

REPORT

# AN INDUSTRIAL STRATEGY THAT WORKS FOR THE UK

## FRAMEWORK & PRINCIPLES

Catherine Colebrook

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Institute for Public Policy Research



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This report is the first in a series of three from IPPR on low-carbon industrial strategy. The next two, to be published in spring 2017, apply the principles outlined in this paper to two key industries in the north of England – the energy intensive industries and the low-carbon goods and services industries. Updates on these reports will be posted on the IPPR website.



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# SUMMARY

## 60-SECOND SUMMARY

The UK economy has several deep structural issues. We are less productive than our peers in Europe, and progress at closing the gap has stalled since the 2007/8 financial crisis. The long-term erosion of our manufacturing base has contributed to a persistent trade deficit, and reduces the extent to which UK manufacturing firms benefit from a falling pound, or investment in major domestic infrastructure projects. Economic activity is increasingly concentrated in London and the South East, and many regions of the UK are yet to recover their pre-crisis levels of GDP per capita. And we are falling well short of our ambition to cut carbon emissions by 80 per cent relative to 1990 levels by 2050.

Against this backdrop, ‘industrial strategy’ has taken on the qualities of a panacea. With the inclusion of industrial strategy in the newly named business department, the government looks primed to launch a more interventionist, ambitious approach to economic policy.

Given the significance of the service sector for UK GVA, productivity and employment, industrial strategy should support innovation as it applies in a service sector context, in addition to technological breakthroughs, with an approach that encourages adoption as well as origination of innovations. The strategy should have a strong spatial dimension, and be determined at both the regional and national levels. Manufacturing should be supported in two ways: firms and research institutions developing new technologies should be supported, but so should less innovative firms with the potential to transition to more sophisticated products. Finally, the decarbonisation objective should underpin the entire strategy.

## KEY FINDINGS

There are several ways in which private markets, left unchecked, deliver sub-par outcomes, including the following.

- **Underinvestment in innovation:** economies don’t innovate to the extent that they should, because some of the benefits to that learning are not captured by the individual or firm that does the innovating.
- **Lack of coordination:** an uncompetitive endeavour for a single firm can be made economically viable by coordinating the activities of several firms in a ‘cluster’, but no one firm has the ability or incentive to create that cluster.
- **Short-term and risk-averse finance:** banks and venture capital funds alike do not offer sufficient finance to the riskier, innovative activities that it is in society’s interest to pursue.
- **Failure to capitalise on public (or publicly driven) demand:** the potential benefits to society of the demand generated by public policy decisions – such as the approval of a major infrastructure

project – are not fully realised, as UK firms are not necessarily configured to supply to them.

- **Lack of motivation to solve societal problems:** the private sector is not sufficiently motivated by market prices to solve the UK's biggest problems – such as climate change, an ageing population or regional decline.

These private sector failings do not necessarily imply that public intervention is the solution. Critics of industrial strategy tend to argue that public intervention carries two key risks:

- the 'waste' argument – that the public sector cannot know better than private markets which investments are worth making, resulting in a high risk of bad investments
- the 'rent-seeking' argument – that involvement of this kind risks capture by private interests.

However, **good policy design can help to overcome these risks.**

The risk of capture can be reduced, for example, through a clear statement from the government of its objectives and success measures. Built-in sunset clauses on any support extended to an individual firm can similarly alleviate that risk, and an emphasis on evaluation – making use of new data-generation and data-gathering techniques – allows for a much richer, real-time understanding of a given intervention's effectiveness than has been possible in the past, reducing the risk of both waste and rent-seeking.

## RECOMMENDATIONS

Given the UK's unique challenges, the best approach to industrial strategy would be a hybrid of the US-style 'liberal capitalism plus' and the Franco-German-style 'coordinated capitalism' industrial approaches, but with a broader definition of innovation and a sectoral coverage that goes beyond manufacturing to encompass services.

The core aims of industrial strategy should therefore be:

1. **To spur innovation to boost productivity, pay, and the quality of work:** industrial strategy should facilitate the adoption of existing innovations, particularly by the service sector, as well as the development of new ones. The definition of innovation should be broadened, to cover innovation as it applies in a service sector context, in addition to technological breakthroughs.
2. **To 'level up' growth and productivity in the regions and nations of the UK:** industrial strategy should have a strong spatial dimension, and be determined at both the regional and national levels.
3. **To grow the UK's manufacturing capabilities:** government should do two things – it should support firms and research institutions developing new technologies; and it should support firms further from the technological frontier, who have the potential to transition into product lines where quality commands more of a premium, or to supply to innovative firms.
4. **To put the UK on track to meet its decarbonisation targets:** the decarbonisation objective should underpin the entire strategy.

# 1. INTRODUCTION

The UK's decision to leave the European Union looks likely to subject the economy to a lengthy and profound economic shock. We don't approach it in the best of shape: our current account deficit, at 5.4 per cent of GDP in 2015, represents the largest deficit (in annual terms) since records began in 1948, and means we are reliant on inflows of foreign capital to balance the books (ONS 2016a). Despite six years of austerity, we continue to run a budget deficit of 4 per cent, while debt is 88 per cent of GDP (ONS 2016b).<sup>1</sup> And with manufacturing now just 10 per cent of GDP, we are overly reliant on an outsized and footloose financial sector for growth (ONS 2016c).

Against this backdrop, 'industrial strategy' has taken on the qualities of a panacea. It has been framed at different points as: a tool to convince incumbent manufacturers to stay in a post-Brexit UK; as a way of making sure the economy works in its population's interests and generates good jobs; and as the key to rebalancing economic activity more evenly across the country. By including industrial strategy in the title of a ministerial department (Department for Business, Energy and Industrial Strategy), the government has signalled its intention to step up its intervention in the economy.

In many ways this isn't the best moment in which to embark upon an ambitious new policy approach – not least because any significant injection of public money to implement the strategy would have to be borrowed. However, **the bringing together of energy and industrial strategy into one department presents a real opportunity to develop an ambitious industrial strategy that has the decarbonisation imperative at its core.** Even within the constraints of the current fiscal and economic context, there is still great potential to arrest and reverse some of the more disturbing trends in UK production, productivity and innovation over recent decades.

The UK government needs to design an industrial strategy that will meet the multifaceted challenges it faces, both as a result of new developments such as Brexit, and as a consequence of longstanding structural issues that have built up over time and are reflected in our twin trade and fiscal deficits. This paper outlines the desirable principles and objectives of an industrial strategy for the UK. The IPPR Commission on Economic Justice, launched this autumn to run for two years, will develop these initial ideas further.<sup>2</sup>

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1 Deficit figure is for financial year 2015/16; debt figure for year end 2015/16.

2 See <http://www.commissiononeconomicjustice.org/>

## 2. WHAT DOES THE UK NEED FROM AN INDUSTRIAL STRATEGY?

In order to understand what the UK needs from an industrial strategy, it is necessary to examine the UK supply side's particular challenges, and understand what role industrial strategy could play in solving them. We explore the main issues briefly below, but for a more detailed analysis of the UK's economic challenges, see Jacobs et al 2016.

### 2.1 PRODUCTIVITY, INNOVATION AND JOB QUALITY

When firms innovate – that is, they become more efficient by adopting new technologies or processes – they are able to produce more output, or serve more customers, with the same number of people. In other words, they become more *productive*. The rate at which productivity is rising is therefore a measure of how effectively the economy as a whole is innovating.

