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in carbon levels, compared to 1990, within fourteen years."

reorder it. The process is already well underway.

Recognising this, in April 2021, the UK government set in law some of the world's most ambitious climate change targets: a 78% reduction in carbon levels, compared to 1990, within fourteen years. 'Net Zero' by 2050.

Composites will help us get there.

for decarbonisation. They hold the key to more efficient transport, sustainable energy – including the much-heralded hydrogen economy and much else.

They will help our powerhouse industries – automotive, aerospace, defence, infrastructure – stay relevant and competitive. Their variety and versatility will unlock our creativity and help us reap the rewards of 'digital engineering', so we can make better products, more quickly, and with less waste. Products the world will want to buy.

Climate change is a daunting challenge that requires us to re-imagine traditional engineering. The UK has world-leading science, engineering and innovation skills. They come together in our composites sector: a vibrant ecosystem of large and small firms, regionally distributed, expert at tackling real-world problems.

Together they will drive the transformation to a low carbon future and, along the way, create new export opportunities, grow skilled jobs and support levelling up.

## But – only if we make the right choices now.

Our composites industry is a Strategic National Asset, years in the making, but its advantages could quickly be lost.

Products must be redesigned for the Net Zero world; from ships to shoes, spacecraft to food packaging, the way we conceive, design, make, distribute, use and dispose of the stuff of everyday life, will change. To stay competitive, the UK must be at the forefront of this process.

By controlling the engineering (design) function for the next generation of products, we can shape supply chains and anchor value here in the UK. We do this by helping the sector innovate and develop skills, prove new methodologies and set standards for the world.

If we don't, the centre of gravity will shift elsewhere, and Britain will become a customer for high value goods and services, rather than a provider of them.

As other nations invest in decarbonising their economies, demand for carbon fibre is predicted to exceed global production capacity within just a few years. Rather than Britain waiting in line for what supplies we can get, we can control our destiny and invest in onshore production and re-use to supply our domestic market, and for export.

Composites are famously tough but this durability is a double-edged sword: they are difficult to recycle. This is another market opportunity for the UK: we have the science, engineering and composites knowhow to create innovative recycling processes and even invent new, more sustainable materials. Britain can be the architect of a circular composites economy worth billions.



