Why a successful industrial strategy will be low carbon and resource efficient

green alliance...

Summary

The UK's industrial strategy aims to improve the performance of UK businesses, increase productivity and create good quality jobs across the country.

Our contention is that it will only succeed in doing so by fostering low carbon and resource efficient growth.

Here, we outline the global environmental drivers that are changing the business landscape. We set out three elements any industrial strategy should include and provide examples of UK companies leading the way.

A successful industrial strategy needs to:

- **Raise the baseline:** to build UK manufacturing competitiveness by using product and process innovation to radically improve energy and resource efficiency.
- **Futureproof:** to ensure that leading UK business sectors remain competitive by developing goods, services and processes that will be in high demand in a low carbon, resource efficient world.
- **Double down:** to focus on the sectors that have the potential to deliver both high productivity and decarbonisation, to foster world class new industries in the UK.

Global demand for low carbon energy infrastructure is rising

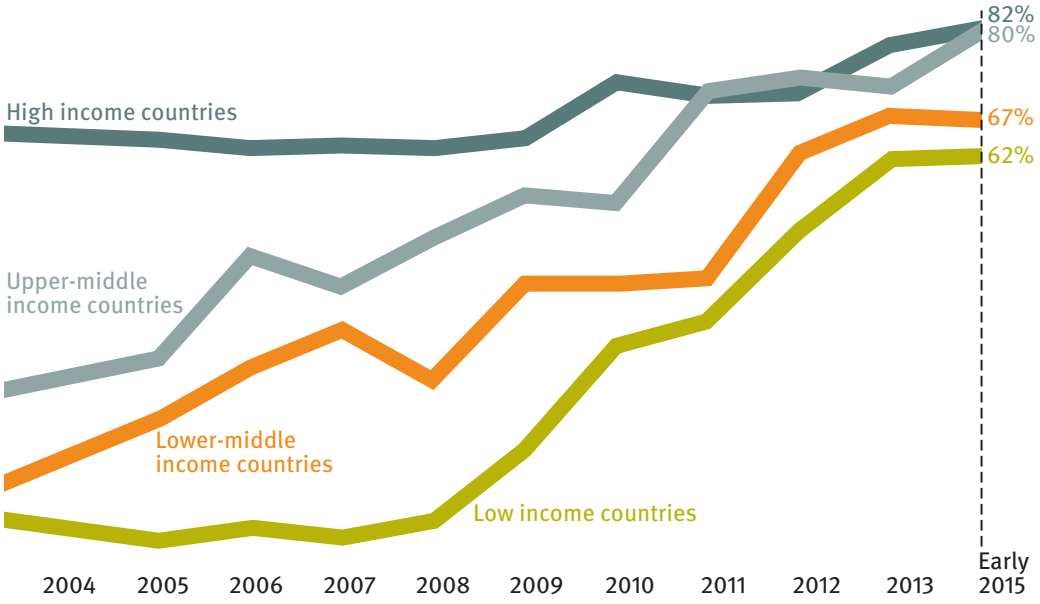
The UK established itself as a low carbon leader with the legally binding Climate Change Act in 2008. But renewable energy policies are no longer the preserve of western economies.

The Paris Agreement commits developed and developing countries to a low carbon emissions pathway that will shape energy investment in the coming decades.

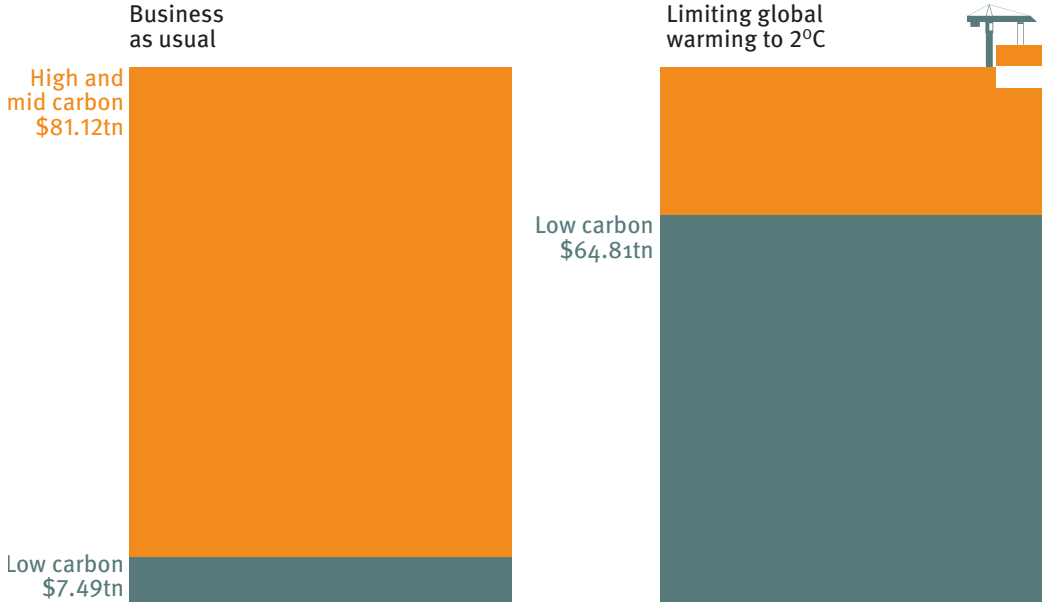
Globally, $90 trillion will be spent on infrastructure by 2030, the majority of which will need to fund low carbon infrastructure to limit global warming to 2°C.

