

Annual Report

Industrial Strategy Council



February 2020

About the Industrial Strategy Council

The Industrial Strategy Council ('the Council') is an independent non-statutory advisory group established in November 2018. It is tasked with providing impartial and expert evaluation of the government's progress in delivering the aims of the Industrial Strategy. Its membership is comprised of leading men and women from business, academia and civil society.

Acknowledgements

The Industrial Strategy Council would like to thank the research and secretariat team for their contribution to this Annual Report.

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Foreword from the Chair

For more than a decade, the UK has faced a productivity crisis as great as any since the Industrial Revolution. This has affected the pay packets of everyone, many of whose inflation-adjusted wages are still lower than a decade ago.



The Government's Industrial Strategy, published in November 2017, set out a comprehensive set of policies for tackling this productivity crisis. In November 2018, the Government set up an Industrial Strategy Council to evaluate progress on this Strategy.

This first Annual Report provides the Council's independent assessment on the progress of the Industrial Strategy. Because industrial policies take time to take effect, it is too early to provide a comprehensive evaluation of its impact on pay and productivity. Nonetheless, I hope this report provides a rigorous assessment of areas where policy progress has been made and areas needing further attention, which can help government when deciding on its next steps in this crucial area of policy.

Executive Summary

The creation of the Industrial Strategy Council was a commitment in the UK Government's Industrial Strategy White Paper published in November 2017. The Council's remit is to provide impartial and expert evaluation of the Government's progress in delivering the aims of the Industrial Strategy – a long-term plan to boost the productivity and earnings power of people throughout the UK (Section 1). Following the 2019 General Election, the Government has recommitted itself to these goals.

This Annual Report fulfils the Council's responsibility to report regularly to government on progress on the Industrial Strategy. In its first year, the Council has made significant progress in developing its evaluation framework and in carrying out an assessment of key aspects of the Industrial Strategy, working closely with a broad range of stakeholders. The Council has launched its website at industrialstrategyCouncil.org and published a number of research reports.

The Council aims to provide an expert independent challenge to government on whether the Industrial Strategy is having a positive impact on the economy and society. Based on past experience, in the UK and internationally, the key ingredients of a successful industrial policy include:

- **Longevity**, since Industrial Strategy policies typically take a lengthy period to have a significant and durable impact on the economy.
- **Scale**, since Industrial Strategy policies need to be large enough to have that large and lasting impact on macro-economic outcomes.
- **Co-ordinated**, since an Industrial Strategy is likely to span different aspects of policy and different departments of government and other bodies.

The Council's evaluation framework is designed to capture and assess these key ingredients of success. In doing so, it aims to assess the impact of policy from initial implementation to its intermediate impact on businesses and workers to the final impact on the productivity, pay and performance of the economy (Section 2).

Based on the commitments set out in the Industrial Strategy White Paper, the Council has identified 142 distinct policies covering the five Foundations of the Industrial Strategy (Ideas, Infrastructure, Places, Business Environment and People) and the Grand Challenges (covering such mega-trends as climate change, ageing society and automation).

This is an ambitious policy agenda, comprising a very significant number of initiatives, spanning a wide array of policy areas and many government departments. It is a positive step that these policy initiatives were combined into an overarching

Industrial Strategy, rather than being considered and implemented in a piecemeal fashion. And it is encouraging that most of these policy commitments have progressed and are now in delivery phase (Section 3).

At the same time, many of these policy commitments are long-term in nature, with a flow of resources and planning stretching over several years. This means it is simply too early to tell if those policies will have the required degree of **longevity** necessary for success in meeting the longer-term objectives of the Industrial Strategy. The role of the Council is, in part, to help secure consistency and longevity in these policies.

In aggregate, the Industrial Strategy comprises around £45 billion of committed funding from government, or around 2 per cent of GDP. The majority of this (£37 billion over the period 2017-2024) is focused on a small number of policy areas – housing, R&D, transport and digital. The degree of focus and scale in this allocation of financing is encouraging when making progress on these areas of the Industrial Strategy.

At the same time, this means that most of the 142 policies in the Industrial Strategy have very limited, and in some cases no, funding associated with them. As a result, they are very unlikely to be operating at a **scale** necessary to have a material impact on the economy. The Council believes it is worth reconsidering the span and scope of existing Industrial Strategy policies, to assess if they are operating at the scale necessary to be effective. The key to a successful strategy is prioritisation.

It remains unclear whether the Industrial Strategy has led to policy being better **co-ordinated** across government. On the one hand, the Industrial Strategy has helped communicate a shared vision across government – for example, on cross-cutting initiatives such as the Grand Challenges. On the other, there is less evidence, so far, of co-ordinated policy decision-making across government. The Council believes that improved policy co-ordination is one of the key potential benefits of an Industrial Strategy and that, in the Grand Challenges, there is an effective vehicle for doing so.

A final important element of policy success is the extent to which the various stakeholders in its successful delivery – including businesses and the general public – are aware of the strategy and believe it is capable of delivering for them. This is important for reasons of accountability and effectiveness. At present, awareness and understanding of the Industrial Strategy among companies appears to be patchy.

Building understanding of the Industrial Strategy among a broad set of societal stakeholders would improve its longevity and effectiveness. The Council believes this needs to be improved. Having a strategy that is more tightly focussed on a core set of initiatives, financed at scale and committed to over the longer-term, would not only improve the chances of the Industrial Strategy meeting its long-term objectives; it would also make it easier for stakeholders to understand and engage with it.

Alongside these overarching points around the key success criteria for the Industrial Strategy, the Annual Report focuses on a few policy areas in greater detail (Section 3). These include:

- The **Grand Challenges** are a good approach to tackling the challenges and opportunities created by “mega-trends” in the economy and society. But so far only modest progress has been made in turning these challenges into policy proposals, much less in implementing these proposals. The Council believes a much greater degree of focus, financing and policy co-ordination is needed to meet those challenges given their scale and scope. The Grand Challenge for which this is most pressing is the Government’s net zero by 2050 target.
- **Regional disparities** played a central role in the Industrial Strategy White Paper. Since 2017, some policy progress has been made, with seven regions publishing **Local Industrial Strategies**. But the target for every Local Enterprise Partnership and Mayoral Combined Authority in England to publish their Local Industrial Strategies by early 2020 looks unlikely to be met. And it remains unclear how these strategies will be taken forward and brought together. Historically, UK regional policy has chopped and changed. To be successful, regional policies need to be consistent over time, operated at scale and appropriately financed. The Council welcomes the new Government’s commitment to “levelling-up” and hopes its implementation plan will meet these success criteria.
- It is encouraging that the Government has set itself an ambitious target for **R&D** expenditure, increasing economy-wide R&D expenditure to 2.4 per cent of GDP by 2027. This is a challenging target. Based on existing trends, a step-change in expenditure will be required, by both the public and private sectors, for this target to be met. More consideration needs to be given to the composition of R&D expenditure – public versus private, basic science versus applied science. The R&D expenditure target should be one element of a broader set of actions supporting science and innovation. The proposal for a UK advanced research agency is a positive recent step.
- The £2.5 billion allocated through the three waves of the **Industrial Strategy Challenge Fund** (ISCF) is making an important contribution to the Government’s planned increase in R&D expenditure. Looking ahead, it would be useful to assess how best to use this funding to “crowd-in” private sector R&D. The Council also believes this Fund will need to be scaled up if it is to support significant progress on the Grand Challenges.
- The UK is facing an unprecedented **skills** challenge, with most UK companies reporting skills shortages and 40 per cent of the workforce having skills significantly mismatched with their jobs. Without policy action, these skills problems will worsen materially over the next decade. The introduction of T-levels, the National Retraining Scheme and additional financing for Further

Education (FE) are steps in the right direction. But the Council believes a strategic overhaul of training policies and institutions is needed to meet the future skills challenge in the UK, with government and the private sector working in partnership.

- Vibrant businesses require adequate and affordable finance, both to start-up and to scale-up. The Council recognises the important role of the British Business Bank (BBB) in supporting the provision of **SME finance** to the economy. But financing gaps remain for start-ups and scale-ups, especially in some parts of the UK and some sectors. The Council supports an expansion in the number of businesses benefiting from the BBB's support, with a focus on those regions and sectors which are currently poorly served.
- Evidence suggests the recent **reforms to the apprenticeship system** have raised vocational education standards in the UK, with larger numbers of higher-level apprenticeships. But the system has also been found to be somewhat inflexible and restrictive, with levy-paying firms using less than a fifth of the funding available to them and the overall number of apprenticeships falling. The Council believes a strategic review of, and the introduction of greater flexibility into, the apprenticeship system is needed.

A key element of the Council's work programme is "deep-dives" on specific elements of the Industrial Strategy. These are designed to allow the Council to assess the impact of specific elements of the Industrial Strategy programme. Current projects, covering skills, places and sectors, are summarised in Section 4, while Section 5 discusses recent developments in the Council's Success Metrics.

Membership

- **Andy Haldane (Chair)** – Chief Economist of the Bank of England
- **Kate Barker** – Commissioner of the National Infrastructure Commission, recently Chair of the Industrial Strategy Commission
- **Emma Bridgewater** – Founder of Emma Bridgewater Ceramics
- **Jayne-Anne Gadhia** – CEO of Salesforce UK, Member of the Scottish Business Taskforce
- **Christine Gaskell** – Local Enterprise Partnership (LEP) Chair for Cheshire and Warrington
- **Rupert Harrison** – Managing Director and Portfolio Manager, BlackRock
- **Vivian Hunt** – Managing Partner UK and Ireland of McKinsey, Chair of CBI London Council
- **Rotha Johnston** – Chair of Northern Ireland Screen
- **Juergen Maier** – Chair of Digital Catapult and Co-Chair of Made Smarter.
- **Paul Marshall** – Co-founder and Chairman of Marshall Wace LLP
- **Charlie Mayfield** – Chair of Be the Business
- **Nicola Mendelsohn** – Vice-President for Europe, the Middle East and Africa for Facebook, Non-Executive Director of Diageo
- **Archie Norman** – Chair of Marks & Spencer
- **Hayley Parsons** – Welsh entrepreneur and investor, Founder of GoCompare
- **Roy Rickhuss** – General Secretary of Community, member of the General Council of the Trades Union Congress
- **Nancy Rothwell** – President and Vice-Chancellor of the University of Manchester, Professor of Physiology, Co-chair of the Council for Science and Technology, past President of the Royal Society of Biology
- **Jennifer Rubin** – Executive Chair of the Economic and Social Research Council (ESRC), Professor of Public Policy at Kings College London
- **Matthew Taylor** – Chief Executive of the Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA)

Section 1: Role of the Council

The creation of the Industrial Strategy Council was a commitment in the UK Government's Industrial Strategy White Paper published in November 2017.¹ The Council was established as a non-statutory advisory group in November 2018.² The Council, individually and collectively, operates independently from Government and other interests.

The Council's remit is to provide impartial and expert evaluation of the Government's progress in delivering the aims of the Industrial Strategy – a long-term plan to boost the productivity and earnings power of people throughout the UK.³ This Annual Report fulfils the Council's responsibility to report regularly to Government on progress on the Industrial Strategy. It also highlights how the Council has progressed its evaluation framework and work programme in its first year.

In evaluating the success of the Government's Industrial Strategy, the Council assesses the key ingredients of a successful industrial policy. Three are particularly noteworthy. First, Industrial Strategy policies typically take a long time to have a material and enduring impact, so they need **longevity**. Second, policy measures need to be of an appropriate **scale** for the problem they are trying to address if they are to have an impact. Finally, many aspects of industrial policy span different areas of activity and different government departments, so **co-ordinated** policies are needed.

An Industrial Strategy is typically designed to address areas of persistent structural weakness in the economy, including low productivity. The role of the Council is, in part, to help ensure that the strategy endures over time in order to meet these longer-term challenges. But the Council also recognises that elements of this strategy need to evolve over time so that it can continue to reflect the changing needs of the UK economy and the future challenges it faces, including the effects of leaving the EU, and of decarbonising the economy in line with the UK's net zero target.

The Council works alongside other important independent institutions across government providing external scrutiny and advice to government. These agencies vary in both status and scale (Box 1). They include the National Infrastructure Commission, which is supported by a secretariat team of approximately 40 and a

¹ BEIS (2017). *Industrial Strategy: building a Britain fit for the future*, December. Retrieved from: www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

² BEIS (2018, November 1). *New Industrial Strategy Council meets as membership announced*. Retrieved from: www.gov.uk/government/news/new-industrial-strategy-council-meets-as-membership-announced

³ For more details see: <https://industrialstrategycouncil.org/governance>

delegated budget of £5.7 million;⁴ the Committee on Climate Change, which received £4.5 million in Grant-in-Aid funding in 2018-19;⁵ and the Migration Advisory Committee, which is supported by a secretariat team of around 11 and had a budget of around £0.8 million in 2017-18.⁶ The Council does not have statutory status and has a modest budget and staff resources. In this respect, it is most similar in status and size to the Migration Advisory Committee.

The Council can also learn from other countries' experience with similar bodies. Several OECD countries have created institutions with a remit to support productivity. These bodies differ but in general have a remit which is broader and resources which are larger than in the UK (Box 2). The OECD has defined some principles to guide the design of these institutions including independent governance, transparent process, solid research capacity, economy-wide frame of reference, and linkages to policy-making mechanisms within government.⁷ The Council satisfies, at a high level, these criteria.

⁴ National Infrastructure Commission (2019). *Corporate Plan 2019-20 to 2021-22*, September. Retrieved from: www.nic.org.uk/publications/corporate-plan-2019-20-to-2022-23/

⁵ Committee on Climate Change (2019). *Annual Report and Accounts 2018-19*; July. Retrieved from: www.theccc.org.uk/publication/annual-report-and-accounts-2018-2019/

⁶ Migration Advisory Committee (2019). *Annual Report 2017-18*; January. Retrieved from: www.gov.uk/government/publications/migration-advisory-committee-annual-report-2017-to-2018

⁷ Banks, G. (2015). *Institutions to promote pro-productivity policies: Logic and lessons*, OECD Productivity Working Papers, 2015-01, OECD Publishing, Paris. Retrieved from: www.oecd-ilibrary.org/economics/institutions-to-promote-pro-productivity-policies_5jrql2tsvh41-en

Box 1: Independent external bodies

There are several independent bodies that provide advice and scrutiny to government on a range of issues. Below are a few examples.

Office for Budget Responsibility (OBR)

The OBR was created in 2010 to provide independent and authoritative analysis of the UK's public finances. It is a non-departmental public body, sponsored by HM Treasury and its functions and broad governance structure are set out in the Budget Responsibilities and National Audit Act 2011. The OBR has five main roles: economic and fiscal forecasting; evaluating performance against target; sustainability and balance sheet analysis; evaluation of fiscal risks; and scrutinising tax and welfare policy costing.

Committee on Climate Change (CCC)

The CCC is an independent, statutory body established under the Climate Change Act 2008. Its purpose is to advise the UK Government and Devolved Administrations on emissions targets and report to Parliament on progress made in reducing greenhouse gas emissions and preparing for climate change.

National Infrastructure Commission (NIC)

The NIC was created in 2015 and established as an Executive Agency of HM Treasury in 2017. It operates independently and at arm's length from government. The Commission advises government on all sectors of economic infrastructure and considers the potential interactions between its infrastructure recommendations and housing supply. The Commissioners provide expert, impartial advice to government on long-term infrastructure, develop a national infrastructure assessment, and conduct specific studies.

Council for Science and Technology (CST)

The CST is government's advisory body on science and research, engineering, social sciences and disruptive innovation. It reports directly to the Prime Minister and its members come from the high-tech industry, the National Academies and academia.

Migration Advisory Committee (MAC)

The MAC is an independent, non-statutory, non-departmental public body sponsored by the Home Office. It provides independent and evidence-based advice to government on matters relating to migration.

Box 2: Independent scrutiny of industrial policy

Several other governments around the world have created institutions with an ongoing remit to undertake research and policy reviews related to enhancing productive performance. Some key international examples include:

The Productivity Commission, Australia

The Commission is an advisory body established in legislation that is required to consider the performance of the whole economy, with an arm's length relationship with government. The commission has a substantial research capacity and control over how its budget is allocated. Its work streams include public inquiries and research studies, requested by government and self-initiated; annual reporting on productivity, industry assistance and regulation; performance monitoring and benchmarking of government bodies; and handling competitive neutrality complaints.

