

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
SUSTAINABLE VENTURE DEVELOPMENT PARTNERS LTD	ATLAS	£75,266	£52,686

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

100 million plastic coat hangers are discarded in the UK each year (Common Objective, 2020). A significant proportion of these are used just once; most notably, those used at the 'garment on hanger' (GOH) stage - when garments are transported on hangers from factories to stores before being discarded for branded front-of-house hangers. Globally, an estimated 100 billion of these hangers are discarded each year (The Drum, 2020).

Our vision for this project is to apply HCD principles to completely rethink the existing ecosystem of GOH coat hangers to eliminate plastic waste from this part of the fashion supply chain. The project may produce new concepts for hanger redesign, or equally new systems to completely negate the need for hanger usage.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
PLASTIC WATCH LTD	Designing a service to incorporate plastic footprint into online shopping and make plastic footprint counting as ubiquitous and easy as calorie or exercise counting	£71,848	£50,294

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Despite evidence to suggest that there is a desire amongst consumers to reduce their single-use plastic footprint, making real and sustained behaviour change is a challenge. This project seeks to explore technological interventions that can allow customers to do grocery shopping online (a market segment that doubled following the Covid-19 pandemic) to change their behaviours towards reducing single-use plastic in their baskets.

For customers shopping in-store, single-use packaging is highly visible and obvious. Online shopping platforms do not always show the packaging that items arrive in, leading to a grocery shop that can include additional unintended single-use plastic.

As a start-up company that is dedicated to the reduction of single-use plastic, we believe that the barriers in accurately assessing and understanding the plastic contained within your shop should be removed and that consumers should have access to the tools needed to help them easily and effectively make decisions that reduce plastic waste.

This project will seek to identify the specific barriers to making a fair assessment of single-use plastics in an online shopping context and work in a human-centred design approach with customers to rapidly prototype solutions through two iterative cycles of make, test learn activity. Our aim is to utilise and explore a technological approach that will create a user experience that can be embedded within a busy modern lifestyle but supports the user to visualise their single-use plastic grocery waste to create the conditions for sustained behaviour change. Focussing on the user experience of online shopping and the ways in which waste could be minimised, this project will create an exploration of an intervention into the user journey that can reinforce, reward, and challenge shopping behaviour to empower consumers to understand and take ownership of the single-use plastic generated in their online shop.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
AGRIFOOD X LIMITED	AgriFlex: Human-Centred Design for Sustainable Agricultural Plastics	£39,996	£27,997
Brunel University London		£39,635	£39,635

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

The agricultural use of non-biodegradable oil-based plastics for applications such as weed-suppressant membranes, silage-wraps and poly-tunnels contribute to soil and water contamination by microplastics and toxic chemicals. They are persistent in the environment, which consequently affects plant growth, human and wildlife health. Globally, plastic film use on farms was expected to reach 7.4-million tonnes by 2019 and will continue to increase at >5% annually, to meet the demands of increased food production in response to human population growth.

The oil-based flexible-plastic films used in agriculture and horticulture are difficult and expensive to recycle because of contamination with soils, pesticides and fertilisers. The requirement for users to collect them from fields after use and transporting the materials to a recycling facility further impacts the soil quality and is time and energy consuming; resulting in greenhouse gas emissions that contribute to climate change. Consequently, the illegal burning of plastic films results in further environmental pollution.

The replacement of current materials with safer alternatives and changes in farming practices are essential. Biodegradable bioplastic films manufactured from agri-food by-products (AFBPs) can provide a 'green' alternative, avoiding collection from farms for recycling and the associated environmental and economic impacts. The use of AFBPs reduces waste going to landfill or incineration, greenhouse gas emissions and the achievement of government targets for net-zero carbon release.

The aim of the AgriFlex project is to use Human-Centred Design (HCD) methods to enhance and encourage the use of biodegradable bioplastic films for the agricultural and horticultural industry for weed-suppression and to conserve water in crop production. The project activities include:

- (i) Evaluation of stakeholder behaviour with respect to current agricultural mulch films;
- (ii) Establishing key design specifications and human-centred features to encourage uptake of novel flexible bioplastics for widespread adoption; and
- (iii) Evaluation of requisite performance characteristics including physical, mechanical, durability, shelf-life, end-of-life treatment.

