Delivered by Innovate UK

Driving plastic packaging innovation

Smart Sustainable Plastic Packaging Challenge

With a portfolio of over 80 funded projects, UKRI's £60 million Smart Sustainable Plastic Packaging Challenge, delivered by Innovate UK, is the largest and most ambitious UK government investment to date in sustainable plastics research and innovation. It supports bold, ambitious innovation to bring about wholescale change in the UK's ability to reduce, reuse and recycle plastic packaging, and reduce plastic pollution.

Click on the icons above to explore a specific catagory.

reuse
refill
return

CASE STUDY

www.abelandcole.co.uk

reuse, refill, return

UK's first refillable plastic milk bottle

Abel & Cole has delivered a ground-breaking innovation, creating the UK's first ever refillable polypropylene milk bottle for the launch of its Club Zero Refillable Milk.

Having decided plastic was the best material for the job using robust life-cycle assessment, the one litre reusable polypropylene (PP) bottle took three years and seven teams of experts – including Berry Global, Campden BRI and Berkeley Farm Dairy – to develop, test and launch. The bottle design is optimised to facilitate superior cleaning and to suit Berkeley's Farm Dairy's existing filling equipment and can be refilled up to 16 times before being recycled.

Since the launch, the refillable bottle has seen a significant uplift in sales week-on-week. The average return rate since product launch is now above the target of 75%.

Project successes:

- CO_2 saving of 60 tonnes/year compared to reusable glass
- Multi-award winning
- Eliminates 450,000 single-use plastic bottles/year
- Scalable to other bottle sizes

CASE STUDY

www.refillcoalition.com

reuse, refill, return

Scaling up the refill proposition

The Refill Coalition is led by GoUnpackaged, one of the UK's leading reuse & refill experts. Formed in 2020, the coalition has partnered with leading UK retailers and global manufacturers to develop a standardised solution for in-store refill and home delivery of consumer returnables – with Aldi UK, Ocado Retail, CHEP, Digi, Eden Trade Fixtures and Berry.

This ambitious initiative has developed two standardised, full supply chain solutions to deliver refills at scale for key food staples (e.g. cereals and pasta) and household products (e.g. cleaning and personal care products). Since October 2023, Aldi UK has trialled the in-store refill solution in two stores and is showing strong results.

In August 2024, Ocado Retail became the first major supermarket to pilot the new reusable packaging in a scheme designed for online shopping and sales are exceeding expectations.

Project successes:

- High retailer & consumer satisfaction
- The UK's first fully scalable refill system
- Strong sales compared to single-use equivalents
- Multi-award-winning project

CASE STUDY

www.ppftg.wordpress.com

reuse, refill, return

Pushing boundaries on food-to-go packaging

The Perpetual Plastic for Food to Go (PPFTG) project, led by Loughborough University, explored supply chain values and capabilities, novel technologies for tracking and hygiene assurance, and consumer behaviours to address the environmental, societal, and economic impacts of plastic food-to-go packaging.

By pushing the boundaries of existing recycled PET plastic manufacturing lines and knowledge, the PPFTG's thermoformed, reusable food-to-go tray solution proves that a design for circularity is possible with minimal industry investment required.

The pack is designed to survive a minimum of 10 cycles: from filling and sealing, through to customer purchase and consumption, and then washing and refilling.

Project successes:

- 'edie Awards 2024' finalist
- Effective cleaning and pack integrity assessment
- Novel tracking technology
- Design-led approach to packaging research