The Strategic Sector Committees, France

Committees have been formed corresponding to each of the “strategic sectors” of French industry. Each Committee brings together, under the guidance of an industrial president, representatives of industry players, companies or industrial federations, trade union organisations, and industry experts to advise the French Government on policy and deliver structures for economic policy.

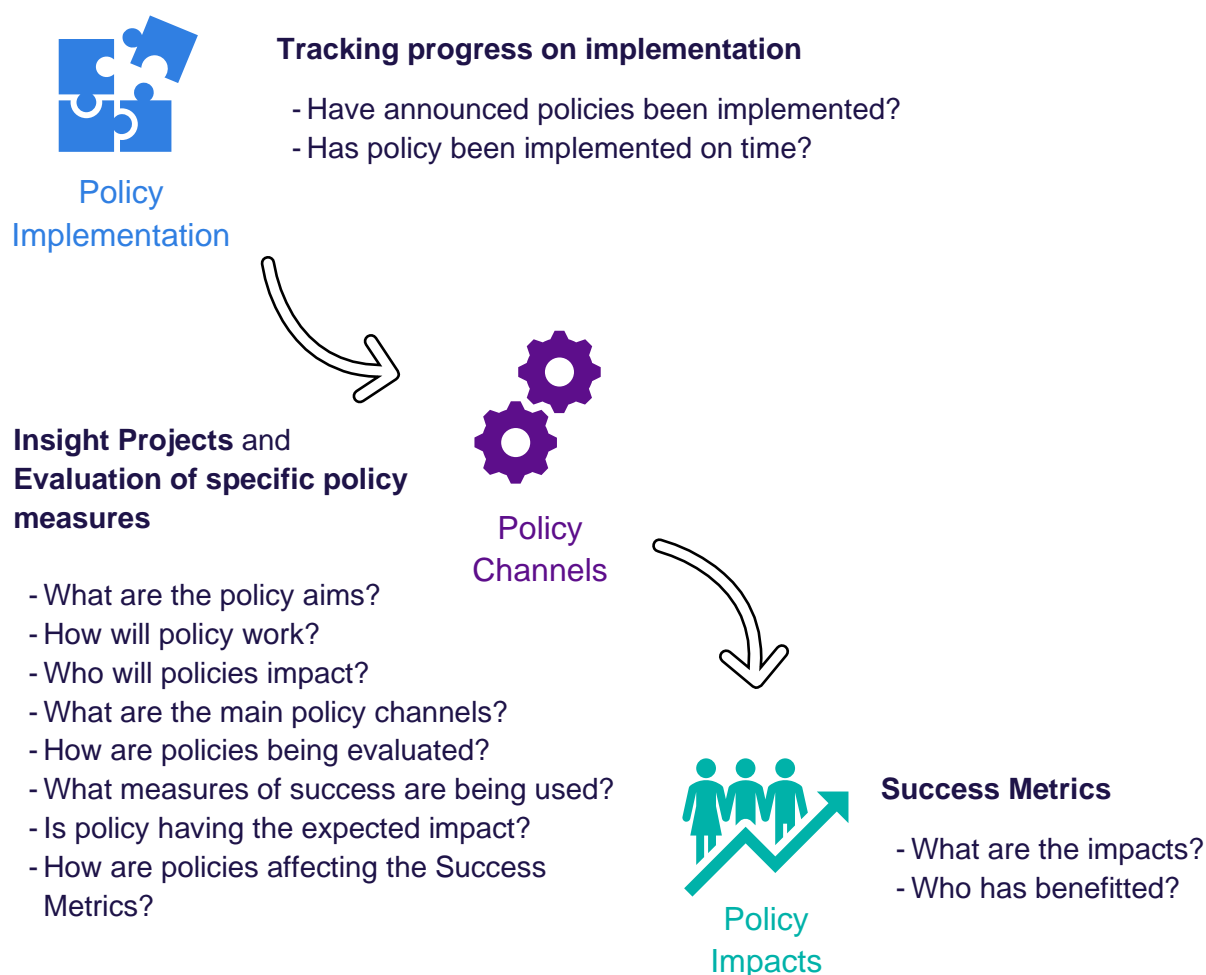
New Zealand Productivity Commission

Founded in 2011, the commission is established in legislation and provides advice to government on improving productivity in a way that is directed to supporting the overall well-being of New Zealanders, having regard to a wide range of communities of interest and population groups in New Zealand's society. Core responsibilities are to undertake in-depth inquiries on topics referred by the government; carry out productivity-related research that assists improvement over time; and promote understanding of productivity issues.

Section 2: Evaluation Framework

In its first Annual Report, the Council thought it would be useful to set out its approach to evaluating the government's progress in delivering the aims of the Industrial Strategy. The framework underpins the Council's work programme and is designed to ensure a rigorous and independent evaluation process. The framework is designed to encompass the full policy process from policy implementation, through policy channels to policy impacts (Figure 1).

Figure 1: The Council's Evaluation Framework



The four components of the Council's evaluation framework are: (i) Tracking progress on implementation; (ii) Evaluation of specific policy measures; (iii) Insight Projects; and (iv) Success Metrics. These different components capture all parts of the policy process as shown in Figure 1. For example, the Success Metrics are

focused mainly on policy impacts, while the Insight Projects focus on policy channels. Further detail on these components of the framework are set out below.

The Council maintains a work programme to support this evaluation framework. The Council and its project teams engage and consult with a wide range of stakeholders during the delivery of its work programme. Project teams are comprised of researchers and analysts drawn from across academia, business, and government.

In addition to maintaining its own work programme, the Council works closely with partner organisations to build the evidence base needed to evaluate the Industrial Strategy. A recent example is work supporting the Carnegie UK Trust and Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA) on the contribution of good work to productivity.⁸ The Council expects to draw heavily on the work of the Economic and Social Research Council (ESRC) Productivity Institute once it becomes established in 2020.⁹

The Industrial Strategy covers the whole of the UK, so the Council is responsible for understanding the impact of Industrial Strategy Policies across England, Wales, Scotland and Northern Ireland. There are a mix of devolved and reserved policy areas within the Industrial Strategy. For example, the Industrial Strategy Challenge Fund (ISCF) is a UK-wide financing tool, whereas skills policy is devolved across the home nations.

Tracking progress on implementation

Timely and effective delivery of announced policies is the most basic success measure for the implementation of the Industrial Strategy. The Council believes it is important to hold government to account on implementation. Tracking implementation also helps the Council prioritise its more in-depth work. Section 3 sets out the Council's assessment of policy implementation so far, focusing on a few key areas and initiatives. The Annex provides a comprehensive assessment of implementation of all the policy commitments made in the Industrial Strategy White Paper.

Evaluation of specific policy measures

The remit of the Council does not include commenting on fiscal policy or tax measures or making public policy recommendations to government. But the Council does have a role in considering how specific policy measures are being evaluated, both by government and other independent bodies. Its role is also to assess the

⁸ Carnegie UK Trust (2020), *Can Good Work Solve the Productivity Puzzle?* Retrieved from: www.carnegieuktrust.org.uk/publications/can-good-work-solve-the-productivity-puzzle

⁹ For more details see: <https://esrc.ukri.org/funding/funding-opportunities/esrc-productivity-institute/>

impact of those policies on the economy and society, including through their impact on the set of Success Metrics developed by the Council. As these metrics change over time, analytical work will be needed to assess whether that is the results of policy actions or other factors. The Council will draw on government's own policy evaluation, and that of other independent bodies, as inputs in its evaluation.

Insight projects

A key element of the Council's work programme is its set of insight projects.¹⁰ These are "deep-dives" on specific elements of the Industrial Strategy, often spanning several policies. They are designed to allow the Council to comment, rigorously and in detail, on the impact of specific elements of the Industrial Strategy. They involve completing new analytical and research work, drawing on existing evidence and working closely with key stakeholders. Each insight project is overseen by a group of Council members. The Council publishes reports based on the work and reports its findings to government. The Council currently has projects underway covering skills, places and sectors (Section 4).

Success Metrics

The Council's remit includes developing a set of Success Metrics to assess the impact of the Industrial Strategy. The Council has published its initial set of Success Metrics following an extensive period of consultation.¹¹ The Success Metrics are the set of indicators the Council believes would improve in response to a successful Industrial Strategy. Importantly, the Success Metrics look "beyond GDP", to measures of social, human and natural capital, as well as broader welfare impacts. The Success Metrics have been published as interactive tools with accompanying commentary on the Council's website (Section 5).

¹⁰ For more details see: <https://industrialstrategycouncil.org/insight-projects>

¹¹ For more details see: <https://industrialstrategycouncil.org/measuring-what-counts-industrial-strategy-council-publishes-success-metrics>

Section 3: Tracking Progress on Implementation

The Industrial Strategy is a long-term delivery programme that spans 20 government departments and arm's-length bodies. The policies themselves will take time to have an impact on outcomes in the economy. Nonetheless, timely and effective delivery of announced policies is the most basic early success measure for the Industrial Strategy.

Given the dispersion of policies and funding across Whitehall, the Industrial Strategy is not run as a single programme and decisions are not taken through one accountable body. However, government has created cross-Whitehall governance processes to drive and monitor delivery, with Senior Civil Servants in the relevant departments having accountability for policy delivery on behalf of their Accounting Officer, and ultimately Parliament and the public.

The Council's detailed assessment of progress on delivery of each of the policies in the Industrial Strategy is set out in the Annex. A total of 142 policies across the five Foundations of the Industrial Strategy have been identified by the Council, based on the commitments set out in the Industrial Strategy White Paper. Each policy has been assigned a rating based on an assessment of where they are in the policy development and implementation cycles.

Most policy commitments have made progress and are now in a delivery phase. It is notable, though, that not all policies have an announced delivery date, and many are commitments to review existing policies rather than enact new ones. More fundamentally, many are long-term policy commitments with the flow of resources and implementation spanning several years. This means many of these initiatives are, necessarily, at an early stage of implementation.

In aggregate, the Industrial Strategy encompasses around £45 billion of committed funding across government, or around 2 per cent of GDP.¹² The majority of this spend (£37 billion over the period 2017-2024) is focused on a small number of areas – housing, R&D, transport and digital – through the National Productivity Investment Fund (NPIF).¹³ Notable non-NPIF commitments include British Business Bank financing of £4 billion, new spending on education and skills totalling approximately

¹² BEIS (2018). *Forging our future: Industrial Strategy - the story so far*, December. Retrieved from: www.gov.uk/government/publications/forging-our-future-industrial-strategy-the-story-so-far

¹³ HM Treasury (2018). *Budget 2018*, October. Retrieved from: www.gov.uk/government/publications/budget-2018-documents

£600 million, and an increase to the R&D tax credit rate.¹⁴ This means a large number of the policies listed in the Annex have very limited, or no, funding associated with them. This clearly constrains the ability of these policy initiatives to make a material contribution to meeting the objectives of the Industrial Strategy.

Below we focus on a few key policy areas.

Grand Challenges

The Grand Challenges are an effective approach for tackling recognised global mega-trends and a good vehicle for ensuring co-ordinated policy action across government departments. But the Council believes much greater policy focus, action and co-ordination are needed to match the scale of those challenges. Raising awareness of, and establishing a collective commitment to, the Grand Challenges – in particular, the challenge of delivering net zero – will be important ingredients of success.

The Council welcomes the recognition of the importance of tackling the challenging global trends of Artificial Intelligence (AI) and Data, Clean Growth, Future of Mobility and Ageing Society in the Industrial Strategy. These mega-trends require radical, economy-wide and society-level adjustments, working across sectors and government departments. They offer huge opportunities for the economy.¹⁵

As set out in Section 1, a successful industrial strategy requires a long-term approach, stable policy environment and needs to be delivered at scale through co-ordinated action taken both within and outside of government. This is particularly important for making progress on the Clean Growth Grand Challenge.

The Council believes that due to their complexity, systemic character, interconnectedness and urgency, Grand Challenges require a novel policy approach.¹⁶ It is clear government recognises that the success of this policy programme will rely on the involvement of different social groups, together with a cross-government engagement, and use of the full range of government policy tools (Figure 2).

So far, government has not made much progress in galvanising public, private and academic support for action around the Grand Challenges. In part as a result, progress towards putting in place plans to meet these Challenges has been slow and

¹⁴ HMRC (2017). *Corporation Tax: increasing the rate of Research and Development expenditure credit*. Retrieved from: www.gov.uk/government/publications/corporation-tax-increasing-the-rate-of-research-and-development-expenditure-credit/corporation-tax-increasing-the-rate-of-research-and-development-expenditure-credit;

¹⁵ For more details see: www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges

¹⁶ Mazzucato, M. and D. Willets (2019). *A Mission-Oriented UK Industrial Strategy*, May. Retrieved from: www.ucl.ac.uk/bartlett/public-purpose/publications/2019/may/mission-oriented-uk-industrial-strategy

modest. Progress towards implementing these plans has been slower and more modest still.

Figure 2: Government's stated approach to tackling the Grand Challenges



For instance, government has committed to reducing the UK's greenhouse gas emissions to net-zero to 2050.¹⁷ As highlighted by the Committee on Climate Change, current plans might not be sufficient to meet even an 80 per cent reduction target.¹⁸ Reductions in emissions have so far been largely limited to the power, waste and industry sectors. To make progress, these efforts will need to be expanded economy-wide. They will also require significant structural change in the macro-economy and in the micro-level behaviours of both business and households.

As one example, consider the move to a low carbon transport system. According to the analysis by the National Infrastructure Commission, a wide range of policy actions will be required to enable a large-scale uptake of electric vehicles: from ensuring an adequate provision of charging points, to future-proofing the electricity generation capacity and distribution networks. The Commission estimates that 100 per cent uptake of electric cars and vans could increase total annual electricity demand by 26 per cent by 2050.¹⁹ In the longer term, the adoption of autonomous

¹⁷ BEIS (2019, June 27). *UK becomes first major economy to pass net zero emissions law* [Press release]. Retrieved from: www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law

¹⁸ Committee on Climate Change (2019), *Net Zero – The UK's contribution to stopping global warming*, May. Retrieved from: www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

¹⁹ National Infrastructure Commission (2018). *National Infrastructure Assessment 2018*, July. Retrieved from: www.nic.org.uk/publications/national-infrastructure-assessment-2018/

vehicles is also likely to pose challenges around infrastructure design, capacity, travel patterns, land use, and interactions between transport modes.

In relation to the AI and Data Grand Challenge, important steps have been taken by government to develop and prepare for the adoption of AI technology across the economy. This includes support outlined in the AI Sector Deal, the establishment of the Centre for Data Ethics and Innovation (CDEI) and the Office for AI (OAI). The latter will be responsible for establishing governance frameworks for AI, supporting its adoption across the economy, and ensuring the UK has the skills, data, investment and leadership for its successful deployment.

But, as highlighted by the 2017 review by Professor Dame Wendy Hall, successful adoption of AI in the UK will depend on a wide range of actions across four broad categories: access to data, supply of skills, AI research and uptake of AI. There is much further to go on all four fronts. Further steps will be needed to ensure effective and considered data governance to support development of innovative, safe and ethical AI applications. The forthcoming National Data Strategy will be important in this respect.

The development of AI skills will be crucial both in relation to new university graduates, reskilling of the existing workforce, and attracting overseas talent. The UK research base is well-placed to take advantage of the AI revolution. But the long tail of low productivity firms, and gaps in management practices across the UK, mean the widespread uptake of AI technology will be a significant challenge. The potential economic benefits of widespread AI adoption are large. PwC have estimated that Artificial Intelligence could add £232 billion to UK GDP by 2030.²⁰

Finally, the UK's rapidly ageing society will radically reshape the economy, society and policy. By 2040, it is estimated that nearly one in seven people will be aged over 75.²¹ Without significant improvements in health, UK population ageing will increase the incidence of ill-health and disability. Ageing will also affect the UK workforce, with the economic performance of the UK economy increasingly reliant on older workers. However, demographic change will also create commercial opportunities in the UK, opening up new markets for UK companies.

The Government Office for Science has identified six policy areas that will be affected significantly by an ageing population: work, learning, housing, families, health and social care, and connectivity. The Council supports the establishment of the UK Longevity Council, advising government on how to use innovations in technology, products and services to improve the lives of our ageing population, and the appointment of the Business Champion for the Ageing Society Grand Challenge.

