Rethinking Materials

Innovation & Investment Summit 2026

May 2026

Introduction

This presentation brings together **key takeaways** from Rethinking Materials 2026, combining an **overview of the exhibitors** with a **distilled summary** of the conference talks.

It highlights how innovators across materials, packaging, biotechnology, circular systems and manufacturing are addressing sustainability challenges and accelerating the transition towards lower-impact solutions.

The exhibitor section showcases emerging technologies, products and partnerships shaping the future of materials, while the talk summaries identify recurring themes, market signals and strategic implications.

The document is intended to capture what stood out across the event, what appears commercially relevant, and what may influence future opportunities in sustainable materials innovation.

‘*Plasticfreeland*’ exhibitors

Plastic free land

The Bottle Collective

PulPac's Bottle Collective develops Dry Molded Fiber bottles, helping brands replace plastic packaging with scalable, customisable, lower-footprint fibre alternatives for food, drink, health and FMCG.

Visit website

NBCo

New Bottle Co develops advanced moulded fibre bottles from renewable plant materials, offering durable, compostable alternatives to plastic with strong barriers and scalable manufacturing.

Visit website

Flavedo

Flavedo & Albedo makes vibrant, high-performance makeup in zero-plastic packaging, offering products like tint, eyeshadow, eyeliner and glow for plastic-conscious beauty shoppers.

Visit website

Seep

Seep makes zero-plastic, natural cleaning tools, including sponges, scourers, cloths, gloves and bin liners, designed to replace disposable plastics in home cleaning.

Visit website

Plastic free land

Matter

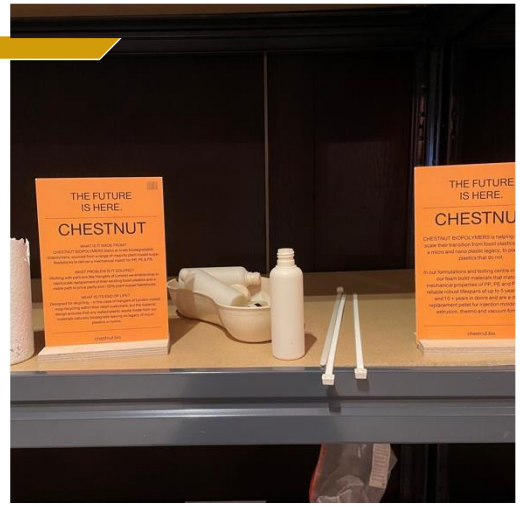
Matter develops scalable water-filtration technology that captures microplastics and microfibres from laundry, textile manufacturing and supply chains before they reach the environment.

Visit website

Vivomer

Shellworks makes Vivomer, a plastic-free biomaterial for packaging that performs like plastic, is made from plant waste, and composts without microplastics or toxins.

Visit website



Chestnut

Chestnut Biopolymers develops biodegradable, majority plant-based formulations that replace fossil plastics in manufacturing, offering drop-in alternatives for medical disposables, packaging and consumer goods.

Visit website

Notpla

Notpla creates biodegradable, plastic-free packaging from seaweed and plants, replacing single-use plastics with food containers, seaweed paper, dissolving pods, films and sustainable alternatives.

Visit website

Plastic free land

Terramtech

Terram develops 100% bio-based, plastic-free packaging materials and barrier coatings that match plastic performance, cost and scale for foodservice, CPG, retail and converters.

Visit website

Biofluff

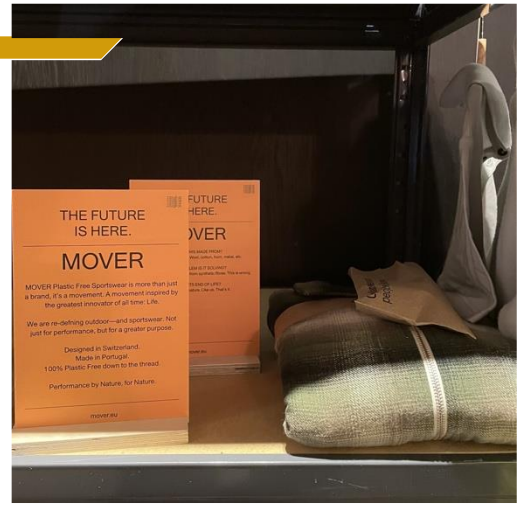
BioFluff develops 100% plant-based alternatives to fur, shearling and plush, creating animal-free, oil-free biomaterials for fashion, accessories and toys, produced in Europe.

Visit website

Yulex

Yulex makes certified, plant-based natural rubber materials that replace neoprene, geoprene and elastane in wetsuits, textiles, yoga products, footwear and accessories.

Visit website



Mover

Mover makes plastic-free sportswear using natural fibres like merino wool and organic cotton, offering performance jackets, trousers and base layers designed to reduce plastic pollution.

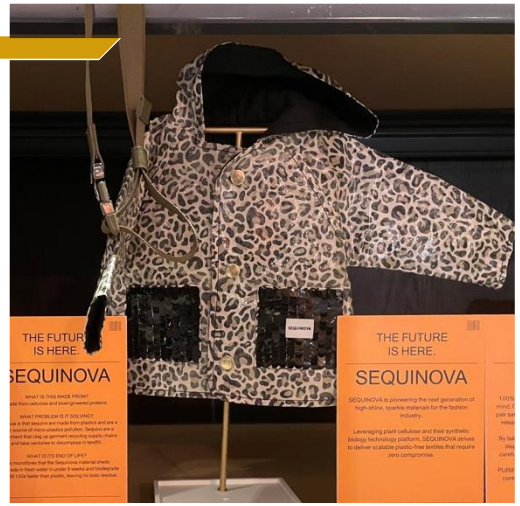
Visit website

Plastic free land

Purified

PURIFIED creates 100% plastic-free trainers from natural materials, designing comfortable, biodegradable footwear with recyclable components that safely return to Earth after years of wear.

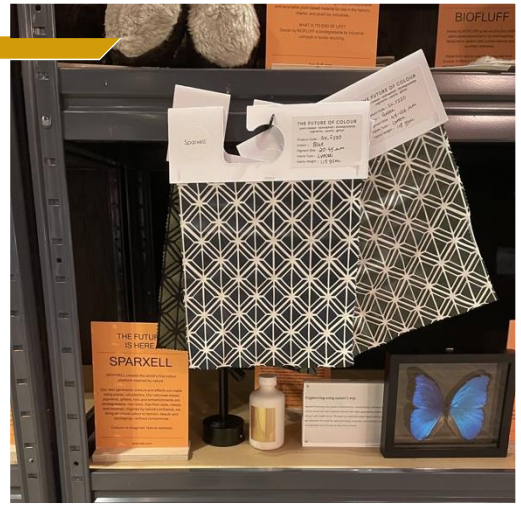
Visit website



Sequinova

Sequinova makes biobased sequins and sparkle materials at scale for fashion and cosmetics, offering lower-impact alternatives to conventional plastic decorative finishes and glitter.

Visit website



Sparxell

Sparxell designs and manufactures plant-based cellulose pigments, biodegradable glitter and special-effect biomaterials, replacing synthetic colourants, mica and mined minerals across cosmetics, fashion and packaging.

Visit website

Solk

SOLK makes Swiss-engineered, compost-capable sneakers from chrome-free leather, natural rubber and biobased materials, designed for everyday wear and return-to-compost end-of-life.