CASE STUDY

www.reath.id

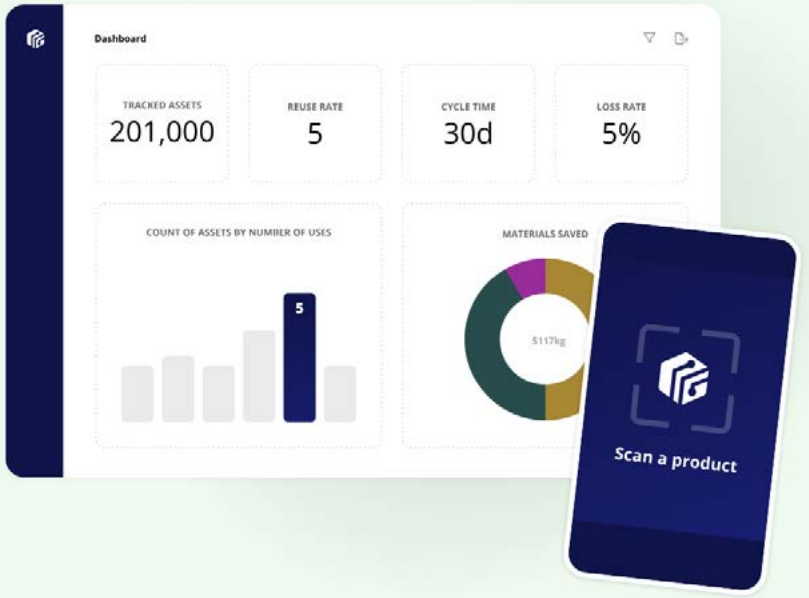
reuse, refill, return

A passport to reuse

Edinburgh-based start-up Reath has developed a new digital passport platform that makes it easy and safe for packaging to be reused.

With the lack of robust, reliable systems to track reusable packaging being cited as one of the barriers to reuse and refill, Reath received SSPP funding to identify and standardise the data that needs to be collected for reusable packaging and develop a system to capture that data.

Reuse.ID, which Reath has released as an Open Data Standard, creates a standardised 'digital passport' for each item: it is tagged and given a unique ID and Reath's software then tracks it at every stage of its lifecycle. The data collected includes 'static' information – such as when a piece of packaging was made, what it was made from and what percentage of recycled material went into it – and 'dynamic', such as what it's been filled with and how many times it's been reused.



Project successes:

- Winners of Hubbub & Starbucks' Bring it Back fund
- Earthshot Prize nominee
- Innovation in real-time tracking
- Successful seed funding with global investors

CASE STUDY

www.letsuseagain.com

reuse, refill, return

Smart cleaning for reusable bottles

Again's CleanCell-V2 project aimed to make reuse more economically viable by developing the concept for the 'CleanCell' hub, capable of cleaning high volumes of rigid reusable plastic packaging at low cost.

The self-contained smart hub semi-automatically de-labels, washes, dries, inspects and palletises reusable plastic bottles. It has been developed to meet key environmental and financial parameters, including cost per unit and energy and water consumption. Challenges included designing a camera system that can inspect the breadth of bottle formats required and conveyors capable of automatically adjusting to different bottle dimensions.

Again has now raised a further £2.2m of capital and the first CleanCell hub is running in Runcorn for reusable glass bottles from major pub chains.

Project successes:

- In discussions about reusable PET at scale
- Winners of Hubbub & Starbucks' fund
- Highly innovative engineering
- On track to receive 1 million bottles per month by April 2025

CASE STUDY

www.wearecauli.com

reuse, refill, return

Takeaway without the throwaway

Award-winning firm Cauli is on a mission to disrupt the urban food industry with technology and automation to help the catering sector and its customers shift to reusable food and beverage packaging.

Since 2019, with funding from the SSPP Challenge, the firm has developed and trialled the Cauli Reuse System (CRS) supply chain and tracking technology, featuring a digital customer interface, POS-based borrowing mechanism, admin panel, and smart return kiosks.

CRS is now running in over 50 sites, including Heathrow Airport, corporate and industry firms like BT, hospital settings including NHS Barts Trust, and educational institutions including University of Worcester, helping our clients save up to 40% in cost and 92% in carbon emissions.

Project successes:

- Sharable learnings on digital tech to support reuse
- The Cateys Innovation Zero prize winner
- Very customer and user centric approach
- Significant environmental benefits

CASE STUDY

www.clubzero.co

reuse, refill, return

Acing reusable packaging

CLUBZERØ is an award-winning Reuse DRS system that provides core technology for tracking returnable packaging, drop point infrastructure for quick returns, and servicing (washing and repair) to enable reusability. CLUBZERØ supports scale up of reuse for consumer packaged goods, retailers, fast food outlets and food service companies to avoid waste.