Two thirds of low carbon infrastructure spending (£43 trillion) will be in the rapidly urbanising developing world and will include public transport, energy, building, and water and waste systems.

Proportion of countries with renewable energy policies



The switch to low carbon infrastructure by 2030



Businesses increasingly recognise their exposure to carbon and resource risks

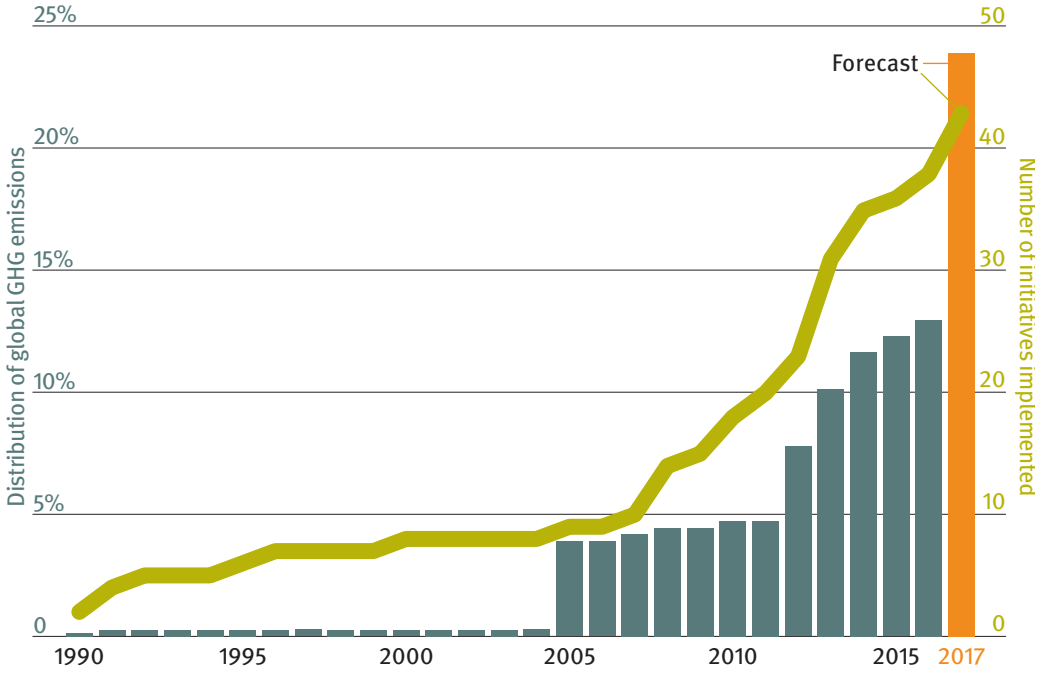
Carbon pricing is rapidly being adopted around the world and is forecast to cover 20 per cent of carbon emissions by 2017.

According to the OECD, global resource consumption doubled between 1990 and 2015 and is expected to double again between 2015 and 2050.

