

Clean Transport Success Stories



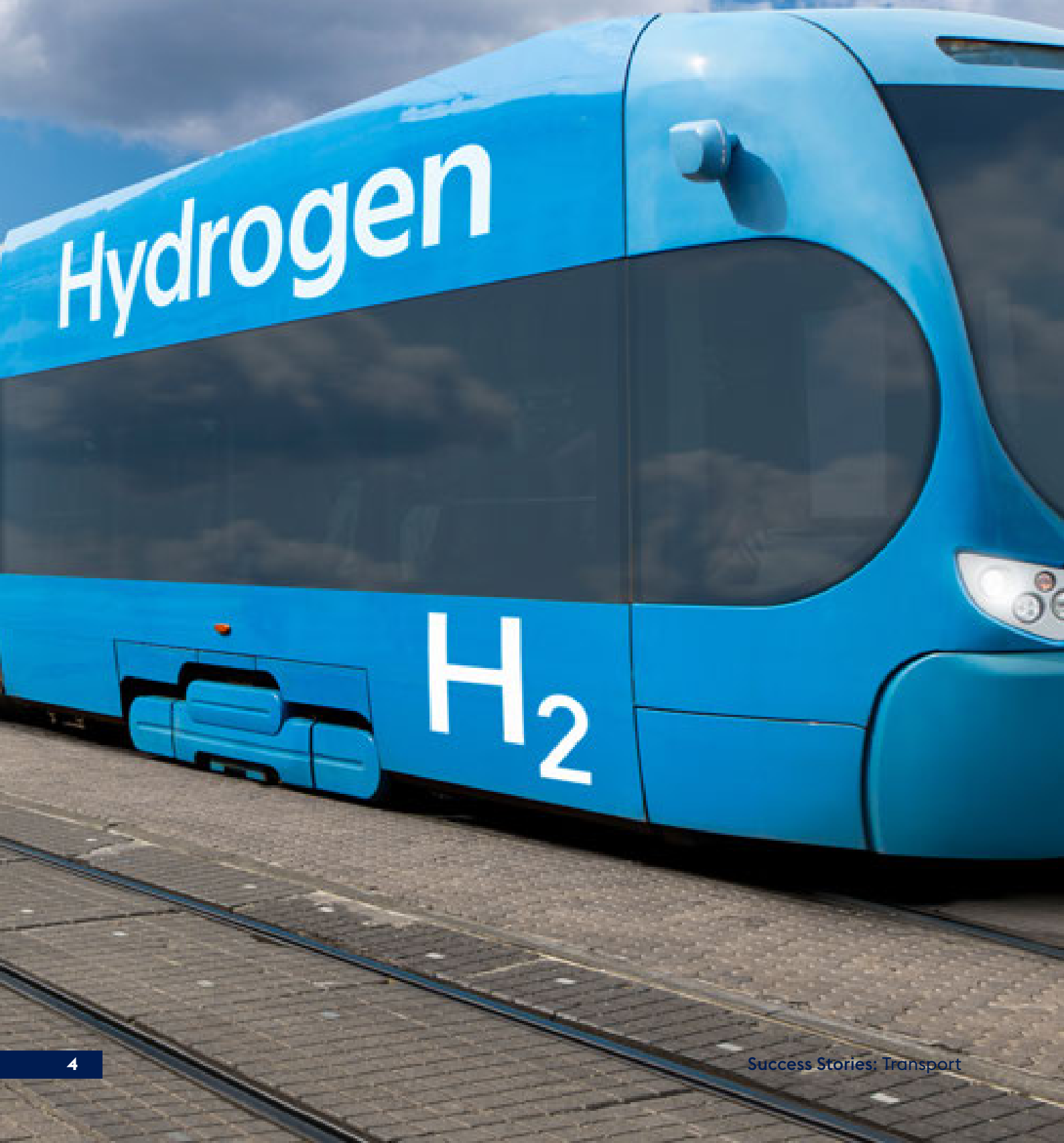




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Introduction





We, at DIT, are here to offer as much assistance as we can to UK and international businesses that want to improve their clean energy capability.

In this book you will find examples of companies we have supported.

Contact us through **www.great.gov.uk/contact**



Transport Export – Infrastructure:

Success Story: Cairo Monorail project

In August 2019, an **Alstom-led consortium** signed a €2.7 billion contract to design, construct, operate and maintain the first two sustainable monorail lines in Egypt.

With trains manufactured in Derby, the Cairo monorail will increase the capacity of public transport by 40,000 passengers per hour, reducing the number of cars and air pollution in Egypt. Just one example of how the UK is supporting a city's infrastructure for a better future.