Visit website

Scale-ups & start-ups

Start-up technologies

Arda biomaterials

Arda converts spent grain from beer and whisky production into high-performance, plastic-free biomaterials. Using proprietary green chemistry, it reconfigures plant proteins into durable, scalable textiles designed to replace leather and synthetic materials across fashion, automotive, and interiors.

Visit website

Demeter Bio

Demeter Bio engineers next-generation, bio-based coatings and polymers that replace PFAS “forever chemicals.” Using biotechnology-driven materials science, it delivers fluorine-free water, oil, and abrasion resistance for textiles and packaging without toxic persistence or performance compromise.

Visit website

BioBond

BioBond develops high-performance, plant-based adhesives and coatings that replace petroleum-derived materials. Its biodegradable, microplastic-free solutions are designed for packaging and industrial applications, delivering comparable or superior performance while reducing VOCs and environmental impact.

Visit website

Start-up technologies

Terrasafe

TerraSafe is a material innovation platform accelerating the next generation of plastic-free packaging by curating and integrating a portfolio of plastic-free barrier packaging materials—designed to transform packaging from a polluter to a protector.

Visit website

Zeefier

Zeefier produces industrial-scale textile dyes from seaweed, fully compatible with existing dye-house processes. Its natural seaweed palette enables biodegradable color solutions—browns, greens, reds, greys—that address pollution from synthetic dyes across fashion and interiors.

Visit website

Aropha

Aropha is an ISO-accredited lab specializing in rapid, cost-effective biodegradability, ecotoxicity, and compostability testing. Combining AI (ArophaAI) and lab automation, it supports businesses with fast, scalable, and predictive evaluation of sustainable materials.

Visit website

Start-up technologies

OzoneBio

OzoneBio produces emission free, bio-based adipic acid from wood and agricultural waste, enabling fully bio-derived Nylon 6,6. Its green-chemistry process eliminates N_2O emissions while delivering high-performance materials for textiles, plastics, automotive components, and packaging.

Visit website

Evoralis

Evoralis develops advanced enzymes that depolymerise plastics such as PET, nylon, and PU back into virgin quality monomers. Using a patented ultra-high-throughput screening platform, it enables scalable, enzyme-based recycling for textiles, packaging, and automotive materials.

Visit website

Carboncell

Carbon Cell creates a plastic-free, compostable foam made from biochar and natural polymers. Designed to replace polystyrene, the material is carbon-negative, high-performance, and suitable for packaging and insulation while locking carbon away for centuries.

Visit website

Solena Materials

Solena Materials designs novel protein fibres using AI and synthetic biology. Its biodegradable, non-oil-derived fibres deliver high performance comparable to synthetics while avoiding microplastic pollution, offering a scalable alternative for fashion, sportswear, and technical textiles.

Visit website

Scale-up technologies

Buyo

Buyo transforms agricultural and food bio-residues into biodegradable, compostable plastic alternatives. Using patented bio-fermentation and material-engineering processes, its materials match the performance of conventional plastics while safely decomposing without microplastics or toxic residues.

Visit website

Cornnext

Cornnext develops CornNext-17, a corn-starch-based biopolymer that biodegrades naturally within around 30 days without industrial composting. Made using enzymes and fermentation, it offers a high-performance, microplastic-free alternative to single-use plastics for packaging and consumer goods.

Visit website

Kelpi

Kelpi creates high-barrier, seaweed-based coatings that replace plastic layers in paper and fibre packaging. The material delivers strong protection against moisture, oxygen and grease while remaining biodegradable, recyclable and fully compatible with existing packaging production lines.

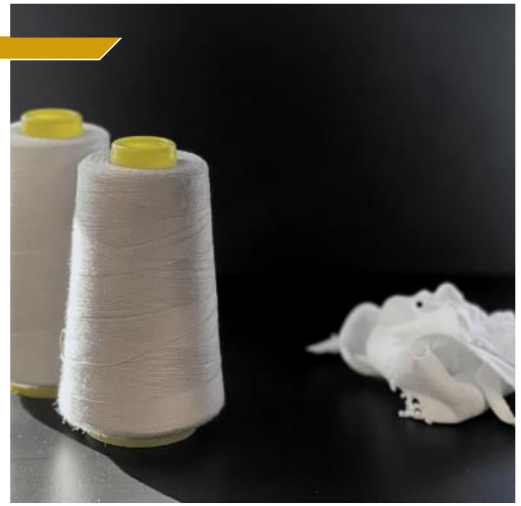
Visit website

Pack2Earth

Pack2Earth develops robust, high-barrier packaging materials made from plants and minerals. Its films and mouldable materials are home-compostable at ambient temperatures, organically recyclable, and designed as drop-in replacements for plastic in long-life dry, semi-liquid and liquid packaging.

Visit website

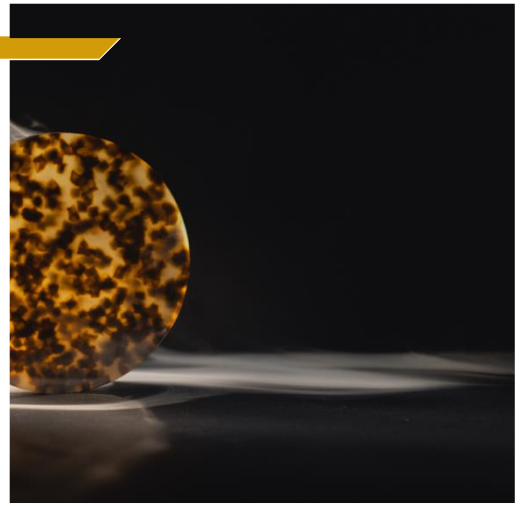
Scale-up technologies



Fairbrics

Fairbrics converts captured industrial CO_2 into polyester fibre using catalytic chemistry. By replacing fossil feedstocks with recycled carbon emissions, it delivers drop-in polyester for textiles and packaging with significantly reduced carbon impact and full compatibility with existing manufacturing processes.

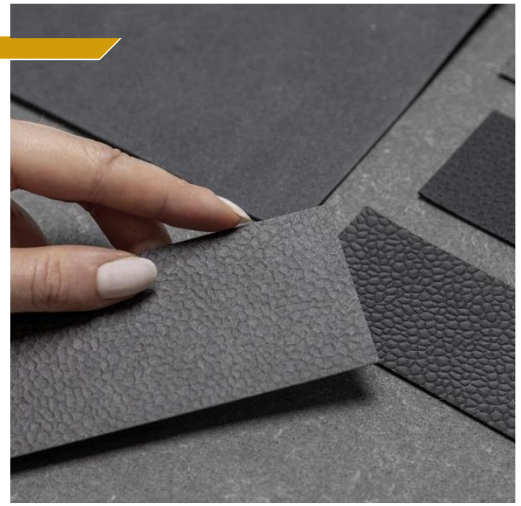
Visit website



Imeko

Imeko recovers and purifies cellulose acetate from discarded cigarette filters, transforming a major pollution stream into high-performance circular material. Its flagship product, Celion®, enables premium applications in eyewear, fashion accessories and design while demonstrating scalable, traceable chemical recycling.

Visit website



Revoltech

Revoltech develops LOVR™, a plastic-free, hemp-based leather alternative made from agricultural residues. The mono-material delivers durability, abrasion resistance and design flexibility for fashion, furniture and automotive interiors while remaining biodegradable and compatible with existing production infrastructure.

