

Summary

Why we need a modern industrial strategy

Industrial strategy can mean many different things. In the 1970s, industrial strategy became synonymous in Britain with the failures of nationalised industries like British Leyland, “picking winners”, poorly targeted government investment and sclerotic growth.

More recently, industrial strategy has been used to describe successful interventions in countries as diverse as South Korea, the United States, Germany and in some aspects, the UK. Targeted interventions – ranging from tax breaks and deregulation to strategic procurement decisions and specific investment in particular skills – have been combined with free market economic policies to nurture growth in particular sectors and places. Far from the experience of 1970s Britain, the international approach to industrial strategy has often been fruitful, leading to more productive and better balanced economies.

This document sets out a new vision. A vision for a modern British industrial strategy that does not repeat the mistakes of our past, and learns the lessons of our own successes and those of our overseas competitors. It is a vision to support, strengthen and develop our different industries, and to get all parts of the country firing on all cylinders.

The objective of our modern industrial strategy is to improve living standards and economic growth by increasing productivity and driving growth across the whole country.

This is not about the Government directing the economy or determining the industries of the future from Whitehall. Instead, we will identify our competitive strengths, explore with industry the ways in which government can help, and put in place institutions and relationships to sustain higher levels of productivity over the long term. It is about creating an economy resilient to change and fit for the future.

In some industries, this approach is already mature. The Government has long worked collaboratively with the aerospace industry to create one of the world’s best business environments for advanced aerospace engineering, design and manufacture. In the automotive sector, close partnership between government and industry has supported strong growth, with thousands of people employed in highly skilled jobs. But this relationship is less developed in other industries, and we have not established a coherent framework for industrial strategy across all sectors. This document starts to set out that framework.

We identify 10 pillars we believe are important to drive forward our industrial strategy across the entire economy: science, research and

innovation; skills; infrastructure; business growth and investment; procurement; trade and investment; affordable energy; sectoral policies; driving growth across the whole country; and creating the right institutions to bring together sectors and places. These pillars frame our approach, and across each of them we set out a programme of new policy.

The way in which these pillars relate to specific places will vary, and will change over time. In some areas, it will be important to target government investment flexibly to support specific areas or sectors. In others the right intervention might be to create new sector bodies, research institutions or financing bodies – where the lack of those institutions is holding back growth and productivity.

In all cases, we will work with industry and draw upon the considerable expertise of UK business to design our industrial strategy.

Why we are proposing this strategy

This strategy draws on lessons from other countries and identifies some of the key approaches that have enabled stronger productivity and more balanced growth in other economies.

It also draws on our own history: what has worked and what has failed; the strengths we must build on and the weaknesses we must correct.

These lessons have led us to the 10 pillars for the industrial strategy we set out in this paper. We are proposing these areas because the evidence shows that they drive growth. Places with higher rates of investment in research and development, more highly skilled people, better infrastructure, more affordable energy and higher rates of capital investment grow faster and have higher levels of productivity. Policies on trade, procurement and sectors are tools we can use to drive growth by increasing competition and encouraging innovation and investment. Through central government actions and by strengthening the local institutions that support a more productive economy we can ensure that growth is driven across the whole country.

The pillars

1. **Investing in science, research and innovation** – we must become a more innovative economy and do more to commercialise our world leading science base to drive growth across the UK.

2. **Developing skills** – we must help people and businesses to thrive by: ensuring everyone has the basic skills needed in a modern economy; building a new system of technical education to benefit the half of young people who do not go to university; boosting STEM (science, technology, engineering and maths) skills, digital skills and numeracy; and by raising skill levels in lagging areas.

3. **Upgrading infrastructure** – we must upgrade our standards of performance on digital, energy, transport, water and flood defence infrastructure, and better align central government infrastructure investment with local growth priorities.

4. **Supporting businesses to start and grow** – we must ensure that businesses across the UK can access the finance and management skills they need to grow; and we must create the right conditions for companies to invest for the long term.

5. **Improving procurement** – we must use strategic government procurement to drive innovation and enable the development of UK supply chains.

6. **Encouraging trade and inward investment** – government policy can help boost productivity and growth across our economy, including by increasing competition and helping to bring new ways of doing things to the UK.