The UK has had a stubborn 'productivity gap' versus its peers in Europe for many years, requiring a larger workforce to produce the same level of output as France, Germany, the Netherlands and Belgium (Dolphin and Hatfield 2015). This is the case even on a sector-by-sector basis, so cannot be wholly attributed to the UK's more service-focused economy (ibid). Since the 2009 recession, productivity growth has slowed dramatically, and progress at closing the gap has stalled (see figure 2.1). The UK is not alone in experiencing disappointing productivity growth since the recession, but its performance is certainly towards the bottom of the league table: across the EU28 countries, only Greece, Italy, Finland and Denmark have seen productivity rise more slowly since 2010.<sup>3</sup>

Productivity growth is vital if living standards are to continue to rise. Wages and productivity are highly correlated (see figure 2.2): sustainable, non-inflationary wage increases are only possible if productivity is rising.

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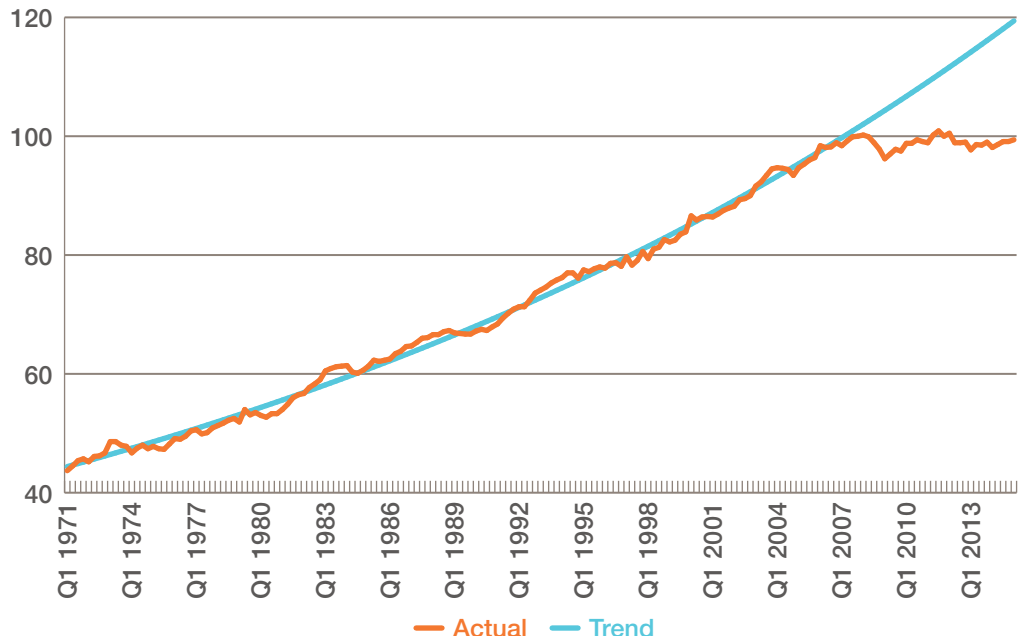
3 Eurostat data on labour output per hour worked: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdec310>



**FIGURE 2.1**

**Productivity growth has stalled post-crisis**

*UK output per hour (actual versus long-term trend), Q1 1971–Q1 2015 (2011 = 100)*

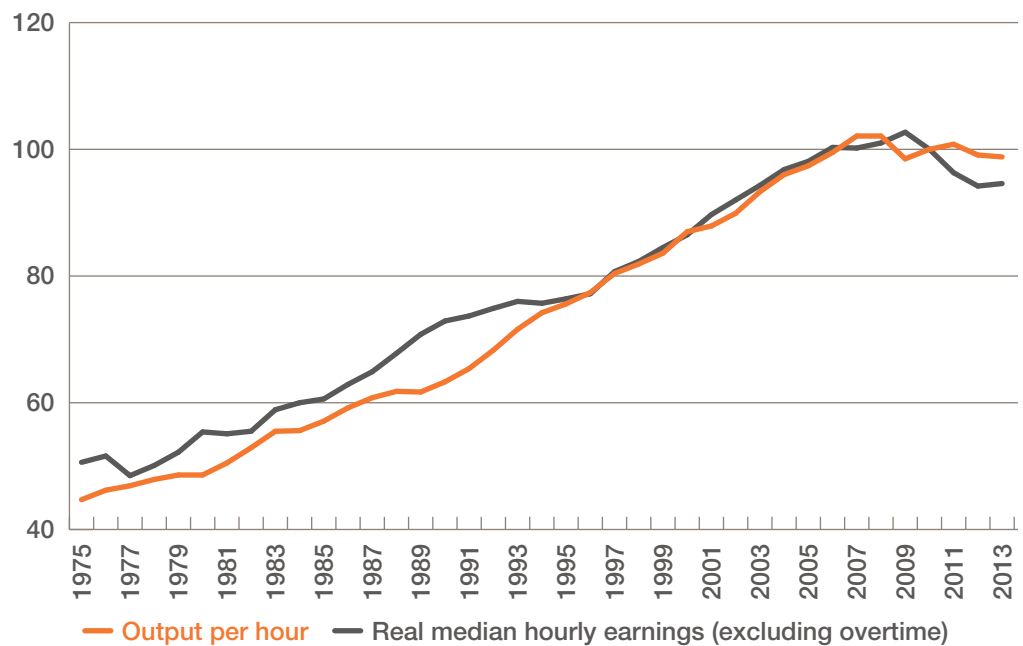


Source: IPPR calculations using ONS, 'Labour Productivity time series dataset' (ONS 2016d)

**FIGURE 2.2**

**Earnings track productivity growth over time**

*Output per hour and real median hourly earnings (excluding overtime), 1975–2013, UK, (2010 = 100)*



Source: ONS, 'UK Wages Over the Past Four Decades – 2014' (ONS 2014)

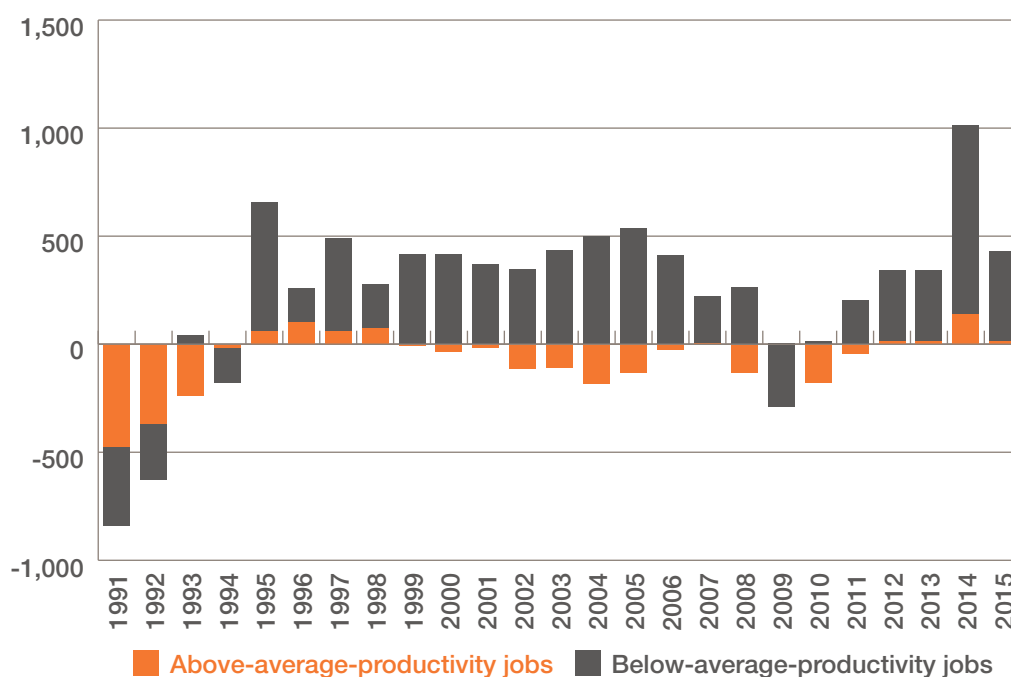
## 2.2 EROSION OF THE MANUFACTURING BASE

A key reason for the UK's disappointing productivity performance relative to its peers is the rate at which economic activity has shifted towards lower-productivity service sector work. Recessions have tended to hit the manufacturing sector hardest, with the sector generally recovering more slowly than the rest of the economy (Lawrence and Stirling 2016). This, coupled with generally high productivity growth in the sector, has meant that falling employment within the sector is a long-term trend. Manufacturing jobs now account for just 10 per cent of all employment, compared with 15 per cent in 2000 (ONS 2016e).