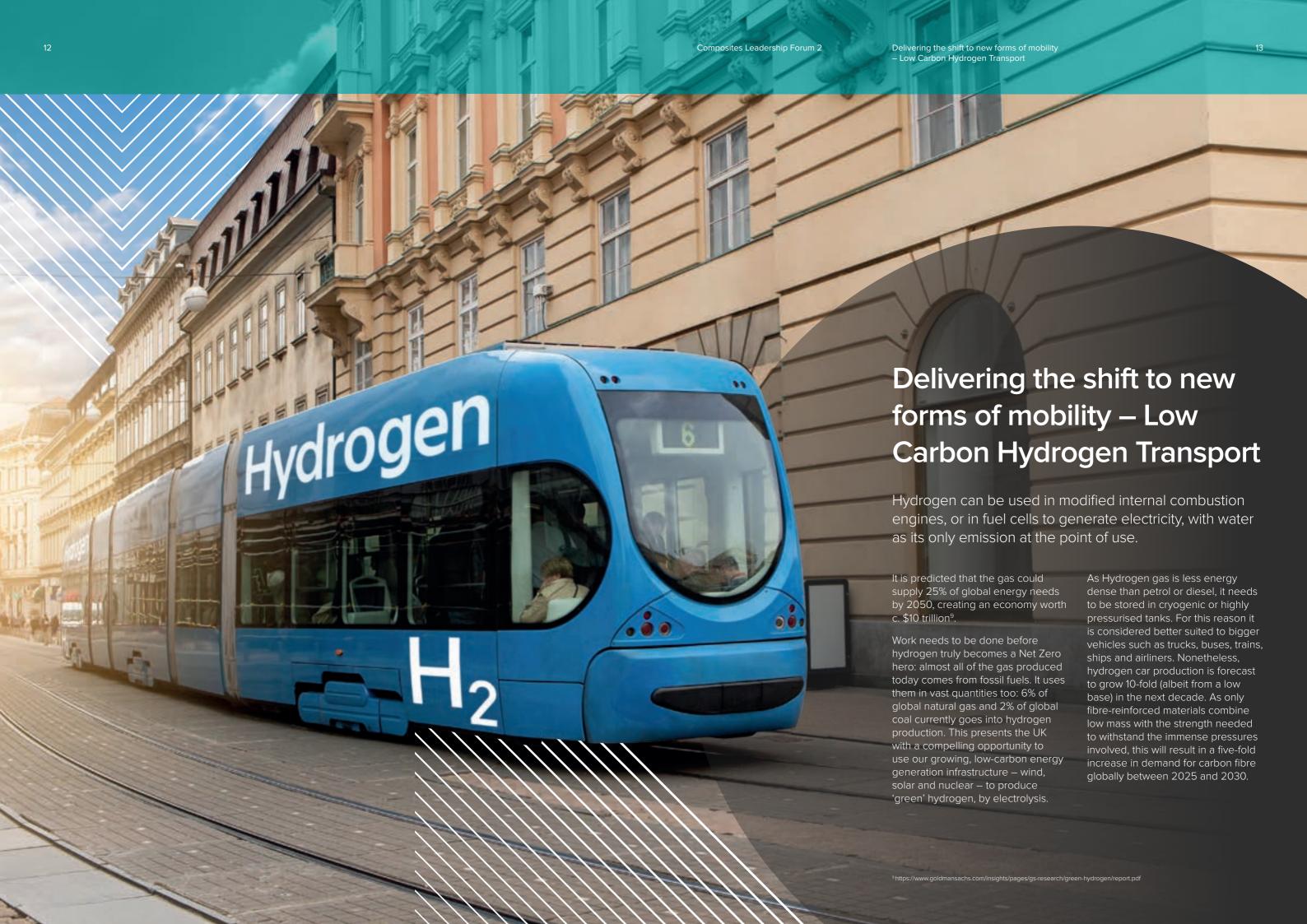
Composites Leadership Forum How big is the composites opportunity? 0





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## The future of mobility

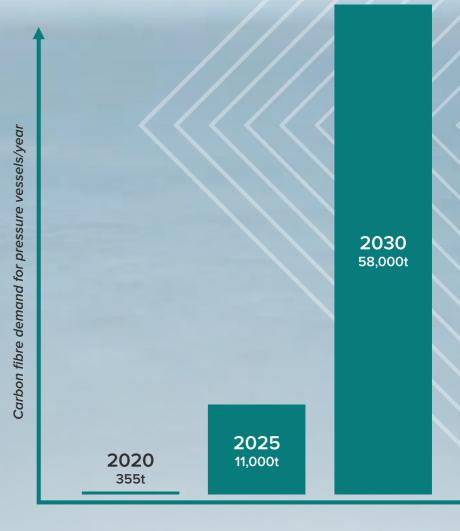
Radical changes are underway in the way we travel. In the next decade new petrol & diesel cars will be a thing of the past, public transport will be re-defined and personal mobility will be increasingly important.

Composite technologies unlock these opportunities to revolutionise our personal mobility from lightweighting electric vehicles to offsetting the weight of the batteries to increase the range of cars to enabling hydrogen powered buses & trains. Bicycles already take advantage of composite materials with other forms of personal mobility being developed that will equally benefit

This rise of new vehicles requiring composite solutions will see a huge rise in demand.

## Market Opportunity

Carbon fibre requirement for hydrogen pressure vessels in transportation<sup>10</sup>.