7. **Delivering affordable energy and clean growth** – we need to keep costs down for businesses, and secure the economic benefits of the transition to a low-carbon economy.

8. **Cultivating world-leading sectors** – we must build on our areas of competitive advantage, and help new sectors to flourish, in many cases challenging existing institutions and incumbents.

9. **Driving growth across the whole country** – we will create a framework to build on the particular strengths of different places and address factors that hold places back – whether it is investing in key infrastructure projects to encourage growth, increasing skill levels, or backing local innovation strengths.

10. **Creating the right institutions to bring together sectors and places** – we will consider the best structures to support people, industries and places. In some places and sectors there may be missing institutions which we could create, or existing ones we could strengthen, be they local civic or educational institutions, trade associations or financial networks.

These pillars all reinforce one another. An economy with more innovative start-ups will require more highly skilled people, more venture capital, and better digital infrastructure. Inward investment can drive productivity growth by bringing new ideas and new ways of doing things to the UK. But to attract inward investment we need to be competitive on energy costs and infrastructure – as well as having a strong science base and highly skilled people. And the aims of our strategy will be further advanced by other complementary work – such as our further thinking on the labour market which will be set out later in the year.

In many of these areas, such as innovation, finance and attracting inward investment, the UK already has great strengths. The industrial strategy will enable us to capitalise fully on them.

The nature of the challenge

The UK has grown strongly in recent years – by over 14 per cent since 2010, second only to the United States among major advanced economies⁴.

Employment has reached a record high, with 2.7 million more people in work than in the first quarter of 2010⁵. Unemployment is at its lowest level for 11 years.

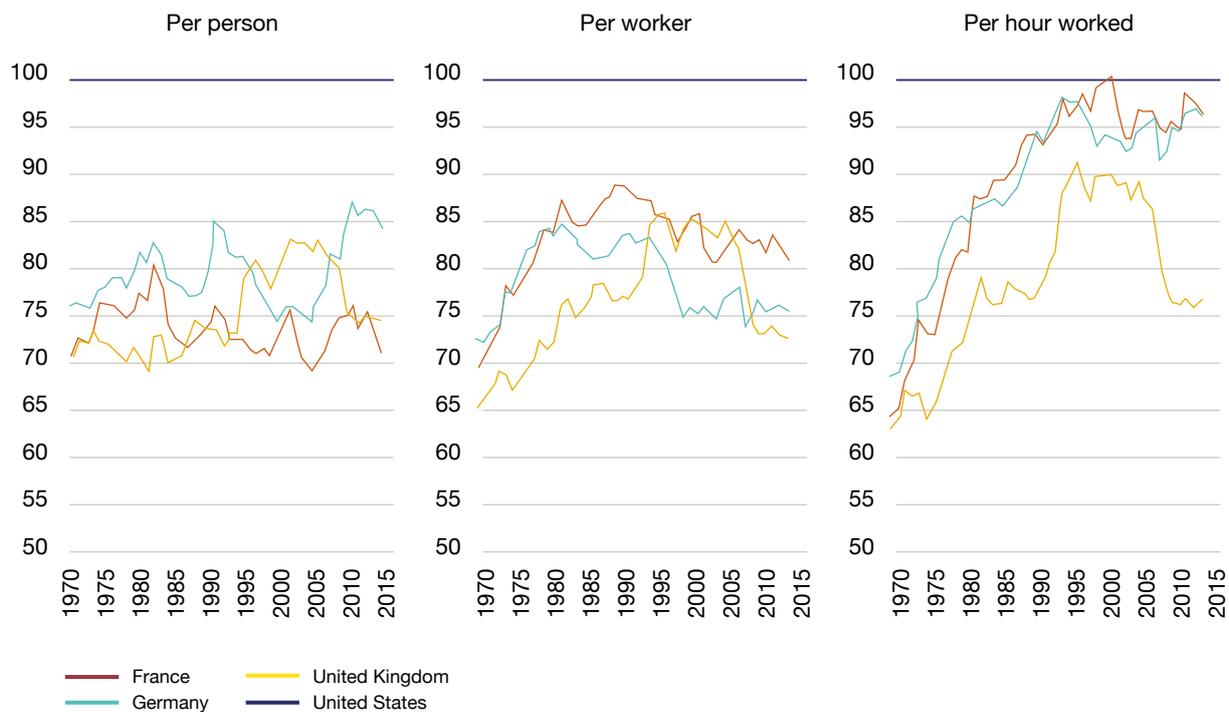
But while real wages are now growing, earnings are still recovering from a substantial decline following the recession of 2008⁶. Per capita growth in incomes has not been as strong as headline figures on overall GDP growth.