In 2024, for the second year running, CLUBZERØ partnered with Barclays at the Wimbledon Championships 2024 to offer customers ice cream in their Perfect Pots, diverting an estimated 50,000 single-use items from landfill. The firm also unveiled its new and improved Drop Point Boxes, designed to support large sporting events, and has been working with leading food service company Aramark for BP. A recent Life Cycle Assessment report reported that CLUBZERØ reusable packaging delivers CO_2 reductions of up to 93% versus single-use packaging.

Project successes:

- Served 30,000+ end customers in the UK, USA & UAE
- Average return rate of 95%
- Eliminated 2.6m+ single-use plastics from landfill
- Saved 39 tonnes of CO_2e emissions

CASE STUDY

www.pragmaticsemi.com

reuse, refill, return

Smart tech for reusable packaging

Optimising the logistics for reusable packaging is critical to tracking reusable food-grade plastic packaging and enabling scalable infrastructure.

As part of the SSPP-funded TRACE project, Pragmatic Semiconductor has developed a smart solution using RFID (radio-frequency identification) tags based on low-cost FlexICs (flexible integrated circuits). The tags can be embedded directly into individual pieces of packaging or applied as a durable RFID-enabled label that can withstand many wash cycles.

This low-cost solution makes a big difference to the viability and scalability of reusables and provides benefits throughout the value chain. End-to-end traceability helps to reduce loss rates – a major factor in determining the viability of returnable systems – as well as providing data-driven insights for retailers and brand owners.

Project successes:

- Sustainability Awards 2023 finalist
- Potential for further in-pack sensing innovation
- Packaging lifespan, washing and return rate insights
- Improves economic viability of refill

CASE STUDY

www.reposit.world

reuse, refill, return

Ramping up returnables

Reposit, the pioneering returnable packaging platform, is working with major retailers, FMCG brands and industry partners nationwide on pre-filled returnable packaging schemes to accelerate the transition to reuse.

Scalable across categories and channels, Reposit's "return for reward" programme facilitates the reverse logistics and washing infrastructure to make sure packaging is refilled and reused, and rewards consumers for returning. Elements of the SSPP-funded project include packaging leasing, standardised asset-tracked reusable containers, analytics, reward vouchers and a smart consumer webapp.

In 2024, in partnership with Reposit, M&S expanded its Refilled scheme for own-brand cleaning and laundry products to 10 products in 23 stores. Reposit is also expanding across different channels and personal care categories and is looking to further opportunities including a refillable cup scheme in Glasgow.

Project successes:

- Up to 74% return rate in specific stores
- Scaling returnable ecosystem to multiple products across brands, channels, categories
- International uptake of the platform
- Standardised packaging-as-a-service works

CASE STUDY

https://grantham.sheffield.ac.uk

reuse, refill, return

Modelling the future of reusable packaging

The Many Happy Returns project, led by the University of Sheffield, explored reusable packaging systems for food applications, assessing the potential to reduce the environmental impact of plastic packaging by keeping it in circulation for as long as possible.

The team combined insights from disciplines as varied as linguistics and chemistry to work out how to get reuse into the mainstream for food packaging. As part of the work, the project set up the Vytal scheme in campus café, which allows people to borrow takeaway bowls and cups and has provided important data on wear and staining, environmental impacts, and how people react to reuse. The project team has also produced a short guide for businesses and other organisations on 'How to Talk About Plastics' with recommendations on how to use language more effectively to encourage reuse before recycling.

Project successes:

- IChemE Hutchison medal winner
- LCAs of reuse systems from 'cradle to grave'
- User centric research approach
- 'Reuse, Refill, Rethink' display at Museum of Brands

films & flexibles

CASE STUDY

www.flexibleplasticfund.org.uk

films & flexibles

Flexible collections

The co-funded £2.9m FPF FlexCollect project is the most extensive pilot for household collection and recycling of flexible plastic packaging ever undertaken in the UK and is helping to prepare for the new Simpler Recycling regulations for flexible plastics to be collected from English households by March 2027.