UK Export Finance provided a £1.7 billion guarantee for the project – the first export of UK-built trains in over a decade, supporting Egypt's ambitions for sustainable transportation infrastructure.





Transport Export – Hydrogen:

Success Story: Success Story: Powering innovative SUV racing series

In July 2020, **AFC Energy** announced a collaboration with Extreme E, the team behind the **ABB** FIA Formula E Championship, with their part being the supply of zero emission, hydrogen fuelled, off grid power to drive the world's first electric SUV racing series.

Racing in some of the world's remotest corners of the world, the series will help highlight climate issues and the technologies that can accelerate global decarbonisation efforts.



Transport Export – Hydrogen:

Success Story: Success Story: Developing and launching a high power EV charger

December 2020 saw **AFC Energy** sign a strategic partnership with **ABB**, a world leader in electrification and digitalisation technologies, to develop and launch a high power electric vehicle (EV) charging product for distribution from the second half of 2021. AFC design and manufacture hydrogen fuel cells which have broad applications for remote power across multiple sectors including; the construction industry, charging infrastructure and mobile power units.

Both companies have invested in commercialisation, market agreement and a joint production agreement to showcase the supply of secure, reliable and flexible on-site power generation in ultra-rapid EV charging.

AFC Energy are already in discussions with several of **ABB's** customers who have expressed an interest in the system.



Transport Export – Alternative Transport:

Success Story: Reducing private car use in London

The main aim of the Mayor of London's Transport Strategy is for 80 per cent of all trips in and around the capital to be made on foot, by bicycle or using public transport by 2041.

A target that reflects the nationwide Active Travel initiative that will help solve London's inactivity crisis that is a consequence of the impact of COVID-19.

Transport for London (TfL) and their options to reduce the use of private cars is already bringing significant benefits to London's air quality and clean growth agenda.

Ranging from major changes to small but impactful behaviours, the changes are easily shared and can be applied to the benefit other major cities around the world.



Transport Export – Airports:

Success Story: New Midfield Concourse, Hong Kong International Airport

Delivered by a Joint Venture of two world leading UK multi-disciplinary companies – **Mott MacDonald** and **Arup Group** – the HK\$10 billion Midfield Concourse (MFC) is located to the west of Terminal 2 and between the two existing runways. Other UK companies delivered architectural and engineering services plus retail design to the joint venture.

The 105,000 square metre, five storey concourse provides 20 aircraft stands and is designed to serve an additional 10 million passengers per year. The terminal was completed on schedule at the end of 2015 with a Grand Opening Ceremony held 31 March 2016.

The award-winning terminal has incorporated 35 environmentally beneficial features into its design, ranging from the use of Building Information Management technology to design a virtual model of the building in 3D before construction started to 1,200 square metres of solar panels incorporated onto the roof.



Transport Export – Aerospace:

Success Story: Reducing the impact of flying from A to B

Based in the heart of Bristol, **Vertical Aerospace** are one of the world's top aerospace hubs.

Founded in 2016, the team has already grown to over 100 world-class engineers and experts, having recruited from the likes of **Airbus, Boeing, Leonardo, Gulfstream, Rolls-Royce, Jaguar Land Rover, Dyson** and most of the UK's Formula 1 teams.

They are passionate about the power of electric aircraft to transform the way people fly across the world. Since their inception, **Vertical Aerospace** has been disrupting the aircraft development process, combining the rigour and discipline of aerospace with the speed and agility of **Formula 1** to create cutting edge aircraft.

They are already a global pioneer in sustainable aviation technologies, as one of only a handful of companies worldwide to have flown two full-scale all-electric vertical take-off and landing (eVTOL) prototypes, both with **UK Civil Aviation Authority** approval.



Transport Export – Automotive:

Success Story: Revolutionising electric vehicle design

The microfactories of UK 'unicorn' **Arrival** gives them the flexibility needed to revolutionise electric vehicle design and the manufacture of its range of delivery vehicles and buses.

With the help of UK government funding, **Arrival** are developing automated capabilities to help realise their full potential in this exciting and expanding market.

While relatively new, **Arrival** are publicly listed on the Nasdaq and were valued at roughly \$13 billion (£9.5 billion) in March 2021.



Transport Export – Automotive:

Success Story: Leading the way in self-driving technology

Oxbotica is a world-leading autonomous vehicle software company based in Oxford, UK with offices also in Toronto, Canada. **Oxbotica** was founded in 2014 with the vision of 'Universal Autonomy', to deliver autonomy to any vehicle, in any environment. Today, the company's unique software is being trialled and used across multiple industries with global partners in sectors such as autonomous grocery deliveries, shuttles and operators of mines and refineries. Through this, **Oxbotica** is hoping to change the way people and goods move forever.