This shift to lower-paid, lower-productivity work has significant impacts on work quality, incomes and quality of life. It should be noted that its impact falls disproportionately on women, who are overrepresented within the low-wage sectors (Thompson et al 2016).

**FIGURE 2.3**

**High-productivity jobs have been lost during recessions, and low-productivity jobs have replaced them**  
*Job creation and destruction in sectors with above- and below-average productivity, 1991–2015*



Source: ONS, 'Workforce jobs by industry' (ONS 2016f), and IPPR calculations

The manufacturing capacity the UK has retained is much more dependent on imported inputs than its major competitors, because of depleted domestic supply chains (BIS 2012). This limits the extent to which domestic manufacturers can capitalise on the opportunities presented by large infrastructure projects such as the High Speed 2 rail link, Crossrail 2 and Hinkley Point C. It also means that an exchange rate depreciation does not have a wholly positive impact on exporters, since it pushes up the cost of the inputs they require from overseas (ibid).

Over the coming years, public and private investment in major infrastructure projects will create domestic demand for goods and services, while the government will continue to spend billions on the NHS, which is the country's biggest procurer of pharmaceuticals, medical technologies and equipment. Currently, though, the UK is not geared up to reap the economic and societal benefits of these public expenditures due to the lack of relevant domestic supply chains.

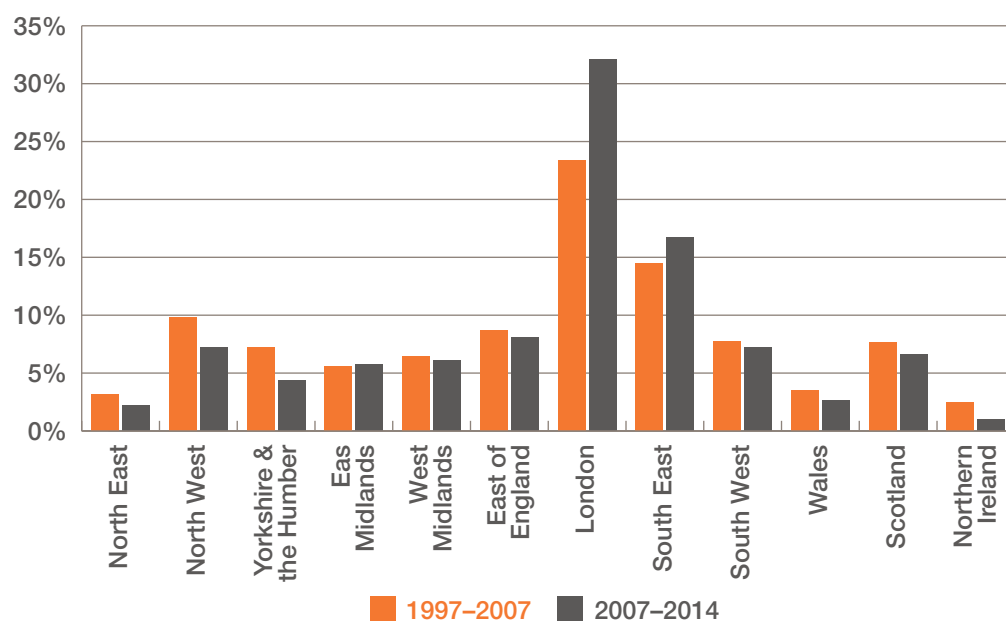
The country's reliance on imported goods means that our considerable trade surplus in services is dwarfed by our goods trade deficit, which has exceeded 2 per cent of GDP for 14 of the past 15 years (Jacobs et al 2016). With three out of four components of the current account now in deficit, the UK is particularly vulnerable to a weakening in domestic economic conditions (ibid).

### 2.3 REGIONAL GVA, PRODUCTIVITY AND INCOME DISPARITIES

One consequence of the shift from manufacturing to services is that economic activity – and therefore prosperity – has become increasingly concentrated in London and the South East. Several regions, including Northern Ireland, Yorkshire and the Humber, and the West Midlands, are yet to recover their pre-crisis levels of GDP per capita (Haldane 2016). National economic indicators now provide next to no insight into what is happening in these regions of the UK that have been 'left behind' economically. The boost provided to the national figures by London is such that ministers can boast of the strength of the UK economy even as these economic fissures continue to widen.

**FIGURE 2.4**

**The geographical concentration of growth has increased**  
*Share of nominal GVA growth by region, per cent*



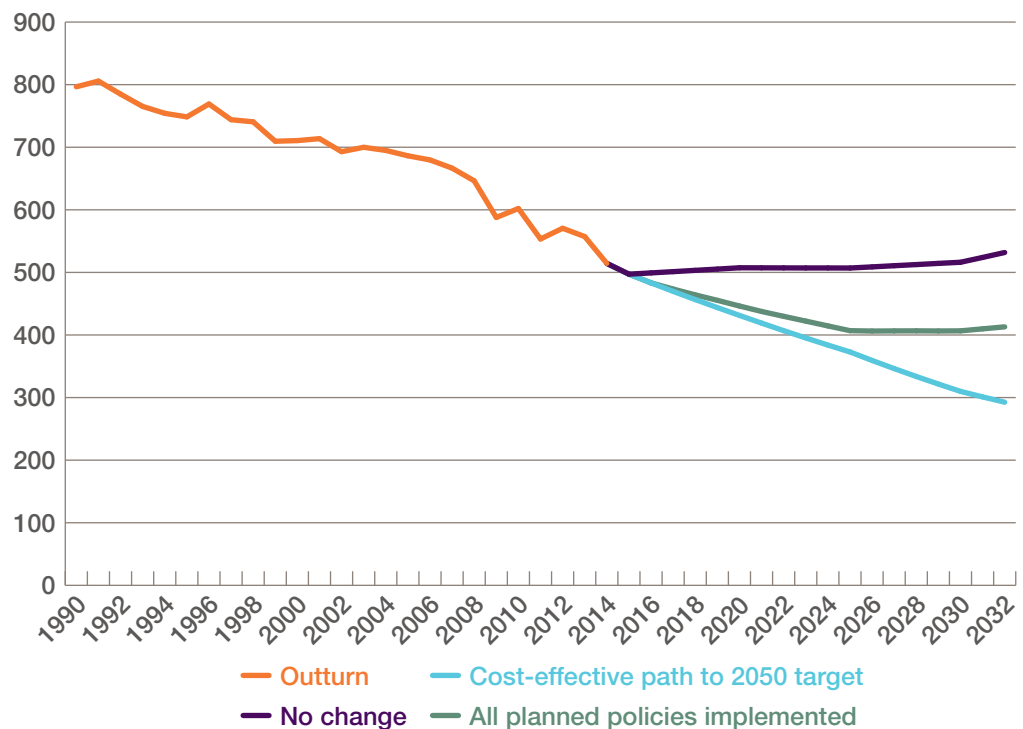
Source: Bowman et al, 'Reframing industrial policy' (Bowman et al 2014)

## 2.4 SLOW PROGRESS TOWARDS DECARBONISATION

The UK has a pressing need to decarbonise at a rapid rate between now and 2050. On the basis of current policy, the UK looks highly unlikely to meet its statutory emissions targets for 2030. New green sectors will need to innovate and grow at a much faster rate than they have done to date, and take-up of existing technologies will need to accelerate if a step change in progress is to be achieved.