Managed by a consortium comprising Ecosurety, SUEZ recycling and recovery UK, RECOUP and WRAP, FlexCollect is working with 10 volunteer local authorities to run a series of innovative flexible plastic packaging kerbside collection and recycling pilots through to March 2025. These will build vital operational and cost data to inform future best practice across different geographies, demographics and collection services.

By late 2025, enough flexible plastics will have been collected to allow an assessment of the different reprocessing options, providing insights at each stage of the value chain.

Project successes:

- Largest trial of its kind in the UK
- c. 200,000 households across England
- High quality material collected – 90% recyclable
- Very high household satisfaction

CASE STUDY

www.interfacepolymers.com/

films & flexibles

Recycle-ready food grade films

Working collaboratively, Interface Polymers Ltd and Flexipol Ltd have developed an additive that allows them to produce multi-layer barrier plastic packaging films that can be upcycled into high-value applications.

The Recycle Ready project brings together Interface's Polarfin® additive technology – that overcomes molecular non-compatibility between mixed polyolefins and polar polymers to enable them to be recycled – and Flexipol's film technology expertise and manufacturing capabilities. The aim was the development of fully scalable alternative LDPE multi-layer barrier films for the commercial production of food contact flexible packaging that can be repeatedly recycled using existing sorting and processing plants.

Interface now has a pilot plant in India with production capacity to compatibilise up to 1000 tonnes/yr of barrier film.

Project successes:

- Increases circularity potential for multi-layer films
- Significant industry interest
- Broad application potential in other multi-material packaging and non-packaging

Greener cleaning for films & flexibles

Nextek's COtooCLEAN™ is a revolutionary waterless decontamination technology that supports the recycling of post-consumer polyolefin films back into food-grade film without the need for depolymerisation. The process combines super-critical CO_2 with green co-solvents to effectively remove odours, oils, fats and printing inks. Requiring no water or corrosive chemicals, it can also delaminate and de-metallise multi-layer films.

Developed with commercial and technical support from Unilever, Amcor, Viridor, Allied Bakeries, Bio-Extractions, University of Nottingham, and Bangor University, the COtooCLEAN™ process has won a number of awards, including the $3m Alliance Prize in Circular Solutions for Flexibles in 2022. The next step for Nextek is the construction of an industrial-scale demonstration plant in the UK, which is due online in Q4 2025.

Project successes:

- Low CO_2 footprint versus other end-of-life options
- Collaborative & award-winning
- Significant additional investment leveraged
- Supports food-grade film recycling

Informing future flexible packaging design

Circular Economy for Flexible Packaging (CEFLEX) is major collaboration of over 180 European firms, associations and organisations with the aim of making all flexible packaging in Europe circular by 2025.

A key part of CEFLEX's work is providing independent, scientific data on the design, sortability and mechanical recyclability of flexible packaging to inform better decision making. With SSPP support, it has run an extensive testing programme to generate robust scientific data to inform the 'Designing for a Circular Economy Guidelines'.

Developed by, and for, the whole value chain, these evidence-based guidelines give CEFLEX stakeholders and the wider flexible packaging industry the complete picture: building understanding of end-of-life processes, circular economy design principles and sustainable design choices for recyclability.

CEFLEX
A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

Project successes:

- Europe-wide value chain collaboration
- Evidence-based design guidelines
- Supports increased recyclability of flexibles
- Informing more work on standards

advanced recycling

CASE STUDY

www.berryglobal.com

advanced recycling

World first food-grade PP recycling

Berry Global's new CleanStream® plant in Leamington Spa is the world's first closed-loop system to mechanically recycle post-consumer polypropylene packaging waste back into contact-sensitive recyclate, improving circularity for food, homecare and industrial packaging.

