



Innovate
UK

Net Zero report

Case studies





From green recovery post-COVID-19 and electric-powered transport, to wind turbines and energy-efficient homes, there are many cases demonstrating the impact of UKRI-Innovate UK funding on achieving the net zero agenda.

COVID green recovery

With support from the Fast Start programme, **Fernhay** responded to the COVID-19 crisis with an updated electric-assist, emission-free eQuad, which can be used to pick up and deliver packages throughout the city. The eQuad is currently being tested by UPS in several European cities.

Elsewhere, with the help of funding from the Sustainable Innovation Fund, **Radical Fibres** aims to produce panels made from 100% waste stream materials that exemplify principles of circularity, low-carbon manufacturing and sustainability. The project will allow the company to adapt post-COVID, ensuring a return to growth.

Transport

In September 2020, **HydroFLEX**, the first ever hydrogen-powered train, ran on the UK rail lines. Funded with a £750,000 grant from the Department for Transport, it followed almost two years of development work.

Over at **ZeroAvia**, the HyFlyer II project received a £12.3 million grant to scale up its zero-emissions engines for a 19-seater aircraft.

Li4UK, a £500,000 feasibility project, aims to develop a sustainable domestic lithium supply chain.

Power

Power Roll achieved funding of £1 million from two Energy Catalyst brokerage events. Its flexible solar film is easily installed in off-grid locations in Africa and India.

Over at **GreenSpur Wind Limited**, the company aims to deliver the world's most environmentally friendly wind generator.

Meanwhile, **ReFLEX Orkney** is developing a first-of-its-kind integrated virtual energy system linking local electricity, transport and heat networks.

Through the Sort and Segregate Nuclear Waste competition, **NUVIA Ltd** received funding to develop nuclear waste sorting and segregation. NUVIA is already performing waste operations on several UK nuclear licenced sites.

Agriculture and land use

LettUs Grow Ltd is developing a vertical farming project designed to reduce water usage in agriculture. Funded by the Transforming Food Production challenge, it needs no pesticides and can be deployed anywhere in the world. LettUs Grow's technology is currently being used in Wales as part of the social-impact project Crop Cycle.

Industrial Decarbonisation challenge

This challenge is the first active funding stream as part of a wider government commitment to cut industrial emissions. Its aim is to develop at least one low-carbon industrial cluster by 2030, and the world's first net zero carbon industrial cluster by 2040 in support of the **Industrial Clusters Mission**. The challenge provides up to £170 million, matched by £261 million from industry, to invest in developing technologies, such as carbon capture and storage and hydrogen fuel switching. The technologies will be deployed and scaled up within the UK's largest industrial clusters.

Industry

A new pilot facility in St Helens will provide a centre of excellence for the sustainable manufacture of glass. The Transforming Foundation Industries challenge has contributed £15 million to the construction cost of the facility with **Glass Futures Ltd**, helping cut emissions across heavy industry and create green collar jobs.

In May 2021, the Industrial Energy Transformation Fund announced the first tranche of winners from its Phase 1 competition window, including **Essar Oil (UK) Ltd**. Essar will upgrade a major distillation unit with a new furnace, designed for 100% hydrogen firing, reducing site CO₂ emissions by 11% each year.

With £4.4 million of funding from the Smart Sustainable Plastic Packaging challenge, an advanced plastic recycling solution is set to save difficult-to-recycle plastics from landfill and incineration. **ReNew ELP** is developing the world's first site to use the hydrothermal upgrading process HydroPRS™. 80 jobs will be created in the construction phase, with a further 30 people employed in late 2022 and more jobs created as production lines are added.

Buildings and infrastructure

Totally Modular is reimagining the supply chain so SMEs can benefit from modern methods of construction (MMC). The company has pulled together a consortium to create STELLAR, a hub-and-spoke model where central hub factories manufacture structural frameworks at scale, while regional spoke factories satisfy those areas with highest demand, and use local trades to finish off the MMC process. This enables SMEs to benefit from lower cost and increased productivity and quality, while helping to deliver social homes.

Meanwhile, **SPECIFIC** has been working with Pobl Group and Neath Port Talbot Council on a project to develop 16 new innovative, eco-friendly homes. Renewable technology and energy efficient materials are integrated into the homes to actively reduce the impact of carbon emissions and fuel poverty.

Catalysing innovation

Mixergy, the British cleantech developing residential smart hot water tanks, was the 2020-21 winner of the Rushlight Solar Award and also the Rushlight Natural Energy Award. The start-up has now raised £3.6 million in Series A round. Mixergy will use the funding to expand its business, with the aim to decarbonise households and reduce consumer energy usage.

Centres of excellence and research excellence

Carbon8 Systems is a cleantech spin-out from the University of Greenwich that received support from Innovate UK EDGE to bring its carbon capture and use technology to market.

Innovate UK EDGE also started working with Gommyr in 2019, helping it commercialise eStreet – a solar battery microgrid that provides water, telecom access, sanitation and security to its business clients.

Elsewhere, Air Quality Research (AQR) has developed a new way to treat contaminated water. It has a low energy requirement, uses no added chemicals and will help accelerate the water industry to meet net zero carbon goals. Innovate UK helped AQR to deploy its technology for the Vicat Group in France, where it will be used to convert up to 12,000 tonnes of cement dust into construction aggregates.



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