²⁰ PwC (2017, July 28). *Artificial Intelligence could add £232bn to UK GDP by 2030*. Retrieved from: www.pwc.co.uk/press-room/press-releases/artificial-intelligence-could-add-232bn-to-UK-gdp.html

²¹ Government Office for Science (2016). *Future of an ageing population*, July. Retrieved from: www.gov.uk/government/publications/future-of-an-ageing-population

Given the scale of these issues, and the far-reaching ambition of government, significant, consistent and co-ordinated action will be needed to progress the policy agenda on these Grand Challenges. This includes, crucially, ensuring adequate resources are devoted to delivering these goals. Successful delivery will also require meticulous planning and careful monitoring of delivery, co-ordinated across government departments. To date, progress on the Grand Challenges has fallen well short of those requirements.

Regional disparities

The Council believes that addressing regional disparities is a critical element of a successful industrial strategy. The target for every Local Enterprise Partnership and Mayoral Combined Authority in England to publish their Local Industrial Strategies in early 2020 is unlikely to be met. And it is unclear how these plans will be taken forward. To be successful, regional policies need to be consistently applied, appropriately financed and focussed on “left behind” regions. The new Government’s commitment to “levelling-up” is encouraging and needs to be assessed against these success criteria.

The local component of the Industrial Strategy is delivered by Mayoral Combined Authorities (MCAs) or Local Enterprise Partnerships (LEPs) in England, and the devolved administrations in Scotland, Wales and Northern Ireland. In principle, Local Industrial Strategies are co-designed by MCAs or LEPs and central government to ensure alignment with the national Industrial Strategy.

The Government’s aim is to agree all Local Industrial Strategies (LISs) in England by early 2020. So far, seven of the expected 36 LISs have been published: West Midlands, Greater Manchester, West of England, and the Oxford-Cambridge Arc comprising: Buckinghamshire, Cambridgeshire & Peterborough, Oxfordshire and South East Midlands (Figure 3). The target for every LEP and Mayoral Combined Authority in England to publish a Local Industrial Strategy by early 2020 looks very ambitious and unlikely to be met.

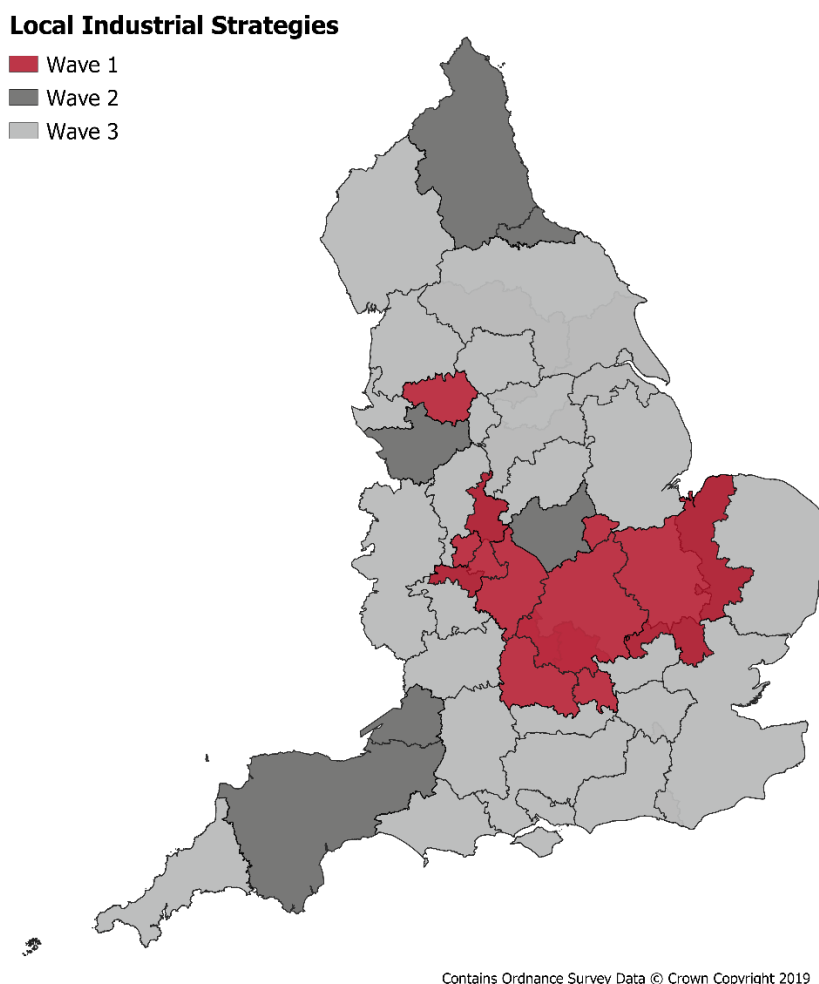
The Council sees a great deal of potential in championing a local approach to meeting the objectives of the Industrial Strategy. Regional and spatial differences across the UK are high by comparison with other large, high income countries. They are also at their highest level in a century.²² To close those differences, policies will typically need to be tailored to local circumstances if they are to meet local needs.

Making that local approach a reality relies, however, on local areas having the capacity and capability to design and execute a set of policy interventions necessary to raise productivity and earnings power. Yet, the institutions and targets of UK regional policy

²² Industrial Strategy Council (2020), *UK Regional Productivity Differences: An Evidence Review*. Retrieved from: <https://industrialstrategyCouncil.org/uk-regional-productivity-differences-evidence-review>

have been in constant flux over many decades.²³ This problem was highlighted in a 2017 Institute for Government report which pointed to persistent weaknesses in the UK system of government, including “poor institutional memory” and “a tendency to abolish and recreate organisations”.²⁴

Figure 3: Waves of the Local Industrial Strategies



At this stage, it is not clear how the Local Industrial Strategies drawn up by the LEPs and MCAs will be brought together or taken forward. Irrespective of the precise direction policy takes, it is clear that a greater degree of stability in local institutions and actors would be desirable. The Council strongly supports greater longevity and

²³ UK2070 Commission (2019). *Fairer and Stronger: Rebalancing the UK Economy. The First Report of the UK2070 Commission*, May. Retrieved from: <http://uk2070.org.uk/wp-content/uploads/2019/05/FIRST-REPORT-UK-2070-EXECUTIVE-SUMMARY.pdf>

²⁴ Institute for Government (2017). *All Change: Why Britain is so Prone to Policy Reinvention and What Can Be Done About It*, March. Retrieved from: www.instituteforgovernment.org.uk/sites/default/files/publications/IfG_All_change_report_FINAL.pdf

strategic planning in the setting of regional policy and funding, and greater consistency and continuity in the local institutions discharging these functions.

Devolution, by itself, is no catch-all solution for tackling regional disparities. Paul Cheshire, Max Nathan and Henry Overman point out that devolution can actually worsen economic outcomes if powers are devolved to the wrong level. And devolution could even increase spatial disparities if there are sharp differences in the quality of local governance.²⁵ The problem of gaps in economic decision-making capability of some UK local authorities has been highlighted by recent academic research. For example, a recent report by Abigail Taylor of CityREDI shows that, relative to larger, urban areas, small rural LEPs have struggled to obtain central government funding.²⁶

Evidence so far clearly demonstrates that the capacity of the LEPs and MCAs to take on the task of designing and developing a Local Industrial Strategy is likely to vary significantly. That is also likely to be true of their capacity to deliver this strategy.

The Council is conducting qualitative research to assess how the LEPs and MCAs are approaching the development of their LIS. It will explore how LEPs/MCAs are collaborating with stakeholders, and with one another, to produce their strategies; how places are deciding which policies and initiatives to prioritise; and their approach to evaluation and monitoring of their progress towards success. This will give the Council an in-depth understanding of the process of developing a LIS.

The new Government has committed to a policy of “levelling-up” the UK economy. This is an encouraging step. The Council’s recent research report outlined some of the key ingredients of a successful regional policy.²⁷ These included consistency and continuity of application, adequate financing and a concentration on “left behind” places. In due course, it will be important to assess the government’s implementation plan for “levelling-up” against these success criteria.

Past research on regional policies, in the UK and internationally, has also made clear the importance of adequate capacity and capability across local institutions. At present, it seems likely that this capacity is patchy across regions. A commitment to invest in local institutions and talent will be an important additional ingredient if the Government’s “levelling-up” programme is to be a success.

Research and Development target

The Government has set itself a challenging target to increase economy-wide R&D expenditure to 2.4 per cent of GDP by 2027. Having an ambitious target

²⁵ Cheshire, P. C., Nathan, M., and H. G. Overman (2014). *Urban Economics and Urban Policy*. Edward Elgar.

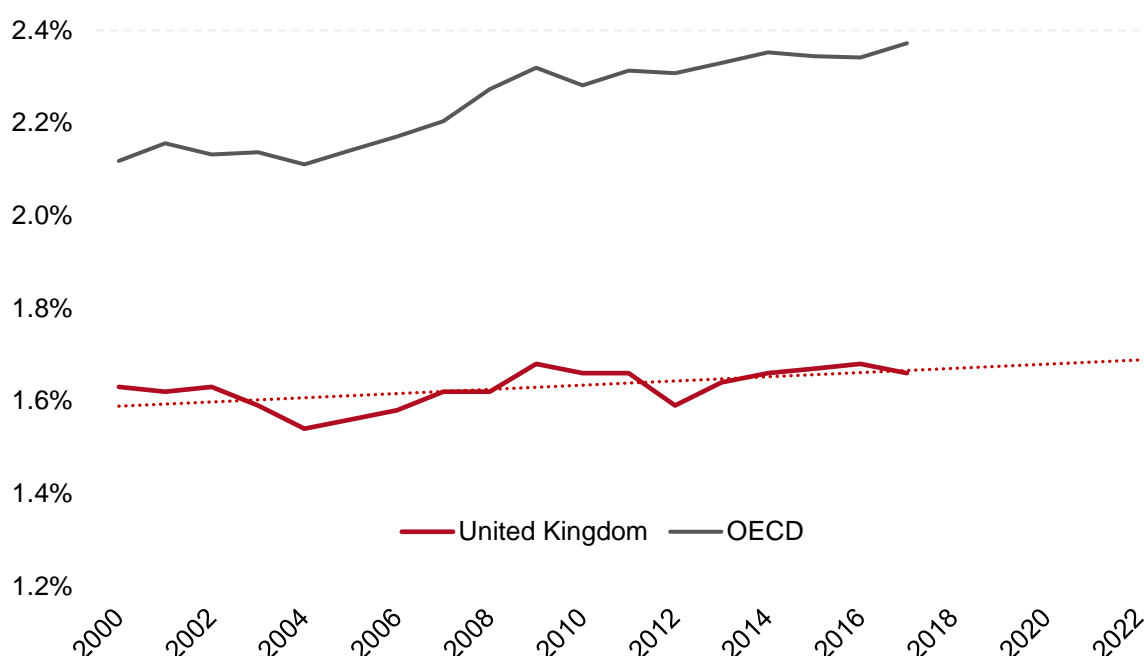
²⁶ Taylor, A., 2019. *The Realities, Challenges and Strengths of the External Funding Environment at LEP Level*. Smart Specialisation Hub, March. Retrieved from: www.birmingham.ac.uk/Documents/college-social-sciences/business/research/city-redi/Projects-Docs/EXTERNAL-FUNDING-ENVIRONMENT-FINAL-REPORT-c.pdf

²⁷ Industrial Strategy Council (2020), *UK Regional Productivity Differences: An Evidence Review*, op. cit.

for R&D is a positive step. But a step-change in the growth rate of R&D expenditure will be required to meet this target. The target should be one element in a broader set of actions aimed at supporting science and innovation in the UK, including a possible advanced research agency.

One of the flagship policy targets in the Industrial Strategy is to increase UK R&D spending to 2.4 per cent of GDP (the OECD average) by 2027. The Council applauds the setting of an ambitious target for R&D expenditure, given the well evidenced link between R&D investment and productivity.²⁸ Nonetheless, based on R&D trends so far this century, it would require a step-change in behaviour to meet this objective. For example, based on those trends, government’s R&D target would not be reached until after 2050 (Figure 2).²⁹

Figure 4: UK expenditure on R&D as a percentage of GDP



Source: Eurostat

That is not to suggest this target is unrealistic. Several countries have achieved an increase in R&D expenditure close to, or even higher, than the required 0.7 percentage points of GDP over a similar timeframe. Historical examples include the 0.8 percentage points of GDP rise in Iceland (between 1997 and 2007) and the 1.8

²⁸ For example: Ugur et al. (2016). *R&D and productivity in OECD firms and industries: A hierarchical meta-regression analysis*, Research Policy, December. Retrieved from: www.sciencedirect.com/science/article/pii/S0048733316301160; OECD (2001), *R&D and Productivity growth: Panel Data Analysis of 16 OECD Countries*; STI Working Papers, Retrieved from: www.oecd-ilibrary.org/content/paper/eco_studies-v2001-art12-en

²⁹ Based on a simple annual average growth rate of approximately 1 per cent over the period 2007 to 2017.

percentage points of GDP rise in South Korea (between 2003 and 2013).³⁰ Nonetheless, these increases were the international exception rather than the rule.

The 2.4 per cent R&D target comprises contributions from both the public and private sectors. At present, private R&D is running at around 1.2 per cent of GDP (2018) or around 50 per cent of the overall target.³¹ This means “crowding-in” private R&D spending, both domestic and overseas, will be important in meeting the UK’s overall R&D target.

Previous research has indicated that both direct government funding and tax credits can increase private R&D. Recent estimates suggest that, on average, every £1 of UK public funding on R&D generates £1.36 of private R&D investment over 10 years, with the majority of this increase occurring in the first 5 years.³² This suggests public R&D can play an important catalytic role. There is also evidence to suggest tax credits have encouraged private investment.³³

While it is useful to focus attention on the level of R&D spend as an input measure, what matters is the outputs of this increased R&D activity. The balance of R&D spending is likely to be important here. For example, the productivity impact of public and private R&D may not be equivalent. Nor might the impact of investment in basic research versus applied research. For example, the downstream success of R&D might be better measured by its contribution to commercialising research at Universities. The Council believes the appropriate balance of R&D spending warrants further consideration by government. The Council hopes that, when published, government’s 2.4 per cent Roadmap will provide an ambitious and detailed delivery plan, against which the Council can assess progress.

It is also clear that an R&D expenditure target is only one element of a potential portfolio of policies that could be put in place to support and promote basic and applied science and innovation across the UK. These could include: ensuring a sufficient supply of Science, Technology, Engineering and Mathematics (STEM)-qualified talent; fostering partnerships between academia and industry; reducing barriers, and providing incentives, for commercialisation of research; and promoting innovation through government procurement.

Government is already taking action in many of these areas. This includes: the Future Leaders Fellowship programme to promote the supply of research talent;

³⁰ Source: BEIS analysis based on *OECD Main Science and Technology Indicators*

³¹ Source: ONS, *Expenditure on R&D performed in UK Businesses - as % of GDP*. Retrieved from: www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/timeseries/a8ej/berd

³² Economic Insight for BIS (2015). *What is the relationship between public and private investment in science, research and innovation?* July. Retrieved from: www.gov.uk/government/publications/research-and-development-relationship-between-public-and-private-investment

³³ For example: Westmore, Ben (2014), *Policy incentives for private innovation and maximising the returns*, OECD Journal: Economic Studies, Vol. 2013/1. http://dx.doi.org/10.1787/eco_studies-2013-5k3trmjhhxq

continued support for the Catapult innovation network; the ongoing development of the Knowledge Exchange Frameworks strengthening links between business and academia; and the launch of the GovTech Catalyst scheme aiming to use procurement to support innovation.³⁴

It is also important to recognise that UK innovation activity often does not show up in headline R&D figures. For example, much of the innovation done by UK service sector firms is not captured in R&D spending – for example, activity in the creative industries. Recent research has highlighted the importance of “intangible assets”, including software, design and artistic originals, in driving UK productivity growth.³⁵ The UK’s international innovation ranking improves significantly when considering investment in intangible assets.³⁶

The new Government has recently discussed setting up an advanced research agency in the UK. This would be an important institutional step forward in catalysing research and innovation in the UK, thereby supporting the objectives of the Industrial Strategy. An agency of this sort (ARPA) has existed in the US since 1958 to initiate important research in the areas of defence, computer science, advance materials and communications, including laying the foundations for the creation of the Global Positioning System.³⁷

Industrial Strategy Challenge Fund

The £2.5 billion allocated through the three waves of ISCF is making an important contribution towards meeting the government’s planned increase in R&D. The Council believes it will need to be scaled up, perhaps significantly, to support progress on the Grand Challenges.