Transport Export – Charging Infrastructure:

Success Story: Providing the UK's largest electric vehicle charging infrastructure

BP Pulse are the UK's leading provider of electric vehicle charging infrastructure and operates through **POLAR** and **Chargemaster**, to form the largest electric vehicle charging network in the UK, with more than 6,500 public charge points.

They provide a comprehensive, flexible, and practical range of electric vehicle charging solutions, and their charging stations are specially developed to accommodate new technological advances and the growing demands of the electric vehicle industry.

They work in partnership with leading energy providers, vehicle manufacturers, government agencies, management consultancies and property development and blue-chip companies. **BP Pulse** are the largest supplier of public, workplace and home charging units in the UK and has supplied over 50,000 charging points across Europe.



Transport Export – Charging Infrastructure:

Success Story: Improving the search for electric vehicle charging points

As the number of electric vehicles on the road increases, so too does the need to locate public charging points. A need that **RingGo**, as the UK's No.1 parking app, is meeting through the rollout out of an iPhone and Android app to allow users to search for electric vehicle (EV) charging points within their vicinity.

This new feature allows drivers to view a map of over 5,500 EV charging points across the UK. Drivers will be able to find the closest charging point and, through **RingGo's** navigation, be directed to the selected charging destination.



Transport Export – Maritime:

Success Story: Improving the movement of cruise ships

London-based UK fluid dynamics tech company **Silverstream Technologies** is building on success with a £1 million deal with US shipping giant, Carnival Cruises, to supply its Silverstream® System.

Silverstream® creates a 'carpet of micro-bubbles' – a type of Air Lubrication System (ALS) that pumps tiny bubbles through vents on the ship's hull across the vessel's full flat bottom. This reduces friction with the water, helping the ship glide through the ocean.

The system offers two distinct advantages: first, by increasing speed due to lower resistance, the technology is independently proven to reduce fuel consumption by 5-10 per cent, depending on the type of vessel. This in turn cuts running costs. Second, it helps lower associated emissions – a vital concern as global shipping is currently responsible for generating more than one billion tonnes of CO₂ a year.





Transport Export – Maritime:

Success Story: Launching the UK's first maritime electric charging network

Plymouth Port has become home to the UK's first marine electric passenger ferry and electric water taxi, in response to the council's ambitious **Climate Emergency Action Plans**.

These developments are part of **MeLL – the Marine e-Charging Living Lab**, which sets out to develop a network of charging facilities around Plymouth Sound, helping support widespread adoption of electric technology through the city's **Clean Maritime Demonstrator Competition**.

Plymouth has a rich marine-centric economy, with 10% of the workforce working in the marine sector. As such, the city's Ocean Futures Prospectus sets out a bold strategic vision for its future economic relationship with the ocean – with activity focused on **autonomy, digital oceans and reaching maritime net zero by 2030**.



Transport Export – Energy Production and Clean Power:

Success Story: Robotics delivering ocean data and maritime solutions

Ocean Infinity, working out of Houston, Texas, and Southampton, are a world leading marine robotics company that deploys autonomous technologies at scale to capture ocean data and deliver maritime solutions.

Their mission is to use innovative technology to transform operations at sea, enabling people and the planet to thrive by minimising CO2 emissions, reducing offshore health and safety exposure and providing operational excellence in efficiency and quality.

Ocean Infinity owns and operates the largest fleet of 6,000m-rated underwater autonomous vehicles in the world. In addition, they currently has six work-class remotely operated vehicles and eight unmanned surface vehicles.

Their aim is to deliver fast, high quality, offshore robotic services, mitigating environmental impact, as far as technology advancement allows.



Transport Export – Rail:

Success Story: Fast charge solution

Vivarail specialise in developing battery traction and charging systems for a range of different stock, and they now have the UK's only battery and battery hybrid trains.

To make battery trains feasible, they need to combine range with rate of recharge, and **Vivarail's** batteries are designed to provide that – up to 100km between charges and able to recharge in 10 minutes. To achieve that, **Vivarail** have designed and manufactured Fast Charge.

Fast Charge works by harvesting energy from any available source, including the electricity grid, local solar arrays, or wind turbines, and storing the energy in power banks at stations for use on demand.

The power banks are housed in shipping container-sized units that can store significant amounts of energy. The train comes into a station and decides how much electricity it needs for the next stage or duty cycle. The train communicates this to the power bank and is rapidly charged with the correct amount of energy from the bank via a charging rail. Fast Charge delivers up to 100km range in less than 10 minutes.