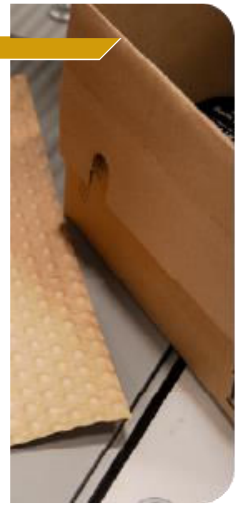
Visit website

Simplifyber

Simplifyber produces soft-goods directly from a proprietary natural-fibre liquid moulded into 3D forms. Its cellulose-based process eliminates spinning, weaving and cutting, reducing waste and steps while enabling fully biodegradable footwear, accessories and textile components at industrial scale.

Visit website

Scale-up technologies



Papair

Papair develops paper-based cushioning materials designed to replace plastic bubble wrap. Its patented, glue-free paper structures provide impact protection for e-commerce and logistics while remaining fully recyclable, mono-material, and compatible with existing packaging processes.

Visit website

Pulpac

PulPac is the inventor of Dry Molded Fiber, a disruptive manufacturing technology that forms high-performance fiber packaging without water-intensive wet molding. The process enables plastic-like precision, significantly lower CO_2 emissions, and scalable production of fiber lids, trays, and packs.

Visit website

Solum

Solum develops advanced digital shelf labels and smart retail technologies that replace paper price labels with low-energy electronic displays. Its IoT-enabled systems improve pricing accuracy, reduce operational waste, and support data-driven retail while eliminating recurring printed label production.

Visit website

Solutum

Solutum engineers high-performance, plastic-like flexible packaging materials with a true end-of-life solution. Its patented compounds run on existing PE equipment while enabling recycling, industrial composting, and complete biodegradation in soil and water—without microplastics or toxic residues.

Visit website

The talks

1. Keynote speech

The Geneva Moment Turning Frustration into Environmental Progress

The keynote reframed the stalled global plastics treaty negotiations in Geneva not as the end of progress, but as the end of a particular assumption: that action must wait for total international consensus.

It was argued that the world now needs to build practical, market-shaping coalitions wherever enough ambition already exists.

Rather than relying on diplomacy alone, progress can come through pre-competitive collaboration, policy signals, and operating models that shift how companies procure, design, collect and reuse materials.

The UK Plastics Pact was presented as evidence that measurable change is possible when brands, retailers, recyclers and government align around shared rules and accountability.

Its evolution into the broader UK Packaging Pact signals a move beyond plastics into system-wide packaging optimisation, reuse, refill, harmonised data and infrastructure investment.

The speech also located circularity within economic resilience: virgin plastic volatility, geopolitical energy risk, EPR and public concern all change the business case.

The message was not to abandon treaty ambition, but to stop waiting for it. Companies positioned ahead of regulation can turn optional action today into structural advantage tomorrow.

2. What Makes a Circular Material Ecosystem Work?

The panel explored circularity as a system challenge involving regulation, design, data, collection and investment.

Speakers discussed how PPWR, EPR, traceability and digital product passports can improve material flows, while stressing that reuse, repair and end-of life design must be aligned with commercial realities and local infrastructure.

2. Key takeaways

Regulation is changing behaviour, but it creates new system dynamics as well as clarity

PPWR, EPR and deposit return schemes are driving collection, recycled content and design-for-recyclability discussions, while modulated fees can shift competitiveness between materials. However, when deposit schemes remove high-value materials from existing systems, waste-economics can change again. Regulation therefore sets direction and a floor, but ecosystem actors still need to manage uncertainty, timing and unintended consequences.

Data is becoming a core circularity layer

Traceability tools, QR codes, data matrix systems, invisible tags and digital product passports can tell brands, sorters and consumers what a product is, where it goes and how it should be handled. This visibility helps reduce uncertainty and optimise sorting, recycling, repair or reuse. The discussion suggested that data is not merely a compliance burden; it can become a commercial enabler when it improves material recovery and consumer engagement.

A circular material ecosystem must be designed from the end backwards

Panellists stressed that recycling is the final step, not the whole of circularity. Reuse, refill and repair should come first where viable, but they demand behaviour change and infrastructure alignment. Design teams need to understand the operational realities of collection, sorting and processing before launching innovations. Otherwise, new materials may become breakthroughs on paper and failures in practice.

3. Reusable Packaging Renaissance

Collaboration, Regulation, and the Path Forward

The session examined whether reusable packaging is moving from pilots to scale.

Panellists highlighted the need for shared infrastructure, standardised packaging, customer simplicity, retailer collaboration, EPR funding and clear regulation.

France’s reuse investment model and UK retailer partnerships showed how reuse can become commercially viable beyond isolated experiments.

3. Key takeaways

Reuse is an infrastructure problem, not just a packaging-format problem

The panellists repeatedly emphasised that no individual retailer, brand or platform can build a viable reuse economy alone. Shared cleaning, sorting, logistics, return points and data systems are needed to lower cost and make participation easy. Standardised packaging and interoperable systems are especially important in grocery, where consumers shop across retailers and expect convenience.

France offers a useful example of policy-enabled reuse scale

CITEO's allocation of 5% of EPR fees to reuse projects has helped finance the difficult middle stage between pilot and industrialisation. This funding supports cleaning, sorting and operational systems that private actors struggle to justify alone. The lesson for the UK is that EPR should move beyond acknowledging reuse in principle and provide concrete mechanisms that reduce investment risk and rebalance costs between single-use and reusable formats.

Consumer simplicity is non-negotiable

Reuse systems must feel at least as easy as single use, with clear return options, simple incentives and consistent experiences across retailers. The panel warned against fragmented systems where every retailer or brand asks consumers to behave differently. The sweet spot is likely high-frequency products with enough volume and repeat purchasing to support return loops, shared packaging pools and commercially credible utilisation rates.

4. Technology Showcase

New Materials and Circularity Enabling Technologies

This showcase presented start-ups turning waste, biomass, enzymes, testing and safer chemistry into scalable material solutions.

The pitches covered seaweed dyes, bio-based nylon, enzymatic recycling, PFAS-free coatings, biochar foam, biodegradability testing and spent-grain leather alternatives, with investors probing performance, price parity, infrastructure and adoption pathways.

4. Key takeaways

Strongest innovations are designed to enter existing industrial systems

The most commercially convincing companies were not asking the market to rebuild around them. They were finding ways to plug into what already exists: Zeefier's seaweed dyes are designed for industrial dyeing systems; Carbon Cell is working with expanded-foam manufacturers; Arda uses brewing infrastructure and existing plastic-leather or film equipment; Evoralis is integrating enzymes into recycler partnerships. The lesson is clear: new materials scale faster when they reduce adoption friction for mills, converters, manufacturers and brands.

Alternative feedstocks only matter if they deliver performance and price

The session was full of promising feedstocks — seaweed, wood bark, nutshells, sawdust, agricultural waste, biochar, food waste and spent grain — but the real test was never novelty. Investors pushed on dye fastness, nylon cost parity, coating performance, foam processing, certification and material quality. The sharper takeaway is that "waste-derived" or "bio-based" is not enough. These materials must behave like industrial materials, meet standards, and show a credible path to price parity.

Enabling technologies may be as important as the materials themselves

The showcase was not only about new materials; it was also about the tools that allow them to scale. Evoralis uses enzymes to unlock hard-to-recycle textiles and plastics. ARPHA uses biodegradability testing and AI prediction to help companies avoid late-stage product failure. Demetra Bio addresses the chemistry risk behind PFAS substitution. These examples show that circularity depends on enabling technologies — testing, prediction, safer chemistry and selective recycling — not just new material formulations.

