

Measuring the Success of the Industrial Strategy

Industrial Strategy Council



Research Paper

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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

This work was overseen by Council members Jennifer Rubin, Rupert Harrison and Diane Coyle.

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

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Foreword from the Chair

This document presents the Industrial Strategy Council's preliminary set of metrics for measuring the success of the Industrial Strategy and explains the underpinning rationale for the metrics we have chosen. My thanks to Professor Diane Coyle, Professor Jennifer Rubin, and Rupert Harrison for leading this work on behalf of the Council.



The responses received by Government to its consultation on the Industrial Strategy Green Paper¹ highlighted that people and business want confidence that the Industrial Strategy will stand the test of time – that it is a framework they can use for decision making and that it can be expected to last and have impact. Evaluation of the Industrial Strategy is key to understanding what is working and how, and what is not and why. The real test of a successful Industrial Strategy is the consequences it has for the lives of UK citizens.

Since its inception, a key element of the Industrial Strategy Council's remit has been to develop a comprehensive set of success metrics which allow us to assess the impact of the Industrial Strategy. We have now developed a robust set of metrics that cover the bases of the Industrial Strategy. These metrics are underpinned by a strong theoretical understanding of what drives economic growth. The success metrics that we have developed can be considered a preliminary set of indicators that would be expected to improve in response to a successful Industrial Strategy. The metrics are one part of a broader evaluation framework the Council is putting in place. That framework, including the metrics, will continuously develop over time, and our other research will inform its future shape.

Part of the Council's remit is to challenge and improve how government evaluates progress. The Council will comment on ways to improve the measurement of success and the better use of data across government. We have identified some data gaps as part of developing our metrics and will seek to fill these gaps working in collaboration with stakeholders and the statistics agencies.

I would like to thank those stakeholders that have been involved in the development of the success metrics to date, including those who attended workshops during the various phases of development.

Andy Haldane

Chair of the Industrial Strategy Council

¹ <https://www.gov.uk/government/consultations/building-our-industrial-strategy>

Introduction

The Industrial Strategy Council ('the Council') is an independent non-statutory advisory group established to provide impartial and unbiased evaluation of progress in delivering the Industrial Strategy.

The UK's Industrial Strategy, launched in November 2017, is a long-term plan to deliver jobs, economic growth and prosperity across the country². In line with the Council's terms of reference, it will, amongst other things, **recommend a series of success measures for the implementation of the Industrial Strategy**. The Council will **also comment on ways to improve the measurement of success, particularly in terms of productivity and the better use of data across government**. In view of this the success metrics look "beyond GDP", to measures of social, human and natural capital, as well as broader welfare impacts. It is through these measures that outcomes to the lives of UK citizens can be tracked.

The Council is also tasked with commenting on delivery against these measures and their contribution to UK economic growth; commenting on the effectiveness of evaluation of the impact of the Industrial Strategy programme; and publishing a regular public report assessing progress on implementation of the Industrial Strategy against success measures and on ways to improve measurement and evaluation.

About this Research Paper

This research paper outlines the methodology followed by the Council to develop its success metrics and details the metrics chosen. It does not present or comment on how the metrics have evolved recently. The success metrics will be published as interactive tools on the Council's website with accompanying commentary and where relevant used in future Council publications, including the Annual Report. This research paper also highlights areas where the Council believes that important data is missing or not yet of sufficient quality to be included as a success metric. The Council is open to working with stakeholders to fill these data gaps.

² <https://www.gov.uk/government/topical-events/the-uks-industrial-strategy>

Development of the Success Metrics

It is the Council's view that its approach to evaluation should be live and dynamic. This means that metrics may be replaced over time as new research is developed, or better data is collected. The Council's broader research programme will contribute to refining the selected metrics. The success metrics are intended to provide a useful summary of key outcomes rather than be an exhaustive list.