The HCD approach, combined with performance testing of prototype films, will ensure that future products meet the requirements of prospective end-users, increasing their acceptability, uptake and use. When combined with information from other stakeholders in the manufacturing, distribution and deployment of agricultural plastics, the commercial success of the films and return on investment will be strengthened significantly. This process will ensure successful progression from proof-of-concept to large-scale manufacturing necessary to meet market demand. Positive changes in end-user behaviour will also be more likely, supporting significant positive environmental benefits, protecting future food production, human and wildlife health.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
BOWER COLLECTIVE LTD	Reusable packaging innovation for the home and personal care market	£49,492	£34,644

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Bower Collective is on a mission to eliminate plastic waste. We sell Earth's best natural household products in plastic-free and reusable packaging. We launched in January 2020 and have grown rapidly since then, being one of the first UK retailers offering a closed loop reuse and refill system for our home and personal care products. We are forecasting revenues in excess of £300k for our first year. We've been featured in The Times, The Sunday Telegraph, The Independent and on ITV This Morning.

Our project is focused on developing a genuinely innovative reusable packaging system for the home and personal care market. [Our current system][0] is a prototype version using simple dispensers and durable multi-laminate flexible pouches. Our customers empty the pouches into their dispensers at home, then return the empty packaging to us in pre-paid returns envelopes. We wash the packaging and then refill for redistribution into the market.

We know that our overall business model and use of reusable packaging results in a significant reduction in the plastic consumer waste stream coming out of our customers' homes. Take a look at our [Plastic Waste Calculator][1] to see the data we have compiled.

With the funding from this project we will run an extensive human-centred co-creation process to establish the usability, desirability and market uptake of our new reusable packaging system. As we already have a rapidly growing business and highly engaged community of over 25,000 consumers, we are uniquely well placed to do this.

Our objectives from this project are to:

- \* Co-design a world-leading reusable packaging system with our highly engaged customer base
- \* Acquire a range of behavioural insights around our products and closed loop reuse and refill system
- \* Build out physical packaging prototypes and live market test these within our closed loop system

[0]: <https://bowercollective.com/pages/reuse-refill>

[1]: <https://bowercollective.com/pages/waste-calculator>

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results



## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
SUBSTANCE GROUP LTD	SBTRCT Skincare Product and Packaging Development	£72,775	£50,942

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

### **\*\*SBTRCT - Plastic-Free Solid Skincare\*\***

SBTRCT \[pronounced, 'Subtract'\], is the UK's first 100% plastic-free premium skincare brand.

a new gender-neutral skincare brand, dedicated to making highly effective solid skincare. The range is being developed for people who want to care for the environment without compromising on having great skin or great design. Through a mix of innovative product formulations, packaging formats and sustainable materials, SBTRCT's mission is to tackle the major environmental challenges facing the skincare industry.

SBTRCT's philosophy is simple. Less is More. Take the very best proven ingredients, such as squalane, glycerine, shea butter and coconut oil. Reduce them down to their most potent form. Negate the need for single-use plastic packaging and water-based formulations. And make with the products here in the UK.

SBTRCT is cruelty and palm oil free. The products are suitable for vegans, perfect for travel and have 100% compostable packaging.

A Moisturising Facial Balm and Gentle Foaming Cleanser have already been developed and will be launched in September 2020\ . They are both solid in state, (they come in a bar format). They are packaged in special 100% domestically compostable card packaging and are accompanied by accessories that help to store the products and are made out of sustainable materials such as bamboo.

SBTRCT is looking to create new products and accessories to grow its existing range. Leading an industry that is still wed to single-use plastic as its default packaging solution and creating a choice for consumers who really want to make a difference.

sbtrct.co.uk

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
DSPOSAL LTD	Reducing plastic waste in respiratory health	£21,791	£15,254
REPLY CONSULTANCY LTD		£46,266	£32,386

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Around 75 million inhalers are prescribed every year in the UK for the treatment of respiratory diseases like asthma, of which 70% are pressurised metered-dose inhalers (pMDIs) made with single use plastic (polypropylene) 'actuators'. Research shows most used inhalers are disposed of at home, ending up in landfill or low-temperature incineration, despite initiatives to encourage recycling.

We are seeking to fundamentally re-design these life-saving devices so that the use of plastic is minimised or eliminated.