5. EU & UK Bioeconomy Strategies -

Scaling Bio-Based Materials, Policy & Textile Innovation Impact

The panel compared the EU's mature bioeconomy agenda with the UK's delayed roadmap.

Speakers discussed bio-based materials, lead markets, public procurement, finance and regulatory alignment, while warning against technology-first policy.

The central question was how to turn promising science into bankable, sustainable markets at European and UK scale.

5. Key takeaways

The EU is building a more coherent bioeconomy market architecture than the UK

Its strategy combines lead markets, regulatory measures, non-legislative initiatives, investment groups and forthcoming bio-based plastics requirements. By contrast, the UK roadmap remains delayed despite extensive policy work. This creates uncertainty for innovators and investors, especially where UK-EU regulatory divergence increases cost and complexity. Scale-up decisions will follow markets that provide clarity, demand and harmonised rules.

The bioeconomy must learn from earlier policy mistakes

Speakers warned against a technology-first approach that promotes engineering biology or bio-based feedstocks without a holistic sustainability lens. Previous bioeconomy and biofuels efforts showed that poor design can create land-use change, food competition or other unintended consequences. Sustainable scale requires lifecycle thinking, biomass governance, credible standards and attention to resource limits, not merely replacing fossil carbon with biological carbon.

Finance will only mainstream bio-based materials when projects become legible and bankable

The panel compared the bioeconomy to energy efficiency and renewable energy, where definitions, reporting systems and financing products eventually became institutionalised. Bio-based materials still occupy a tiny share of banking activity. To change that, financiers need a pipeline of projects, clearer metrics, lead markets, offtake commitments and policy mechanisms that reduce risk between science projects and commercial plants.

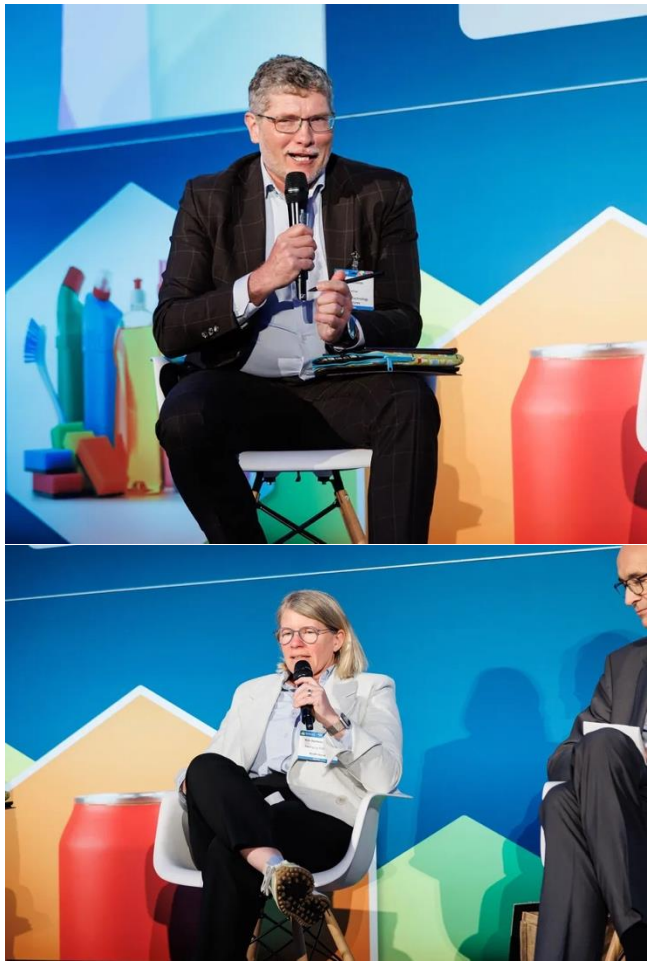
6. Leadership Panel

Integrating Material Transitions into Corporate Strategy

The leadership panel explored how material transitions become corporate strategy inside complex businesses.

Speakers from packaging, materials science and flooring described balancing circularity with performance, cost, machinery, supplier readiness and long product lifecycles.

The discussion emphasised champions, systems testing and business relevance as conditions for adoption.



6. Key takeaways

Material transitions succeed when solving business problems and sustainability problems

The chambered closure example showed that circularity cannot compromise functionality, consumer experience or factory compatibility. The innovation worked because it removed a material-recovery barrier while preserving elasticity and use performance. This is how sustainability arguments become credible to leadership: they are framed as improvements to product design, risk management and future competitiveness, not isolated environmental claims.

Real-world system testing matters more than theoretical compliance

The materials science discussion showed that standards can be insufficient if they do not match actual operator conditions. A compostable package that fits a composter's 60-day cycle is more meaningful than a material that complies in principle but fails in practice. Visiting facilities, speaking with resin providers and testing under operational conditions help companies design materials for the systems that actually exist.

Circularity looks different for long-lived materials

Flooring may remain in use for decades, so companies must manage legacy products that were not designed for today's recycling systems. The phased strategy described in the panel moved from internal waste to installer take-back to cross-industry waste inputs, while designing new products for future recovery. This underlines that material lifetimes shape circular strategy: packaging can be redesigned quickly, but construction and interior materials require long-term stewardship.

7. Lightning Talks

Future-Proofing Packaging and Textiles with Data

The lightning talks showed how AI, machine learning and structured data can accelerate sustainable materials development.

Speakers covered formulation optimisation, experimental design, chemical-risk assessment, regulatory intelligence and enterprise decision-making, arguing that better data reduces blind spots, speeds R&D and helps companies choose safer, future-proof materials.

7. Key takeaways

AI can accelerate R&D by making experimentation more targeted

The Intellegens presentation described active design of experiments, where existing data trains a model that recommends the next most valuable tests. New results then feed back into the model, improving the system over time. This approach does not replace laboratory work; it reduces wasted experiments and helps scientists focus on the most informative options. Reported reductions of 50% to 80% in experimental effort show why this matters for materials scale-up.

Good data is the foundation of sustainable materials development

The opening talk stressed that material developers need real data, quality data and the right technical language to translate properties into usable requirements. Sustainability cannot be treated as a single metric; it includes feedstocks, processing, performance, end-of-life pathways and application-specific constraints. Computational tools only become useful when they are connected to laboratory validation and commercial realities.

Chemical-risk AI is becoming a strategic tool, not just a compliance tool

As regulation shifts from named substances to chemical families and structural risk, manual document review becomes too slow and incomplete. AI can extract chemical information from supplier documents, flag inconsistencies, infer uncertain substances and support hazard assessment or substitution screening. This can reduce blind spots across thousands of documents and help procurement, R&D, sustainability and finance teams manage future material risk.

8. Accelerating Fashion’s Material Innovation

From Transparency to Industry Impact

The fashion panel asked why promising materials remain trapped in pilots and capsule collections. Speakers examined performance validation, supply-chain integration, financing, cost premiums, margin stacking and feedstock choices.

The discussion stressed that brands, innovators and manufacturers must align earlier if next-generation materials are to reach meaningful industrial scale.

8. Key takeaways

Fashion’s pilot problem is fundamentally a scale-integration problem

Small capsule collections can work around technical issues through manual coordination, but scaled production exposes every weakness in yarn spinning, fabric development, sewing, certification, procurement and quality control. Innovators need to work with manufacturers before approaching brands, and brands need suppliers they already trust. Materials that fit into existing production networks have a much better chance of becoming normal business.