**FIGURE 2.5**

On current projections, we are likely to miss our decarbonisation targets  
*UK greenhouse gas emissions (MtCO<sub>2</sub>e\*), actual (to 2014) and projected (from 2015), 1990–2032*



Source: Climate Change Committee, *Meeting carbon budgets* (CCC 2016)  
 \*Note: 'MtCO<sub>2</sub>e' = 'Million tonnes of carbon dioxide equivalent'.

## 2.5 INSUFFICIENT TAX REVENUE GENERATION

The UK public finances are unsustainable in the long-term on current policy. Over the next 30 to 40 years, the number of taxpaying workers will fall relative to the number of dependants, and the health and social care costs associated with an elderly population will rise, meaning spending will exceed government income by more each year, and the deficit will rise (OBR 2015). This is true even under a conservative assumption of unchanged spending policy (ibid). Transforming the UK's supply side, so that it generates more profit and therefore higher tax revenues per head of population, must be one element of the government's response to this challenge.

### 3.

## DEFINING 'INDUSTRIAL STRATEGY'

#### APPROACHES TO INDUSTRIAL STRATEGY

What is industrial strategy? In truth there is no single definition: its meaning has altered over time, and it still means different things in different contexts.

In the UK and other European countries prior to the 1980s, the traditional definition of industrial strategy (or policy) was one of 'command-and-control' state intervention: supporting incumbent manufacturing industries through subsidies, planning agreements with large firms to attempt to secure investment commitments over the long term, and public ownership of firms (Coates 2014). By helping uncompetitive incumbents to stay afloat, it decelerated structural change, and slowed technological progress, and it is ultimately judged to have been a failure in the UK (Aiginger 2014). It is highly unlikely to be an effective approach for the UK to adopt today: even in the much less globalised context of the 1970s, the government struggled to exert the level of control it would have liked over multinational firms such as Chrysler and Ford (Coates 2014).

More recently, countries with developed economies and a history of public intervention in the private sector, such as Germany and France, have adopted a model of 'coordinated capitalism' (Coates 2014), acting to support and develop their existing industrial bases while remaining economically open and non-protectionist. Aspects of this approach include strong government-business relationships to shape industrial development in major sectors, the championing of firms, including through the provision of finance, and national- and regional-level ownership of large enterprises.

The US has adopted what could be termed a 'liberal capitalism plus' approach: it tends to restrict its interventions to very targeted (but significant) support for early-stage innovation, although in crisis periods it has done more to assist individual sectors, staging rescues of both the financial and automotive sectors in the wake of the 2007/8 financial crisis.<sup>4</sup> In normal times, this narrow form of industrial strategy won't 'shift the dial' on the structure of the economy, at least, not in the short-term, but it can tackle specific market failures and develop a niche in particular nascent technologies (Mazzucato 2013).

In the UK, after the unsuccessful industrial policies of the 1970s, successive Labour and Conservative governments had concluded that 'liberal capitalism' was the best system for nurturing a dynamic,

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<sup>4</sup> See <https://www.whitehouse.gov/economy/jobs/rescuing-the-american-auto-industry>

productive economy. Government should stand aside by minimising red tape, providing a stable, low-tax environment and focusing on horizontal policies, such as investment in infrastructure and education, that – in theory at least – do not favour one activity, industry or region over another. This could also be described as a form of industrial strategy, though a relatively non-interventionist one.

**TABLE 3.1**  
An industrial strategy typology

Type of industrial strategy	Policies it implies in practice	How success could be measured
<b>Command and control:</b> interventions to support incumbent industries	<ul style="list-style-type: none"> <li>Public ownership of firms (including through nationalisation)</li> <li>Planning agreements with individual firms to secure commitments on future investment and job creation</li> <li>Sector-specific subsidies to encourage investment</li> <li>State rescue of struggling firms</li> </ul>	<ul style="list-style-type: none"> <li>GDP/GVA growth (both national and regional)</li> <li>Business investment</li> <li>Manufacturing sector growth</li> <li>Employment (national and regional)</li> <li>Exports</li> </ul>
<b>Coordinated capitalism:</b> nurturing and building on existing supply-side strength	<ul style="list-style-type: none"> <li>Public investment banks that provide finance to small and medium-sized businesses</li> <li>(In Germany's case) a strong regional dimension to public investment decisions, through a network of regional public banks</li> <li>State ownership of companies (e.g. France's ownership of EDF and SNCF; Germany's ownership of Deutsche Bahn and part-ownership of Volkswagen)</li> </ul>	<ul style="list-style-type: none"> <li>GDP/GVA growth (both national and regional)</li> <li>Business investment</li> <li>Sectoral diversity</li> <li>Employment (national and regional)</li> <li>Productivity growth</li> <li>Wage growth</li> <li>Exports</li> </ul>
<b>Liberal capitalism plus:</b> public intervention limited to nurturing innovation, in normal times	<ul style="list-style-type: none"> <li>State-run research programmes</li> <li>Public research and innovation institutions that have an ongoing dialogue with business and universities to develop an understanding of which interventions would be most effective</li> <li>Public investment in early-stage research identified as promising/essential</li> <li>State rescue of firms in extreme circumstances</li> </ul>	<ul style="list-style-type: none"> <li>Short-term: innovation activity (patents, or reductions in specific process or production costs)</li> <li>Over the long-term: GDP growth; productivity; wages</li> </ul>
<b>Liberal capitalism:</b> government standing aside to foster growth	Horizontal policies: <ul style="list-style-type: none"> <li>Stable macroeconomic frameworks</li> <li>Low business taxation</li> <li>Tax reliefs on investment and research</li> <li>Deregulation</li> <li>Favourable business environment (e.g. high-quality infrastructure; skilled workforce)</li> </ul>	<ul style="list-style-type: none"> <li>GDP growth</li> <li>Business startups and churn</li> <li>Business investment</li> <li>Employment</li> </ul>

It is important to note, though, that horizontal policy interventions, such as spending on infrastructure, education or generic research subsidies, are rarely – if ever – sector-neutral (Stiglitz et al 2013, Khan 2014). To give just a few examples: R&D tax credits disproportionately benefit those industries such as pharmaceuticals for which R&D is an especially large fraction of expenditure; pursuit of a light-touch regulatory environment benefits the more regulated industries, such as food and drink manufacture; use of quantitative easing has benefited the banking sector; and the use of public procurement to drive outcomes will have the biggest impact on the healthcare sector, where public expenditure accounts for more than 80 per cent of demand (BIS 2012).<sup>5</sup>

These contrasting definitions imply a different set of policy interventions and success measures, and they target different economic activities or sectors. A few of the key differences between industrial strategies are explained in table 3.1.

### **3.2 RECENT HISTORY OF INDUSTRIAL STRATEGY IN THE UK**

After the experiences of the 1970s, successive UK governments on both the right and left had – until the global financial crisis and ensuing recession – chosen to intervene as little as possible in the supply side of the economy, restricting themselves to horizontal policies only. This decision was made on the twin fears that: first, the public sector was not able to make better judgements than the market on the sectors or firms most likely to succeed; and second, the public sector was vulnerable to capture by corporate interests if it did extend support to individual firms.