The Industrial Strategy Challenge Fund (ISCF) invests in strategic innovation, bringing together world-class research with business investment and public funding.³⁸ £2.5 billion has been allocated to date through the first three waves of the ISCF and will be spent over the coming years. To illustrate the scale of the programme, this funding would correspond to approximately 7 per cent of the UK’s 2017 total domestic expenditure on R&D, if it was to be spent in one year. The policy

³⁴ Two schemes provide funding for businesses to develop new solutions to be applied in government/public sector; both are relatively small scale but are positive examples of how procurement could be used to support innovation. For more details see:

www.gov.uk/government/collections/sbri-the-small-business-research-initiative;
www.gov.uk/guidance/the-govtech-catalyst-challenge-process

³⁵ Goodridge, P., Haskel, J. and G. Wallis (2018). *Accounting for the UK Productivity Puzzle: A Decomposition and Predictions*, *Economica*, 85, 339, pp. 581-605.

³⁶ Corrado, C. Haskel, J. Jona-Lasinio, C. and M. Iommi (2016). *Intangible investment in the EU and US before and since the Great Recession and its contribution to productivity growth*. *EIB Working Papers*, No 2016/08.

³⁷ Initially called ARPA (Advanced Research Projects Agency) but currently called DARPA (Defense Advanced Research Projects Agency).

³⁸ For more details see: www.ukri.org/innovation/industrial-strategy-challenge-fund/

has made a significant contribution towards the government’s planned £4.7 billion increase in research and development spending over 4 years.³⁹

According to the latest data published by UKRI (31 October 2019), the Industrial Strategy Challenge Fund has supported 2,671 organisations since its inception.⁴⁰ The fund invests in world-leading research and innovative businesses (Figure 5). One of those is the Faraday Battery Challenge, which has seen firms working on increasing charging speeds and ranges of electric vehicles.⁴¹ Other challenges include quantum and low-carbon technologies, early diagnosis and precision medicines, and transforming construction and food production.

Figure 5: Challenge areas funded through ISCF⁴²

Accelerating Detection of Disease	Leading-edge healthcare
Audience of the future	Low-Cost Nuclear
Commercialising quantum technologies	Manufacturing and future materials
Creative industries clusters	National Satellite Test Facility
Digital Security by Design	Next generation services
Driving the electric revolution	Prospering from the energy revolution
Faraday battery challenge	Robots for a safer world
From data to early diagnosis and precision medicine	Self-driving cars
Future Flight	Smart Sustainable Plastic Packaging
Healthy ageing	Transforming construction
Industrial decarbonisation	Transforming food production

The ISCF can also play a significant role in crowding-in private funding into research and innovation. The Fund’s focus on the later stages of the innovation process can help incentivise industry co-investment and sustain the flow of ideas from the

³⁹ Ibid.

⁴⁰ Source: UKRI Communications Team

⁴¹ www.ukri.org/innovation/industrial-strategy-challenge-fund/faraday-battery-challenge/

⁴² For more detail see: www.ukri.org/innovation/industrial-strategy-challenge-fund/#pagecontentid-1

research base into commercial uses.⁴³ This crowding-in of private investment will be particularly important for meeting the Government's R&D target by 2027.

The Council observes that the ISCF is one of the only innovation funds that is explicitly supporting delivery of the Grand Challenges. Given the scale of these challenges, their limited progress to date and their need for sustained funding over a prolonged period, this suggests the ISCF (or similar innovation funds) may need to be scaled-up, perhaps significantly, if the Grand Challenges are to make significant progress.

Skills

The UK is facing an unprecedented skills challenge, with around 40 per cent of the workforce having skills materially misaligned with their jobs. Without policy intervention, these skills mismatches will rise materially over the next decade. The Council believes current education and training policies and institutions will need to be overhauled and expanded significantly to meet this skills challenge.

It is well-established that the education and skills of the workforce are a vital ingredient in driving improvements in an economy's productivity and growth.⁴⁴ One academic study found that the UK could improve its productivity by 5 per cent or more if it reduced the level of skills mismatch to that of best-practice peer nations.⁴⁵

At the same time, the UK appears to be facing an unprecedented skills challenge. In surveys, more than three-quarters of businesses report skills shortages as their biggest impediment to growth and competitiveness. And it is estimated that as many as 40 per cent of the UK workforce have skills that are significantly misaligned with the needs of their job. Within this, around 30 per cent are under-skilled for their job, and around 10 per cent over-skilled.⁴⁶

In October 2019, the Council published a research paper projecting forward these skills mismatches to the end of the decade, based on probable trends in the workplace (see Section 4). Based on plausible assumptions and on current policies, an additional 7 million workers could be under-skilled by 2030.⁴⁷

⁴³ HoC Science and Technology Committee (2019). *Balance and effectiveness of research and innovation spending inquiry*, March, Retrieved from: www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/inquiries/parliament-2017/research-innovation-spending-17-19/

⁴⁴ For example: BIS (2015), *UK skills and productivity in an international context*, December. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/486500/BIS-15-704-UK-skills-and-productivity-in-an-international_context.pdf

⁴⁵ OECD (2015). *Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data*. Retrieved from: <http://dx.doi.org/10.1787/5js1pzx1r2kb-en>

⁴⁶ OECD Skills for Jobs database. 2016 data. Uses EU labour force survey, covering the whole of the UK. Retrieved from: stats.oecd.org

⁴⁷ Industrial Strategy Council (2019). *UK Skills Mismatch in 2030*, October. Retrieved from: <https://industrialstrategycouncil.org/uk-skills-mismatch-2030-research-paper>

At least as important as the scale of this skills challenge is its source. The skills deficits will be acute in digital skills and STEM subjects. But they will also be wide and widening for a broader range of vocational and interpersonal skills – for example, critical thinking and creativity, negotiation and communication and teaching and training. These needs are not necessarily well-served by existing educational practice and institutions.

A change in educational policies will only be part of the solution. With 80 per cent of the 2030 workforce already in the workforce today, reskilling the existing workforce will in fact be the major challenge between now and 2030. This suggests employers, government, trade unions and individuals will need to work together to deliver the combination of retraining, upskilling, and lifelong learning that will be required.

A number of initiatives are underway to improve the skills of the UK workforce. The question is whether, individually and collectively, these are likely to be sufficient to meet the UK's future skills challenge. As things stand, that seems very unlikely. For example, while the principles behind Government's National Retraining Scheme (NRS) are sound, the £100 million pledged for its pilot phase will make few inroads into the UK's skills mismatch.⁴⁸

The devolution of the Adult Education Budgets (AEBs) from 2019 will allow Mayoral Combined Authorities and the Greater London Authority to tailor their provision to local needs. This is a positive step in ensuring education spending is well-aligned with local skills needs.

T-Levels will provide a new set of standards for technical education in England when they go live in September 2020, with the support of £500 million of funding per annum once fully rolled out.⁴⁹ Nonetheless, it remains to be seen whether T-Levels can be rolled out at an adequate scale and with sufficient quality. HM Treasury has announced £60 million for a Capacity & Delivery Fund to build provider capacity of industry placements. But providers will face a very significant increase in the demand for high-quality placements in a short period of time.⁵⁰

The funding needs of the further education system are likely to increase materially as the UK transitions to a higher-tech economy. The £400 million investment in Further Education in 2020-2021, announced as part of the 2019 Spending Review Settlement, is a welcome development.⁵¹ This investment is a significant increase as a proportion of the current Further Education budget for 16-19 year olds, of around £6 billion. But it has to be seen in the wider context of total education sector

⁴⁸ HMT, *Budget 2018*. op. cit.

⁴⁹ DfE (2019). *Introduction of T-Levels – Guidance*, October. Retrieved from: www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels

⁵⁰ DfE (2019), *T-Levels Industry Placements*, May. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/802703/Industry_placements_policy_update.pdf

⁵¹ DfE (2019, August 31). *Chancellor announces £400 million investment for 16-19 year olds' education*. Retrieved from: www.gov.uk/government/news/chancellor-announces-400-million-investment-for-16-19-year-olds-education

spending. In the 2019 Spending Review, this equalled £64 billion (the Department of Education departmental expenditure limit).

Recently, the Government has announced a further £3 billion of spending over 5 years on further education and skills through a new National Skills Fund.

Over almost three decades, the UK has heavily relied on the free movement of workers from the EU to manage its skills and labour shortages. Recent studies have shown that high-skilled migration can make a positive contribution to productivity in individual firms and local areas.⁵² The transition to a new immigration system post-Brexit could have far-reaching consequences for the labour market at both ends of the skills spectrum. A number of sectors are heavily reliant on EU workers, including food manufacture (where EU workers account for 32 per cent of the total workforce), accommodation (20 per cent), warehousing and transport (18 per cent), and construction (13 per cent).⁵³

Taken together, the UK economy is likely to face an unprecedented, and growing, skills challenge in the years ahead. Without intervention, these rising pressures will hold back productivity growth in the economy. While recent policy initiatives and announcements are encouraging, particularly in the area of Further Education, they seem likely to fall well short of the scale necessary to meet this skills challenge.

Supply of SME finance

The Council recognise the important role of the British Business Bank (BBB) in supporting the provision of SME finance. To meet the objectives of the Industrial Strategy, the Council believes an expansion in the number of businesses benefiting from the BBB's support would be desirable, in particular in regions and sectors that are poorly served at present.

In the wake of the 2008-09 global financial crisis, lending by banks to businesses fell sharply. For SMEs, the resumption of bank lending did not commence until 2015, due to a combination of weak demand and constrained supply. Traditionally, SMEs rely heavily on bank lending as they are unable to access alternative sources of finance.

According to the SME Finance Monitor, bank loan applications have become less likely to be successful in recent years. In addition, SME Finance Monitor data has shown persistently higher rejection rates for younger, small businesses, and for

⁵² Runge J. (2019). *Briefing: Overview of evidence on economic impact of EU migration*, NIESR, August. Retrieved from: www.niesr.ac.uk/publications/niesr-briefing-overview-evidence-economic-impacts-eu-immigration

⁵³ Migrationwatch UK (2017). *How vital are further inflows of EU workers?* October. Retrieved from: www.migrationwatchuk.org/briefing-paper/420

those looking to grow, than for larger well-established SMEs. These effects have persisted since the financial crisis.⁵⁴

The BBB is a government-owned business development bank dedicated to serving smaller UK businesses at all stages of their development: starting up, scaling up and staying ahead.⁵⁵ As at end of July 2019, the BBB's Start Up Loans programme had lent £519 million to 65,730 entrepreneurs. And 31,223 facilities have been drawn down under the BBB's Enterprise Finance Guarantee Programme, to a value of over £3.3 billion.

The Patient Capital Review, announced in Autumn 2016, led to a two-thirds increase in the scale of the BBB. The BBB launched a new £2.5 billion investment programme in June 2018, British Patient Capital, to provide patient capital to high-growth firms. It launched a further three programmes in 2018: the Managed Funds programme, the Regional Angels programme, and the National Security Strategic Investment Fund (NSSIF). The BBB is currently supporting over 91,000 smaller businesses, with the total of stock of finance of £7 billion (as at June 2019).⁵⁶

The Council welcomes the emergence and growth of the BBB, as a means of providing finance to support high growth start-ups and scale-ups. The adequate provision of SME finance is a long-standing fault-line in the UK financial system. It also welcomes the BBB's recent focus on regional financing initiatives, as a contribution towards the new Government's "levelling-up" agenda.

Looking ahead, the Council believes that a further expansion in the number of companies benefitting from BBB financing would be desirable, supporting start-ups and scale-ups across the UK. This could be particularly useful in supporting sectors and regions of the UK that are currently poorly served.

Apprenticeship reform

Evidence suggests reform of the apprenticeship system has raised vocational education standards in the UK. But the system has also been found to be inflexible and restrictive, with levy-paying firms using less than a fifth of the funding available to them and the overall number of apprenticeships falling. The Council believes a strategic review of, and the introduction of greater flexibility into, the apprenticeship system is needed.

Reform of the UK apprenticeship system began in 2017. Since then, the new system has significantly reshaped the skills landscape by introducing a new levy and co-investment between Government and employers, coupled with new standards to raise the quality of apprentice schemes for employees and to better meet employers'

⁵⁴ BVA BDRC (2019), *SME Finance Monitor Q2 2019*.

Retrieved from: www.bva-bdrc.com/products/sme-finance-monitor/

⁵⁵ For more details see: www.british-business-bank.co.uk/

⁵⁶ Ibid.

skills needs. The new standards require at least 20 per cent off-the-job training and last at least one year, in line with practices in Germany, Austria and Switzerland.

The apprenticeship system is intended to serve as a high-quality route into the labour market for students not going to university. It also offers a way for adult workers to upskill and retrain while in work. This is particularly important given that potential future skill needs in the workplace may differ significantly from those needed in the past, necessitating lifelong learning.

The new system has clearly increased higher-level apprenticeships. As a share of overall apprenticeship starts, higher-level training has jumped from 5.3 to 19.1 per cent over the period 2015/16 to 2018/19 (Figure 6). The combined share of advanced and higher-level apprenticeships was 63.5 per cent in 2018/19, up from 43 per cent in 2015/16.

Figure 6: All Age Apprenticeship Programme Starts by Level and Age (2010/11 to 2018/19 – Reported to date)⁵⁷

Level	2015/16	2016/17	2017/18	2018/19	2019/20 (reported to date, as of Jan 2020)
Intermediate Apprenticeship	291,300	260,700	161,400	143,590	51,209
Advanced Apprenticeship	190,900	197,700	166,200	174,727	68,376
Higher Apprenticeship	27,200	36,600	48,200	75,058	36,140
Totals	509,400	494,900	375,800	393,375	155,725
% of Higher + Advanced Apprenticeships	42.8%	47.3%	57.1%	63.5%	67.1%
% of Higher Apprenticeships	5.3%	7.4%	12.8%	19.1%	23.2%

The upshot has been a significant shift from lower to higher-level apprenticeships across all parts of the economy, including towards STEM and financial services. Correspondingly, there has been a significant fall in the number of apprenticeships

⁵⁷ DfE (2019). *National Statistics, Further Education and Skills*, November. Retrieved from: www.gov.uk/government/statistics/further-education-and-skills-november-2019

provided by “traditional” sectors, such as construction and retail, that traditionally have dominated the apprentice system. This is true in both absolute numbers and relative terms.

The net effect of these shifts has been a fall in the overall number of apprenticeship starts. These were 23 per cent lower in 2018/19 than in 2015/16, the last full academic year before the reforms.⁵⁸ That said, it should be noted that the downward trend in starts has been reversed in 2018/19 with 17,000 additional placements created compared to the previous year. The fall in starts has been particularly marked for level 2 apprentices (GCSE equivalent) for those aged 25 or over, with 59 per cent fewer starts over the same period. This fall has been especially acute in the retail sector.

Research by the Resolution Foundation suggests that the Apprenticeship Levy itself does not appear to have led to a reduction in the total number of apprenticeship starts. In 2017/18, levy-paying firms were just as likely as non-levy payers to invest in the types of lower-level programmes that have experienced the sharpest reductions, while the levy appears to have increased the number of higher-quality schemes.⁵⁹

At the same time, there are elements of the new apprentice system which warrant further attention and reform. The first is financing. The current set-up of the scheme appears to have resulted in underspending at the level of the firm, at the same time as government is at risk of exceeding its budget allocation.

The current design of the system might be slowing down the speed, with which the available funds are spent by individual firms. In 2017-18, levy-paying employers accessed only £191 million (9 per cent) of the funds available to them to pay for new apprenticeships.⁶⁰ The uptake of the levy funds has increased since then, reaching 18 per cent in the period between May 2017 and April 2019.⁶¹ This suggests there is considerable scope for initiatives which connect larger firms to smaller firms to facilitate levy transfers, or improved partnerships between providers and employers.⁶²

⁵⁸ NAO (2019). The apprenticeship programme report, March. Retrieved from: www.nao.org.uk/report/the-apprenticeships-programme/

⁵⁹ Resolution Foundation (2019). *What do the latest apprenticeship figures tell us?*, September. Retrieved from: www.resolutionfoundation.org/comment/what-do-the-latest-apprenticeship-figures-tell-us/

⁶⁰ NAO (2019). *The apprenticeship programme report*, op. cit.