The process for arriving at the success metrics has highlighted the following drivers that defy easy measurement, and which require more in-depth research:

- Measuring resource efficiency, and the relationship with growth;
- The importance of different aspects of health, well-being and wider social factors to growth;
- Measuring outcomes with an intergenerational view; and
- The relationship between connectivity and other geographic spill-overs with growth (beyond a single calculated agglomeration elasticity).

Scope of the Success Metrics

As well as tackling the productivity challenge, the Industrial Strategy has implicit distributional objectives - for example, earnings between and within regions. The success metrics have been developed to capture headline (or average) outcomes for the whole of the UK in many cases but will also enable the Council to:

- Make distributional comparisons across places and sectors; and
- Make international comparisons.

These distributional comparisons will allow us to better understand inequalities across groups and places and assess whether the Industrial Strategy is having a positive impact for those at the lower end of these ranges. It will also allow the Council to benchmark the UK's international competitiveness.

Whilst measures such as GDP and earnings are still valuable and will be examined, the Council acknowledges the need to look beyond traditional measures, given the broader outcomes associated with a successful Industrial Strategy. The success metrics include welfare outcomes more widely including social and natural capital, wellbeing impacts, and the distribution of wealth.

The Council recognises that metrics alone cannot attribute outcomes to policies. Metrics may be influenced by a broader set of factors and policies other than the Industrial Strategy. Causal links between movements in the metrics and specific Industrial Strategy policies cannot be simply drawn. More in-depth policy evaluation

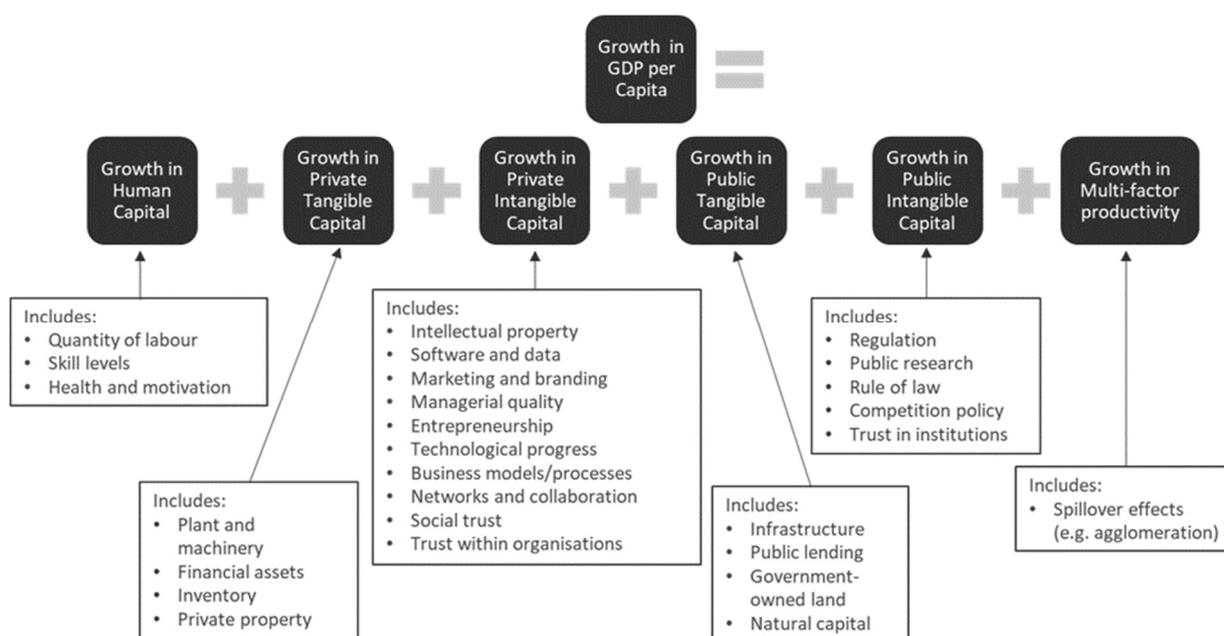
and review is needed to assign outcomes to policies. Similarly, the metrics alone cannot suggest gaps in policy. However, the metrics can be considered as the set of indicators that the Council believes would improve in response to a successful Industrial Strategy. They will form part of the Council’s evaluation framework.