If we want to see faster growth in wages, sustained over the long term and experienced across the country, the UK needs to address the productivity gap with other leading countries. While the proportion of people in work is at a record high, we still produce less for every hour we work than our competitors.

The gap with our competitors is a longstanding one. Following the reforms of the 1980s, the UK reduced the productivity gap with the United States. During the years before the 2008 recession, the UK had largely caught up with Germany in terms of output per worker, and moved ahead of France on output per person, showing that we can improve our performance. However, though we closed the per-worker gap substantially, per-hour productivity remained lower than France, Germany and the US⁷.

The recession of 2008 reversed much of this progress, with the UK hit harder than other countries. As a result, productivity in the UK fell substantially behind our competitors. As the graph opposite shows, workers in France, Germany and the US produce on average as much in four days as UK workers do in five⁸. To get sustainably higher wages, this gap must be closed.

Productivity and output in the UK, France and Germany, compared to the US



Source: OECD Productivity Statistics

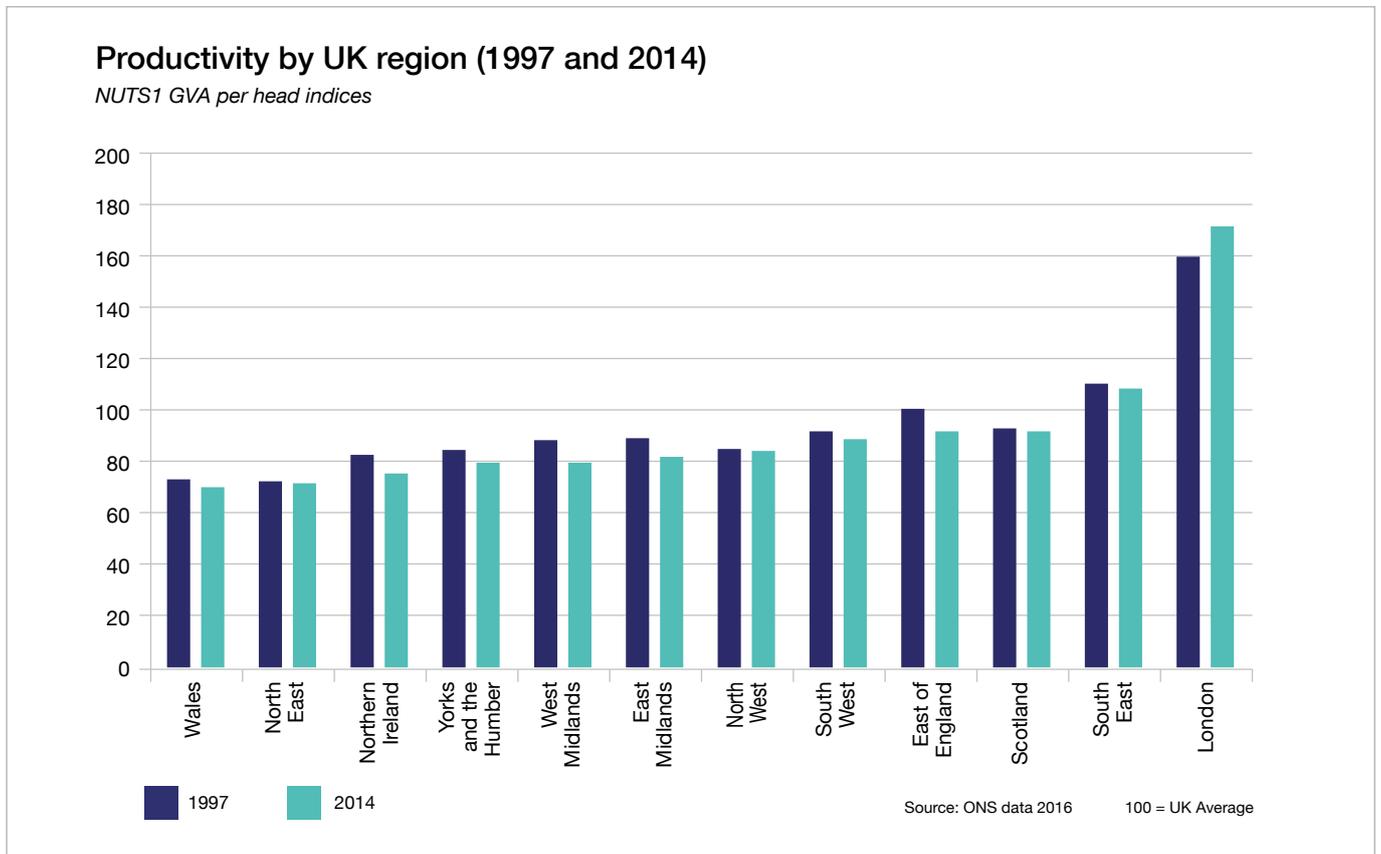
Improving productivity does not mean making people work harder. It means helping them to work smarter – producing more value for each hour of their time and thereby increasing their earning power. This is how economies grow and how living standards improve.