This approach began to shift towards the end of the Labour government when in January 2009 the then business secretary Peter Mandelson agreed a post-crisis £2.3 billion rescue package for the car industry (Radice 2010). In the same year, the Department for Business, Enterprise and Regulatory Reform (BERR) published a low-carbon industrial strategy, developed in response to the 2006 Stern review of the economic impacts of climate change, and the subsequent commitments to reduce carbon emissions made with the 2008 Climate Change Act. This led to interventions to support low-carbon firms, including offshore wind, electric car and nuclear manufacturers, and the establishment of the Energy Technologies Institute (HMG 2009, Radice 2010).

The 2010–2015 Coalition government retained some, but not all, of these measures. It undertook a thorough review to select 11 sectors<sup>6</sup> that it judged had the greatest potential, including enabling sectors such as the ‘information economy’ (BIS 2012, BIS 2013a). The Coalition also supported the commercialisation of new innovations through the Catapult network,<sup>7</sup> and the building of domestic supply chains via the Advanced Manufacturing Supply Chain Initiative (BIS 2015). However, perhaps inevitably given the fiscal context, the public capital committed to the

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5 For the 80 per cent healthcare figure see Nuffield Trust ‘NHS in numbers’ web page: <http://www.nuffieldtrust.org.uk/nhs-numbers-0>

6 The 11 sectors identified were: Aerospace; agricultural technology; automotive; construction; information economy; international education; life sciences; nuclear; offshore wind; oil and gas; professional and business services.

7 See <https://www.catapult.org.uk/>

funding of new innovations was limited (Berry 2016, Nesta 2016). Much of the Coalition's strategy was dismantled with the change in government in 2015, although the Conservative government has retained the Catapult centres. Fundamentally, the prevailing orthodoxy among policymakers has remained unchanged: government cannot do a better job than the market of directing investment and innovation activity, and shouldn't try.

In one of his first speeches on the subject, the new business, energy and industrial strategy secretary, Greg Clark, said that 'many of the policies and decisions that form our industrial strategy will not be about particular industries or sectors, but will be cross-cutting' (Clarke 2016a). However, recent efforts by the government to reassure carmaker Nissan that it could invest in expanding its Sunderland plant without fear of tariffs as a result of Brexit suggest the government may feel compelled to offer more specific, reactive support as the period of referendum-induced uncertainty persists. The risk is that support of this kind is allocated to incumbents out of a motivation to preserve jobs, rather than as an outcome of a strategic vision about the low-carbon, innovative sectors the government should be promoting as part of a long-term industrial strategy.



# 4. THE CASE FOR GOVERNMENT INTERVENTION IN MARKETS

## 4.1 REASONS WHY FREE MARKETS DELIVER SUB-PAR OUTCOMES

There are a number of ways in which private sector markets, left unchecked, may deliver undesirable outcomes when it comes to investment choices.

### 1. Underinvestment in innovation

Living standards are raised when an economy acquires new knowledge, or 'learns' (Stiglitz et al 2013). However, economies don't learn to the extent that they should, because some of the benefits to that learning are not captured by the individual or firm that does the learning. In economic language, there are 'positive externalities', or spillovers, to investing in learning (or innovation), which means that investment by firms in developing new knowledge is lower than we as a society would like.

Even when the private returns would justify an investment in developing a new technology, the market does not tend to provide a clear indication of those returns (Aghion et al 2011). This uncertainty is distinct from the concept of 'risk' – which acknowledges a range of possible outcomes with different probabilities – because the situation has no precedent: it is unique (Knight 2012). A lack of information may dissuade a firm from undertaking such development projects – particularly given the positive externalities to successful innovation, described above – which again means they happen less often than we as a society would like.

### 2. Lack of coordination

An uncompetitive endeavour for a single firm can be made economically viable by coordinating the activities of several firms in a 'cluster' (Dolphin 2014). Clustering allows firms to specialise in a narrower element of the production process, which can make each individual activity more viable and less risky for the individual firms (Stiglitz et al 2013). No one firm acting alone, however, has the incentive or ability to create that cluster, since the benefits to doing so would be shared among all firms in the cluster, and wider society.

### 3. Short-term and risk-averse finance

Banks tend to favour businesses with a demonstrable track record or collateral (such as real estate) (Sawyer 2014), which means that startup businesses without collateral have to look to alternative sources of finance, such as venture capital funds (VCFs) or business angels, to take their ideas forward.

But there are levels of uncertainty that even 'risk-loving' VCFs cannot tolerate – particularly at the earliest stages, before the commercial viability of a new product has been established (Mazzucato 2013). Further, VCFs

tend to favour investments with low capital intensity, since they reduce the cost of investing, and have a bias towards projects that are likely to become commercially viable within three to five years, since early exit brings high returns and a track record that makes future fundraising easier (ibid). All of these conditions mean that there is a funding gap that is not met by private sources, but which it would be in the public interest to close.

#### **4. Failure to capitalise on public (or publicly driven) demand**

Investment in major infrastructure projects, by either the public or the private sector or some combination of the two, serves two purposes: it enables growth by ensuring that businesses can communicate, transport their goods, and power their operations; and it creates new demand for goods and services, which could be met by UK firms. Similarly, government expenditure, most significantly on the NHS, but also via its broader procurement activities, creates demand for the goods and services that UK firms could fulfil.

Currently, however, UK firms do not reap the benefits that they could from these opportunities. This is partly a consequence of the country's depleted supply chains limiting the extent to which they can meet this demand. However, it can also be attributed to public decision-making processes that do not place a sufficient weight on the broader, long-term benefits to society of awarding a contract to a UK-based firm that uses domestic supply chains.

A good example of this would be the recent decision to award construction and management of the Hinkley Point C nuclear power station in Somerset to the French energy company EDF, working with a Chinese partner, CGN. Although EDF claims that 64 per cent of the project's value will be spent in the UK (EDF 2016), the fact that the French government is EDF's majority shareholder is likely to mean that the company will also want to share the economic benefits of the project with French suppliers.<sup>8</sup> There are similar supply chain opportunities as a result of the forthcoming expansion of Heathrow, and the High Speed 2 rail link – projects whose wider benefits to the UK would be greatly enhanced if they were able to source the products and services they need domestically.

#### **5. Lack of motivation to solve societal problems**

Perhaps most importantly, the private sector is not sufficiently motivated by market prices to drive forward the innovation and investment needed to solve the UK's biggest problems, such as climate change, an ageing population or regional decline.

When it comes to investments in developing green technologies, the benefits to the world at large of learning how to produce energy or conduct an industrial process more cleanly – that is, the 'positive externalities' – are not reflected in the private returns to an innovator or investor, which means insufficient progress towards decarbonisation targets in the absence of some external direction or motivation.

In the same way, firms do not reap the social benefits of locating in a deprived area (except to the extent that their costs, for example of land and labour, are lower), and so are unlikely to factor in those benefits when deciding where to locate. Similarly, investors are unlikely to

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<sup>8</sup> See <https://www.edf.fr/en/the-edf-group/dedicated-sections/finance/financial-information/the-edf-share/shareholding-structure>

prioritise supporting firms in deprived areas if their primary interest is in making a profit.

#### 4.2 IS PUBLIC INTERVENTION THE ANSWER?

Of course, identifying a deficiency in the way private markets function is one thing; being confident that public intervention could solve it satisfactorily is quite another. There are very good reasons – the UK’s own past experience included – to believe that public involvement at the firm or sector level carries its own risks, which may or may not outweigh the potential benefits to intervention.

Scepticism that public involvement is the answer tends to take two forms: first, that the public sector cannot know better than private markets which investments are worth making, which means it is destined to make inferior investments (the ‘waste’ argument); and second, that involvement of this kind is particularly vulnerable to capture by private interests, which make it more difficult for the public sector to extract itself from an intervention even when the evidence points to it not being effective (the ‘rent-seeking’ argument). Industrial strategy is therefore about weighing the effects of non-intervention with these risks of intervention.