Premium-separation models can help sustainable materials escape margin stacking

When a more expensive material passes through several tiers, each actor may add margin to the premium, making the final product disproportionately expensive. Separating the premium and treating it as a strategic sustainability investment can reduce this compounding effect. However, panellists stressed that financial mechanisms alone are insufficient; implementation must still be controlled through the value chain so the intended material actually reaches the product.

The industry needs a shared definition of ‘good enough’ for transition materials

Biomaterial innovators face conflicting customer views on feedstocks, from edible sugars to agricultural residues to post-consumer textiles. Ideal circular feedstocks may be technically possible but commercially unavailable. Without guidelines, every brand applies its own judgement, slowing adoption. The panel argued for standards or criteria that recognise real progress while managing unintended consequences such as land use, energy intensity or food competition.

9. Textile-to-Textile Recycling

Driving Commercial Scale with AI and Circular Innovation

The panel focused on the commercial realities of textile-to-textile recycling. Speakers discussed post-consumer waste, automated sorting, pre-processing, dye and contaminant removal, capital intensity, offtake agreements and public funding. The discussion positioned recycling as essential to regional resilience, but dependent on infrastructure, honest economics and value-chain coordination.

9. Key takeaways

Post-consumer waste is the real test of textile circularity

Post-industrial waste is easier to trace, cleaner and often closer to virgin material, but it does not solve the larger problem of fragmented consumer textile waste. Reju's focus on post-consumer waste in Europe reflects an ambition to close the loop authentically. That ambition requires large-scale regeneration plants, public and private funding, and brand offtake commitments that give investors confidence.

Pre-processing is a major bottleneck

Sorting, de-trimming, de-sizing, disassembly and contaminant removal must happen before many chemical or mechanical recycling technologies can work at scale. Circle-8's proposed automated facilities and Diocycle's solvent-based contaminant-removal technology both address this missing middle. Without high-volume, low-cost, clean feedstock, even technically ready recycling processes will struggle to operate economically.

The sector needs realism about cost and investment

Panellists warned against convenient narratives about near-term price parity with virgin textiles. Recycling post-consumer garments is difficult, capital-intensive and operationally complex. Costs can fall through efficiency, scale and better system design, but they will not disappear by optimism alone. Public grants, European funding, EIB-style mechanisms, private investment and long-term offtake agreements all have a role in de-risking the next phase.

10. Paperisation in Packaging

Market Momentum, Innovation and Strategic Adoption

The paperisation panel assessed whether fibre-based packaging is reaching a strategic crossroads.

Speakers explored consumer trust in paper, technical barriers, barriers and coatings, recyclability, food-contact compliance, scale economics and retailer influence.

The discussion warned against treating paper as automatically sustainable, instead advocating use-case-specific material choices.

10. Key takeaways

Paperisation is not automatically circular

Many paper-based replacements are composites involving coatings, barriers or plastic layers, and those details determine whether they behave like paper in recycling systems. Sorters and mills need formats that fit size, shape and fibre-quality requirements. A product that consumers perceive as natural may still be problematic if it contaminates paper streams or lacks a viable offtake route.

The right material depends on the product and use case

Panellists drew a distinction between dry and wet products, primary and tertiary packaging, performance and non-performance applications. Paper may be highly appropriate for some formats and unsuitable for others, especially where moisture, fat, oxygen or long shelf life create demanding barrier needs. The supermarket of the future is likely to contain more material diversity, not a single winning substrate.

Scale requires alignment without freezing innovation too early

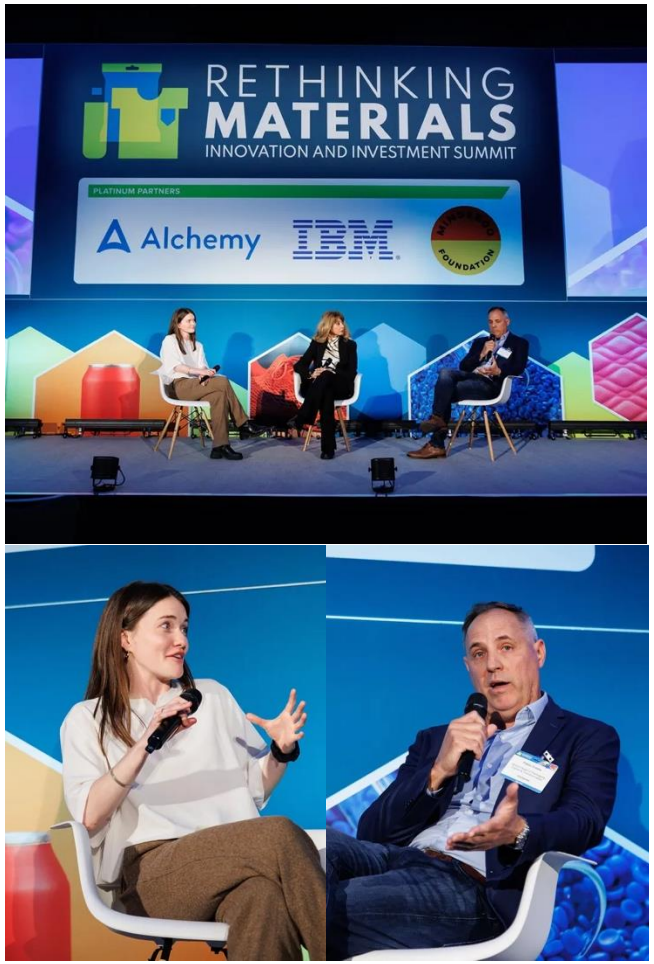
Random small trials do not give recyclers, retailers or converters enough volume to learn and invest, while one-brand experiments rarely create competitive cost structures. Retailers and large brands can help pull meaningful volumes into the system. However, the panel cautioned against premature standardisation that would prevent emerging solutions from developing. The useful middle ground is coordinated scale around well-understood, system-compatible formats.

11. Fireside Chat

Unlocking the Potential of Paper-Based Flexible Packaging in Emerging Markets

The fireside chat examined small-format flexible plastic packaging in emerging markets, where affordability, performance and leakage risk collide.

Speakers considered whether paper-based flexibles can help when collection economics fail, while stressing that paper must be responsibly sourced, recyclable or biodegradable, and capable of surviving demanding distribution conditions.



11. Key takeaways

The problem is specific: low-value flexible packaging in leakage-prone systems

Small-format sachets and snack packs provide affordability and product protection, but they have little economic value for informal collectors. That makes them highly likely to escape waste systems and enter the environment. The paper opportunity matters because it starts from this problem, rather than from a generic desire to replace plastic.

Paper-based flexible packaging must still perform like packaging

Food packs need barrier properties, mechanical strength and shelf-life protection, especially in hot, humid or informal retail environments. A snack pack hanging outside a small shop in Thailand faces different conditions from a pack on a European supermarket shelf. New substrates, coatings, converting processes and machinery adaptations are required before paper-based flexibles can serve these use cases reliably.

Collaboration is essential to avoid fragmented non-scale

No single brand, supplier, recycler or NGO can solve small-format flexible packaging alone. The speakers emphasised shared work across paper suppliers, machinery suppliers, converters, food companies, recyclers and forestry actors. Without alignment, companies may create incompatible solutions that fail to build volume, performance knowledge or recycling pathways. The goal is coordinated innovation around clear design obligations and watch-outs.

12. From Signal to System

Human Health as a Decision Driver in Materials Innovation

The panel argued that human health is becoming a strategic driver in material innovation.

Speakers connected chemical exposure, microplastics, endocrine disruption, litigation, investment risk and supply-chain transparency.