The differences hidden beneath the UK’s headline rate of productivity are also of great significance.

Our country has significant disparities in economic performance. The productivity gap between different parts of the country has been widening for decades, and it is these differences that ultimately impact on how much people earn.

As the graph overleaf shows, the majority of increases in productivity have been focused in London. Since 1997, London has moved from being 59 per cent higher than the UK average ‘gross value added’ per person (GVA is a measure of economic performance), to 72 per cent above, while most other regions have fallen further behind the national average⁹.

Regional disparities are now wider in the UK than in other western European nations. In the UK, 61 per cent of people live in areas with incomes 10 per cent below the national average¹⁰. This compares to only 50 per cent in Germany, and just 40 per cent in Italy. Even France, with a similarly dominant capital city, is more balanced – 53 per cent of people live in areas 10 per cent below the average.



It is important not to over-simplify this story. For instance, the productivity gap within each region is greater than between regions. Furthermore, since the 1990s, the gap between north and south has been driven by the resurgence of London, which for most of the twentieth century had been falling behind the rest of the country¹¹. We want London to continue to prosper, but the rest of the country needs to keep pace too.

Change is possible. Since 2010 wages have grown fastest in Northern Ireland and the North East of England¹², while the unemployment rate has fallen fastest in Wales¹³. Scotland has seen the fastest growth in productivity.

So while regional disparities are especially high in the UK, change in the right direction is possible. Indeed, more than possible, it is essential – because that is where much of the untapped potential of the British economy is to be found.

Tackling the productivity gap and driving growth

The objective of the modern industrial strategy is to improve living standards and economic growth by increasing productivity and driving growth across the whole country.

The 10 pillars in this Green Paper are summarised here and explored in more detail in the following chapters.

Investing in science, research and innovation



Innovation is not just about a few people in labs making breakthroughs, but about adopting new and more productive ways of working. To become a more innovative economy requires the ability to seize new opportunities and adapt to change. The United Kingdom has the advantage of a strong science base – including more Nobel Laureates than any country outside the United States¹⁴.

But historically, we have not been as successful at commercialisation and development as we have been at basic research. We have often been slower than competitors to take up and deploy existing technologies: for example, the UK makes less use of robotics and automation than most other countries in Western Europe¹⁵.

Our competitors have also grown their investment in research and development relative to the UK. The UK invests 1.7 per cent of GDP in private and public funds on research and development. This is below the OECD average of 2.4 per cent¹⁶ and substantially below the leading backers of innovation – countries like South Korea, Israel, Japan, Sweden, Finland and Denmark – which contribute over 3 per cent of their

GDP to this area¹⁷. Compared to competitors in Asia, UK public funding is relatively concentrated on early stage research.