Underpinning Theory

The basis for the success metrics is a conceptual framework that maps Industrial Strategy policies to the known drivers of earnings and productivity growth.

Economic theory provides a basis for understanding the relationship between factors of production, the efficiency with which they are combined, and the resulting level of income or output. The drivers of earnings and productivity growth are described in an extended production function (Figure 1). The framework decomposes growth in output into contributions due to changes in measured inputs of factors of production (labour and capital) and multi-factor productivity (calculated as a residual).

Figure 1: Drivers of earnings and productivity growth in an extended production function



There is substantial evidence suggesting capital should be broken down into tangible and intangible categories in order to more easily map onto policies, and better account for differences in their contribution to production and intensity of usage across industries over time.³ The extended production function also splits capital input into public and private. The extended production function distinguishes

³ It is noted that not all the drivers identified in the extended production map directly to the preliminary set of success metrics.

between assets that indirectly support productivity (such as physical infrastructure like roads, and intangible infrastructure like market institutions) and those that do so within firms and other organisations (such as plants, machinery and patents).

The Council recognises that the empirical evidence on the role of some of these drivers in boosting productivity is more limited than others. For example, there is a significant body of research on drivers such as software investment and skills but much less on public trust and natural capital.

Components of the Industrial Strategy

The Industrial Strategy is based on:

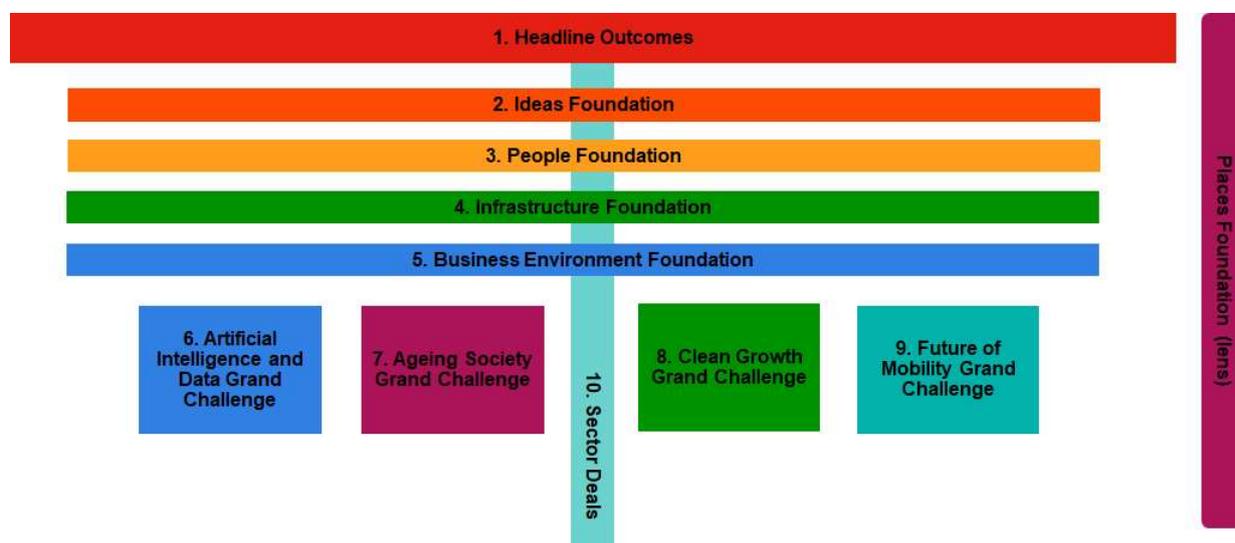
- Strengthening the five Industrial Strategy **Foundations**:
 - **Ideas** – to make the UK the world’s most innovative economy;
 - **People** – ensuring good jobs and greater earning power for all;
 - **Business Environment** – the best place to start and grow a business;
 - **Infrastructure** – delivering a major upgrade to the UK’s infrastructure; and
 - **Places** – creating prosperous communities across the UK.
- Taking on **Grand Challenges**:
 - **Artificial Intelligence and Data** – putting the UK at the forefront of the AI and data revolution.
 - **Ageing Society** – harnessing the power of innovation to help meet the needs of an ageing society.
 - **Clean Growth** – maximising the advantages for UK industry from the global shift to clean growth.
 - **Future of Mobility** – becoming a world leader in the way people, goods and services move.
- Building long-term strategic partnerships through **Sector Deals**. These deals are partnerships between the government and industry on sector-specific issues to create significant opportunities to boost productivity, employment, innovation and skills.