Vivarail's battery trains, coupled with **Vivarail** Fast Charge Solution provide sustainable energy for a low carbon railway, clean air, better environment.



Transport Export – Aerospace:

Success Story: The future of urban air mobility in CAA Regulatory Sandbox



The **UK Civil Aviation Authority's** (CAA) Regulatory Sandbox helps industry innovators to increase their chances of complying with future regulations.

This is achieved by ensuring development activities identify the key challenges that innovation can bring in terms of safety, security and consumer protection.

By working with innovators via the Regulatory Sandbox, the CAA aims to tackle challenges at an early stage, helping to accelerate the pathway to approving novel technologies and concepts.

Following the launch of the CAA's Future Air Mobility Regulatory Sandbox, a consortium led by **Eve Urban Air Mobility Solutions** came together to develop a concept of operations for integrating Urban Air Mobility (UAM) operations into UK airspace.

Within the Sandbox project, the consortium aims to explore concepts for safely integrating piloted electric air taxis into low-level airspace, with specific focus on the transportation of passengers above the UK's city regions; develop a concept of operations for harmonising airspace, procedures and infrastructure to accelerate the advancement of the UAM ecosystem; and help the CAA to shape future regulations for UAM operations across the UK.



Transport Export – Aviation Fuels:

Success Story: Developing sustainable aviation fuels

To help support the production of sustainable fuels for difficult to decarbonise transport modes in the UK, the government has run two multimillion-pound industry demonstration competitions designed to provide capital support for plants looking to produce low carbon fuels from waste.

Launched in 2014, the Advanced Biofuels Demonstration Competition (ABDC) was created with the aim of supporting innovative projects that turn low value wastes into high value fuels. The ABDC successfully supported the construction of two cutting edge plants in the UK: **Nova Pangaea Technologies** in Teesside, awarded £4.5 million for demonstrating their forestry wastes to ethanol process; and **Advanced Biofuels Solutions** in Swindon, which received £11 million for a first-of-a-kind waste gasification plant. This support has proved crucial as the projects embark on the next stages of their commercial development and contribute to innovation in the sector.

The Future Fuels for Flight and Freight Competition (F4C) was launched in 2017 and made up to £20 million of capital funding available to projects that will produce low carbon waste-based fuels to be used in aeroplanes and lorries specifically.

Building on the success of the F4C the Green Fuels, Green Skies Competition (GFGS) was launched in March 2021. The GFGS competition was launched by the Department for Transport to support the development of the emerging UK sector on its pathway to production of SAF at scale. Eight industry-led projects have been shortlisted to receive a share of the £15 million Green Fuels, Green Skies (GFGS) competition funding for the development of sustainable aviation fuels (SAF) production plants in the UK. Shortlisted proposals include plants aiming to produce jet fuel from: CO₂ captured from the atmosphere with hydrogen from water; alcohol derived from wastes; everyday household and commercial black bag rubbish; and sewage.



Transport Export – Infrastructure Investment:

Success Story: Investing in battery storage technology

In 2020, **Infracapital**, the infrastructure investment arm of major European asset manager M&G, acquired a majority equity stake in Zenobe, a leading player in the rapidly expanding electric bus and battery storage market in the UK.

Zenobe owns a growing portfolio of more than 160 electric buses, with a further 380 in the pipeline, as well as owning/operating associated electric vehicle charging points. Their buses are provided as a managed service to bus operators, such as **National Express**, **Stagecoach** and **First Group**, on long-term, multi-year contracts.

Zenobe also provide balancing and reactive power services to the National Grid, which facilitates the growth of renewables by mitigating the impact of energy intermittency. Zenobe seek to optimise batteries after their initial use case, providing second-life batteries, most recently partnering with Extreme E, the electric motor-racing series.



Transport Export – Green Finance:

Success Story: Financing Thameslink trains

As an investor in the government's £7 billion Cross London Trains (Thameslink) programme, **Equitix** has helped introduce breakthrough energy-saving innovations used on the new rolling stock units on the Thameslink network.

These include on-board intelligence systems to monitor, record and analyse the fleet's energy consumption.

Consumption that is reduced through the use of an innovative regenerative braking system which recycles energy used and gives it back to the line, and which is further enhanced through Automatic Train Operation (ATO), with improved acceleration and deceleration rates allowing for quicker journeys, and finally, the introduction of 20% lighter trains than the previous generation, that use less energy and reduces the levels of wear and tear on tracks.



Department for International Trade

The UK's Department for International Trade (DIT) has overall responsibility for promoting UK trade across the world and attracting foreign investment to our economy. We are a specialised government department with responsibility for negotiating international trade policy, supporting business, as well as delivering an outward looking trade diplomacy strategy.

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