Our vision is to inspire other industry-led initiatives to design out persistent plastic wastes in the healthcare sector through re-imagining how healthcare equipment can be designed for reuse and valued by users. Human-centred design can be used to support a more sustainable NHS, while generating jobs in the UK green economy.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Ecodisco Ltd	Testing a scalable Deposit Return Scheme to remove single-use plastic cups from clubs and venues in the UK	£68,600	£48,020

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

The night-life economy contributes 6% to the GDP of the UK economy annually, yet very little has been done to reduce the industry's environmental impacts and improve its unnecessary appetite for waste. On average, 85m people attend live events in the UK annually and this results in over 100 million single-use plastic cups being wasted.

ECODISCO has created a Circularity Scheme for venues and clubs to support the reduction of plastic waste in the night-life economy. With the support of IUK, ECODISCO will design and test three different business models: a deposit retention scheme (DRS), levy scheme and network sharing scheme for reusable cups; we will incorporate findings into the final design of the Circularity Scheme.

ECODISCO removes all of the effort for venues to transition to reusable cups, which frequently drive them to use single-use plastic cups. ECODISCO will supply, collect, clean and return reusable cups weighted to the capacity of the venue. This overcomes the pain points of storing, cleaning and drying reusable cups in-venue. This project incorporates real-world pilots with an initial 5 Central London venues.

As the night-life economy recovers from COVID-19, ECODISCO will be a proponent of building back the industry with a pain-free and low-cost solution to reducing plastic waste. Acting now prevents a 'back to business' attitude that prolongs unsustainable, wasteful behaviours. Based on each venue using 1500 reusable cups per 500 cap venue, per night, we estimate ECODISCO's Circularity Scheme will:

1. Avoid up to 3.12 tonnes of plastic waste per London venue annually.
2. Save ~1.5 tonnes of carbon per London venue annually.
3. Save a venue up to £100,000 in SUP per year.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
LESS&	The Open Bottle	£72,652	£50,856

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

Project description - provided by applicants

The Open Bottle project seeks to design and create a set of refillable and reusable bottles that can be used by a range of product suppliers.

The project aims to draw on lessons available from existing reuse systems (materials used, container shapes and designs, labeling options...), folding these secondary source insights into development of standardized bottles suitable for a range of home care and personal care products.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results



## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
PERSONARC LTD	PlastiFrame Prototyping	£60,719	£42,503
AXIS DESIGN ARCHITECTS LIMITED		£9,737	£6,816

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

PlastiFrame is a new kind of reusable, recycled plastic framing system for the creation of small structures and buildings. For customers procuring temporary and semi-permanent solutions, especially in the ever changing Covid-19 environment PlastiFrame promises to offer the benefits of durability, and of maintaining investment value as a reusable or sellable product on a secondhand marketplace.

Possible applications include fences, screens, sheds, pergolas, studios, garden office buildings, reconfigurable workspace pods, screens or internal office partitions. Construction applications could include single storey site offices and dry temporary workshops. External exhibition and events markets (and internal events when it returns) would benefit from competitive sustainable framing solutions.

The innovation is found in our design for flatpack recycled plastic sheets, and through careful design of each component, this can be slotted, connected, bolted to form a rigid frame.

The project focuses on the user experience of working with the frame and associated components, designing for simple assembly using unskilled labour and minimal tools. Both speed of erection and of dismantling are essential considerations, as are design for delivery, unpacking and packing with any one package being no more than 40kg for a 2 person life from van to site and back. Even the casing will be part of the core components that can be used to erect and stabilise the structure.

The team is led by Innovation consultancy Personarc Ltd, in collaboration with Axis Design Architects, and joined by subcontractors across digital design and recycled plastics manufacturing.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ANGLO RECYCLING TECHNOLOGY LIMITED	Bringing New Life to Fibrous Waste Streams	£47,065	£32,946

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Based in the Rossendale Valley in Lancashire, Anglo Recycling is a local business whose core business is based around extending the life of an increasing range of industrial plastic waste streams (including clothing and carpet offcuts) which would otherwise be sent to landfill. It employs around 35 people and has developed a range of specialist machinery that takes the original articles and converts them into a number of recycled products that meet the particular needs of a Customer. Through an active presence in various forums, such as Carpet Recycling UK, Anglo has established an extensive network of SMEs textile manufacturers who send them much of their plastic fibrous waste material to reduce any environmental harm it may otherwise have. For example, one carpet manufacturer can easily produce 200,000 carpet off-cuts (known as cones) each week and Buoyant Upholstery, who manufacture a wide of upholstered furniture, have a zero to landfill pledge. In essence, there are many waste stream sources available to Anglo such as Senator Furniture (office furniture), Herbert Parkinson (curtains and blinds) and Hollingsworth and Vose (filtration).