In terms of structure, the success metrics have been organised to cover these components of the Industrial Strategy and are organised into:

- **Headline Outcomes** – these relate to productivity, the labour market, earnings, well-being and social capital;
- the **Foundations**;

- the **Grand Challenges**; and
- **Sector Deals**.

Figure 2: Success metrics structure



The Foundations comprise a horizontal layer of the Industrial Strategy as they support productivity in all sectors. It is recognized that some policies are likely to have a disproportionate impact in certain sectors, e.g. the R&D tax credit in advanced manufacturing.

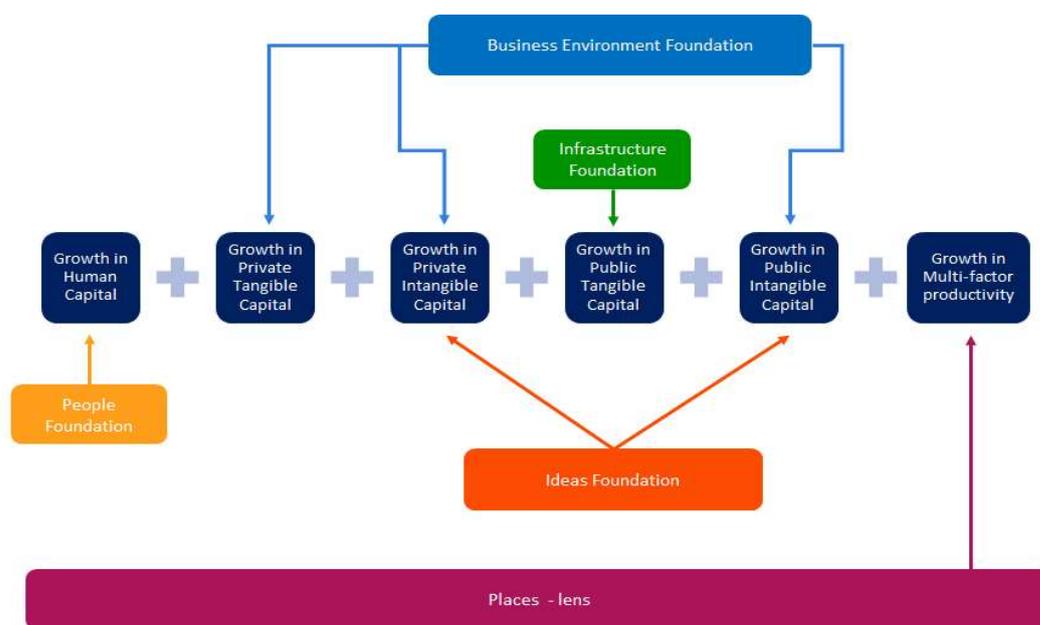
The Places Foundation sits across all horizontal layers, as a regional lens applied across the Foundations (although agglomeration and place-concentrated effects could feed into the growth in multi-factor productivity). Whilst Places is described as a Foundation, it includes taking a locally led approach to growth (for example through Local Industrial Strategies), as well as promoting spill-over effects that contribute to multi-factor productivity (for example, through encouraging clusters through the Strength in Places Fund, and funding improvements to intra-city transport). There is also a spatial dimension to Industrial Strategy policies, which will have impact in different places to different extents.