The CleanStream®process, developed with support from the SSPP Challenge, improves on traditional mechanical recycling through major innovation in artificial intelligence (AI)-based sorting to separate out food-grade PP, advanced washing and decontamination, and stringent material testing to deliver ultra-high levels of recycled polymer purity.

The new facility in Leamington Spa can recycle nearly 40% of all the available sorted PP waste in the UK and the regulatory approvals for use in food-contact packaging applications are now being actively sought.

Project successes:

- Leading contact-sensitive PP mechanical
- Recycling global scale and delivery capacity
- Water and fossil fuel savings v. virgin PP
- Proprietary, AI-based recycling

CASE STUDY

www.muratechnology.com

advanced recycling

Recycling challenging packaging formats

Mura Technology has constructed a world-first facility that can recycle post-consumer plastic packaging, including ‘hard-to-recycle’ formats such as flexibles and multi-layered films, into circular hydrocarbons for manufacturing new plastic.

Now fully commissioned, ReNew’s ELP Hydro-PRT® facility in Teesside will place 20,000 tonnes/year of circular hydrocarbons on the market. As a result of the funding from the SSPP Challenge, the development of the technology has been supported by investment from blue-chip companies across the plastic recycling value chain, including Dow, KBR and CP Chem.

As well as providing a circular solution for plastic waste, the process delivers an estimated 80% CO_2 saving by diverting ‘unrecyclable’ plastic away from incineration and is the first chemical recycling process to be listed on the ecoinvent life cycle inventory database.

Project successes:

- World-first supercritical water process
- 50 direct jobs & c. 250 indirect jobs created
- International licences issued
- First chemical recycling process listed on ecoinvent

advanced sorting

CASE STUDY

www.greyparrot.ai

advanced sorting

AI/NIR data for smarter packaging solutions

Greyparrot is advancing waste recognition technology to help brands meet the growing demand for sustainable packaging.

Combining lower-cost hybrid AI and Near-Infrared (NIR) systems, the company has developed an innovative solution that enhances the efficiency of sorting plants and improves recycling rates. The system identifies 89 types of materials down to SKU level, including those previously missed by standard NIR systems, unlocking a new level of insight into packaging recyclability.

Building on this solution, Greyparrot is giving operators a view of sorting performance at Materials Recovery Facilities. By analysing the recovery rates of packaging, operators can make data-driven decisions to optimise sorting and recycling, and brands can use real-world recyclability data to achieve sustainability goals.

Project successes:

- Overcoming the cost barrier of NIR sorting
- Additional £10m investment secured
- Unlocked a new offering of an AI/NIR air jet sorting machine currently

CASE STUDY

www.impact-recycling.com

advanced sorting

New solution for household flexible plastic waste recycling

Impact Recycling's novel, disruptive Baffled Oscillation Separation System (BOSS) 2D technology is a water-based density separation process that separates post-consumer laminated and multi-layer films from mono-layer polyolefin films. By separating the two waste streams to 95% purity, the BOSS process can deliver high purity PE and PP material streams for recycling back into new plastic packaging.

SSPP funding is supporting the construction of the first commercial scale demonstrator plant. Due to come online in 2025, it will process 25,000 tonnes/year at full capacity, over double the amount of plastic film collected for recycling in the UK in 2019. By de-risking the scale-up, SSPP has also helped Impact Recycling to secure £7m from Nestle UK & Ireland to commercialise this pioneering process.

Project successes:

- Diverts hard-to-recycle plastics from incineration
- High quality PE & PP outputs
- World-first film separation process
- Export market interest

CASE STUDY

www.recycleye.com

advanced sorting

Getting to grips with AI-powered sorting

Project ADER (Automated Detection, Ejection & Recovery), led by Recycleye, deployed the company's low-cost AI-powered system, which replicates the power of human vision, with near-infra-red (NIR) technology to sort packaging waste for recycling.

With the aim of increasing the recovery and quality of recyclable materials, Recycleye used advanced machine learning algorithms, robotics and Recycleye's WasteNet – a visual database of over 2.5 million items – to sort packaging waste to a higher granularity, speed, and affordability than ever possible before.