One of the key challenges associated with working with, which by its very nature is, a wide variety of relatively low-cost synthetic fibres is the ability to economically transport and convert them into new profitable products. This includes making the equipment sufficiently versatile to produce a variety of products, with different specifications, in order to satisfy a range of end-users.

Anglo plans to design and demonstrate a new flexible manufacturing process on a couple of case study synthetic fibre waste streams that offer huge potential in their own right such as pillows, curtains and upholstery. Hotels in the UK collectively use literally hundreds of thousands of pillows and, thus, converting of, what is normally produced from polyester to another product has considerable environmental benefits. There is also the opportunity to explore the possibility of closing-the-loop by selling the newly-purposed product, such as carpet underlay.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
COVENTIVE LIMITED	Composites Designed to Dissolve - DESOLVE	£55,057	£33,034
Sheffield Hallam University		£21,097	£21,097

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

The DESOLVE project will develop a highly innovative soluble thermoplastic composite product which has two key advantages:

- \* It aids recycling of products by being soluble and can assist in disassembly and reclamation of valuable components or materials at the end of life.
- \* It can be designed to fail under certain conditions and use this failure as a beneficial feature.

We will manufacture a thermoplastic pellet that can be injection moulded to make complex shapes. It will comprise a mixture of a reinforcement fibre and a soluble polymer making a composite of good mechanical properties when used as designed but which will soften or dissolve completely when exposed to a planned moisture source.

The benefits for recycling and reclamation are clear. The products made from the soluble composite can be tailored to dissolve at different temperatures, enabling us to make a unique product which has excellent sustainability credentials. The dissolved polymer can be fed directly back into a normal wastewater system with no processing required and components that were integrally moulded can be reclaimed. Fibres can be natural or mineral and can go to composting or re-use respectively.

In this project, we will also deliver a composite that is uniquely designed to change state, fail or dissolve under certain conditions and to use this failure as a beneficial feature. Composite components are generally designed to withstand a load with minimal degradation of performance and they do it very well. However, this project will look into products that change state predictably. This could be compared to an electrical fuse - the fuse does its job to transmit power through to a circuit until certain parameters are reached, at which point it fails in a planned and useful way to avoid danger.

The DESOLVE project will work with creative design experts who will support the identification of innovative uses and design requirements for tailoring of the product for novel recycling and planned dissolution/failure purposes. We envisage the product having wide-ranging potential in industrial storage, civil engineering, toys or domestic goods to name a few.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
SOLECCO SOLAR LTD	New Polymeric Solar Tile Design	£78,852	£55,196

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Plastic is one of the most persistent pollutants on Earth and it's accelerating Climate Change. At every step in its lifecycle, plastic creates emissions that are contributing to the warming of our world.

We produce around 335 million tonnes each year, roughly the same weight as all of humanity combined.

In 2020, the production and incineration of plastic is set to create more than 850 million tonnes of emissions. The impact on the planet will equate to the output of 189 coal-fired power stations.

Currently, about 4-8% of annual global oil consumption involves plastics. At current rates, this will have risen to 20% by 2050. By then, plastic related emissions could rise to over 2.8 billion tonnes, equivalent to the output of 615 power stations, and be responsible for up to 13% of the planet's total carbon budget.

The more plastic we make, the more fossil fuels we need, the more we exacerbate climate change and ocean destruction.

13 million tonnes of plastic enter the ocean each year, which is on course to double by 2030. At this rate, by 2050, there will be more plastic in the oceans than fish.

In the U.K., the operation of buildings accounts for 30% of emissions, mainly from heating, cooling and electricity use.

The proportion of embodied energy in buildings has increased to more than 40% of energy consumption

Roof tiles are typically made from concrete, which has one of the largest carbon footprints and environmental impacts of all materials and poor end of life recyclability. Sourcing and production are energy intensive processes, requiring large volumes of fossil fuels and depleting natural resources.

Cement used to produce concrete is responsible for approximately 8% of the world's emissions alone, which is an even greater contribution than any country other than China or the US. The only materials that are a greater source of greenhouse gases, are coal, oil and gas.

Solar panels are approximately 90% glass and 7% aluminium. These are also two of the most environmentally harmful construction materials in existence.

The embodied carbon of glass is almost 10 times more than concrete, while aluminium is over 115 times more, meaning solar panels can actually increase the building's carbon footprint.