The Grand Challenges are forward-looking opportunities or challenges that span the traditional definitions of sectors, chosen to put the UK in a globally leading position on emerging trends.

Sector Deals comprise a vertical layer of the Industrial Strategy. It is also possible to look at economic outcome metrics using a sectoral lens - for example, to compare the productivity of life sciences with the productivity of the creative industries. However, this tends to rely on the traditional industrial sector classification meaning that emerging sectors (including some covered by Sector Deals, e.g. Artificial Intelligence and Data) do not have outcome metrics readily available.

Figure 3 shows the Foundations mapped to the extended production function⁴. Based on the extended production function, metrics that would be indicative of the overall success of each Foundation can be selected and tracked. The broad and structural nature of the Grand Challenges means they could have impacts across the entire production function.

Figure 3: Mapping the Industrial Strategy Foundations against drivers of earnings and productivity



Stakeholder Engagement

In developing the success metrics, the Council has consulted with a range of stakeholders both within and outside of Government. Stakeholders including the Economic and Social Research Council (ESRC), Productivity Insights Network (PIN)⁵, McKinsey Centre for Government, Office for National Statistics (ONS), and departments across Whitehall have provided input.

This wider stakeholder engagement included a workshop chaired by Council member Dame Kate Barker⁶, which helped to shape the preliminary set of success

⁴ The Council note that this production function neglects resource efficiency and sustainability, which are picked up in the 'headline outcomes' metrics. Also captured in the headline metrics are wider well-being measures.

⁵ The PIN have provided peer review as a critical friend to the project, complementing the conceptual underpinning of the production function. The PIN have said that the production function mapping allows focus to be on the wide-ranging areas on which the Industrial Strategy has an impact, rather than solely overall productivity. The importance of focussing towards the centre of the productivity distribution which contains many SMEs (rather than solely on the long tail very small businesses) was emphasised.

⁶ Workshop held 11th December 2018

metrics presented here. The workshop provided the following design principles, which the Council has sought to meet:

- Strike a balance between maintaining a high-level overview of progress and being comprehensive enough to cover the aspects of the Industrial Strategy;
- Ensure indicators look beyond aggregates and consider regional and distributional impacts;
- Ground the framework in rigorous academic thinking while making it relevant and explainable to non-academics;
- Where possible, use existing data, analysis, and methodologies – while addressing major data gaps; and
- Avoid ‘rolling up’ the metrics into a single ‘index’,

Additional stakeholder engagement included sharing a draft document outlining the methodology and gathering views on the preliminary success metrics and data gaps through a series of discussion-based events.

The Metrics

The shortlisted metrics are summarised in Figure 4, with a more detailed table (including detail on breakdowns, sources and timeseries) in the Schedule of Success Metrics. Distributional outcomes will be considered for each metric, with various averages including mean, median and ranges presented to the Council. The metrics will be published as interactive tools on the Council's website and used to inform the Council's Annual Report.

The criteria used to shortlist metrics included availability, frequency of updates, and recommendations from a range of stakeholders.

The Council are aware of the Government's own evaluation and monitoring programmes for the Industrial Strategy, particularly in relation to assessing the full breadth of the Grand Challenges and Sector Deals. Whilst the Council have selected an initial set of metrics covering these elements of the Industrial Strategy, further work will be needed in these areas.