With the SSPP Challenge funding, Recycleye also redesigned its gripping and pneumatics system and developed the GRIP-R, which addresses the challenges posed when sorting films and flexible packaging with robotic arms, improving sorting accuracy, reducing blockages, and improving efficiency.

Project successes:

- First robotic arm technology to reliably sort film
- £14m investment secured in 2023
- Export markets incl. EU, US & Australia
- 30 new systems installed since the project

alternative materials

CASE STUDY

www.algreen.tech

alternative materials

Bio-based polyurethane for flexible pouches

Algreen develops bio-based, biodegradable, and recyclable materials – including films, coatings, adhesives, foams – that mimic the aesthetic and performance of polyurethane used for cosmetics, food or fashion packaging, as well as in other markets including the automotive sector.

With funding from the SSPP Challenge, the company is further developing and testing the performance and durability of Algreen's products in a multi-layer flexible film pouch packaging solution for the food and fashion industries, as well as assessing the viability of at-scale manufacturing and building the evidence base to support its launch onto the market.

The material's suitability for a wider range of consumer goods packaging applications is also being explored and its environmental performance validated through a full life cycle assessment.

Project successes:

- 2024/5 Earthshot Prize nominee
- H&M Global Change Award winner 2023
- Commercial traction with major brands
- Bloomberg List of Top 25 start-ups to watch

CASE STUDY

www.marinatex.co.uk

alternative materials

New life for fish waste in packaging coating

MarinaTex® is developing a sustainable, marine-based, coating for paper and paperboard food packaging that can be used across multiple industries, including airline, hospitality and retail.

MarinaTex® coating is made from seaweed and seafood waste otherwise destined for energy-intensive post-processing or incineration. It can be composted in anaerobic digesters or recycled through existing paper and cardboard recycling processes.

Unlike plastic processing, the MarinaTex® biopolymer is prepared at ambient temperatures, with low solid concentrations and without harmful solvents, further enhancing its positive environmental impact. The coating is compatible with existing industry manufacturing lines, demonstrating commercial scalability.

Project successes:

- Compatible with existing industry coating manufacturing lines
- Verified Recyclable with paper
- Excellent oxygen barrier, 10x better than uncoated board
- Passes Food Migration tests

CASE STUDY

www.notpla.com

alternative materials

Seaweed-powered packaging

Winner of the prestigious Earthshot Prize, Notpla is famed for innovative, scalable alternatives to plastic made from seaweed and plants. These include their Ooho edible liquid bubbles, paper and fibre-board coatings, single-use films and rigid materials.

With two rounds of funding from the SSPP Challenge, Notpla's solutions have already eliminated over 4.2 million pieces of single-use plastic and its seaweed-based packaging was recognised by the Dutch government as the first and only material to meet strict plastic-free criteria under the EU's Single-Use Plastics Directive in 2023. Since then, the company has gone on to attract further investment and has recently secured an unprecedented £20 million in equity fundraising which will support expansion into new markets and accelerate the development of its next-generation, seaweed-based packaging solutions.

Project successes:

- Big brand partners including UEFA Women's Euro & Just Eat
- Earthshot prize winner 2022
- Aiming to replace 1 billion plastic units by 2030
- 30+ new jobs created

CASE STUDY

www.plantsea.co.uk

alternative materials

Personal & home care delivered in a pod

PlantSea-Pack is a seaweed-derived film technology developed by PlantSea for home and personal care products. This innovative packaging solution consists of water-soluble pods designed for single-use or refill applications for products such as laundry pods, oils and shampoos.

Funding from SSPP in 2023 allowed PlantSea to assess the feasibility and accelerate the scaling-up of the capsules and refill-at-home system, working with partners including Bangor University, Olew and leading FMGC's in laundry and home care to develop the concept further and assess its technical and market potential.