Our project is focused on helping alleviate each of these areas, through the use of recycled polymers to replace revenue-static, carbon-intensive construction materials with a lightweight, innovative solar system design.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results



## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
CAULI LTD	HCD Approach for Digitally-Enabled Reusable Lunch-Box Scheme (HADERLUBS)	£79,389	£55,572

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Linked to a global increasing population, is the increasing production, consumption and disposal of plastics. Plastic production has grown from 1.5 million tonnes per annum in 1950 to 359 million tonnes in 2018, yet only 9% of this is recycled (Plastics Europe, 2019). While plastic packaging has revolutionised the way in which we store and consume food, there are many negative impacts associated with the growing amount of plastic packaging on our planet.

In response, CauliBox has developed a unique solution to address the 'food-to-go' single-use plastic packaging challenge: a digitally-enabled reusable lunchbox scheme that rewards sustainable behaviours. CauliBox's aim is to disrupt the urban food industry, helping customers and vendors transition to reusable boxes by making the processes of sourcing, returning, collecting and washing food containers, convenient and reusable. In this HCD project, CauliBox will develop the bicycle delivery service business model in Cambridge and user experience with students/restaurants/cafes.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
RYPE OFFICE LTD	Sustainable Plastic Office Furniture	£75,816	£53,071

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

### **\*\*Our vision\*\***

The UK office furniture market is valued at £700 million and, at present, depends almost exclusively on virgin materials.

Despite the capability of waste management companies to supply clean, consistent, colour-separated plastic recyclate in large volumes, virgin plastic, metal and wood-based products are the go-to for office furniture manufacturers.

In the UK, a range of companies produce attractive boards from post-consumer waste plastic. However, there is currently no affordable and attractive office furniture products manufactured from waste plastic.

Our vision for this project is to use high quality product design to create office furniture products manufactured from post-consumer waste plastic boards and facilitate the transition from used plastic being a waste problem into a valued raw material within the office furniture supply chain.

Rype Office is a circular economy office furniture remanufacturing and design company with a proven track record in sustainable product design.

### **\*\*Key project objectives and main areas of focus\*\***

This project is to design beautiful, functional office furniture to:

1. Use waste plastic as its primary material
2. Replace environmentally harmful products like melamine-faced chipboard which cannot be economically recycled
3. Change human awareness of and interaction with used plastic
4. Update decades-old office furniture designs to be fit for the modern office, including reinventing storage for paperless offices.
5. Function for multiple lives using Rype Office's circular economy business model, to lock up the plastic for many decades and reduce the use of virgin resources.

### **\*\*Innovation\*\***

There are currently no mainstream office furniture product lines manufactured primarily from post-consumer waste plastic. Not only will the project design out environmentally destructive materials, but due to our circular business model explore servitisation as well as buy-back and take-back offerings.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

Further, many office furniture products are in need of a design update. Desk sizes, under desk drawer pedestals, filing cabinets and storage units were all designed in the 1970's for paper-based desk-centred working. In the 2020's digital agile working means office furniture requirements have changed substantially, particularly as a result from COVID-19\.

The project will help to change the way we work while providing a high value long term destination for waste plastic.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
FILAMENT PD LTD	Tackling the UK's 55 million litre problem of plastic waste from domestic paint.	£79,819	£55,873

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

Paints are a major contributor to marine pollution in the form of plastic microparticles abraded from coated surfaces and from the disposal of waste, unused paint.

55 million litres of leftover decorative paint is generated in the UK each year. When disposed, most of it finds its way into the domestic waste stream, goes into landfill via black bags, enters the oceans, or in some cases gets separated out and incinerated as hazardous waste at considerable cost to local authorities.

The estimated cost of disposing waste paint each year is £20.6 million to Local Government. Following the 2016 PaintCare survey of over 400 HWRCs in local authorities, the majority of respondents confirmed that they do not accept liquid paint, so it is a postcode lottery for the public, and they have no choice but to throw it in with general waste.

This project aims to create a solution for the domestic waste paint sector to help it achieve the Governments goal of Net Zero Waste by 2050\.

Our proposed solution is an innovative tech driven circular economy model that comprises of 3 key areas to promote reuse and recyclability.