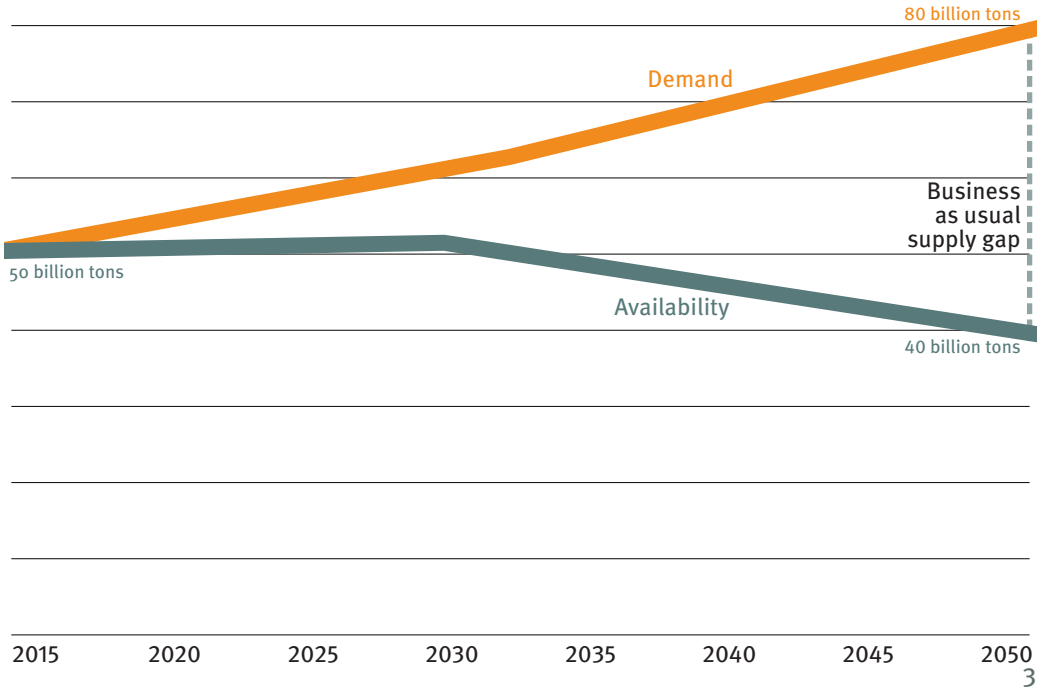
Concern that supply will struggle to keep up with demand is driving the market for resource efficient solutions, estimated by Accenture to be worth $4.5 trillion in 2030.

With its high import dependency, the UK is particularly exposed to the economic impacts of high and volatile commodity prices.

Carbon pricing instruments in the world



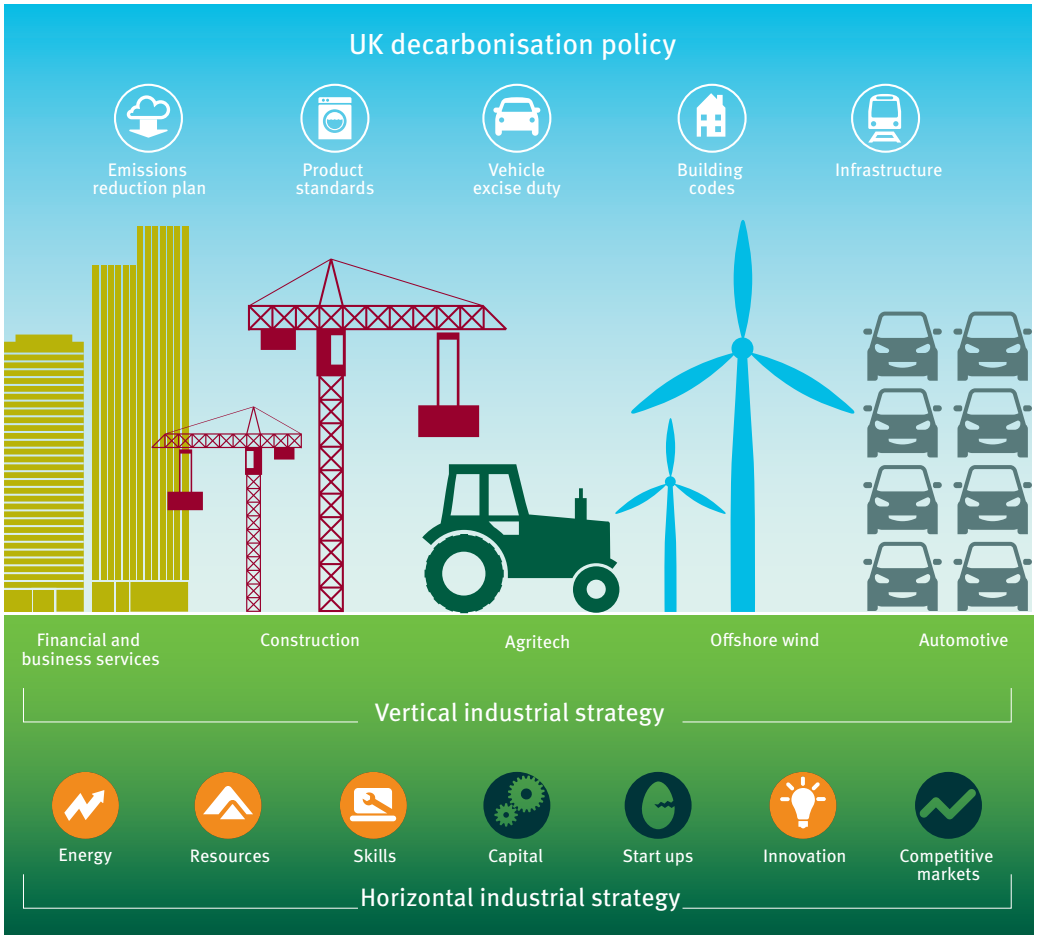
Resource availability vs demand 2015-2050