Supplementary Metrics

The chosen success metrics are not designed to be exhaustive and the Council will not limit itself to those metrics. In addition to the success metrics, the project team is developing a databank of supplementary metrics for the Council, many of which were suggested by stakeholders. This supplementary list includes additional micro-level metrics, and metrics that relate to specific policy areas of the Industrial Strategy. These supplementary metrics will be tracked over time and presented to the Council as trends emerge.

Shortlisted Success Metrics

Figure 4: Summary of shortlisted success metrics

Headline outcomes metrics

As outlined, the challenge in developing the success metrics list has been striking a balance between maintaining a high-level overview of progress and being comprehensive enough to cover the aspects of the Industrial Strategy. The headline outcomes are the key macroeconomic indicators that are most closely linked to the overall aims of the Industrial Strategy - creating an economy that boosts productivity and earning power throughout the UK.

The long-term nature of the Industrial Strategy's policies means that it will take time for the Industrial Strategy to move the dial on many of these metrics and will be very

difficult to identify a causal link. However, the Council are confident these are the metrics that should improve in response to a successful Industrial Strategy.

1. HEADLINE OUTCOMES
<p>Earnings:</p> <ul style="list-style-type: none"> • Gross weekly earnings, adjusted for inflation • Gross median hourly earnings by age and generation, adjusted for inflation
<p>Productivity:</p> <ul style="list-style-type: none"> • Labour productivity: GVA per hour • Productivity: GDP per hour • Multi-factor productivity • Regional disparities
<p>Labour Market:</p> <ul style="list-style-type: none"> • Employment and unemployment rates • Hard to fill vacancies • Sickness absences
<p>Well-being:</p> <ul style="list-style-type: none"> • Life satisfaction • Health satisfaction
<p>Social Capital:</p> <ul style="list-style-type: none"> • Dimensions of trust
<p>Environment:</p> <ul style="list-style-type: none"> • Greenhouse gas emissions

Metrics relating to the Foundations

These metrics will track progress towards Foundation related outcomes:

- The Ideas Foundation aims to boost public and private expenditure on research and development, which in turn should lead to improvements in knowledge, innovation and technological progress.
- The People Foundation relates to investment in human capital by improving education and skills. This will help the current workforce adapt to a changing labour market.
- The Infrastructure Foundation is closely aligned with investment in public tangible capital, where the nature of some infrastructure (e.g. transport and digital networks) makes public investment essential.
- The Business Environment Foundation is broader, aiming to improve private tangible capital (for example, through raising the rate of business investment), private intangible capital (for example, through collaboration within sectors

and fostering entrepreneurship), and public intangible capital (by providing an effective competition regime).

2. IDEAS FOUNDATION	3. PEOPLE FOUNDATION	4. INFRASTRUCTURE FOUNDATION	5. BUSINESS ENVIRONMENT FOUNDATION
Research and Development: <ul style="list-style-type: none"> • Research and development expenditure • University collaboration • Expenditure on science, engineering and technology 	Human Capital: <ul style="list-style-type: none"> • Human Capital 	Expenditure: <ul style="list-style-type: none"> • Government expenditure 	Doing Business: <ul style="list-style-type: none"> • Ease of doing business score
	Education: <ul style="list-style-type: none"> • PISA score • Qualification level 3 	Online Connectivity: <ul style="list-style-type: none"> • Access to broadband • Full fibre access 	Investment: <ul style="list-style-type: none"> • Business investment • Foreign direct investment position
Innovation: <ul style="list-style-type: none"> • Innovation activity • Citation impact 	Quality of Work: <ul style="list-style-type: none"> • Job satisfaction 	Transport: <ul style="list-style-type: none"> • Rail travel • Road travel • Bus services • Investment in transport infrastructure • Commuting time 	Access to Finance: <ul style="list-style-type: none"> • Ease of getting credit score • Type of financing for SMEs
Intangibles: <ul style="list-style-type: none"> • Investment 			

Metrics relating to the Grand Challenges

The Grand Challenge related metrics will track how effectively the UK is meeting each challenge:

- Artificial Intelligence and Data metrics consider the extent to which the UK is at the forefront of the AI and data revolution.
- Ageing Society metrics consider specific outcomes associated with a better longer life.
- Clean Growth metrics consider the extent to which UK industry is shifting to clean growth.
- Future of Mobility metrics track changes in the way people, goods and services are moving.