We cannot know for certain that these pitfalls can be overcome in the UK context. However, good policy and programme design could reduce the risk of undesirable outcomes:

- a clear **statement from the government of its objectives and success measures**, both at the strategic level for the programme as a whole and when it makes a specific intervention, would reassure the public that its money was being well spent, and allow for external scrutiny of the intervention, reducing the risk (or the perception) of capture (Rodrik 2014a).
- built-in **sunset clauses** on any help extended to individual firms could force the public sector to evaluate how successful an intervention has been, and compel it to make a convincing case if it wanted to renew the assistance (ibid).
- an emphasis on **evaluation**, making use of new data-generation and data-gathering technologies, would allow for a much richer, real-time understanding of a given intervention’s effectiveness. These technologies allow the public sector to be much better-informed about the impact of a given policy than it was possible to be in the past, and would help it to extract itself in a timely manner if it became apparent that an intervention was not having the desired effect. This would reduce the need for government to be ‘omniscient’ in order to be effective (Warwick and Nolan 2014, Khan 2014). Conversely, industrial interventions often only demonstrate results over a long-time horizon; a well-designed evaluation could take this into account, and give the public sector the space to allow an intervention to have impact.

# 5. AN INDUSTRIAL STRATEGY FOR THE UK

As detailed in this paper's previous chapters, the UK supply side has a range of problems. Productive jobs have been replaced by less-productive jobs; our manufacturing sector has become less diverse and less complex; growth is increasingly concentrated in London and the South East; and we are failing to face up to our two biggest challenges to date: the need to decarbonise, and to sustain an ageing population.

## 5.1 AIMS OF A UK INDUSTRIAL STRATEGY

The core aims of industrial strategy should therefore be as follows.

1. **To spur innovation to boost productivity, pay and the quality of work.**
2. **To 'level up' growth and productivity in the regions and nations of the UK.**
3. **To grow the UK's manufacturing capabilities.**
4. **To put the UK on track to meet its decarbonisation targets.**

### 1. To spur innovation to boost productivity, pay and the quality of work

The UK is overwhelmingly a service economy: services – of both the tradeable and non-tradeable kind – now account for 79 per cent of UK output (ONS 2016h). This means any effort to boost whole-economy productivity – and tax revenues – will have to encompass the service sectors. The question is whether this is an appropriate goal for industrial strategy, which has tended to focus on the manufacturing sector, even in countries practising 'coordinated capitalism'.

There is a recognition among academics and policymakers that it makes sense in a modern economy to broaden out the sectoral scope of industrial strategy to activities beyond manufacturing (see for example Rodrik 2004, BIS 2012). The types of market failure and sub-par outcome described in chapter 5 are not restricted to the manufacturing sector – in fact as recent IPPR work has shown, the retail, wholesale, creative and hospitality sectors all face specific challenges to raising their productivity that merit government attention (Thompson et al 2016, Straw and Warner 2014).

Further, sectoral distinctions have less and less meaning as the nature of production changes, and service provision becomes a larger part of what manufacturers offer (so-called 'manuservices'). Rolls-Royce, for example, makes more than 50 per cent of its revenues from the servicing of aircraft engines (Pitelis 2014).

There is a broader argument for intervening in the service sectors. These are the sectors that account for the majority of employment in the UK, and

therefore improving the quality of work in those sectors is a prerequisite for bringing about a step change in living standards and quality of life for UK residents, and for reducing inequalities across gender and ethnicity. By shifting the labour force from unproductive, low-wage work into more productive, higher-skilled and higher-paid work, we will be increasing the social returns to growth, as well as reducing the cost to the public purse of subsidising low pay. This should be a core objective of any government.

The fact that some UK service sectors lag behind their equivalents in Europe suggests that the technologies and processes to boost productivity already exist, and that the challenge is largely one of adoption (Thompson et al 2016). This suggests that the ‘liberal capitalism plus’ approach to industrial strategy described in table 3.1, which focuses solely on nurturing new innovation, would not be a sufficient response to the UK’s productivity problem, although boosting new innovations should undoubtedly form a part of the UK’s industrial strategy.

**Conclusion: Industrial strategy should facilitate the adoption of existing innovations, particularly by the service sector, as well as the development of new ones. The definition of innovation should be broadened, to cover innovation as it applies in a service sector context, in addition to technological breakthroughs.**

#### *Policies this implies in practice*

There is international precedent for broadening out the focus of industrial strategy in this way. In Finland, the innovation agency Tekes promotes innovation in ‘service-related design, business and social innovations’ as well as technological innovation. The agency aims to improve the quality of working life, in addition to boosting GVA and productivity.<sup>9</sup> As an example, Tekes’ ‘Business, Productivity and Joy at Work Programme’ aims to help businesses renew their operations by improving their management processes and organisational structures, encouraging better utilisation of their employees’ skills, and helping them make better use of IT and networks.<sup>10</sup>

One policy ‘push’ that can encourage firms to become more efficient is an artificial wage floor. Set high enough, one effect of a minimum wage is to speed up the process of technological adoption, by increasing the price of workers relative to technology. The introduction of the National Living Wage in April 2016, at a higher level than the National Minimum Wage (NMW), signalled the government’s intention to accept a loss of employment in order to achieve this transition – something the previous NMW-setting process had been careful to avoid. However, imposing a high minimum wage is a blunt policy tool that, in the absence of accompanying ‘pull’ factors to educate and encourage firms to improve their efficiency, could simply lead to suppression of other forms of worker benefit, or to price increases (Thompson et al 2016).

Regardless of how it is achieved, faster rates of innovation will speed up the pace at which the labour market creates and destroys jobs, and in general, the jobs destroyed will be low skill. This means there

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9 <https://www.tekes.fi/en/tekes/>

10 <https://www.tekes.fi/en/programmes-and-services/tekes-programmes/liideri/>

is also a role for government in ensuring that displaced workers, and particularly those losing low-paid service sector jobs, are able to re-skill and take up new work as the labour market evolves. The skills system should take a central role in helping people transition from one occupation to another – but currently it falls short, particularly when it comes to helping those who lack basic skills, or are in low-paid work (IPPR 2017 forthcoming). This should be a priority for the UK's industrial strategy, and will require close joint work between the Department for Education and Department for Business, Energy and Industrial Strategy.

Access to the international pool of skills is also key to nurturing higher productivity among UK firms. This means that the UK's immigration policy upon exit from the EU should ensure that migrants with the specific skills the UK economy needs to innovate are able to enter the UK to work, conduct research, or start businesses.

Service sector firms – and particularly those characterised by low wages – tend to be less capital intensive than the manufacturing sector, and benefit from infrastructure and other investments in different ways (Thompson et al 2016). The digital infrastructure to support information and communications technology (ICT) is particularly important for service sector productivity (ibid). Given the significance of the service sector for whole-economy productivity, the government should prioritise infrastructure investments with these distinct needs in mind.

## **2. To 'level up' growth and productivity in the regions and nations of the UK**

Academic opinion is divided on whether industrial strategy should be place-based (that is, region-specific) or people-based (that is, spatially-blind) in order to get the best results.

Those in favour of a people-based (and therefore spatially-blind) industrial strategy would argue that the market finds the best place to locate a given activity, and if both capital and labour are mobile, then this is the outcome that best benefits people, since they can move to where their skills are in highest demand (World Bank 2009). Although the outcome in the short term would be a concentration of activity, this would force local land prices and other costs upwards and make less prosperous regions more attractive to potential investors, meaning that there would eventually be regional convergence, and a more even distribution of wealth and resources.