Driving productivity growth

Productivity can be increased by:

- improving the base level of productivity across the whole economy, ie raising the baseline for all (horizontal)
- growing existing highly productive sectors and building their competitive advantage, ie building sectoral strengths (vertical)



Double down on sectors that address low carbon challenges and meet productivity objectives

Futureproof to ensure highly productive sectors remain competitive in a low carbon, resource efficient world

Raise the baseline on product and process innovation for energy and resource efficiency, to lower costs and increase competitiveness

Raising the baseline

Increase the energy and resource efficiency of business to build a competitive manufacturing base

Across the economy, particularly in manufacturing and energy intensive industries, there are opportunities to increase productivity at the individual business level.

Energy and resource efficiency measures can reduce costs and add value to the bottom line. They also limit exposure to imported material costs, reducing the impact of currency volatility.

- 20-40 per cent savings on energy could be achieved across industry, using measures with an average pay back on investment of 2.6 years.
- 12 per cent increase in average annual manufacturers' profits could be delivered by improving resource productivity.
- Energy efficiency improved the productivity of the UK economy by £1.7 billion between 2010 and 2015.
- Over the next decade businesses could add a further £2.56 billion to their profits through investment in energy efficiency and clean technologies.

Real savings to the bottom line

Anglian Water:
cutting carbon and costs

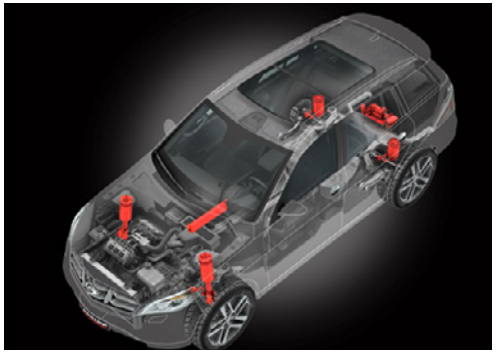
An OFWAT requirement to report on embodied carbon led Anglian Water to invest in improved infrastructure design and construction monitoring.

Lower embodied carbon and lower capital cost were strongly correlated and the approach is now used for all infrastructure projects.

Redevelopment at Raithby water treatment works lowered embodied carbon by 55 per cent and lowered capital cost by 22 per cent.

Dunlop Systems and Components:
increasing efficiency

This medium sized Coventry based company made air suspension components for the automotive sector from its former Holbrook factory until escalating energy costs threatened its existence.



In 2014, a purpose built factory, rated 'very good' by BREAM, and a systematic review of production saved the company 67 per cent on energy and 38 per cent on water use.

It now has a thriving domestic and export business providing high quality manufacturing jobs in the Midlands.

Futureproof

Support UK business to evolve in response to changing global demand

UK competitiveness is based on high quality, knowledge based products and services, which are constantly redesigned in response to changing global demand, new technologies and supply constraints.

The government needs to support existing high productivity sectors in the UK as firms futureproof their products, processes and business models. For example:

- the automotive sector will only remain internationally competitive if it uses its expertise in motorsport, vehicle design and production to constantly increase engine efficiency, braking systems, the use of recovered materials and the development of electric vehicles;
- the UK construction industry contributed 12.5 per cent to the UK's £65 billion surplus in services in 2014; this sector will only continue to offer useful models for export markets in Latin America, Asia and Africa if it leads on passive houses, embedded generation, sustainable materials and resource efficient, offsite construction processes;
- finance and business services will only consolidate their dominant position in global markets if they develop new products and expertise to respond to the demand for low carbon investment products, carbon trading and the professional services needed to build low carbon infrastructure.