Furthermore, there are regional disparities in how the public sector and companies spend money on research and innovation, with UK public R&D funding heavily focused on the ‘golden triangle’ of Oxford, Cambridge and London. As well as continuing to unleash the excellence of institutions, we need to build on the excellence in research and innovation that exists in other parts of the country too, and ensure that capital, institutional influence and government attention is targeted there effectively.

We will invest an additional £4.7 billion by 2020-21 in R&D funding, a bigger increase than in any Parliament since 1979. This paper starts a consultation on how to invest this funding, setting out options ranging from investment in local science and innovation strengths, and increased support for commercialisation, to investing in future research talent. For example, by increasing the number of PhDs in the STEM subjects – science, technology, engineering and maths.

It also consults on the technologies which the new Industrial Strategy Challenge Fund could support, including: smart and clean energy technologies (such as storage and demand response grid technologies); robotics and artificial intelligence (including connected and autonomous vehicles and drones); satellites and space technologies; leading edge healthcare and medicine; manufacturing processes and materials of the future; biotechnology and synthetic biology quantum technologies, and transformative digital technologies including supercomputing, advanced modelling, and 5G mobile networks.

Given its central importance to a range of new technologies, including in the automotive sector, the government has also asked Sir Mark Walport, the Government's Chief Scientific Adviser, to consider the case for a new research institution as a focal point for work on battery technology, energy storage and grid technology. Sir Mark will report in early 2017. Given the UK's underlying strengths in science and energy technology, we want to be a global leader in battery technology.

Developing skills



The United Kingdom has some of the top universities in the world and a larger proportion of our population have degree-level qualifications than most of our competitors. However, technical education has been relatively neglected. A bewilderingly complex array of qualifications, some of which are poor quality, makes the system hard to use for students and employers.

Consequently, we have a shortage of technical-level skills, and rank 16th out of 20 OECD countries for the proportion of people with technical qualifications¹⁸.

We have particular skills shortages in sectors that depend on STEM subjects, where we need more of these graduates to compete successfully in a global economy.

We still have too many underperforming schools and low overall levels of numeracy and literacy. England remains the only OECD country where 16 to 24-year olds¹⁹ are no more literate or numerate than 55 to 64-year olds. Large differences in skill levels around the country, including among school leavers, are compounding imbalances in the UK economy.

This paper opens a discussion on how we can create a new system of technical education, including: a radically simplified set of qualifications; an easy means of finding and applying for technical education courses similar to the UCAS process for higher education; and creating prestigious new Institutes of Technology to deliver higher-level technical education in all regions. A process will be launched this year to establish Institutes of Technology.

This paper also consults on how to boost STEM skills at all levels, from further encouraging the uptake of these subjects at university and expanding the number of specialist maths schools across the country, to new steps to ensure universal basic numeracy. The creation of a new "transition year" will help ensure no-one drops out of education at the age of 16. Faster changes in technology mean we need to help more people retrain in new skills, so we will embed the concept of lifelong learning. To renew communities affected by economic changes and support people in industries at risk of decline, we will explore new approaches including more effective outreach directly into workplaces to promote retaining. The Government will set out its approach in the Spring Budget 2017.



Upgrading infrastructure



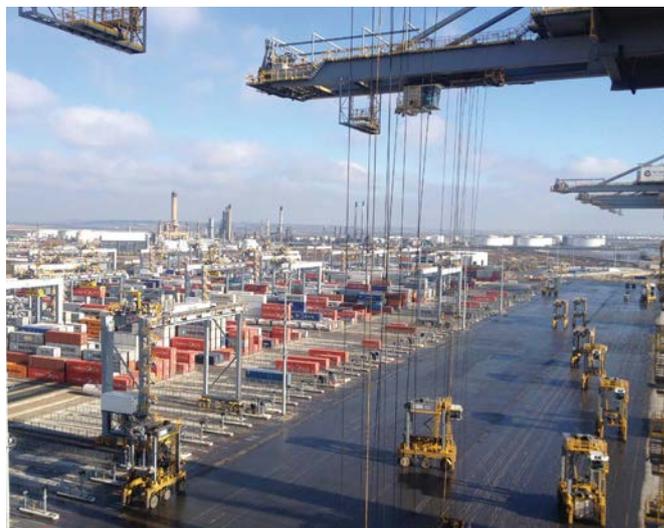
Though the United Kingdom has pioneered many types of infrastructure from railways to mobile telecoms, the quality of our transport infrastructure has been rated as second lowest among G7 countries. According to World Economic Forum surveys our overall infrastructure is perceived by international businesses as worse than our competitors²⁰.