The discussion called for safer substitution, better health-risk frameworks and upstream design, rather than relying on downstream compliance or recycling.

12. Key takeaways

Human health is becoming a material-risk category for investors and brands

PFAS, microplastics, endocrine disruption and litigation risk are shifting health from a technical issue into a financial and strategic concern. Investors increasingly need to ask whether a material could create future liability, regulatory exposure or reputational harm. This changes diligence: the question is not only whether a material can scale, but whether it should scale.

The sector lacks a simple health metric, but not useful frameworks

Unlike climate, where carbon dioxide equivalent provides a common reference, health impacts are harder to compare across materials. However, panellists argued that existing tools for endocrine disruption, persistence, hazard classification and chemical-family risk can be brought together. Better quantification would help capital, procurement and regulation favour safer materials with more confidence.

Circularity without safety can perpetuate harm

The panel challenged the idea that recycling and waste management are sufficient if materials contain problematic additives, microplastic-generating chemistries or hazardous substances. Upstream substitution, safer polymers and better design need more investment relative to downstream infrastructure. Otherwise, the system may become more efficient at circulating problematic materials rather than reducing exposure.

13. Day 2 Opening Presentation

Strengthening Europe’s Critical Raw Material Resilience

The keynote positioned critical raw materials as central to Europe’s competitiveness, sovereignty and green transition.

It explained supply risks, China’s dominance, the EU Critical Raw Materials Act, investment gaps and the role of recycling, substitution, partnerships and patient public capital in building resilient European value chains.

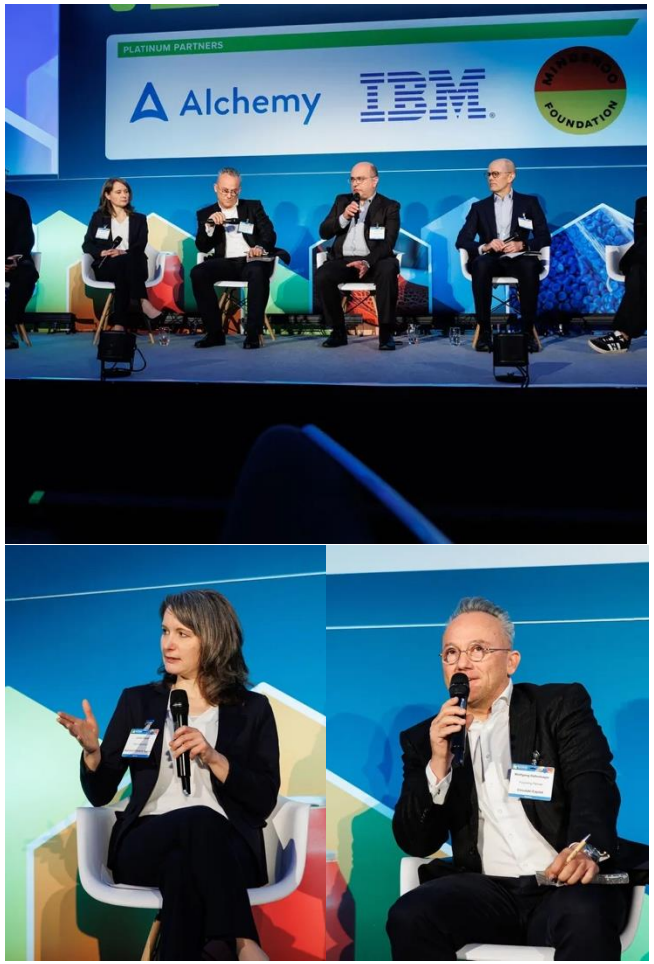
14. Investor Panel

Financing the Next Generation of Materials Innovation

The investor panel examined why next-generation materials struggle to attract capital at the point of scale.

Speakers discussed venture limits, capex-heavy plants, offtake uncertainty, licensing, existing infrastructure, corporate demand coordination and NGO partnerships.

The discussion called for financing structures better suited to industrial materials businesses.



14. Key takeaways

Materials companies fall into a financing gap between venture and infrastructure capital

They may have strong science but require large plants before they can become cost-competitive. Venture funds may lack the capital or patience, while later-stage investors see too much technology and market risk. This means the sector cannot rely solely on traditional software-style venture models. New structures are needed.

Existing infrastructure and licensing can materially improve scalability

Investors favour companies that can plug into current supply chains, use existing filling lines, deploy local production or license technology to established operators. This reduces capex, accelerates market entry and lowers execution risk. However, some breakthrough models may still need to create new infrastructure when they change the underlying economics enough to justify it.

Demand coordination is a financing tool

The Earth Capital and Canopy model illustrated how NGO and corporate relationships can align specifications, aggregate demand and support advanced market commitments. This matters because innovators often cannot secure offtake until they have volume, and cannot build volume without funding. Coordinated buyer demand can help unlock growth equity and project finance.

15. Circular Plastics in Action

Leveraging Chemistry and Waste as Feedstock for a Sustainable Future

The panel treated circular plastics as an execution challenge, not a vision challenge.

Speakers rejected silver bullets and discussed recycled-content volatility, virgin-price competition, policy support, CO2 and methane feedstocks, PHA, low-carbon polymers and offtake agreements.

The discussion emphasised structural demand, regulation and realistic feedstock trade-offs.

15. Key takeaways

Recycled-plastics markets are too fragile without structural support

Demand can collapse when virgin prices fall, undermining recyclers and causing capacity loss. Long-term offtake agreements, pricing mechanisms and policy guarantees are needed to reduce exposure to spot-market volatility. Recycled content will not scale reliably if buyers treat it as optional whenever virgin material becomes cheaper.

Alternative carbon feedstocks can coexist, but each carries trade-offs

CO2 utilisation, methane-based PHA, bio-based feedstocks and recycled plastics all address different parts of the fossil-carbon challenge. Bio-based routes may face land-use and biomass constraints; recycling alone cannot meet demand; gas-based routes require capital and appropriate applications. The panel's systems view was that the future plastics economy will need a portfolio of feedstocks and technologies.

Legislation can enable or confuse emerging materials

PHA was discussed as attractive because of biodegradation behaviour and potential local circular systems, yet legal treatment as a plastic can create uncertainty and limit applications. Policy intent may be positive, but implementation needs nuance around molecular structure, end-of-life environment, rate and extent of biodegradation, and the infrastructure actually available to handle materials.

16. Technology Showcase

Material Innovators to Watch

The showcase presented innovators developing biodegradable plastics, formed-fibre products, leather alternatives, dry-moulded fibre, paper bubble wrap and compostable high-barrier materials.

Across the pitches, companies emphasised drop-in compatibility, existing machinery, licensing, converter partnerships, lower resource use and the need to win on performance and economics.

16. Key takeaways

Drop-in compatibility is a recurring route to scale

Many showcase companies emphasised use of existing machinery, converters, licensees or manufacturing platforms. This reduces adoption friction for brands and manufacturers, who are unlikely to rebuild supply chains for early-stage materials. Whether through Solutum's films, Pack2Earth's flexible and injection-moulding materials, or PulPac's licensing model, scale depends on fitting into industrial reality.

Several innovators are rethinking process, not only material

Simplifyber and PulPac both argued that sustainability gains can come from changing how products are made. Simplifyber collapses fibre, textile and assembly stages into direct three-dimensional forming. PulPac removes water from fibre-forming. These process innovations can reduce waste, logistics, labour, energy or water use while opening new design spaces.