⁶¹ House of Commons Written Question – 271484; Retrieved from: www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2019-07-01/271484

⁶² People management (2019 September 13). *One in four business unhappy with apprenticeship provider*. Retrieved from: www.peoplemanagement.co.uk/news/articles/one-four-businesses-unhappy-with-apprenticeship-provider; FE Week (2019, June 24), *ESFA to consider scrapping levy transfer funding restriction for 16-18 year-old apprentices* [News article] Retrieved from: <https://feweek.co.uk/2019/06/24/esfa-to-consider-scrapping-levy-transfer-funding-restriction-for-16-18-year-old-apprentices/>

At the same time, the average cost of training an apprentice is proving higher than expected because employers are choosing higher-level and more expensive schemes, typically for more experienced and higher-skilled workers. The Government budget allocated to top-up the scheme is, as a result, coming under increasing pressure. In addition, the scheme has been criticised by businesses for being too bureaucratic, inflexible and restrictive.⁶³

While a broad set of performance measures for the apprenticeships programme were published in 2017, the National Audit Office states that it remains difficult to understand the impact of the programme on productivity. The Government could usefully also clarify to employers how the levy could be used to reskill and upskill people in work, especially to meet the increasing demands for STEM and digital skills.

The Council believes that review and reform of the new apprentice system would be desirable. Improving its flexibility and the clarity of process would go a long way towards addressing many businesses' concerns and would help firms make best use of the funds available to them. The Council believes the Government should work with business to identify how the levy can best be used to reskill and upskill people in work to meet future skills needs.

⁶³ For example: BCC (2018, August 16). *Apprenticeships great path for students, but system needs reform to boost numbers*. Retrieved from: www.britishchambers.org.uk/news/2018/08/bcc-apprenticeships-great-path-for-students-but-system-needs-reform-to-boost-numbers; CBI (2019, September 17). *Learning on the job: improving the apprenticeship levy*. Retrieved from: www.cbi.org.uk/articles/learning-on-the-job-improving-the-apprenticeship-levy

Section 4: Insight Projects

Places

The Council believes that addressing regional disparities is a critical element of a successful Industrial Strategy, particularly in the UK where these spatial differences are wide and widening. It welcomes the commitment by the new Government to “level-up” the UK economy.

The Council’s Insight Project on “place” attempts to understand how Industrial Strategy policies might best be designed and directed to close those regional disparities across the UK. There are two elements to the current project:

- An evidence review, which presents a rigorous and comprehensive assessment of the evidence on the extent and causes of spatial disparities in UK productivity and other economic and social indicators, and on the success of policies aimed at closing those differences.
- Qualitative research in four case study Local Enterprise Partnerships (LEPs) and Combined Authorities, to provide a richer understanding of the process of developing Local Industrial Strategies (LISs).

As part of both strands of research, the Council is engaging with a wide range of stakeholders, including officials in local government, LEPs, academics, think-tanks, businesses, and government representatives.

The evidence review published on 4th February 2020 highlights that differences in productivity across UK regions are large and have been persistent over time. There are multiple factors that can explain these differences, the importance of which differs between regions. These factors tend to be mutually-reinforcing, such that spatial differences between those regions “steaming ahead” and “left behind” tend to widen over time.

In the academic literature, the deep roots of spatial productivity differences are often encapsulated in three place-based “narratives”. These, too, are not mutually exclusive and in many places tend also to be mutually-reinforcing:

- *Place-based fundamentals* – such as geography, local culture, governance, infrastructure.
- *Agglomeration economies* – clusters of specialised businesses or labour that become self-sustaining.
- *Spatial Sorting* – the tendency of workers to choose to locate in places with similarly-skilled residents. The same is often true of financial capital.

The Council’s research highlights the important role of longevity and consistency when it comes to the setting of regional policy. Strategies need also to be comprehensive, covering the various aspects of policy in an integrated fashion, given the multiple causes of spatial difference. In developing a plan for “levelling-up” the UK, further work is also needed to close data gaps at the sub-national level.

To complement this quantitative research, the Council is also conducting qualitative research to consider the process for developing the Local Industrial Strategies in four areas: Cambridgeshire and Peterborough, the North East, the Marches and Thames Valley Berkshire. These cases have been selected because they are at different stages of development of their strategy, have different internal geographies and different levels of productivity (Figure 7).

Figure 7: Key facts for qualitative research areas chosen

Place	Geography	Productivity Index in 2017 (UK=100) Source: ONS ⁶⁴	Wave of LIS publication
Cambridge and Peterborough	Mixed: Mostly rural with some urban	93.32	1
North East	Mostly urban	88.97	2
The Marches	Mostly rural with some urban	78.82	3
Thames Valley Berkshire	Urban	122.75	3

Research interviews with local policymakers and involved stakeholders (such as businesses and academics) have focused on:

- **Collaboration:** Who has been involved in what ways? How has this worked?
- **Prioritisation:** How was this done? How was the evidence base used? Do the priorities reflect the place?
- **Evaluation:** What does success look like? What is the plan for monitoring progress towards this?

These interviews have been supplemented by informal engagement with policymakers in the devolved administrations to understand the parallels and differences with the LIS process. This research will be published in the first half of

⁶⁴ONS Regional and sub-regional productivity in the UK: February 2018. Retrieved from: www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/regionalandsu bregionalproductivityintheuk/february2018

2020 and will allow the Council to understand how Local Industrial Strategies are being developed and whether they are helping to deliver the aims of the Industrial Strategy.

Box 3: Key conclusions of the Places evidence review

- Differences in productivity across UK regions are large, in absolute terms and by international standards, and have been persistent over time. Three recent trends stand out: the success of some cities; the decline of coastal and some de-industrialised areas; and the importance of regional “clubs” and “clusters”.
- Differences in productivity across regions can be attributed to differences in any one of the following: i) workforce skills and health, ii) productive assets and infrastructure, iii) local geography and institutions, and iv) the composition of economic activity. In practice, high-productivity regions tend to outdo low-productivity regions along all of these dimensions.
- There are three main “narratives” in the literature about the deep roots of spatial productivity differences, and opinion differs on the relative importance of each in shaping outcomes: place fundamentals, agglomeration economies and spatial sorting.
- These narratives have distinct implications for how government policy ought to tackle regional economic imbalances, and what policy tools ought to be used, and therefore provide a useful framework for interrogating local growth strategies.
- Past experience makes clear that, to be successful, regional policies need to be applied consistently, financed at scale and focused on the “left behind” places. They need also to have sufficient local capacity and capability within local institutions. Historically, UK regional policy has fallen short in meeting these requirements.

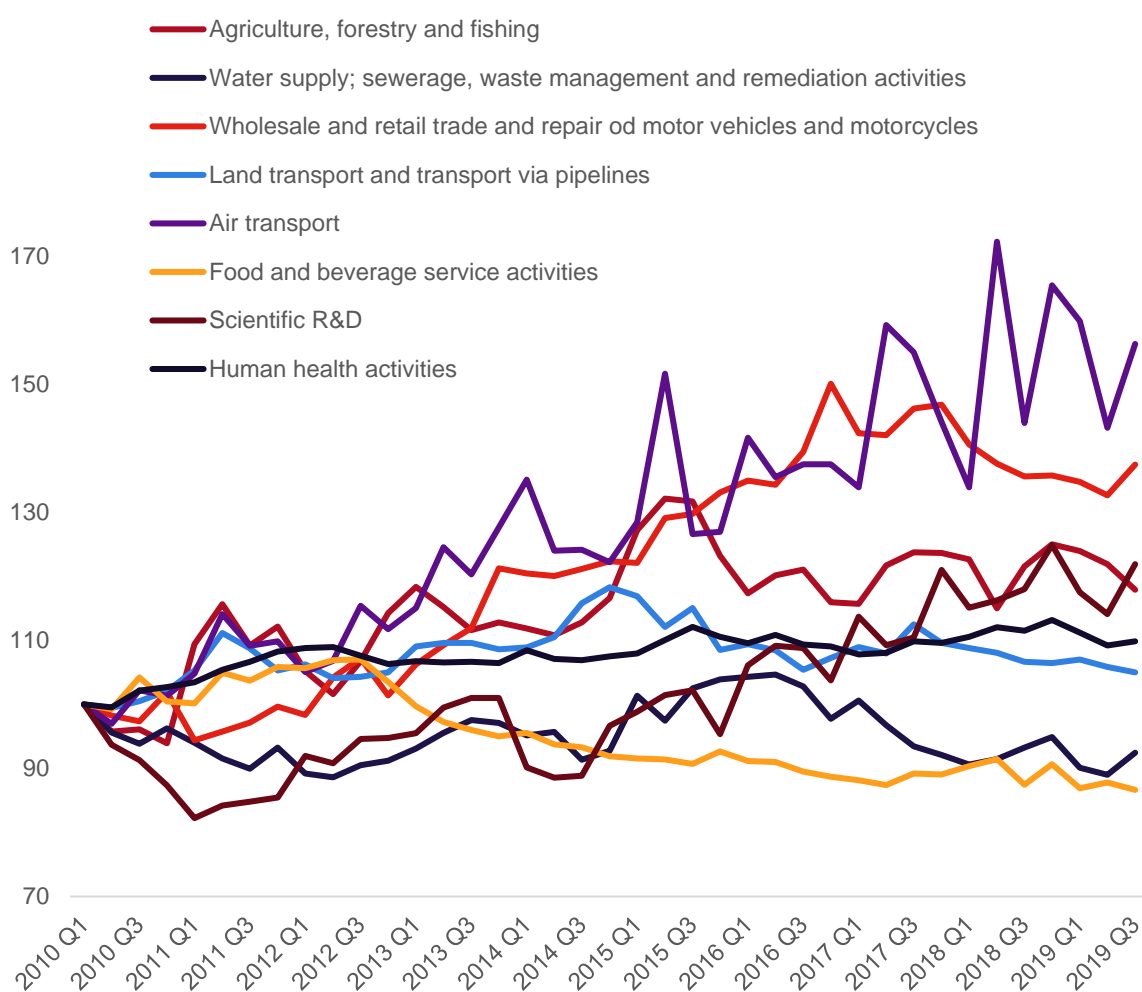
Sectors

A key element of the Industrial Strategy set out by the Government in 2017 was the so-called “Sector Deals”. These are agreements reached between certain sectors of the economy and government to deliver a programme of investment over a period of time. Since then, eleven Sector Deals have been agreed covering a wide variety of industries including construction, the creative industries, life sciences, tourism and nuclear (see Annex).

The Council’s Insight Project on “Sectors” seeks to understand the context for sectoral strategies, including the international context; why some sectors might require policy intervention to help catalyse investment – for example, due to pre-existing market failures or the particular economic conditions they face; and what factors are likely to make for an effective sectoral approach.

Productivity performance often differs very significantly between sectors. For example, since 2010 air transport has seen output per hour rise by over 50 per cent (Figure 8). Over the same period, food and beverage service activities, and water supply; sewerage, waste management and remediation activities have seen output per hour decline. These differences could suggest sector-specific policy strategies may be required.

Figure 8: Output per hour, UK, seasonally adjusted chained volume measure, Q1 2010 – Q3 2019 (Index, Q1 2010 = 100)



Source: ONS

The Council's research will develop case studies, informed by qualitative evidence, of UK Sector Deals and compare them with international sectoral policy in other countries, including China, France and Germany. It will also compare Sector Deals with other approaches to Industrial Strategy, such as cross-sectoral or mission-based approaches like the Grand Challenges. The Council is engaging with a wide range of stakeholders from academia, government departments, NGOs and private firms to inform the project. The research will be published in mid-2020.

Skills

Skills are a key determinant of an individual's career success, earnings power and labour productivity. Investing in skills development can increase productivity and economic growth both directly through raising individual capabilities, but also indirectly by facilitating the creation and diffusion of ideas and innovation. UK companies report that lack of access to the right skills is a major threat to their competitiveness and productivity.

The Council published its first Insight Report on skills in October last year, working in collaboration with McKinsey.⁶⁵ The report highlights the increasingly challenging skills landscape facing the UK in the decade ahead. Box 4 sets out the key findings.

The Council's next research on skills, due to be published later this year, will ask what we can learn from international case studies and workplace perspectives on skills when developing successful systems to meet the UK's skills challenge. The international case studies will cover France, the Netherlands, Japan, Canada and Sweden.

The workplace perspectives research examines employer and employee perceptions on skills and the value of training. This will be complemented by in-depth interviews with a small number of employers to understand the specific skills development challenges they face. The research is structured around three themes: timeframes for addressing skills needs and the type of skill providers needed; current skills development and progression strategies at the organisation level; and improvements in the adult skills system.

⁶⁵ To download the report please visit: <https://industrialstrategycouncil.org/uk-skills-mismatch-2030-research-paper>

Box 4: UK Skills Mismatch 2030

Skill mismatches – which can reflect both skill shortages and skill surpluses – can act as a drag on economic growth. The Council, in collaboration with McKinsey, conducted analysis to estimate skills mismatches in the UK workforce in 2030, based on likely trends in the economy and society.

The analysis found that, by 2030, 7 million additional workers could be under-skilled for their job requirements. This would constitute about 20 per cent of the current labour market. In addition, a further 0.9 million workers could find themselves over-skilled for their job.

Workplace skills that are set to experience the most acute under-skilling by 2030 include:

- The most widespread under-skilling is likely to be in basic digital skills, with up to two-thirds of the workforce facing some level of under-skilling. Around 5 million of those could be acutely under-skilled in basic digital skills by 2030.
- Around 2.1 million extra workers are likely to become acutely under-skilled in at least one core management skill.
- Around 1.5 million workers are likely to become acutely under-skilled in at least one STEM workplace skill.
- Around 0.8 million extra workers are likely to face an acute shortage in teaching and training skills, defined as the ability of those in the working environment to upskill others.

Section 5: Success Metrics

A key element of the Industrial Strategy Council's remit is to develop and maintain a set of Success Metrics. These help the Council to assess the impact the Industrial Strategy may be having in meeting its longer-term goals of increased productivity and earnings power.

Following an extensive period of consultation, the Council published its initial set of Success Metrics in October last year. These empirical metrics were underpinned by a theoretical model of the drivers of growth and mapped to the key elements of the Industrial Strategy.⁶⁶ The long-term nature of the Industrial Strategy's policies means that it will take time for it to move the dial on many of the Success Metrics. It will also often be difficult to identify a causal link from policy actions to these metrics.

Notwithstanding these caveats, this section highlights some important recent developments in some of these metrics. It also highlights data gaps identified in the course of developing the Success Metrics.

The UK productivity puzzle

One of the key longer-term objectives of the UK's Industrial Strategy is to boost productivity growth in the UK economy. Productivity is a measure of how effectively an economy uses its resources. The greater the value of outputs produced in the economy (GDP) relative to its inputs (for example, hours worked), the higher an economy's productivity.

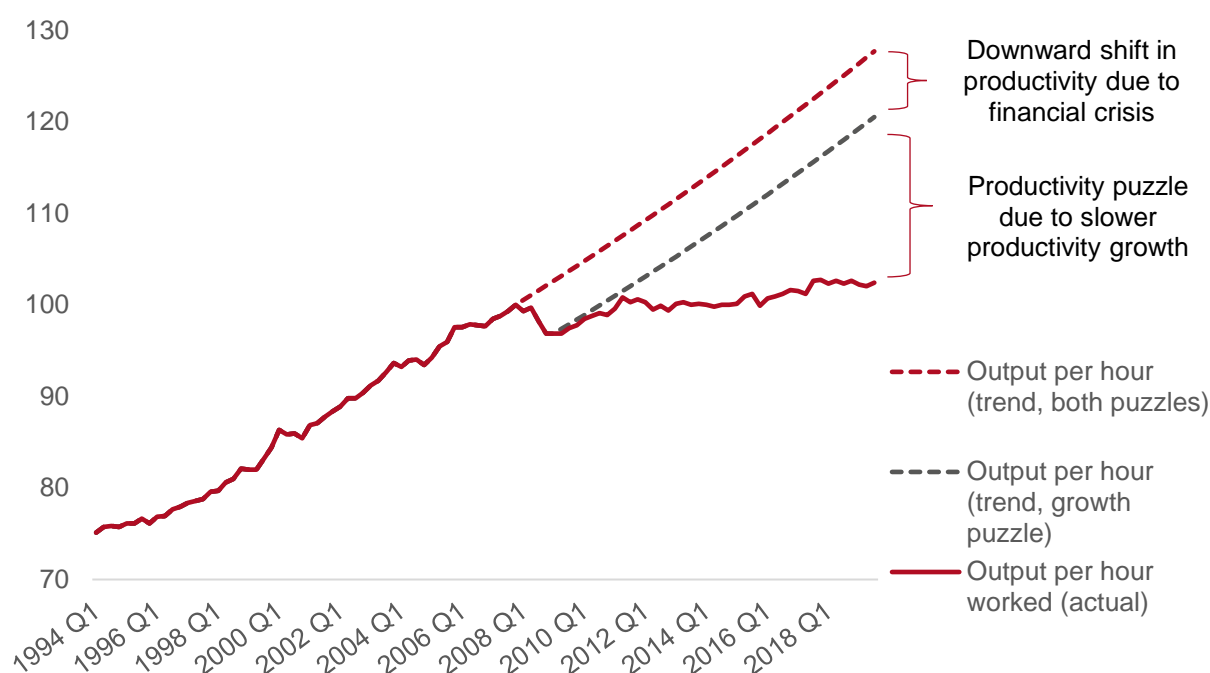
Productivity matters because it has been shown to be the primary source of long-run economic growth, especially in advanced economies like the UK. Developments in productivity are also closely linked to real wage growth for workers – a second, long-term objective of the Industrial Strategy. There is a direct link between growth in productivity and rising living standards and competitiveness in an economy.