This has been driven by factors such as a lack of clear long-term plans and budgets, a complex planning system, and failure to align planning for infrastructure with planning for housing and industry. We need to upgrade our energy, transport, water, flood defence and digital infrastructure across the country.

This will ensure that our businesses can thrive, services are resilient and can enable higher rates of house-building, making houses more affordable. And, as one of the world's leading digital nations, much of the UK's current and future prosperity depends also on our ability to exploit technology and to ensure our data and networks are secure against the many threats we face.

In the Autumn Statement the Government announced a new National Productivity Investment Fund that will add £23 billion in high-value investment from 2017-18 to 2021-22. This includes: £2.6 billion for improvements in transport projects to reduce journey times and help deepen labour markets through improved travel links, and £740 million to support the roll-out of fibre broadband connections and future 5G mobile technology. As well as increasing central government economic infrastructure investment by 60 per cent between 2016/17 and 2020/21, we have improved the framework

for public investment through use of long-term budgets and new institutions like the National Infrastructure Commission and Infrastructure and Projects Authority to enhance planning and project delivery. We will also take action to support more private infrastructure investment: as well as taking strategic decisions on major projects such as Heathrow, Hinkley Point C and HS2, the Government will extend support for infrastructure bonds and loans and create new opportunities for private involvement with new construction-only guarantees.



The Government has established new funding to enable central investment to support local growth. The new £2.3 billion Housing Infrastructure Fund will allow joined-up planning for housing and infrastructure in areas of severe need, and will fund the infrastructure needed to enable house-building on sites with marginal viability in areas with an acute housing need. Our £1.7 billion Accelerated Construction programme will support new entrants and developers, innovative private sector partners and offsite manufacturers to ensure homes are built at up to double the speed of traditional house builders. A total of £1.1 billion of funding for local roads and public transport networks will allow communities to fix local travel bottlenecks that hold back growth.

Supporting businesses to start and grow



The United Kingdom is a world-leading financial centre, but we need to do more to ensure that firms across the whole country can get the finance they need to grow.

The UK ranks third for start-ups, but 13th for the number of businesses that successfully scale up according to OECD research. One potential cause of this is an under-supply of long-term funding – “patient capital” – and later stage venture capital for growing UK companies²¹. Some report that equity finance is more available in London and the South East than other parts of the country. More broadly, we need to ensure that barriers to entrepreneurship and scale-up are identified and addressed in order for UK companies to be able to grow into major global players. We also need to ensure the conditions are right for companies to invest.

The UK invests on average two to three per cent of GDP less than France, Germany and the United States in fixed capital – such as plant and machinery²². This is a long running problem: the UK has ranked in the lowest 25 per cent of all OECD countries for investment in 48 out of the last 55 years.



The Patient Capital Review, recently announced by the Prime Minister, will identify the most effective ways to improve the availability of patient capital for growing businesses.

It is essential that we explore all options that could improve businesses’ ability to invest for the long term, so in this paper we are also inviting views on how to address the factors constraining quoted companies and fund managers from making longer-term investment decisions. We will work with the British Business Bank and the ScaleUp Institute to understand and address the relative weakness of venture capital funding and entrepreneurship networks outside the South East.

Improving procurement



The public sector spends around £268 billion per year, equivalent to 14 per cent of GDP²³. Used strategically, government procurement can encourage innovation, competition, and investment in skills. US agencies and initiatives like the Defense Advanced Research Projects Agency (DARPA), and the Small Business Innovation Research programme have shown how strategic procurement can drive innovation and the creation of new technology businesses.

To realise this potential, the Government has launched an independent review of the UK’s Small Business Research Initiative to examine how we can use strategic procurement to support businesses developing innovative new products and services. It will report in early 2017. The Government is rolling out the “balanced scorecard”, an approach recently developed by the Cabinet Office, across all major construction, infrastructure and capital investment projects over £10 million, including

those in the recently published National Infrastructure and Construction Pipeline²⁴. The scorecard will ensure the impact of procurement on the growth of small business and UK supply chains, skills and apprenticeships is taken into account when considering the value for money of different bids.