Low carbon and resource efficient drivers are changing business models and products

Rolls-Royce:
selling services

Service provision now accounts for over 50 per cent of Rolls-Royce's total revenues. Its Total Care and Revert programmes have changed the business model for aero-engines.

Total Care: a fee is charged for every hour of engine use in exchange for maintenance and repair services; real time monitoring is used to diagnose and maintain the efficiency of engines.

Revert: old high pressure turbine blades are exchanged for new ones, enabling expensive, critical materials (rhenium, hafnium, tantalum and titanium) to be retrieved for reproduction.

Jaguar Land Rover:
manufacturing more resource efficient cars

Jaguar Land Rover switched from steel to aluminium to improve the fuel efficiency of its cars. But aluminium is both more expensive and more energy intensive than steel to make.

The company overcame this problem by working with Innovate UK and others through its REALCAR programme to develop a new, more recyclable aluminium alloy.

It has reduced its net material costs and the embodied carbon of its cars and cut its dependence on imported aluminium from 90 per cent to 50 per cent.

Laing O'Rourke:
material efficiency

Laing O'Rourke is investing in its capacity to produce more efficiently in factories away from building sites.

In its automated precast concrete manufacturing facility in Worksop, it has reduced steel consumption for pre-cast columns by 39 per cent, material costs by 25 per cent and embodied carbon by 21 per cent, compared with on site production.

It also offers high quality employment in areas away from the heart of the construction market in London and the south east.

Finance and business services:
growing new markets

The City of London is the third largest bond market in the world. It is poised to take a significant share of the green bond market, forecast to soon reach $132 billion a year.

The Bank of China listed its first ever Green Covered Bond on the London Stock Exchange in 2016. A third of clean energy projects get their legal and financial advice from the UK.

UNEP recognises the UK as the country which sets the agenda on sustainable finance initiatives domestically and internationally.

Double down

Recognise that sectors which deliver on decarbonisation as well as productivity are critical to UK global success

Focusing on the sectors with potential to deliver both productivity and decarbonisation will foster world class new industries in the UK.

For example:

Offshore wind: the UK has the greatest offshore wind capacity in the world and leading expertise in project development and management. But a clear investment pipeline is needed for the supply chain to develop and drive down costs.

Automotive: the UK is already a major producer of electric cars and a developer of novel, low weight composites. Fiscal incentives for low emission vehicles and support for new charging infrastructure would support consumers to make low carbon choices and encourage supply chain development in the UK.

Policy opportunities to link demand and supply

Offshore wind:
supply chain and project management

Opportunities in turbine manufacturing, turbine towers, foundations, cables and substations depend on government contract auctions.

Analysis shows that 43 per cent of the lifetime cost of a UK wind farm is spent in the UK and the resources required to install and manage projects are largely UK based.

Grimsby will host the world's largest offshore wind maintenance hub, creating 1,600 construction jobs. UK supply chain players include JDR Cable Systems and Seajacks.

Automotive:
developing a leading edge

The domestic and global market for electric vehicles will depend on industry working in partnership with government to install charging infrastructure.

Sunderland is home to the Nissan Leaf and Nissan e-NV200 van. The UK's Advanced Propulsion Centre is funding academic institutions, innovation groups and Nissan to develop the next generation of car batteries.

Motorsport Valley is at the forefront of electric motor design and engineering. The UK has already successfully tested its self-driving vehicles for the first time.

Conclusion

Good businesses are constantly improving their services, products and processes to develop and maintain their competitive advantage. A successful industrial strategy needs to support businesses in responding to the new challenges and opportunities they face.

Some businesses are doing this already and the industrial strategy should support that good practice spread across the economy. We believe that means:

- **Raising the baseline** for how businesses manage energy and materials. Businesses will redesign their operations to take advantage of opportunities to supply low carbon energy and recovered materials; and to enable them to realise efficiency savings and build more resilient sourcing strategies to remain competitive.
- **Futureproofing** existing successes. Using the UK's science and knowledge base to support the adaptation and diversification of businesses as they respond to the changing requirements of a low carbon, resource efficient global economy.
- **Doubling down** on sectors where the UK is both buyer and seller. Identifying the sectors needed to deliver clean air, new energy infrastructure and carbon targets which also have the potential to be high productivity businesses. Government departments should work together to create the right conditions for the UK to grow competitive businesses in these markets.

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Green Alliance is a charity and independent think tank, focused on ambitious leadership for the environment. With a track record of over 35 years. Green Alliance has worked with the most influential leaders from the NGO, business, and political communities. Our work generates new thinking and dialogue, and has increased political action and support for environmental solutions in the UK.

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