The UK has a longstanding productivity gap with its main international competitors. The UK economy is also experiencing its worst decade of productivity growth for perhaps 200 years. The UK experienced a sharp drop in productivity in the immediate aftermath of the 2008 financial crisis, followed by a significant slowdown in productivity growth. The result is that UK productivity is now only marginally higher than a decade ago. This is often referred to as the “productivity puzzle”.

⁶⁶ For more details see: <https://industrialstrategyCouncil.org/success-metrics>

Figure 9 illustrates the “productivity puzzle”, comparing the past decade to previous trends. The lower of the two trend lines is shifted downwards to account for the one-off hit to productivity from the financial crisis. The difference between these lines and the level of productivity today indicates the scale of the productivity puzzle. This suggests it is at least 20 per cent of pre-crisis levels of GDP. This is a massive hit to the economy’s living standards.

Figure 9: Labour productivity: GVA per hour worked, actual versus trend, UK, 1994 Q1 to 2019 Q3 (Index, 2007 = 100)



Source: ONS. Success Metric 1.2.1a

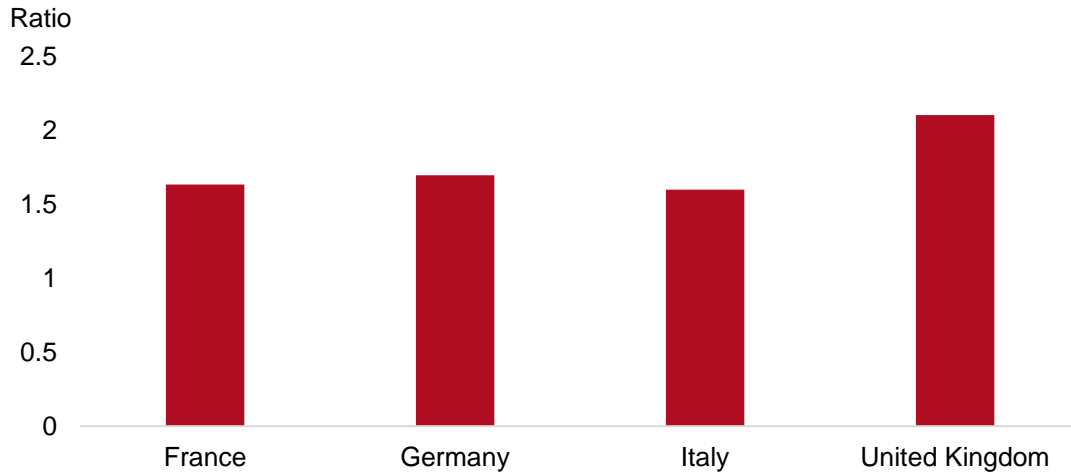
Weak productivity growth is not unique to the UK. Labour productivity was lower in all G7 countries than it would have been had pre-crisis trends continued. But the UK slowdown has been sharper, with the difference between post- and pre-crisis productivity 15.6 per cent in the UK in 2016, double the G7 average of 8.7 per cent.⁶⁷ Recent data suggest there has been no let-up in the UK’s productivity problems. Labour productivity rose by only 0.5 per cent during 2018 and is likely to have fallen in 2019.⁶⁸

⁶⁷ONS, International comparisons of UK productivity (ICP), final estimates: 2016. Retrieved from: www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/bulletins/internationalcomparisonsofproductivityfinalestimates/2016

⁶⁸ ONS, UK Whole Economy: Output per hour worked % change per annum SA. Retrieved from: www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/timeseries/lzvd/prdy

Figure 10 illustrates the ratio of differences between the most productive NUTS2 region in a country (measured as GDP, in purchasing-power adjusted euros per hour) and the least productive region for G7 countries in 2016. In productivity terms, the UK is also one of the most spatially-imbalanced European countries.

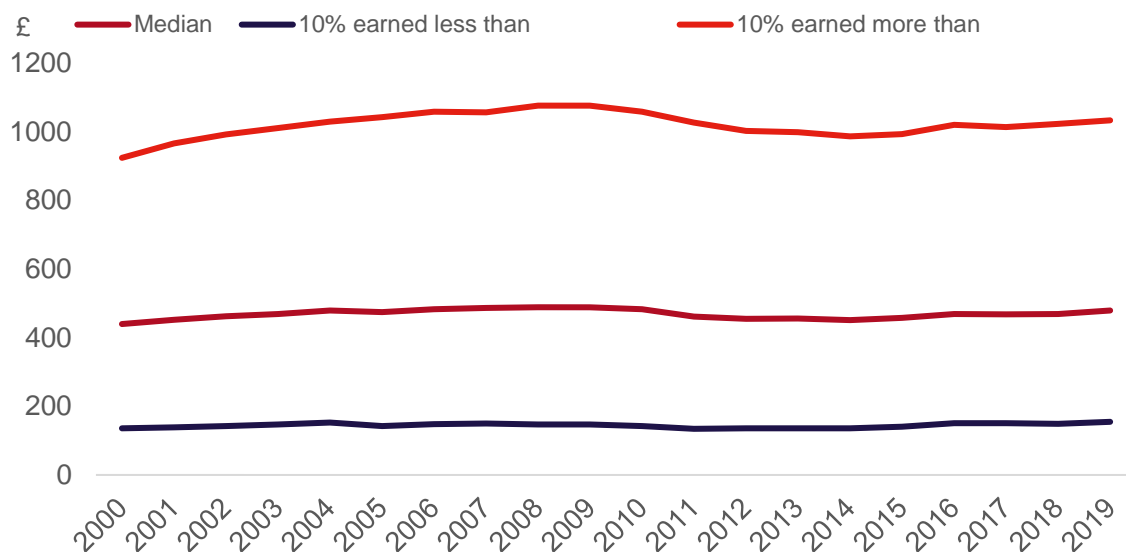
Figure 10: International comparisons of regional disparities in productivity, France, Germany, Italy, UK, 2016



Source: Eurostat. Success Metric 1.2.4a

Weak productivity growth across the UK has been felt in weaker wage growth for UK workers. Figure 11 plots weekly earnings deflated by the Consumer Prices Index including owner occupiers' housing costs (CPIH). Despite a pick-up in nominal earnings over recent years, real pay growth has been muted for many workers. Median real pay in the UK is no higher today than at the time of the financial crisis.

Figure 11: Gross weekly earnings (adjusted for inflation) UK, 2000 – 2019 (2019 data are provisional) (£)



Source: ONS. Success Metric 1.1.1a

In understanding the drivers of weak productivity and earnings, the Council's Success Metrics consider a range of "capitals", both their quantity and quality. These include human capital (such as workers' skills), physical capital (such as a well-functioning transport network) and intangible capital (such as efficient management practices). They also include metrics of the institutional environment within which these capitals interact (such as the quality of competition law).

However, standard measures of economic progress often ignore some of the factors, or "capitals", that people care about most. These include the environment (natural capital, such as forests and oceans), the quality of work, social interactions (social capital, such as community and trust) and physical and mental health. The Council has recognised the importance of these wider factors and included them in the Success Metrics.

Other metrics developments

Figure 12 shows a selection of trends in other Success Metrics. Importantly, these metrics are intended to cover developments at different points along the productivity pipeline, from innovation and technology through to investment in human and physical capital to productivity and pay. The metrics also look at less conventional measures of capital, such as social capital and trust, which are important both for productivity and for wider measures of well-being.

A few observations on recent trends in some of the Success Metrics are worth making.

Indicators of innovation provide an insight into the degree of dynamism in the economy. One such indicator is the (field-weighted) citation index. This compares the UK's research base by a range of international benchmarks (Panel (a)). A score of 1 represents the world average. Since 2007, the UK's field-weighted citation index was the highest among the G7 countries. Data for 2018 shows that the UK produced 14 per cent of the world's most highly-cited publications.

These and other indicators suggest the UK fares well when it comes to basic research and innovation. It is home to several of the world's leading universities and research centres. And it is consistent with the UK being home to a disproportionate number of globally productivity-leading companies – more than in competitor countries compared to whom the UK has a large productivity gap. This suggests the full fruits of this innovation are not being diffused evenly across the UK economy.⁶⁹

⁶⁹ BEIS (2019), *Business Productivity Review*, November. Retrieved from: www.gov.uk/government/consultations/business-productivity-review-call-for-evidence

While innovation is vital for economic growth and wealth-generation, so too is social capital.⁷⁰ Social capital includes personal relationships and networks, civic engagement and institutions and social norms and values. Panel (b) presents some estimates of social capital developed by the Bennett Institute for Public Policy.⁷¹ It compares trust in the United Kingdom to the rest of Europe over time.

Two different components of trust are considered: “General trust” and “People vs Institutions”. The latter captures relative trust in people, as compared with institutions. Both components are, on average, higher in the UK than in Europe over most of the period since the early 2000s. That said, there has been a recent decline in these trust metrics in the most recent data.

Another core contributor to productivity is human capital – the “stock” of competencies and attributes in the workplace. The ONS has developed a measure of the stock of human capital in the UK using, for every age-gender-highest qualification obtained combination of characteristics for each worker, their discounted labour income over the rest of their working lives.

In 2018, the value of the UK’s real human capital stock was £21.4 trillion, an increase of 0.2 per cent on the previous year (Panel (c)). According to the ONS, this was the result of an increase in the educational attainment of those who were economically-active, partially offset by the effects of an ageing population. Tracking this human capital measure over time provides a useful metric on the success of policies to improve education and skills in the UK economy.

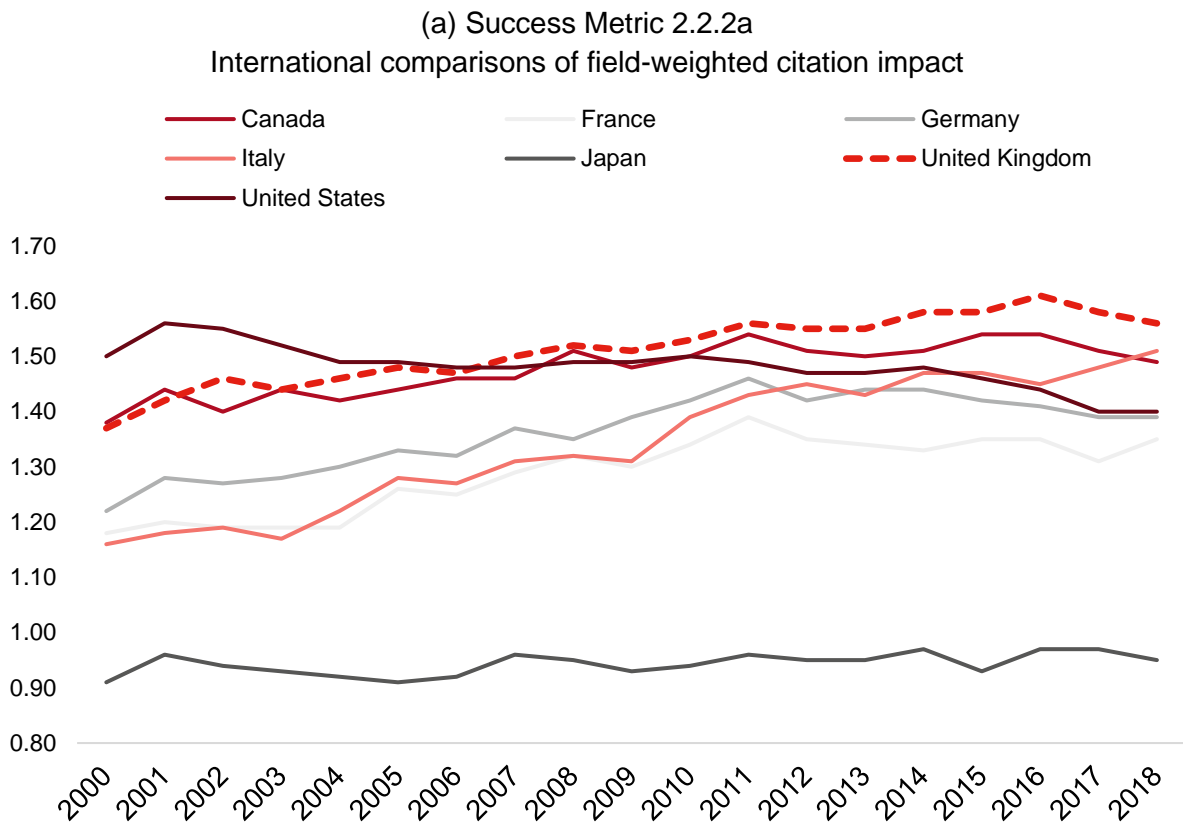
A wider measure of success than productivity and pay are metrics of life, health and job satisfaction. They can help us sketch a picture of national well-being. For example, Panel (d) shows the proportion of respondents reporting very high life-satisfaction by region.

Over the last decade, average life satisfaction has been rising across the UK, despite real wages and productivity having flat-lined. It is also striking that the proportion of respondents reporting very high life-satisfaction is highest in Northern Ireland (where levels of pay and productivity are among the lowest in the UK) and lowest in London (where levels of pay and productivity are by some margin the highest in the UK). This underlines the importance of looking at a wider range of success metrics when evaluating the contribution made by the UK’s Industrial Strategy.