Encouraging trade and inward investment



Government trade and inward investment policies can open up markets for UK firms and bring in income. Measures to support trade and investment can have a crucial impact on long-term growth; not only do they bring in money, trade and investment, but also bring new ideas and approaches, increasing competition and growth.

We start from a strong position on investment – as the number one location for inward investment in Europe – but not enough UK firms export, and trade as a share of the economy has grown more slowly than in our G7 competitors over recent decades.

The creation of the new Department for International Trade is an opportunity to upgrade dramatically support for investors and exporters. The Autumn Statement doubled capacity to support exports through UK Export Finance. We are also building future trading relationships, and we are encouraged that countries such as Canada, China, India, Mexico, Singapore and South Korea have already said they want to discuss our future trading relationships.



The Government is working to support businesses through discussions on market access issues with third countries²⁵. We will test a new 'Team UK' approach to trade, convening consortia of businesses around UK Export Finance backed funding to bid for major overseas contracts, and providing the strong political support that competing countries often do.

We will continue to improve how the promotion of inward investment links up with local areas and we will explore where there are sectors in the UK which could benefit from support to create recurring international trade fairs. We will also consider how we can develop a more strategic approach to targeting inward investment, including measuring our success in terms of the impact of investment on growth. We are also reviewing what we can learn from inward investment strategies of key competitors and will report in 2017.

Delivering affordable energy and clean growth



We need to ensure that we keep costs down for businesses, we coordinate changes to energy infrastructure triggered by new technologies (such as electric vehicles), and we secure the economic benefits of the transition to a low-carbon and resource-efficient economy by making sure next generation technologies are created and harnessed in the United Kingdom.

The Government will set out a long-term roadmap in 2017 to minimise business energy costs. This will be informed by a review, commissioned by the Government, of the opportunities to reduce the cost of achieving our decarbonisation goals in the power and industrial sectors. The review will cover how best to support greater energy efficiency, the scope to use existing instruments to support further reductions in the cost of offshore wind once current commitments have been delivered, and how Government can best work with the regulator Ofgem to ensure markets and networks operate as efficiently as possible in a low-carbon system.

We will also review the opportunities for growth from the energy sector and the opportunities for the UK. We are already testing the use of new grid technologies in various locations around the country in preparation for the shift to electric vehicles. To ensure that new energy technologies are developed here – and the UK benefits from global investment in this area – we have doubled support for energy innovation, and are already investing over £600 million in support to accelerate the transition to ultra low emission vehicles. At the Autumn Statement 2016 additional funding of £270 million was announced.



Cultivating world-leading sectors



Leadership from business has been key to the success of sectoral policies in the UK and other countries. We propose to set an ‘open door’ challenge to industry to come to Government with proposals to transform their sectors through ‘Sector Deals’. The Government will work with sectors that organise themselves behind strong leadership to help deliver upgrades in productivity.

This could involve: addressing regulatory barriers; promoting competition and innovation; working together to increase exports; and working together to commercialise research. Sector deals will be driven by business to meet the priorities of business.

The Government welcomes initial work on early sector deals, including from Sir John Bell on life sciences; Richard Parry-Jones on the transition to ultra low emission vehicles; Juergen Maier on industrial digitalisation; Lord Hutton on improving UK competitiveness and skills in the nuclear industry; and Sir Peter Bazalgette on the creative industries.

Driving growth across the whole country



Economic imbalances between different parts of Britain are larger than our competitors, with incomes and living standards lagging behind in too many parts of the country. These disparities hold back the country's growth and limit opportunities for too many people.

We should confront the fact that our economy is one of the most centralised in the world, with institutions that are often too fragmented to provide the most effective leadership in shaping successful places. Evidence and experience suggests that strong, streamlined, decentralised governance – such as through our city deals, growth deals and mayoral devolution deals – can improve economic decision-making and spur innovation and productivity gains.