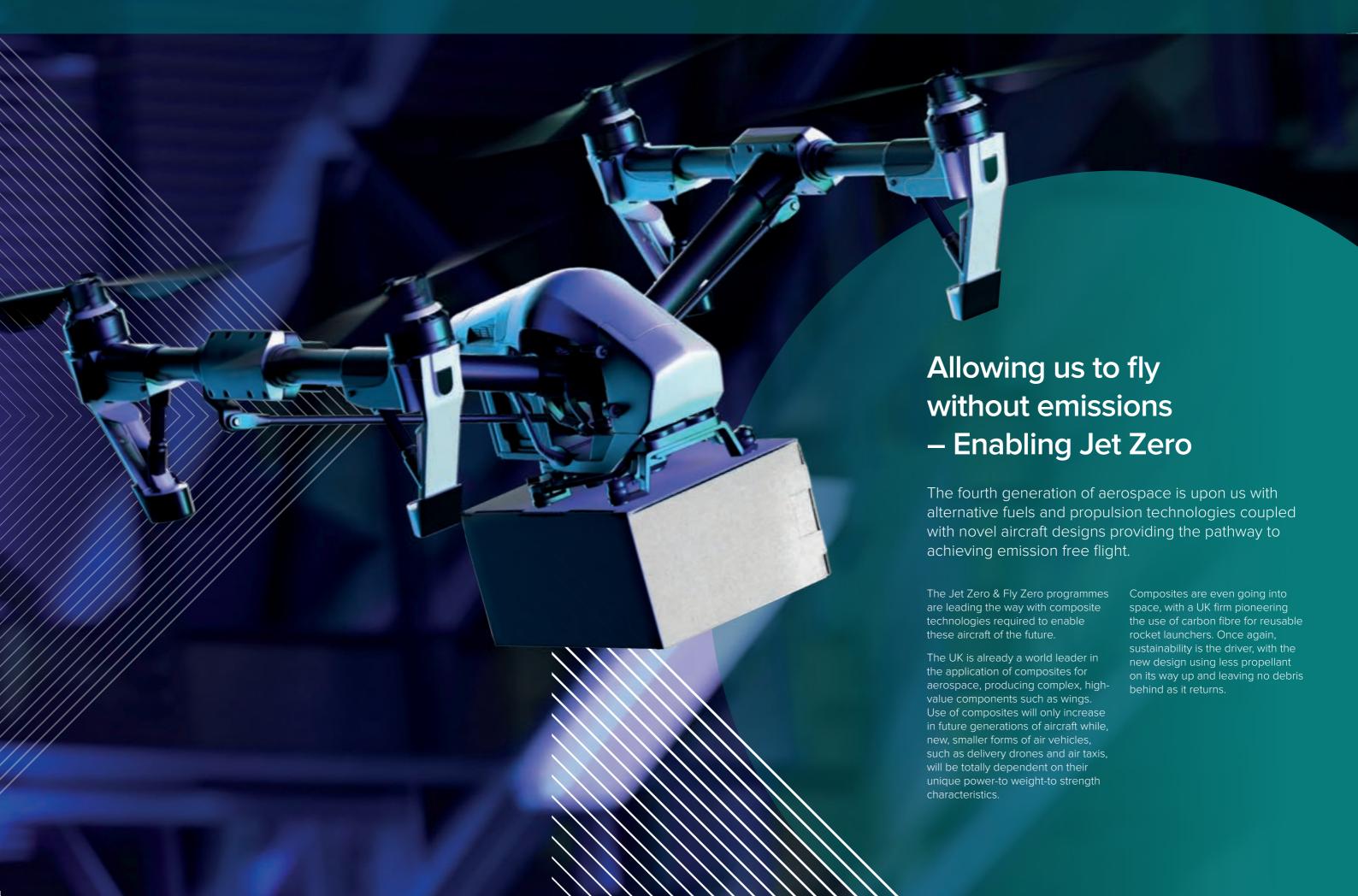


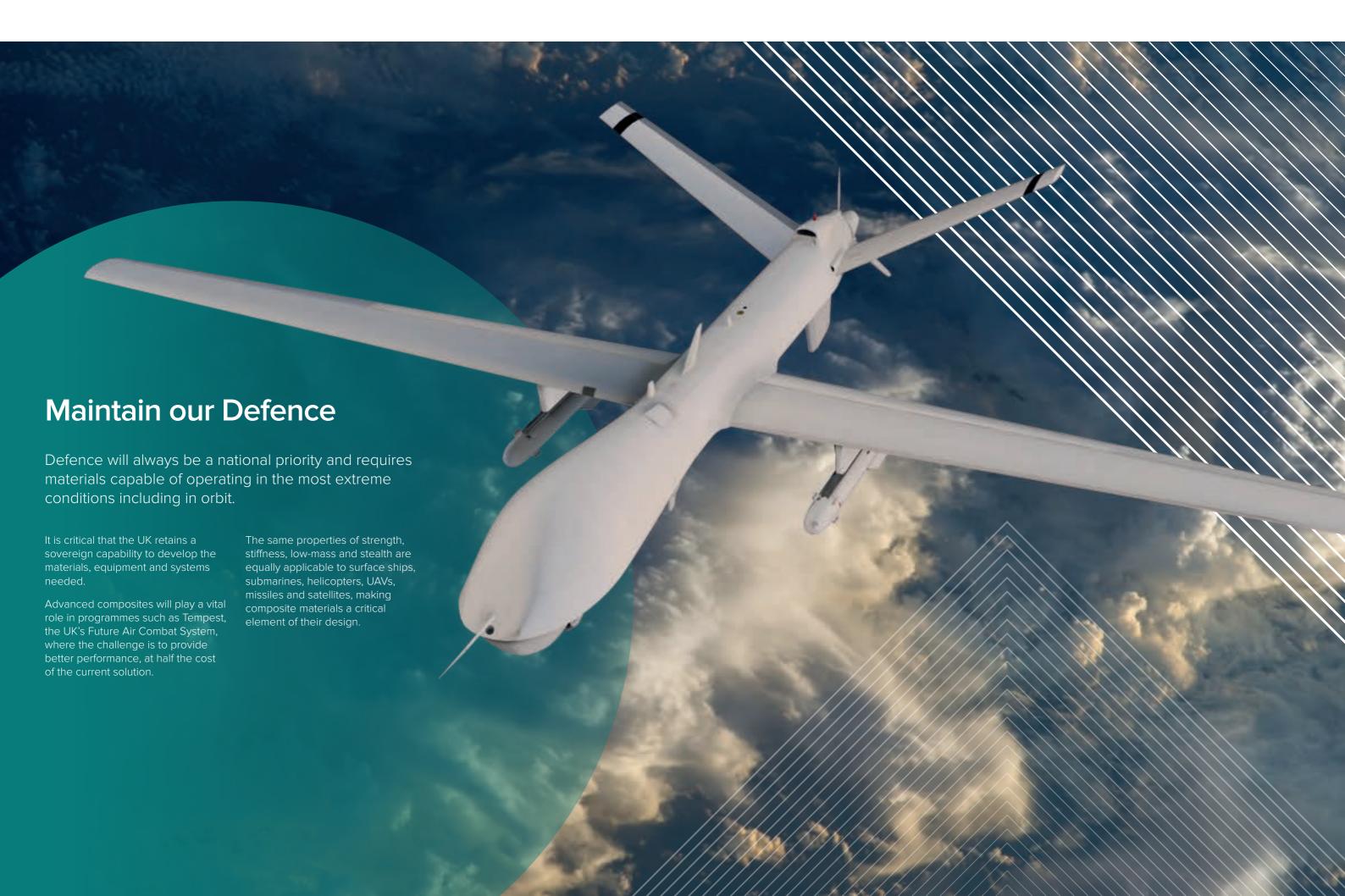
Conservative annual carbon fibre demand for transport pressure vessels: supply will not meet demand

As new supply chains are developed the UK must capitalise on its existing position and expertise in composites to secure the transportation supply chains of the future.

<sup>\*\*</sup>Carbon Fibre Pressure Vessels for Hydrogen in Fuel Cells in Transportation – a real opportunity or an elusive dream?\*\* Andrew Mafeld, Connectra. Go Carbon Fibre Conference. April 2021.

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<sup>12</sup> JEC report: just 2% of composite materials are currently recycled compared to plastics at 20%

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