Sustainability opens doors, but performance and economics close deals

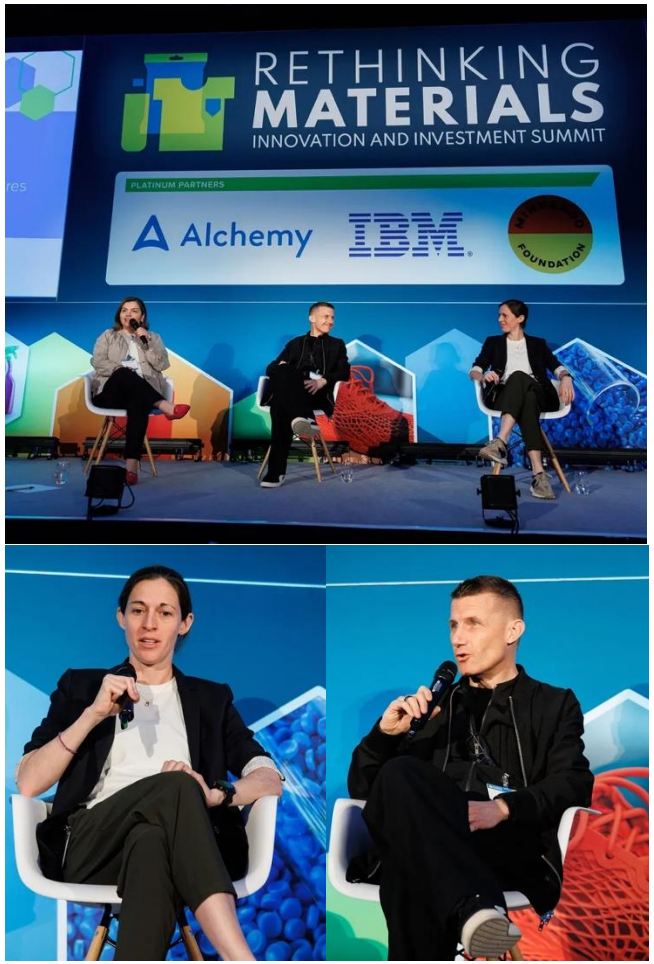
Papair stated this most directly: companies may listen because of sustainability or regulation, but procurement decisions depend on cost, handling, performance and operational benefit. The showcase reinforced a broader conference theme: safer or lower-impact materials must compete in the language of business value, not only environmental intention.

17. Sustainability in Motion

Footwear Innovation that Performs, Inspires, and Endures

The footwear panel explored how sustainability can fit an industry driven by performance, comfort, novelty and emotion.

Speakers discussed factory waste, bio-based foams, partial substitution, consumer behaviour, circular infrastructure and collective action, arguing that scalable change must protect product desirability while shifting material systems over time.



17. Key takeaways

Footwear sustainability must balance performance, desirability and planetary impact

A shoe has to work physically, feel comfortable and look desirable. Consumers, especially athletes, will not sacrifice performance simply because a material is sustainable. This makes footwear a demanding category for material innovation: alternatives must meet technical specifications while also fitting emotional and aesthetic expectations.

Scale may come through partial substitution before full replacement

New Balance's bio-based foam example showed that 100% bio-based content in a small number of shoes may deliver less impact than 5% content across millions of pairs. Like hybrid vehicles in the automotive transition, blended materials can help shift supply chains, build volume and lower cost before full conversion is possible. This is a pragmatic route to market.

Circular footwear requires infrastructure beyond the shoe

A circular shoe inside a linear system will not close the loop. Collection, sorting, recycling, consumer behaviour, factory-waste recovery and supply-chain collaboration all need to evolve. The Footwear Collective's role is to aggregate demand and build shared pathways that individual brands cannot finance alone. Smaller loops, such as production waste recovery, can create progress while larger post-consumer systems mature.

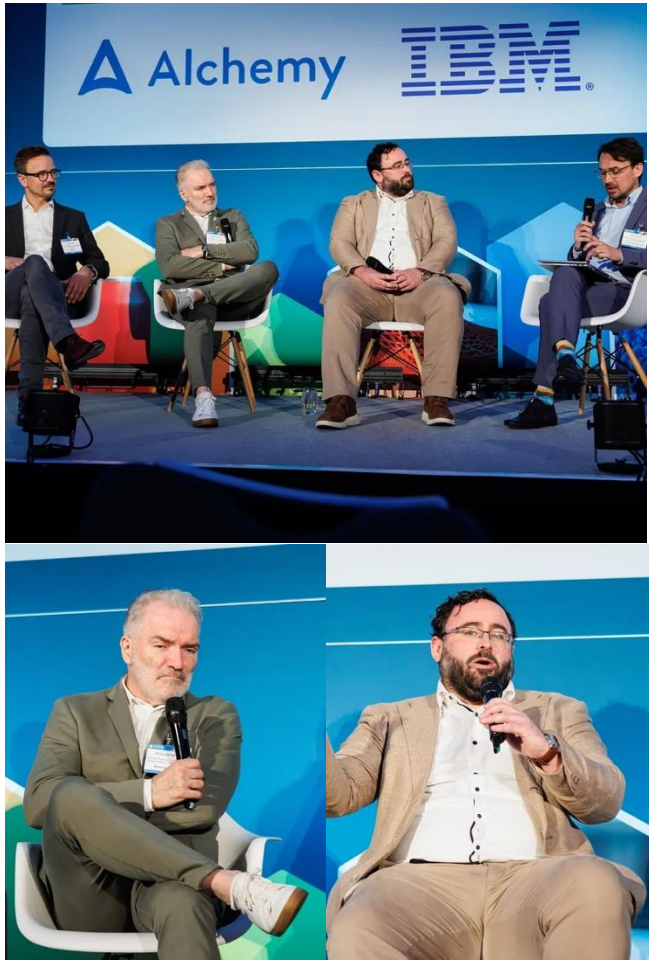
18. Inside the Machine

Transforming Automotive Interiors

The automotive interiors panel examined circularity in a vast, highly regulated manufacturing system.

Speakers discussed recycled-content targets, vehicle end-of-life losses, design timelines, customer acceptance, plastics regulation, supplier capacity and premium expectations.

The discussion framed circular materials as both compliance requirement and resilience hedge against volatility.



18. Key takeaways

Automotive circularity works on long timelines

Vehicles take years to design and may remain in use for decades, so circularity has to be embedded at the start of product development. Acting after a vehicle is already designed captures only a fraction of possible impact. This makes early collaboration between design, engineering, purchasing and suppliers essential.

Recycled materials need not signal compromise

Renault reported that many customers accept or expect recycled materials, provided quality and safety are maintained. In many cases, recycled fabrics, plastics or aluminium can be indistinguishable from virgin alternatives. However, communication must be application-sensitive: customers may feel differently about visible interior surfaces than safety-critical components such as tyres.

The biggest constraint may be supply, not intent

BMW's scale illustrates the challenge: millions of parts per day and a huge supplier base require reliable volumes of recycled plastics and other secondary materials. Regulation can create demand, but suppliers must deliver quality, quantity and consistency. OEMs may need to pull the market by creating offtake and supporting material availability.

19. Safer Materials in Textiles & Plastics

Tackling PFAS and Chemical Risks

The panel addressed PFAS and chemical risk as urgent material-transition issues.

Speakers discussed REACH, polymer regulation, litigation, toxic recycling, chemical recycling, safer substitution and performance trade-offs.

The discussion challenged circularity narratives that ignore embedded hazards and argued for upstream design that prevents harm before remediation is needed.