But it could be argued that such an approach has dominated in the UK for the past 30 years, with the exact opposite result: activity is increasingly concentrated in London and the South East with all the pressures on housing and infrastructure that brings. Regions distant from London, in contrast, languish in a low-growth, low-productivity equilibrium, with an overreliance on the public sector for employment. The UK's yawning regional disparities are the strongest reason to adopt a decentralised approach: top-down economic governance only works well when the country in question is relatively homogeneous (McCann 2016).



Further, in the same way that supposedly sector-neutral policies do in fact often benefit some sectors more than others, a ‘spatially-blind’ industrial strategy unwittingly benefits some regions more than others, since the types of activity set to benefit from industrial policies are likely to be geographically concentrated already (Barca et al 2012). For example, measures to promote investment in aerospace would have a disproportionate benefit to the South West, Lancashire and Derby, since that is where the majority of firms in the aerospace sector are based. And spending on transport infrastructure has long been biased towards London and the South East, even accounting for population differences: London will receive £1,870 per capita on transport infrastructure between 2016/17 and 2020/21, compared with £280 per capita in the North of England (IPPR North 2016).<sup>11</sup>

Perhaps more importantly given the need to ensure that the public sector gets value for money, there is tentative evidence that industrial policies are more effective when administered at the local rather than national level (Aghion et al 2011), meaning that designing and administering such policies at the local level is likely to be a more efficient use of public money. Modern interpretations of industrial strategy put a strong emphasis on the need for policymakers to be embedded in the activities or firms they support, and for the two actors to have an ongoing dialogue in order to have a full understanding of which interventions are working; this again suggests a regionalised approach to policy (Rodrik 2004).

As noted above, the spatial distribution of economic activity in the UK, and our ability to cluster complementary activities, is fundamental to our comparative advantage (Dolphin 2014, Carbon Trust and Vivid Economics 2015). There is also evidence that proximity is key to generating innovation spillovers, particularly in the low-carbon sectors, with new patents tending to cite existing patents registered nearby (Zachmann 2016). One result of our loss of manufacturing capacity is that we don’t have the supply chains to take on the manufacture of innovative new products once we have created them (Dolphin 2014, Khan 2014).

The incoming business, energy and industrial strategy secretary, Greg Clark, acknowledged the need for a spatial approach to industrial strategy in one of his first speeches on the subject (Clarke 2016a). The question is how to select and coordinate national priorities and regional ones. We will still need national-level policymakers to decide how best to support activities of national significance, but often the most significant industries at a local level – and the ones deserving of policy attention – will not be nationally significant. Conversely, should industrial policymakers be left to operate at the regional level without any national coordination, multiple regions could all decide to focus on nurturing and attracting the same type of activity, to the detriment of overall policy effectiveness.

In selecting which sectors and activities to support, at both the regional and national levels, the public sector will inevitably need to prioritise. The original criteria that the Department for Business, Innovation and Skills adopted in selecting its 11 priority sectors included their future prospects, and in particular their potential to generate increased value-

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<sup>11</sup> The figures show what the government plans to spend on transport infrastructure between 2016/17 and 2020/2021. Only spending that includes public funding is used – projects either publicly funded, or funded by a combination of public and private funding.

added and employment, and the extent to which they faced barriers to growth that government could help to remove (BIS 2012). These criteria are sensible, but as they are spatially-blind, they don't guard against regional 'cold spots'.

**Conclusion: Industrial strategy should have a strong spatial dimension, and be determined at both the regional and national levels.**

*Policies this implies in practice*

We would argue that each economic region should have the power to determine its own priority sectors, and that control over the resources needed to shape regional economies should be devolved.

A devolved immigration policy upon exit from the EU could hand regions the power to determine the right level of inward economic migration given their skills needs.

Finally, part of national government's role as a shaper of markets should be to create the incentives that shift activity to less prosperous areas of the country – which could include relocating more of its own activities from London.

**3. To grow the UK's manufacturing capabilities**

Government cannot significantly counter the trend towards low value-added tradeable activities moving to the emerging markets. Our labour, land and energy costs are structurally higher, and our resource-intensive production industries cannot compete (Carbon Trust and Vivid Economics 2015, Rodrik 2014b). It would be futile, therefore, to use industrial policies to attempt to arrest this element of de-industrialisation.

However, the UK can capitalise on its skilled labour force, access to international capital and supply chains, and proximity to a first-adopter consumer market, to become a hub for new product and process innovations – activities in which we have a comparative advantage relative to emerging markets (Carbon Trust and Vivid Economics 2015). In short, we should take the 'high road' of competitiveness when it comes to production, competing on quality rather than cost grounds (Aiginger 2014).

It is also an imperative for environmental reasons that we support our domestic manufacturing capabilities to become more innovative: manufacturing contributes disproportionately to the reduction of energy and resource consumption, and to reducing greenhouse gas emissions (MGI 2012).

There is no reason to assume that our manufacturing sector as a whole could not begin to grow again by following this approach, if growth in high-value production were to outpace falls in low-value production. Further, growth in high-value activities is likely to boost demand for the UK's lower-value manufacturing activities up the supply chain, particularly if there is a benefit to having proximate, responsive suppliers, which is increasingly the case (McCann 2016). These potential suppliers should be assisted so that they can take advantage of these opportunities (Lawrence and Stirling 2016).



**Conclusion: Government support for manufacturing should take two forms: it should support firms and research institutions developing new technologies, and it should support firms further from the technological frontier, who have the potential to transition into product lines where quality commands more of a premium, or to supply to innovative firms.**

*Policies this implies in practice*

The policies that help to promote new innovation activity are well documented, and include direct public funding of basic research; research subsidies (for example via tax credits); a public equity stake in new innovations; facilitation of an innovation ‘ecosystem’ by convening networks and clusters of activity; and use of the public sector as a driver and source of demand (see for example Mazzucato 2013, Nesta 2015). Forthcoming IPPR publications will explore interventions targeted at the low-carbon industries in more depth.

There is less of a consensus around the appropriate level of intervention to help transitioning industries, but recent IPPR work suggests interventions could include advice and financial support for firms with the potential to integrate into advanced manufacturing supply chains, and investments in the buildings, networks and infrastructure that could facilitate cluster formation and growth (Lawrence and Stirling 2016). Again, forthcoming research by IPPR will conduct a more detailed exploration of the policy opportunities for energy-intensive firms.

Given the importance of imported inputs for manufacturing, and the potential benefits to UK firms of having access to new technologies being developed in other countries, the UK should seek to retain low trade barriers as it negotiates an exit from the EU.

**4. To put the UK on track to meet its decarbonisation targets**

The motivations described in chapter 4 behind the need for an industrial strategy are particularly true in the case of low-carbon investment. The positive externalities to green investment include the societal benefits of reducing our impact on the climate, as well as all of the spillover benefits of R&D. However, because carbon is significantly underpriced, the market does not account for these societal benefits, meaning green innovation is lower than is optimal for society without public intervention (Rodrik 2014a).

Perhaps more than any other sector, low-carbon sectors merit public support to ensure they innovate and grow at a sufficient pace. Innovation is path-dependent, meaning that in the absence of intervention, firms will build on existing ideas to innovate, which, given that historically innovation has tended to be of the ‘dirty’ rather than the ‘clean’ variety, means a bias towards dirty over clean innovations (Aghion 2011).

Successive governments have long expressed a desire to nurture a successful low carbon and environmental goods and services sector (LCEGS), but often this has existed alongside a desire to preserve and promote its high-carbon counterparts. For example, the oil and gas sector was one of the 11 priority sectors selected by BIS in 2012, with the aim of promoting ‘the UK’s advantage in the oil and gas sector and increase exports, helping to create jobs and growth’ (BIS 2013b). Policy

contradictions, and policy inconsistency, both make it more difficult for the UK to make progress towards its decarbonisation goals.