6. ARTIFICIAL INTELLIGENCE AND DATA GRAND CHALLENGE	7. AGEING SOCIETY GRAND CHALLENGE	8. CLEAN GROWTH GRAND CHALLENGE	9. FUTURE OF MOBILITY GRAND CHALLENGE
Artificial Intelligence Perception: <ul style="list-style-type: none"> Public attitudes towards AI 	Life Expectancy: <ul style="list-style-type: none"> Healthy life expectancy Disability free life expectancy 	Emissions: <ul style="list-style-type: none"> Emissions Intensity Ratio 	Electric Vehicles: <ul style="list-style-type: none"> Registrations Public perception
Artificial Intelligence Adoption: <ul style="list-style-type: none"> Public sector adoption readiness 	Society: <ul style="list-style-type: none"> Employment and unemployment rates Loneliness 	Renewable Energy: <ul style="list-style-type: none"> Electricity generation 	Road Freight Movement: <ul style="list-style-type: none"> Domestic and international road freight activity
Data Openness: <ul style="list-style-type: none"> Prevalence of open data 		Low Carbon and Renewable Energy Economy: <ul style="list-style-type: none"> Turnover Employment Exports 	
		Research, Design and Development <ul style="list-style-type: none"> Budget 	
		Usage: <ul style="list-style-type: none"> Energy usage per dwelling 	

Metrics relating to the Sector Deals

Sector Deals related metrics consider some of the macroeconomic outcomes included in the Headline Outcomes but at a sectoral level for those sectors with a published Deal. This will allow a better understanding the impact that Sector Deals are having.

10. SECTOR DEALS

Productivity:

- GVA per worker by sector with a Sector Deal

Labour market:

- Number of UK jobs in each sector covered by a Sector Deal

Data Gaps

There are still several outstanding data gaps that the Council are seeking to close. This includes areas where data is missing or not yet of sufficiently quality. In addition to the identified data gaps, the Council note that the metrics should be forward-looking. The metrics, particularly for the Grand Challenges, may be refined as policies age. The identified data gaps include:

Headline Outcomes
<ul style="list-style-type: none"> • Health metrics with empirical importance for productivity growth • Self-employed earnings • Natural capital (stock-based measure)
Ideas Foundation
<ul style="list-style-type: none"> • Timeseries innovation data for SMEs
People Foundation
<ul style="list-style-type: none"> • Skills metrics with empirical importance for productivity • Management practices • Retraining • Vocational skills • Progression in work
Infrastructure Foundation
<ul style="list-style-type: none"> • Infrastructure quality
Business Environment Foundation
<ul style="list-style-type: none"> • Measuring competition • Availability of finance for SMEs
Artificial Intelligence and Data Grand Challenge
<ul style="list-style-type: none"> • AI adoption in the private sector • AI research projects in the NHS
Clean Growth Grand Challenge
<ul style="list-style-type: none"> • Energy use for new non-domestic builds
Future of Mobility Grand Challenge
<ul style="list-style-type: none"> • Efficiency in the movement of goods

In line with their terms of reference, the selected metrics can be considered as the set of indicators that the Council believes would improve in response to a successful Industrial Strategy.

The success metrics are a 'live' workstream and the Council is keen to respond to new and improved research, methods and data, replacing metrics as better indicators become available. The Council's own broader research programme, including the 'insight projects', may also contribute to refining the success metrics.

The project has highlighted 16 areas (of varying sizes) where the Council believes that important data is missing or not yet of sufficiently quality to be included as a success metric. The Council are keen to continue working with stakeholders to understand what data could help address these data gaps.