Since then, the company has expanded its seaweed-based range to include punnets, seaweed infused paper for luxury sustainable packaging and business stationery. The company has also recently successfully closed a significant funding round totalling over £800,000.

Project successes:

- Multiple award winner
- Product safety certifications for food and cosmetic use
- Successfully secured over £800,000 further investment
- 7+ new jobs created

CASE STUDY

www.spplabs.com

alternative materials

Recyclable frozen food paper packaging

Sustainable Packaging Products (SPP) Ltd develops and supplies paper-based sustainable packaging materials that are conventionally recyclable and compostable.

With SSPP funding, the company has developed its new SeerPak™ Freezer Pouch, a new, super-strength paper with a compostable coating that provides heat seal performance combined with high grease, water, and moisture vapour barrier. The pouch has been tested with a range of frozen food items – including French fries, vegetables, and chicken nuggets – and has been shown to retain food quality whilst resisting any form of grease staining even with foods containing rape seed oil.

The testing of various coating and paper combinations for this project has led to the development of a wider portfolio of coated paper products for other applications, some of which are already commercialised.

Project successes:

- Partnered with sustainable polymer and major paper companies
- High barrier performance
- Supported further innovation in sustainable coatings

CASE STUDY

www.xampla.com

alternative materials

Unlocking the power of plant-based materials

Xampla has developed a range of materials made from plants, including films, coatings and microcapsules, which offer exciting opportunities to replace plastic. With two rounds of funding from SSPP, initially to develop edible film packaging and then a natural plant polymer coating for paperboard, the company has gone from strength to strength, forming partnerships with major brands including Gousto, Britvic and ELEMIS.

In 2023, Xampla launched Morro™, its range of plastic- and PFAS-free materials that are biodegradable, home compostable, and compatible with standard recycling processes. Production of Morro™ materials has been scaled up through a manufacturing partnership with 2M Group of Companies, and 2M and Huhtamaki have announced a multi-year supply deal to use Morro™ Coating for a range of takeaway boxes, replacing up to 25,000 tonnes of plastic coating by 2030. A further multi-year commercial supply agreement with Transcend Packaging was announced last October.

Project successes:

- Innovate UK Smart Grant winner in 2024
- Aiming to replace 25kt of plastic coating by 2030
- Secured $18M equity funding to date
- $5M grant funding since inception

data & modelling

CASE STUDY

www.plastic-i.com

data & modelling

Mapping plastic pollution in our oceans

Marine plastic pollution is one of today's most significant environmental challenges. Using satellite data and Artificial Intelligence, and working with industry leaders including Seven Clean Seas, The Ocean Cleanup, and the Sea Cleaners, Plastic-i has built a platform to facilitate the identification and removal of marine plastic on a global scale.

By detecting, mapping, and classifying floating debris, Plastic-i's platform provides decision makers and clean-up operators with actionable insights to boost effectiveness and measure the success of interventions.

Now called the Plastic-i Observatory, the platform was recently made available for open beta testing and the technology is estimated to reduce clean-up costs by 20% while increasing plastic removal by a factor of 20.

Plastic-i's mapping model applied to a scene near the Dominican Republic, with a large debris accumulation on the right side of the image

Project successes:

- 8 years of data analysed
- 670,000,000 km^2 of ocean mapped
- 6 continents covered
- Earthshot Prize Nominee 2024

CASE STUDY

www.bmt-ni.com

data & modelling

Streamlining sustainable packaging design

Blow Moulding Technologies (BMT), a cutting-edge spin-out from Queen's University Belfast, is revolutionising the £129bn plastic bottle industry, where 1 million bottles are consumed every minute. With SSPP funding, BMT has developed software that combines advanced measurement systems, digital simulation, AI, and machine learning to optimise bottle design and manufacturing.

Using the 'BMT Way' – measure, digitise, and execute – the software streamlines workflows, reduces waste, and accelerates the adoption of sustainable materials, enabling packaging with just the right amount of material and increasing recycled content. By replacing traditional trial-and-error testing, BMT's solution de-risks and shortens design cycles, paving the way for faster innovation and empowering manufacturers to create smarter, more sustainable bottles while lowering costs and environmental impact.