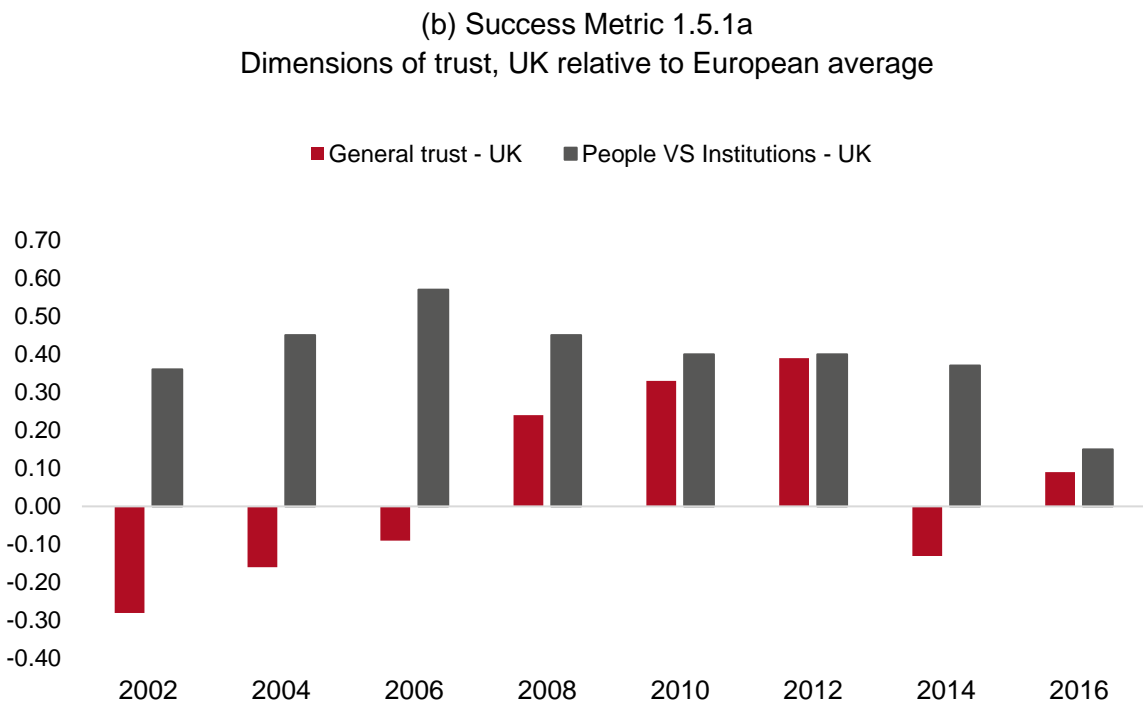
⁷⁰ Knack S., Keefer P. (1997). *Does Social Capital Have an Economic Payoff? A Cross-Country Investigation*, The Quarterly Journal of Economics, November. Retrieved from: www.jstor.org/stable/2951271?seq=1#metadata_info_tab_contents

⁷¹ Bennett Institute for Public Policy, (2019). *Measuring social capital for Industrial Strategy*. Retrieved from: www.bennettinstitute.cam.ac.uk/blog/measuring-social-capital-industrial-strategy/

Figure 12: Selected Success Metrics

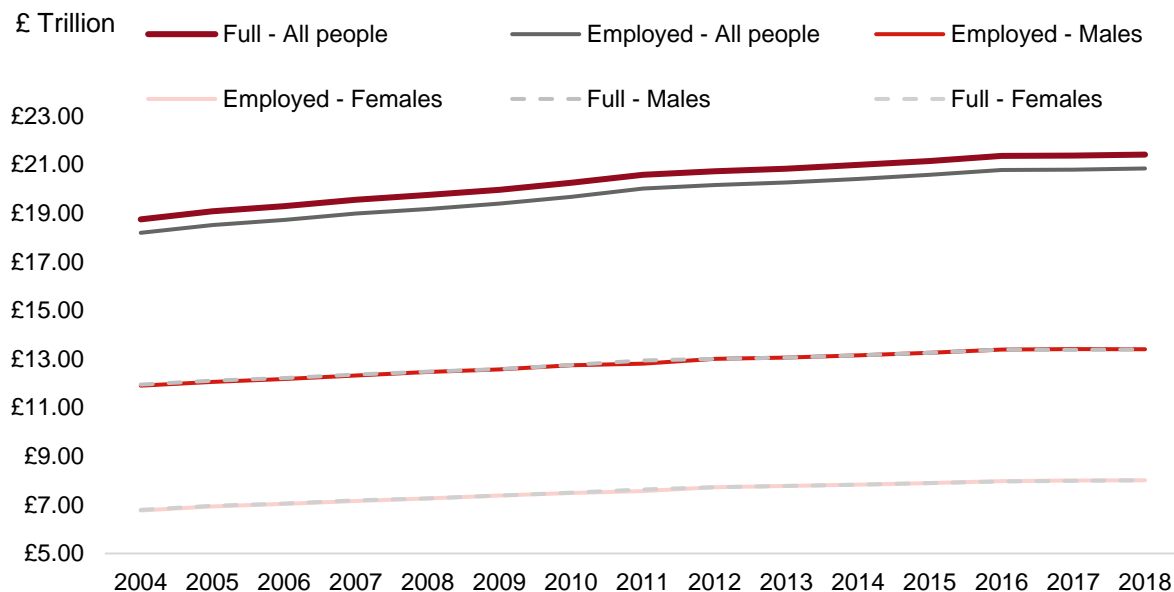


Source: BEIS



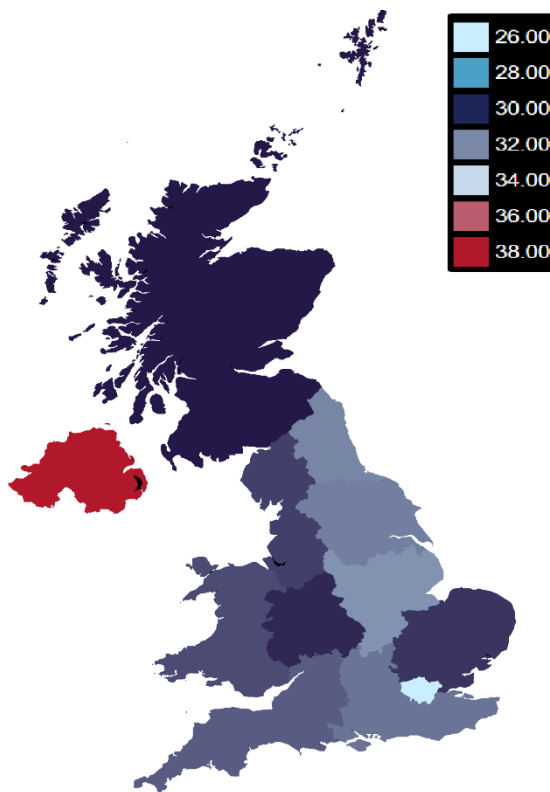
Source: The Bennett Institute for Public Policy

(c) Success Metric 3.1.1a
 Real full and employed human capital stock, UK by gender, 2004-2018 (£ trillion)



Source: ONS

(d) Success Metric 1.4.1b
 Proportion of respondents reporting very high life satisfaction, 2018-2019 (%)



Source: ONS

Recent data gap developments

The Council's approach to evaluation needs to be dynamic. This means that metrics need to evolve over time as new research is developed or better data is collected. In its work on Success Metrics, the Council identified several data gaps and is now working in collaboration with others to close those gaps. These include:

Productivity

ONS are developing their productivity estimates, including improvements to multi-factor productivity estimates with the aim of making them National Statistics.⁷²

Measuring outcomes across places

The Places insight project highlighted the scarcity of data on, among other things, consumer and producer prices for across-region comparisons. The ONS are progressing work in this area.

Human Capital

The ONS have a project which aims to develop an indicator-based approach to the measurement of human capital by considering a wide range of metrics including crime, education, family and health-related inputs and enablers.

Management practices

ESRC funded research projects are exploring the impact of different management, engagement and well-being initiatives on workplace productivity.

Social and Natural Capital

Researchers at the Bennett Institute for Public Policy and the ONS are currently developing ways of producing robust estimates of the stock of natural capital and social capital.

Health

The Council welcomes the health index work proposed in the Government's "Advancing our health: prevention in the 2020s" consultation paper⁷³ and Chief Medical Officer's 2018 Annual Report.





⁷² National Statistics have been assessed by the Office for Statistics Regulation as fully compliant with the Code of Practice for Statistics. National Statistics status means that statistics meet the highest standards of trustworthiness, quality and public value.

⁷³ Cabinet Office and DHSC, (2019). *Advancing our health: prevention in the 2020s - consultation Document*. Retrieved from: www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document

Annex

Policy Status: Foundations

This section provides the Council’s assessment of delivery progress for the Industrial Strategy Foundations policies. The measures listed below have been identified by the Council based on the commitments announced in the Industrial Strategy White Paper. This assessment aims to give an indication of the Government’s activity with regard to the implementation of its commitments. A more detailed commentary on the likely impact, scale and suitability of the listed policies can be found in Section 3.

Key		
Phase complete		Government has implemented the policy (for all intents and purposes the roll-out of the policy has been completed, e.g. funding has been paid out to recipients).
Delivery in progress		Government is taking steps towards the delivery of the policy and has not missed its delivery deadline .
Early development		Government hasn't taken any action (or the action taken can, beyond a reasonable doubt, be judged as inadequate) towards the implementation of the policy or missed its delivery deadline.
Pending		

Ideas			
Policy Commitment	Policy description and responsible department	Launched: policy design phase	Delivered: policy roll-out phase
EUREKA	(BEIS) UK to hold the chairmanship of EUREKA from July 2018 to June 2019.		
Launch of UK Research and Innovation (UKRI)	(BEIS) Create UKRI by combining the seven research councils, Research England and Innovate UK into a single body.		
International Research and Innovation Strategy	(BEIS) Set out how the UK will develop its international research and innovation partnerships to tackle global challenges and support local growth. Published May 2019.		
Additional grant funding for Innovate UK	(BEIS) Allocate a further £44m of grant funding to enable Innovate UK to fund £150m of responsive grant competitions in 2017/18		
Increase the R&D tax credit rate	(HMT/HMRC) Increase the rate of the R&D expenditure credit for large businesses to 12% from January 2018.		
Increase weighting of impact in REF	(BEIS) Raise the weighting of impact in the Research Excellence Framework from 20% to 25% from the next assessment round.		
Catapult network funding	(BEIS) Provide additional funding for the Catapults network supporting commercialisation of new products and services		
Tier 1 Research and Innovation visas	(BEIS/Home Office) Double the available Tier 1 visas and altered immigration rules for scientists and researchers.		
Increase SME awareness of R&D tax credit	(HMRC) Work with SMEs and those developing new technologies to increase awareness of R&D tax credits.		
Industrial Strategy Challenge Fund Wave 1	(BEIS/UKRI) Invest £1bn over 4 years from April 2017 in strategic R&D programmes.		
Industrial Strategy Challenge Fund Wave 2	(BEIS/UKRI) Invest £725m in a second wave of the Industrial Strategy Challenge Fund from November 2017.		

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Higher Education Innovation funding	(BEIS) Increase the level of HEIF funding to £250m a year by 2020-21.		
Research talent investment package	(BEIS) Invest £1.3bn to develop research and innovation talent, including UKRI Future Leaders Fellowships.		
Strategic Priorities Fund	(BEIS) Develop new fund to support high quality multi-disciplinary programmes.		
Investment Accelerator Pilot	(BEIS) Set up a scheme designed to bring in seed equity alongside grant funding by matching the most innovative early stage businesses with investors.		
SBRI Review and GovTech catalyst	(BEIS) Review the Small Business Research Initiative scheme, and to launch a GovTech Catalyst and £20m Fund		
Strength in Places Fund	(BEIS) Allocate £235m to a fund to take a place-based approach to research and innovation funding, to support significant local economic growth.		
International Collaboration Fund	(BEIS) Set up a £110m fund to enhance UK's excellence in research and innovation through global engagement.		
Industrial Strategy Challenge Fund Wave 3	(BEIS/UKRI) Develop a third wave of programmes to support through the Industrial Strategy Challenge Fund		
Attracting global private sector R&D	(BEIS/DIT) Work with universities, research institutions and UKRI to increase global investors' R&D activities in the UK.		
Knowledge Exchange Framework	(BEIS) UKRI to develop a new framework to benchmark how well universities foster knowledge sharing and research commercialisation.		
2.4% R&D Roadmap	(BEIS) Publish roadmap setting out Government plans to achieve commitment to reach 2.4% of GDP investment in R&D across the economy by 2027		
Leveraging labs for local growth	(BEIS) Develop better mechanisms for labs and local businesses to build partnerships (following Julia Goodfellow's Review)		

People			
Policy Commitment	Description	Launched	Delivered
Careers Strategy	(DfE) Make improvements to careers advice for all ages. Published Dec 2017.		
Apprenticeship Levy	(DfE) Introduce a new levy on large employers to fund apprenticeships.		
Review of Post 18 Education + Funding	(DfE) Review the adult education system. Published May 2019.		
Consideration of MAC Review	(Home Office) Respond to Migration Advisory Council recommendations submitted to Government in September 2018.		
Taylor Review	(BEIS) Examine the opportunities and risks around modern working practices. Recommendations have created legacy commitments.		
School and college performance measures	(DfE) Introduce change to 'destination' measures to highlight apprenticeships as separate education destination category since October 2018.		
Digital platform for STEM ambassadors	(UKRI) Increase young people's engagement with STEM.		
Basic Maths Premium pilot	(DfE) For Post 16, test innovative approaches to improve outcomes through £8.5m pilot.		
National Retraining Partnership	(DfE) Form a group to oversee the National Retraining Scheme. Formed in March 2018.		
Career learning pilots, including Flexible Learning	(DfE) Develop pilots to inform the National Retraining Scheme, including £10m Flexible Learning Fund.		
Basic digital skills entitlement (adults)	(DfE) Introduce free entitlement for basic digital skills training to adults.		
New Institute of Coding	(DfE) £20m new institute to be formed through consortium of universities and employers, delivering high level digital skills.		

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Policy Commitment	Description	Launched	Delivered
Increasing BAME apprentices	(DfE) Increase by 20% proportion of BAME apprentices. Consideration of general apprenticeship reform may impact this commitment.		
Increasing disabled apprentices	(DfE) Increase by 20% proportion of disabled apprentices by 2020. Consideration of general apprenticeship reform may impact this commitment.		
Local Digital Skills Partnerships	(DCMS) Increase collaboration between public, private and charity sector organisations and help address local digital skills needs.		
Institutes of Technology	(DfE) Increase the provision of higher-level technical education across the country. The IoT programme has 5 operational institutions and a further 7 with legal agreements in place.		
Digital apprenticeships and tech qualifications	(DfE) Introduce new apprenticeships and qualifications following T Level consultation, review and approval on apprenticeship standards.		
Reform functional skills qualifications	(DfE) Improve quality and levels of employer recognition.		
Level 3 Maths support programme	(DfE) Improve maths education and increase participation and attainment.		
Offer maths to all L3 pathway students	(DfE) Incentivise institutions with £600 premium per pupil studying maths and further maths at Level 3.		
Expansion of Teaching for Mastery programme	(DfE) £42m programme to build pipeline of students able to reach higher level STEM study. Targets: 11,000 primary and secondary schools by 2023. Building capacity of maths hubs through the Northern Powerhouse.		
Upskilling computer science teachers	(DfE) Allocate £84m over 4 years to raise the quality of computer science teaching, including upskilling of 8,000 teachers and a focus on engaging girls and students from disadvantaged backgrounds.		
Encourage flexible working	(BEIS) Work with business to develop an action plan for flexible working, inform evaluation of Right to Flexible Working Regulations.		
CREST awards	(UKRI) Promote STEM subjects among students. Target to double the students undertaking CREST awards to 60k in 2019.		

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Policy Commitment	Description	Launched	Delivered
£5m for carers returning to work	(GEO) Promote reemployment of carers.		
Increase BME labour market participation	(DWP/Cabinet Office) Goal to increase BME labour market participation, as identified in Race Disparity Audit.		
Level 4 and 5 technical education	(DfE) Review demand and supply of higher-level, classroom based technical education.		
Expansion of specialist maths schools	(DfE) Open more specialist post 16 maths schools, following establishment of Exeter and King's College maths schools		
Establish a technical education system	(DfE) Includes launching T-Levels, reviewing existing post-16 qualifications, building further education capacity, realignment of Level 4-5 qualifications.		
Building capacity to deliver technical education	(DfE) Includes a programme of professional development support for Further Education providers to build capacity for T Levels starting 2020.		
Maths teacher bursaries pilot	(DfE) Incentivise maths teacher recruitment and retention, trainees receiving £20k bursary in 2018/19. Eligible maths teachers to receive £5k or £7.5k in 2021-24 academic years.		
National Retraining Scheme	(DfE) Set up an online retraining programme for low-skilled workers. Pilot started in Liverpool.		
1m more disabled in work by 2027	(DWP/DHSC) Work with local areas to encourage local interventions. Consideration of integration with Local Industrial Strategies. DWP reviewing welfare reforms which may impact this commitment.		

Infrastructure			
Policy Commitment	Description	Launched	Delivered
Widening eligibility for energy-intensive industry exemptions	(BEIS) Address potential intra-sectoral competitive distortions, taking into consideration the impact on consumer bills.		
Transport Efficiency Strategy	(DfT) Publish strategy, to help government build long-term collaborations with industry, and support innovation and growth.		
NIC review of freight infrastructure	(NIC) Publish a study on the future of freight infrastructure, including looking at urban congestion, decarbonisation and harnessing new technology.		
25 Year Environment Plan	(DEFRA) Publish plan to preserve and enhance the UK's natural capital, including better resource use and consideration in major investments decisions.		
Geospatial Commission	(UKGI) Establish Geospatial Commission to make the most of the value of geospatial data and provide strategic oversight.		
Future telecoms infrastructure	(DCMS) Review of the telecoms market to understand businesses' incentives for investment in new digital infrastructure.		
Strategic priorities, digital infrastructure	(DCMS) Publish and consult on Statement of Strategic Priorities on objectives for widespread availability of fixed and mobile connectivity.		
Rebalancing Toolkit	(DfT) Provide a framework and use of evidence to support high value transport investments in less productive parts of the UK.		
Charging R&D	(OLEV) Allocate £40m funding, matched by industry, for new charging technologies.		
Electronic tracking of waste	(DEFRA) Maximise economic benefits from greater resource productivity, including publication of resources and waste strategy.		
MasterMap	(UKGI) £80m to support work with the Ordnance Survey and Geospatial Commission to release MasterMap data to businesses.		
Smart Systems Plan	(BEIS) Implement the Smart Systems and Flexibility Plan by 2022, enabling the electricity system to work flexibly and efficiently.		