We will use infrastructure investment to support local growth and the rebalancing of the economy. The creation of new funding like the Housing Infrastructure Fund and £1.1 billion of funding for local roads and public transport networks will enable infrastructure decisions to be matched more effectively with local economic plans.

We will tackle historic underinvestment and have provided development funding for major infrastructure upgrades such as the Midlands Rail Hub and Northern Powerhouse Rail. We will continue to support better local decision-making structures for infrastructure planning, including the new mayoral combined authorities, and regional bodies like Midlands Connect and Transport for the North. Strong

and accountable place-based governance – with a clear business voice – will be critical to making the most of this additional investment.

Differing skill levels entrench the disparities in our economy, so we will go beyond the national skills reforms set out above and take further actions where skill levels are too low. We will work with local areas to test new approaches to closing the skills gap. These could include: improved pre-school education to reduce the divergence of achievement which opens up before school; new schemes to support the retention and attraction of graduates; and measures to increase the take up of apprenticeships.



We will also use the additional R&D investment set out above to back world-class research and innovation, supporting local economies across the country. New funding streams, such as the Industrial Strategy Challenge Fund, could allow us to invest in the innovation strengths of different areas, whether led by businesses or universities. Expanding existing streams supporting universities' commercialisation activity would allow them to do more for their local economy and support more local small businesses.

Creating the right institutions to bring together sectors and places



Two key lessons from industrial policy in other countries are the need for consistency and patient effort, and to deliver this, the need to create the right institutions to support development over the long term.

At the national level, progress has been through the creation of business-led institutions. We will now build on such institutions where they exist, or work with business to create them where they are needed.

We will work with local areas to help develop industry clusters based around local expertise, putting in place the right institutions with the right powers to help support local areas of economic strength. This may involve creating new institutions or strengthening existing ones such as educational and innovation institutions, business networks and trade associations, or financial networks and local funds. We will maximise the benefit that ‘anchor’ businesses can bring to an area by supporting the growth of UK supply chains. The Department for International Trade will review the potential role it can play in attracting businesses, including with reference to the impact they can make on areas where productivity needs to catch up.

The Cabinet Office is reviewing the location of Government agencies and cultural institutions and will consider relocating them where they could help reinforce local clusters and support private sector growth. Recognising the importance of cultural and sporting institutions in making different places attractive

to people and businesses, this review of arms-length bodies will include cultural institutions, particularly where cultural assets could be better used and exhibited to support local areas – for example, the Government Art Collection.

We will support the creation of new educational institutions where they are needed, and support local networks of universities where they want to come together to improve commercial opportunities. We will also review whether there is more that can be done to leverage government and research council laboratories to drive local growth. We will work with local government to review how to bring more business expertise into local government, for example through the creation of a modern “Alderman” type of role within local government; and we will work with Local Enterprise Partnership (LEPs) to review their role in delivering local growth, examining how we can spread best practice and strengthen LEPs, including extending the support they receive from the What Works centre for Local Economic Growth. We will work with the new Mayoral Combined Authorities to build up their capacity in the run up to the first elections in May.



For those areas where responsibility is devolved to Scotland, Wales and Northern Ireland, we will both respect devolved arrangements, and endeavour to build on shared interests to deliver better outcomes for people in all parts of the United Kingdom. To this end, we propose establishing Ministerial Forums on Industrial Strategy with each of the Devolved Administrations. These will bring together all

relevant UK Government departments and the Devolved Administrations to consider how the Industrial Strategy can best address key productivity barriers in Scotland, Wales and Northern Ireland. This is an open invitation to representatives of each Devolved Administration to develop plans jointly with the UK Government to support all areas of the UK, and to align our economic plans and strategies closely.

Questions for consultation

1. Does this document identify the right areas of focus: extending our strengths; closing the gaps; and making the UK one of the most competitive places to start or grow a business?
2. Are the 10 pillars suggested the right ones to tackle low productivity and unbalanced growth? If not, which areas are missing?
3. Are the right central government and local institutions in place to deliver an effective industrial strategy? If not, how should they be reformed? Are the types of measures to strengthen local institutions set out here and below the right ones?
4. Are there important lessons we can learn from the industrial policies of other countries which are not reflected in these ten pillars?