The concept focuses around the idea of REDUCE -- JUST ENOUGH -- RETURN to tackle the 55 million litres of plastic waste from domestic paint annually in the UK and is a combination of innovative technology, design and circular business models.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Radical Fibres Ltd	Reusable Nanofibre Facemask - Designed to Protect	£49,906	£34,934

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results



## Project description - provided by applicants

Plastic pollution was already one of the greatest threats to our planet before the coronavirus outbreak. The huge increase in the daily use of plastic disposable facemasks, along with other forms of PPE to keep people safe and stop the spread of disease, is not sustainable. Numerous reports are emerging everyday imaging and documenting the huge increase in PPE found on river banks and beaches. It is currently impossible to go for a walk from your home without seeing some form of discarded plastic PPE waste polluting the environment. We intend to change this by developing a sustainable filter material that is effective at stopping very small particles, smaller than the COV19 virus (60nm) and thus effectively stop virus transmission as well as eliminate the damage the current masks are doing to the environment. This filter material will be integrated into masks for the general public.

Until immunisation becomes available nation-wide (and worldwide), there is a significant risk of major disruption and the UK cannot afford a return to lockdown. Face masks are the new norm, but, apart from the high-end medical N95 respirators, no other filters are rated to stop viruses effectively. The supply of high-end respirators must be prioritised for frontline medical staff.

Our solution is to manufacture filters using eco-freindly nanofibres made from biodegradable polymers such as cellulose. These filters which are highly-breathable, flexible and can be used as inserts into natural textile, simple face masks. This will increase the protection of cloth masks (even home-made ones) significantly, with the efficiency then being ruled by the tightness of the fit around the filter/face. The nanofibres will also harness static electricity through engineered scientific design to trap and hold even the smallest of nanoparticles, and may be of further use in areas of high pollution or for people with chronic respiratory problems.

Nanofibres are produced using a high electric field to pull a fibre out of a droplet of solution on the end of a needle (a process called electrospinning), a very slow process that would make filters for ~3 masks/day. Due to electrostatic shielding, bringing more needles to bear is not a linear process, requiring higher and more unsafe voltages, and limiting the choice of materials that can be used. Our innovation is a modular solution that increases deposition rates by 1000 - 10000 times per module.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Results of Competition: Designing Sustainable Plastic Solutions

Competition Code: 2004\_PRIF\_DESIGNINGSUSTAINABLEPLASTICSOLUTIONS

Total available funding is £884,814

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
GOOD CLUBS LIMITED	Project Good Box: designing a reusable packaging system for sustainable grocery delivery	£79,422	£55,595

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results

## Project description - provided by applicants

We are Good Club, an online retailer delivering ethical and sustainable staple grocery items to UK households at affordable prices.

It is our mission is 'to make sustainable products accessible to all' delivered with the lowest environmental footprint possible. Our unique business model allows us to offer healthy, organic and sustainable food and household items to customers for 20-40% cheaper.

Today, UK bricks-and-mortar supermarkets use a staggering 59 billion items of plastic packaging per year, that's 900 pieces of plastic packaging per person, much of which is single-use, wasteful, with at best a 50% recyclability rating (Which 2019) -- even less will be physically recycled. We are disrupting this market and our next step is to implement a Closed Loop reusable packaging system that can eliminate grocery plastic packaging waste.

Since going live in 2019 we now sell ~4000 sustainable products to thousands of customers but we deliver the majority of these today in single-use/recyclable carton boxes, existing supplier plastic packaging and off-the-shelf containers. Our current packaging and delivery system is sub-optimal for our ambitions and our customer needs. This project will kick-start an important next phase in our growth.

We plan to develop a Closed Loop reusable packaging-system for the delivery of sustainable products to customers, that could be collected, cleaned and reused by us. We are developing and piloting this Closed Loop supply chain in 2020 using off-the-shelf crates, product containers and fillers, but we need a bespoke design solution for the system to work effectively for customers and stakeholders.

The main focus for the project is to design this new packaging-system, to include a delivery 'box', individual containers and product 'protection', that are easy and cost-effective to transport, store, clean and refill across user's homes and our 'reverse logistic' supply chain. Reuse and refill strategies are important models for tackling plastic packaging waste and are growing. Yet most today are for a single categories or brands i.e. beauty, personal care, household cleaning, making our solution innovative by offering full grocery category delivery. The nearest direct competitor is Loop but our solution is innovative because i) we offer MUCH more choice (~4000 vs 165 items) ii) Loop is prohibitively expensive and elitist (Loop packaging deposits can cost 60% of the RRP) ii) we offer ethical/sustainable groceries, rather than mainstream brands, which can help move shopping towards a more resilient, sustainable diets and food systems.

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

Use the Competition Code given above to search for this competition's results