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Policy Commitment	Description	Launched	Delivered
Clean Air Fund	(DEFRA) Set up a £220m for Clean Air Fund supporting local authorities to help people to adapt as air quality measures are implemented.		
Low carbon industries support	(BEIS) Allocate £162m of (ISCF) funding for innovation in low carbon industries and development of bio-economy strategy.		
Green is GREAT campaign	(BEIS/DIT) Promote UK's expertise in the clean economy through the Green is GREAT campaign to amplify the UK's global reputation.		
5G Testbeds and Trials	(DCMS) Roll-out 5G pilot project building on 5G Strategy, delivering in phases where UK has a competitive advantage.		
Full Fibre networks	(DCMS) Invest £200m in the Local Full-fibre Networks Challenge Fund. Ambition for 10m premises to be connected over next decade.		
Transforming Cities Fund	(DfT) Create a £2.5bn fund to improve connectivity between cities and neighbouring towns and improve public and sustainable transport.		
Housing Infrastructure Fund	(MHCLG) Create £5.5bn government capital grant programme to help unlock housing development in areas with greatest demand.		
UK Spaceport	(UK Space Agency) Create a £50m programme for new satellite launch services and low gravity spaceflights.		
Plug in car grant	(OLEV) Provide £100m new funding for the plug-in car grant.		
Charging infrastructure	(OLEV) Provide £200m government investment matched by private investors, to accelerate roll-out of charging infrastructure.		
Building charge points	(OLEV) Update building regulations to mandate all new residential developments contain cabling for charge points.		
Water resources statement	(DEFRA) Produce National Policy Statement ensuring a high-quality water supply can be ensured in the future.		
Public Works loan board	(BEIS/MHCLG) Strengthen local decision making on infrastructure through £1bn (discounted interest rate) loan to local authorities to support local infrastructure.		

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Policy Commitment	Description	Launched	Delivered
Industrial energy efficiency scheme	(BEIS) Build on the 2050 Decarbonisation Action Plans agreed with seven of the most energy-intensive sectors, supporting investment.		
Crown Marketplace	(CCS) Improve digital procurement platforms to make it easier for suppliers to do business with government.		
Digital railway Manchester-York	(DCMS/DfT) Invest £5m to embed digital railway technology between Manchester and York, now included in the Rail Sector Deal.		
Digital railway South East	(DCMS/DfT) Invest £5m to develop a digital railway upgrade on the south east and east London lines. Now included in the Rail Sector Deal.		
Digital signalling	(DCMS/DfT) Invest £84m for new digital signalling across a range of trains.		
Road and rail digital infrastructure investment	(DCMS/BEIS) Invest £5m to test the use of Highways England owned infrastructure to allow better connectivity on road network. £35m to test solutions to provide improved digital connectivity on trains – using the Network Rail test track.		
Minimising business energy costs	(BEIS) Included the publication of an Energy White Paper to indicate solutions for business energy savings.		
Embedding Strategic Procurement	(BEIS) Embed a more strategic approach to public procurement. The aim for broader outcomes (impact on local jobs, skills, regional rebalancing and strength of supply chains) to be considered at the earliest possible stage.		
Balanced scorecard	(MHCLG/HMT) Embed a process to consider relevant social and economic objectives alongside cost-effectiveness on all major construction and capital investment projects.		
Cleantech Equity Funding	(BEIS) Invest £20m for a new equity fund (Clean Growth Fund) to strengthen support to commercialise new clean technologies.		

Business environment			
Policy Commitment	Description	Launched	Delivered
Local Growth Hub network	(BEIS/HMCLG) Ensure all businesses in England have access to a Growth Hub.		
Corporate Governance	(BEIS) Improve alignment of executive pay with long-term company performance.		
Review export strategy	(DIT) Work with business to undertake a review of export strategy. Published August 2018.		
Publish Consumer Green Paper	(BEIS) Publish a Consumer Green Paper that tackles areas where markets are not working for consumers and businesses.		
BBB Regional Managers network creation	(BBB/BEIS) Roll out network of BBB regional managers to ensure businesses know how to access sources of investment.		
Extend Enterprise finance guarantee	(BBB/BEIS) Extend guarantee to 2022 and expand programme to support up to £500m loans a year.		
CMA remit expansion	(BEIS/HMT) Encourage the Competition and Markets Authority to identify and prioritise inadequate competition in low-productivity sectors.		
Strategic Relationship Management programme expansion	(DIT/BEIS) Expanding the government's account management approach to offer a government contact to a broader range of companies.		
UK Trade Commissioners network creation	(DIT) Establish a network of nine UK Trade Commissioners, each developing a regional trade plan.		
Team UK consortium for infrastructure bids	(DIT) Support British consortia, bringing together businesses of all sizes to bid for global infrastructure contracts.		
Competition Law review	(BEIS) Publish a review of the existing competition regime to ensure it works effectively to support an enterprise economy.		
Business Productivity Review	(BEIS/HMT) Launch a review of what actions could improve productivity and growth of SMEs, addressing the long tail of lower productivity firms.		

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Policy Commitment	Description	Launched	Delivered
Improve access to business info online	(BEIS) Improve the way government provides information and support to business online, alongside the national Business Support Helpline.		
Enterprise Investment Scheme and VC Trusts	(BBB/BEIS) Expand the support innovative, knowledge-intensive businesses receive through these schemes.		
Review of business support market	(BEIS) Findings of this report absorbed into Business Productivity Review evidence base.		
Pilot export growth support for MSBs	(DIT) Pilot a scheme for potential scale-ups and ambitious medium-sized businesses. Including co-investment for accessing export support.		
Develop Great.gov.uk	(DIT) Continue to develop Great.gov.uk ensuring it meets the needs of more UK businesses.		
CMA funding boost	(BEIS/HMT) Provide the Competition and Markets Authority an extra £2.8m a year to take on more cases.		
Improve SME access to Export Finance	(DIT) Promotion campaign and better signposting; introduce a new guarantee to banks designed to increase liquidity in the supply chain, enabling exporters' access to capital.		
Project performance measure update	(DIT/BEIS) Change primary measure of performance from number of projects coming to the UK to measure economic impact.		
Access to venture capital for female leaders	(BBB/HMT) Identify ways to tackle barriers faced by female-led businesses in accessing venture capital through behavioural research.		
Inclusive economy partnership programme	(CO/DCMS) Establish partnership to enhance the UK's reputation as a global hub for social investment.		
Business Basics Programme delivery	(BEIS) Trial innovative approaches to drive up the adoption of better business practices.		
work with Be the Business	(BEIS) Explore with Be the Business improvements in productivity through enhancing management practices and improving skills.		
British Patient Capital Programme	(HMT/BBB) Launch a £2.5bn investment fund to help ensure businesses can access capital needed to scale up.		

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Policy Commitment	Description	Launched	Delivered
Managed Funds fund of funds programme	(BBB/BEIS) Seed a series of private sector fund of funds of scale, first wave of investment up to £500m, unlocking c.£1bn private capital		
Enterprise Capital Fund programme	(BBB/BEIS) Back first-time and emerging fund managers, supporting at least £1.5bn of new investment.		
National Security Strategic Investment Fund	(HMT) Allocate up to £85m National Security Strategic Fund to invest in advanced technologies that contribute to national security missions.		
Commercial Investment Programme	(BBB/BEIS) Launch programme through the BBB to support developing clusters of business angels outside London.		
Support businesses to comply with regulation locally	(BEIS) Includes advice for businesses setting up a Primary Authority Partnership, and support for Local Enterprise Partnerships in coordinating regulatory frameworks focusing on local business needs.		
Ensure UK is attractive HQ destination	(DIT) Explore options for supporting multinational firms to locate their global and European headquarters in the UK.		
Backing overseas investment in UK VC	(DIT) Back overseas investment in UK venture capital, expected to drive £1bn of investment.		
Supply Chain competitiveness programme	(BEIS) Launch supply chain competitiveness programme to target areas where key businesses need to improve, supporting training and enhanced business processes.		

Places			
Policy Commitment	Description	Launched	Delivered
Boost for new Mayors	(BEIS/MHCLG) Boost new mayors' capacity and resources (£12m fund for 2018/19 and 2019/20).		
Devolution of new powers	(BEIS/MHCLG) Provide additional devolved powers to the Mayoral Combined Authorities (West Midlands and Greater Manchester).		
Grimsby Town Deal	(MHCLG) Pilot scheme to explore new approaches to develop innovative solutions to growth and attract private investment.		
Cultural Development Fund	(DCMS) Invest £20m to continue to support the role culture can play in regeneration.		
Business rates retention	(MHCLG) Further business rates retention pilots.		
Skills Advisory Panels	(DfE) Will support the identification, prioritising and addressing of current and future skills needs at a local level by bringing together partnerships of employers, education providers and local government in Mayoral Combined Authorities and Local Economic Partnerships.		
Public Bodies relocation (Places for Growth)	(CO) Relocate arms-length bodies and departmental functions out of London to new hubs and specialist clusters across the UK between now and 2025.		
LEP Review (6 commitments)	(BEIS/MHCLG) Review of the roles and responsibilities, leadership, governance, accountability and geographic boundaries of Local Enterprise Partnerships.		
Oxfordshire Housing deal	(MHCLG) Part of the Ox Cam Arc package, government investment of up to £215m to fund infrastructure, affordable housing and local capacity to support the delivery of up to 100,000 homes by 2031 and a joint statutory spatial plan.		
Local Energy Programme	(BEIS) Local Energy Programme to support areas to develop their capability and capacity to realise energy opportunities.		
Adult Education Budget to Mayoral areas	(DfE) Help mayors to ensure learners can gain the skills that local businesses need, linking local educational institutions with labour markets.		

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Policy Commitment	Description	Launched	Delivered
City and Growth deals with DAs	(MHCLG/BEIS) Continue to support growth and create opportunities across Scotland, Wales and Northern Ireland.		
Portfolio of High Potential Opportunities	(DIT) Identify opportunities relating to strategic supply chain gaps, places and clusters that have economic potential but are not widely understood.		
Support for Midlands Connect	(MHCLG/DfT) Provide £6m to support the development and delivery of rail and motorway projects in the Midlands Connect strategy.		
Teacher Development Premium	(DfE) A £42m pilot testing the impact of a £1k budget for high quality professional development for teachers in areas where driving pupil outcomes is a challenge. Fund now invested in the teacher recruitment and retention strategy.		
Local Industrial Strategies	(BEIS/MHCLG) Identify local strengths and challenges, future opportunities and the action needed to boost productivity, earning power and competitiveness. Led by Mayoral Combined Authorities and Local Economic Partnerships.		
Ox Cam Arc package	(MHCLG/OGDs) A package to stimulate economic growth, including investment in rail and road infrastructure and housing.		
UK Shared Prosperity Fund	(BEIS/MHCLG) Ensure local areas continue to receive flexible funding for their local needs following EU Exit.		

Policy Status: Grand Challenges

This section provides information on the policy content and main delivery highlights related to the Grand Challenges. As the Grand Challenges were envisaged to be a developing work programme from their inception the Council does not provide a policy by policy breakdown in this section. More detailed commentary on progress, likely impact, scale and suitability is provided in Section 3.

Key Grand Challenges Delivered Commitments			
Challenge	Missions	Delivery highlights	Upcoming / Next Steps
Grand Challenge Programme	See below	<p>Launched 5 missions to tackle specific problems.</p> <p>Launched Youth Industrial Strategy Competition and Longitude Explorer Prize to engage young people to provide solutions to tackle the Grand Challenges.</p> <p>Appointed Business Champions and Expert Panels (3/4)</p> <p>New partnerships with key countries, such as Japan, the USA and the Nordics</p>	<p>Launch new Grand Challenge innovation competitions</p> <p>UK-Japan collaboration on the Grand Challenges, including Five 'GREAT Weeks' on the Grand Challenges</p>

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Challenge	Missions	Delivery highlights	Upcoming / Next Steps
AI and Data	Use data, Artificial Intelligence and innovation to transform the prevention, early diagnosis and treatment of chronic diseases by 2030	<p>New AI masters and 16 doctoral centres partnering with Turing Institute for new PhDs and fellowships</p> <p>3 Data Trust Pilots, pioneering data sharing</p> <p>Established Centre for Data Ethics and Innovation. CDEI Partnership with Race Disparity Unit to prevent bias in decisions made by algorithms</p>	<p>AI Council Working groups</p> <p>London Tech Week 2020</p>
Clean Growth	<p>At least halve the energy use of new buildings by 2030</p> <p>Establish the world's first net-zero carbon industrial cluster by 2040 and at least 1 low-carbon cluster by 2030</p>	<p>2050 net zero target in law</p> <p>Green GB Week 2018: 67 organisations made pledges to drive clean growth</p> <p>New Future Homes Standard by 2025, supporting the building mission to ensure all new homes are future-proofed</p>	<p>Publish Energy White Paper</p> <p>COP26 (Glasgow, 2020)</p> <p>Launch consultation on improving energy performance standards for buildings through changes to Part L of the Building Regulations</p>

Challenge	Missions	Delivery highlights	Upcoming / Next Steps
Future of Mobility	Put the UK at the forefront of the design and manufacturing of zero emission vehicles, with all new cars and vans effectively zero emission by 2040.	<p>Future of Mobility: Urban Strategy published</p> <p>Published the Road to Zero strategy setting out plans to support the transition to zero emission vehicles</p> <p>£90m for Future of Mobility Zones to pilot innovative approaches in places</p>	<p>Launch regulatory review consultation</p> <p>Announce Future of Mobility Zones</p>
Ageing Society	Ensure that people can enjoy at least 5 extra healthy, independent years of life by 2035, while narrowing the gap between the experience of the riche	<p>New National Innovation Centre for Ageing</p> <p>£98m to support innovations for an ageing society through ISCF</p> <p>NHS Long Term Plan alignment</p>	<p>First Longevity Council Meeting</p>

Policy Status: Sector Deals

This section provides information on the delivery progress of the Industrial Strategy Sector Deals.

Sector Deals		
Deal	Detail	
Published Deals	Life Sciences I	Dec 2017. MSD new R&D hub; £162m ISCF funding for new medicines manufacture.
	Life Sciences II	Dec 2018. £79m project on predictive medicine; World-first genomic healthcare project.
	Automotive	Jan 2018. £500m to industrialise low-carbon auto technologies; £26.4m for driverless vehicles.
	Creative Industries	March 2018. £20m Cultural Development Fund; Careers programme to reach 600,000.
	Artificial Intelligence	April 2018. 1000 AI PhDs.; £300m private investment in the sector; £300m for specialist AI research.
	Nuclear	June 2018. £200m to save costs, £32m for manufacturing hub; Workforce diversity commitment
	Construction	July 2018. £420m deal; 50%-time reduction in new build delivery; 25,000 new apprenticeships.
	Rail	Dec 2018. Digitalisation of rail network, reducing cost of digital rail; doubling exports by 2025.
	Aerospace	Dec 2018. £250m to boost innovation through ISCF; workforce diversity commitment.
	Offshore Wind	March 2019. £250m Offshore Wind Growth Partnership; Workforce diversity commitment. Increase UK manufacturing content to 60% by 2030
	Tourism	June 2019. 130,000 additional hotel rooms; a new independent Tourism Data Hub; skills package designed to develop and retain staff.

In negotiation	Deal	Detail
	Professional Business Services	The PBS sector formally entered formal negotiations in July. Government and Industry are currently reaching out to businesses across the UK to gather feedback on proposed commitments and finalise ambitions. Discussions are progressing well.
	Built Environment	Built Environment moved into formal negotiations in July. Since then, Government, Industry Councils and trade associations have been meeting to formalise the deals' commitments.
	Food & Drink	Negotiations on the food and drink sector have paused while sector attention turned to preparations for EU Exit. Government will be working with the Food and Drink Federation to continue negotiations and progress the deal.