This is the case even when a particular sector bridges high- and low-carbon markets, such as the automotive industry. The UK is a major producer of cars and, relatedly, currently has a revealed comparative advantage (RCA) in electric vehicle production. However, the rate at which the UK's electric vehicle sector is innovating (as illustrated by its patent intensity) suggests we aren't developing our technological expertise at the desired rate if we are to continue to perform well in this type of low-carbon product manufacturing, and that other car producers, such as France and Germany, are doing much better (Bruegel 2016). In fact, of the four technologies that Bruegel identifies as being essential for the low-carbon transition – electric vehicles, batteries, wind turbines and photovoltaic cells – the UK displays a technological specialisation in only one of them: wind motors, and the degree of specialisation is slight (ibid).

The automotive sector looks to have been one of the first sectors to receive assurances from government that Brexit will not have an adverse effect on its UK operations. We don't know the detail of those assurances, but it seems unlikely to have been conditional on the firm in question, Nissan, prioritising low-carbon innovation as it expands its operations in the UK – although one of the assurances the business secretary provided to Nissan was that the government 'would maintain a strong commitment to research and development, in particular the take-up of ultra-low emission vehicles' (Clarke 2016b).

Infrastructure investment choices can also present policymakers with a dilemma. For example, policymakers could conclude that a road transport investment would deliver the biggest boost to a particular cluster of activities (road infrastructure has been found to deliver the largest economic impacts of all the major categories (Melo et al 2013) – but road is the most carbon-intensive mode of freight transport, after air (IPCC 1999). The ongoing controversy around airport expansion in the south east of England is another example of the growth–decarbonisation dilemma.

As the government implements a new industrial strategy, the decarbonisation objective will continue to sit in tension with the desire to promote economic growth of any kind, and to preserve jobs in incumbent industries – particularly when those industries are located in deprived areas of the country. Industrial strategy needs to put the former objective first if our climate change targets are to be met, but ensure that, over the long term, its strategy will deliver high-quality work in low-carbon industries.

**Conclusion: The decarbonisation objective should underpin the entire strategy.**

#### *Policies this implies in practice*

The most significant implication of this conclusion for policy is that it will at times mean putting long-term employment opportunities in the low-carbon economic activities of the future before the preservation of

incumbent sectors and firms. This is difficult for any government to do; the pressure to preserve jobs is often intense, particularly when those jobs are in deprived areas of the country.

IPPR has already identified one potential investment that, if taken up by the government, could create thousands of UK jobs that would be invulnerable to outsourcing: inner city heat networks.

Heat networks are a more efficient and lower carbon means of supplying heat within dense urban areas. In the UK they currently provide around 2 per cent of total heat, compared to approximately 60 per cent in Denmark and Sweden. Increasing this proportion to 10 per cent by 2030 (a figure the Committee on Climate Change suggests is reasonable (CCC 2015)) would equate to approximately 1,500 schemes and £16.5 billion of investment, and the generation of 50,000 jobs.

A forthcoming report from IPPR will set out the full potential of heat networks in the UK and the steps required from government, local authorities and industry to unlock the opportunity.

As is the case for any nascent manufacturing industry, the provision of enabling infrastructure is critical for facilitating growth. The government will need to work closely with firms in these industries to understand their needs, and lower the barriers to them choosing to locate activities in the UK.

Government can boost demand for low-carbon goods and services in other ways besides direct investment. It can influence the relative prices of products through subsidy of low-carbon alternatives – such as electric cars – and tighter regulation of high-carbon products – such as through congestion charging or emissions standards. It can increase the weight it places on environmental factors when it evaluates tenders for public contracts. And it can help to bring down the cost of low-carbon technologies, by financing basic research.

Government influences the level of commitment the private sector is prepared to make to developing low-carbon goods and services through the stability of its policy environment. The stronger the belief among investors and firms that the government is committed to decarbonisation over the long term, the more they will be prepared to invest.

## **5.2 SUMMARY OF INDUSTRIAL STRATEGY OBJECTIVES**

The analysis above implies that the UK needs a multidimensional industrial strategy to boost levels of innovation, to improve the way existing sectors perform, and to facilitate improved economic performance across the regions and nations of the UK.

These core aims are diverse, and so they require different policy interventions and distinct indicators of success. Together, they suggest a hybrid of the ‘liberal capitalism plus’ and ‘coordinated capitalism’ approaches described in table 3.1, but with a broader definition of innovation, and a sectoral coverage that goes beyond manufacturing to encompass services. All would need to be underpinned by a stable macroeconomic and business environment.

**TABLE 5.1**

**Summary of a multidimensional UK industrial strategy**  
*Core aims, the challenges they would address, and policy interventions*

<b>Core aim of UK industrial strategy</b>	<b>UK economic challenge(s) it would address</b>	<b>Possible policy interventions</b>	<b>How success should be measured</b>
<b>To spur innovation to boost productivity, pay and the quality of work</b>	<p>Low pay and low productivity growth rates across the economy</p> <p>The UK's persistent productivity gap versus other countries</p> <p>A need to boost tax revenues for the fiscal position to be long-term sustainable</p>	<p>Public support for service sector innovation, both by supporting companies to adopt new processes, and supporting research institutions developing service sector innovations</p> <p>A wage floor</p> <p>A skills strategy that aligns with industrial strategy, and encourages acquisition of skills for progression</p> <p>Immigration policy that prioritises migrants with specific skills</p> <p>Investment in digital infrastructure as the critical enabler of service sector productivity</p>	<p>Sector-level productivity growth</p> <p>Ratio of high-skilled to low-skilled employment – both in terms of existing and new jobs</p> <p>Wage growth</p> <p>Business and income tax revenue growth</p>
<b>To 'level up' growth and productivity in the regions and nations of the UK</b>	<p>Regional GVA, innovation, productivity and income disparities</p>	<p>Strong spatial dimension to industrial strategy</p> <p>Devolution of economic policy budgets</p> <p>Devolved immigration policy</p> <p>Relocation of government institutions from London to other parts of the country</p>	<p>Regional growth rates</p> <p>Regional innovation (patent applications, or venture capital flows)</p> <p>Regional productivity growth</p> <p>Regional wage growth</p>
<b>To grow the UK's manufacturing capabilities</b>	<p>Below-optimal levels of innovation</p> <p>Uncompetitive firms that need to transition to higher-value activities</p> <p>Depleted supply chains, which mean UK firms are unable to take advantage of opportunities presented by large infrastructure projects and government spending</p>	<p>Public funding of research: through grants, and debt and equity financing</p> <p>Convening of research networks for sharing information</p> <p>Low trade barriers</p> <p>Financial support for transitioning firms to develop new product lines</p>	<p>Low-carbon innovation activity (patents, or reductions in specific process or production costs)</p> <p>Sector-specific and whole-economy carbon emissions</p> <p>Sector-specific GVA and employment growth</p> <p>Low-carbon business birth rates</p> <p>Business churn</p>
<b>To put the UK on track to meet its decarbonisation targets</b>	<p>Need to cut carbon emissions by 80 per cent relative to 1990 levels by 2050</p>	<p>Spending on enabling infrastructure to encourage new investment</p> <p>Subsidy of green consumer products (for example, electric cars) to encourage mass adoption</p> <p>Strong environmental regulation, with penalisation of pollution and other environmental impacts</p> <p>Use of public procurement as a source of demand for low-carbon products and processes</p> <p>Policy stability to give low-carbon investors certainty</p>	<p>Cost of low-carbon technologies</p> <p>Growth of low-carbon goods and services sectors</p> <p>Enabling infrastructure projects completed</p> <p>CO<sub>2</sub> emissions</p>

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