Project successes:

- Reduces material waste by over 10%
- Accelerates adoption of sustainable materials
- Major advances in data-driven simulation
- Partnering with world-leading brands

CASE STUDY

https://blogs.city.ac.uk/householdfoodsimulation/

data & modelling

Modelling the future of packaging & food waste

The reducing plastic packaging and food waste through product innovation simulation project, led by City St Georges, University of London in partnership with WRAP and the universities of Greenwich, Kent, and Sheffield, expanded and enhanced WRAP's Household Simulation Model, originally developed to help reduce household food waste.

The project focused on plastic food packaging and used new methods and data to quantify the potential waste impacts of changes to packaging formats, product portions, or householder behaviour. By predicting the outcomes of different variations, the model can help manufacturers to provide the right type of packaging to reduce both food and plastic waste. It is also helping to build a knowledge base to inform future policy and industry sustainability initiatives, and the team is now working with major retailers on packaging nudges and portion optimisation.

Project successes:

- Modelling data developed for chicken, grapes, mushrooms and tomatoes
- Collaborative, multi-disciplinary project
- Up to 86% reduction in packaging (mushrooms)
- Now working with major retailers on packaging nudges and portion optimisation

CASE STUDY

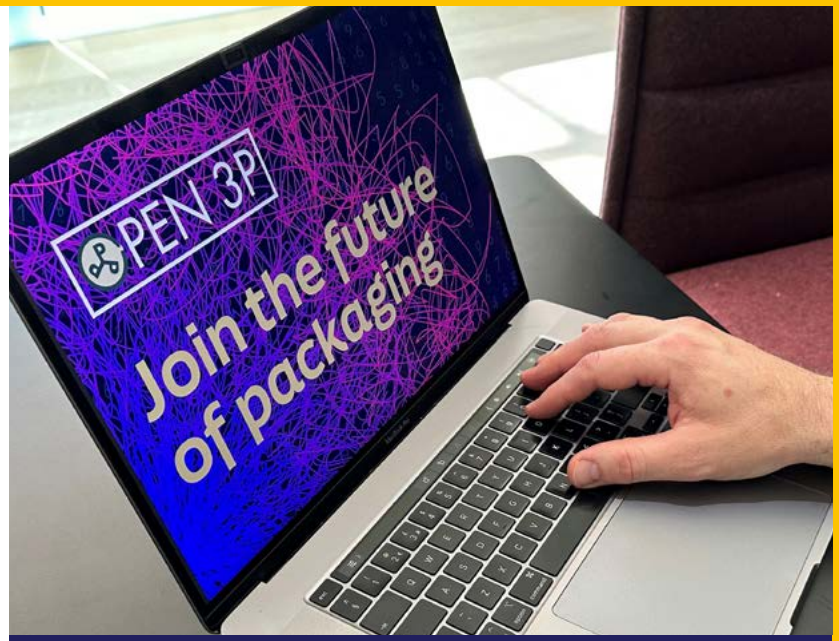
www.open3p.org

data & modelling

Unlocking the power of packaging data

The Plastic Packaging Portals Project developed the freely available Open 3P Standard for packaging data and the GING data-exchange platform. These innovations deliver a ‘single source of truth’ approach to packaging data, reducing regulatory compliance costs, ensuring alignment and collaboration across the packaging supply chain, and supporting sustainability targets.

Delivered by a consortium of industry partners (Dsposal, Ecosurety, Open Data Manchester, OPRL and RECOUP), with input from over 200 stakeholders across the packaging value chain, the Open 3P data standard is gaining global attention from regulators and industry as it delivers significant efficiencies. The GING cloud-based software platform enables users to seamlessly manage and share packaging data securely along their entire supply chain unlocking valuable insights and analysis.



Project successes:

- Underpins the World Business Council for Sustainable Development Packaging Data Exchange Programme
- Supported by major brands and industry partners
- Better data for all reporting needs

GING 3P