19. Key takeaways

PFAS has moved from specialist concern to enterprise risk

Investors, insurers, lawyers and ESG teams are now asking where PFAS appears in supply chains and what liabilities may follow. This changes the business case for safer substitution: companies are not only managing compliance, but future litigation, reputational exposure and insurability. Supply-chain transparency is now a strategic necessity.

Recycling toxic materials does not solve toxicity

The panel forcefully challenged circularity narratives that ignore embedded chemicals. If harmful additives persist through recycling, the system may simply redistribute risk. This does not mean recycling has no role, but it cannot be treated as the primary answer for materials whose chemistry is the problem. Prevention and safer design need greater attention and investment.

Performance requirements should be interrogated application by application

Some chemistries were developed to solve real performance problems, so bans and substitutions require care. At the same time, society may not need maximum performance in every use case if lower-risk materials can perform sufficiently. Safer materials strategy therefore requires nuance: preserve essential function, avoid regrettable substitution, and challenge over-specified uses where harmful chemistry is unnecessary.

20. Why is Material Innovation Only Talking to Itself?

The closing panel asked why material innovation struggles to reach mainstream audiences.

Speakers argued that the sector overuses technical language and underuses design, emotion and storytelling.

They called for clearer narratives, stronger brand translation, citizen-centred communication and more diverse participation from designers, marketers, procurement and creatives.

20. Key takeaways

Material innovation needs design and storytelling earlier

Technical performance alone does not create cultural traction. Designers can translate materials into desirable products, experiences and narratives that people can understand. The panel argued that material science often lacks emotional accessibility, while designers can act as bridges between laboratory possibility and market aspiration. This is not decoration; it is part of adoption strategy.

Brands are both bridges and bottlenecks

Large companies can scale materials, but legal, compliance and claim-approval teams may dilute messaging until little remains. Smaller, more agile brands can sometimes tell clearer material stories, especially when the material maker has already explained the science in plain language. Innovators should therefore prepare communication assets that brands, marketers and consumers can actually use.

Sustainability messaging should be simpler, more human and more consistent

The panel warned against constantly changing language, overloading audiences with acronyms or relying on guilt and fear. People need to know what a material does, why it is better for them, and how it connects to wider wellbeing and planetary outcomes. Repeated, clear messages can build understanding more effectively than endless novelty.

Summary

Material innovation is no longer a materials problem. It is a systems problem

The strongest message across the summit is that better materials do not scale simply because they are better. They scale when the surrounding system is ready: regulation, infrastructure, procurement, machinery, finance, consumer behaviour, data, logistics and end-of-life pathways all have to move together.

This was true for reuse, textile-to-textile recycling, paperisation, footwear, automotive interiors, bio-based materials and circular plastics. The material itself is only one part of the transition. The hard work is building the operating environment that allows it to perform commercially.

Stop asking only “Is this material sustainable?” Ask: what system does this material need in order to succeed, and who is responsible for building it?

The era of voluntary ambition is over; regulation is becoming the market architecture.

Across almost every discussion, regulation was not treated as background noise. It was the force reshaping investment, design choices and commercial behaviour. PPWR, EPR, the EU Critical Raw Materials Act, REACH, PFAS restrictions, recycled-content mandates, reuse targets, end-of-life vehicle rules and bioeconomy strategies are now actively defining the commercial playing field.

But the summit also showed that regulation alone is not enough. It can set the floor, but industry has to build the pathways above it: shared standards, infrastructure, offtake, data systems, financing mechanisms and pre-competitive collaboration.

Regulation is no longer a compliance issue to monitor later. It is becoming a strategic input to product design, investment decisions and market positioning now.

Circularity without safety is a dangerous illusion

One of the sharpest cross-summit insights was that circularity can become counterproductive if it simply keeps problematic chemistry in circulation. PFAS, microplastics, additives, dyes, coatings and unknown chemical mixtures expose a major weakness in many recycling narratives.

Several sessions challenged the idea that more recycling automatically equals better outcomes. If materials contain hazardous substances, then recycling may only create a “circular toxic economy”. Human health, chemical transparency and safer substitution need to move upstream into design, procurement and investment decisions — not remain downstream compliance checks.

Circularity must be judged by what is being circulated, not just how much is being circulated.

The winning material is not the purest solution; it is the one that can cross the adoption gap

Many sessions challenged perfectionism. Innovators, brands and investors all described a gap between ideal solutions and workable solutions. Whether the topic was bio-based feedstocks, fashion materials, footwear foams, paper packaging or automotive interiors, the same lesson appeared: the “best” material on paper may fail if it is too expensive, too difficult to process, too unfamiliar to suppliers, or too demanding for consumers.

The summit favoured pragmatism over purity. Partial substitution, drop-in compatibility, existing machinery, standardised formats, licensing models and blended approaches may deliver more impact than waiting for a perfect future material.

Do not let perfect become the enemy of scaled progress. Prioritise materials that can enter real supply chains and improve over time.

Infrastructure is the missing middle of the materials transition

A striking pattern across reuse, recycling, bioeconomy, critical raw materials and textiles was the absence of the physical infrastructure needed to make new systems work. Reuse needs washing, sorting, collection and return logistics. Textile recycling needs automated sorting, de-trimming, dye removal and pre-processing. Critical raw materials need recycling and refining capacity. Bio-based materials need biorefineries and scale-up assets. Circular plastics need stable recycled-content markets and local processing.

This is the “missing middle”: beyond R&D, before mature commodity markets. It is expensive, unglamorous and often too risky for conventional investors, but without it the transition stalls.

The biggest opportunity may not be inventing the next material. It may be financing and building the infrastructure that lets existing innovations scale.

Finance has not yet caught up with the industrial reality of materials innovation

The summit repeatedly exposed a mismatch between material innovation and conventional capital models. Many materials companies are science-led, capex-heavy, slow to scale and dependent on large plants, offtake agreements and regulatory certainty. That does not fit neatly into software-style venture capital, nor does it yet feel safe enough for traditional project finance.

Speakers pointed towards new structures: public de-risking, patient capital, corporate venture, demand aggregation, advanced market commitments, NGO-investor partnerships, project finance, licensing models and premium-separation mechanisms.

If we finance materials like software, many will die before scale. The sector needs capital structures designed for factories, feedstocks, infrastructure and long adoption curves.

Data is becoming the connective tissue of circular material systems.

Data appeared not as a buzzword, but as an operational requirement. Digital product passports, traceability tools, AI-enabled sorting, chemical-risk platforms, material passports, machine-learning formulation tools and lifecycle intelligence all point to the same need: the system cannot manage what it cannot identify.

Better data can reduce uncertainty for brands, recyclers, regulators, investors and consumers. It can help materials move through circular systems, reveal hidden chemical risks, accelerate R&D, support compliance and make end-of-life decisions more accurate.

Future-proof materials will need digital identity as much as physical performance

The sector’s biggest communications failure is mistaking technical proof for market desire.

The closing sessions made clear that material innovation often speaks fluently to itself but poorly to the people who decide whether materials succeed: consumers, citizens, marketers, designers, retailers, procurement teams and investors outside the specialist bubble.

Technical superiority is not enough. Materials need stories, emotional relevance, clear benefits and cultural desirability. GORE-TEX succeeded because people understood what it did for them. Many sustainable materials still lead with abstract sustainability claims rather than lived value, performance, beauty, comfort, health, resilience or identity.

If a material cannot be understood, desired and bought, it will not scale — no matter how clever the science is.

Thanks

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