

New objectives, same rationales

Shifts in the United Kingdom's industrial strategies?

Tommaso Ciarli
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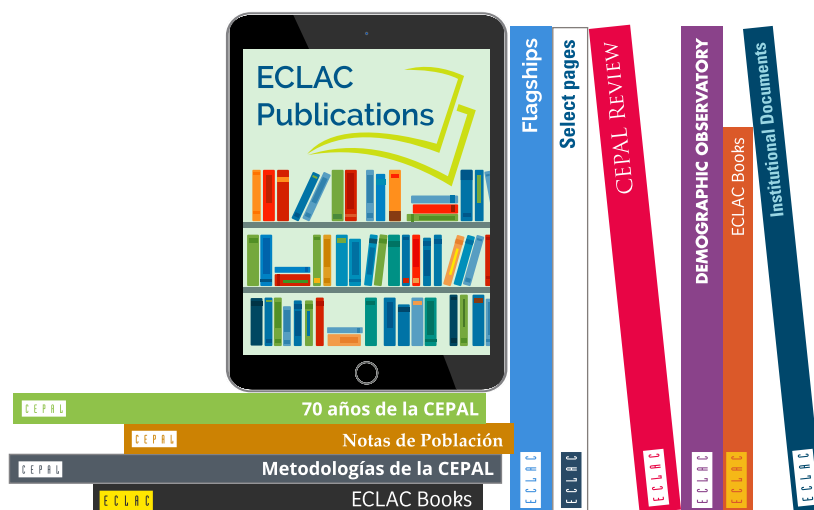
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This document was prepared by Tommaso Ciarli, Andrés Madariaga Espinoza and Neil Foster-McGregor, consultants with the Unit on Investment and Corporate Strategies of the Division of Production, Productivity and Management of the Economic Commission for Latin America and the Caribbean (ECLAC). It was prepared under the supervision of Andrea Laplane, Economic Affairs Officer, and Cecilia Plottier, Senior Economic Affairs Officer, both of the same Unit, and coordinated by Cecilia Plottier, as part of the activities of the project "Recover better: overcoming the consequences of the COVID-19 pandemic in Latin America and the Caribbean" in the framework of the cooperation programme between the ECLAC and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), financed by the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany.

The authors gratefully acknowledge the contributions of Tera Allas, Diane Coyle, Chiara Criscuolo, Guy Lalanne, Brian MacAulay, Anna Valero and Alison Wolf, whose perspectives and knowledge significantly enriched this report. They are also grateful for the insightful comments received from Nicolo Gligo, Andrea Laplane, Marco Llinás, Cecilia Plottier and Paul Wander of ECLAC.

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United Nations publication
LC/TS.2024/64
Distribution: L
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Printed at United Nations, Santiago
S.2400527[E]

This publication should be cited as: T. Ciarli, A. Madariaga Espinoza and N. Foster-McGregor, "New objectives, same rationales: shifts in the United Kingdom's industrial strategies?", *Project Documents* (LC/TS.2024/64), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2024.

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Contents

Introduction	5
I. Data and methods	7
II. Shifting industrial strategies in the United Kingdom	11
A. Pre Covid-19 pandemic: building a Britain fit for the future	11
B. Post Covid-19 pandemic: plan for growth and levelling-up	13
C. Objectives and rationales pre and post COVID-19	14
D. Implementation	18
E. How has industrial policy in the United Kingdom changed since the 2017 industrial strategy?	23
III. The recent literature on industrial policy: objectives, rationales, and implementation.....	25
A. Trends in policy objectives	26
B. Trends in Rationales	27
C. Implementation	28
IV. Discussion	29
A. Objectives	29
B. Rationales	30
C. Implementation challenges	31
D. Policy outcomes and effectiveness	32
E. Lessons for industrial policy	33
Bibliography.....	35
Annexes	39
Annex A1	40
Annex A2	41
Annex A3	41
Annex A4	43

Tables

Table 1	United Kingdom: overview of objectives across industrial strategies, 2017, 2021 y 2022	15
Table 2	United Kingdom: examples of objectives and rationales of policy instruments across industrial strategies.....	17
Table 3	United Kingdom: main components of industrial strategy design, 2017, 2021 and 2022	18
Table 4	United Kingdom: examples of policy instruments mentioned in the industrial strategies, 2017, 2021 and 2021	19
Table 5	United Kingdom: changes in the objectives, rationales and design features of the industrial strategies, 2017, 2021 and 2022	23
Table A1.1	Query for systematic search of academic literature	40
Table A2.1	List of academic publications in the final sample	41

Figures

Figure 1	Policy objectives in the academic literature, before and after the pandemic.....	26
Figure 2	Policy rationales in the academic literature, before and after the pandemic	27

Introduction

Across the globe, and especially in high income countries, the use of industrial policy is on the rise.¹ While the increased focus of industrial policy maintains some of its traditional objectives linked to economic growth, productivity, and competitiveness, such objectives are being complemented with additional objectives linked to wicked social challenges such as climate change, rapid technological change, and inequality, and to strategic challenges related to access to critical materials and security (Ciarli et al., 2024).

This report is one of a series that considers the developments in industrial policies across a range of countries, with the current report focusing on the industrial policy landscape in the United Kingdom (UK) and how this has changed in recent years. The UK represents an interesting case study for several reasons. One of these relates to the UK's withdrawal from the European Union, which has led to debate about the UK's role in the global economy and of the role of policy in achieving its aims. The UK has also developed a series of Industrial Strategies that in the analysis below we categorise in two periods (a pre- and post-pandemic phase of industrial strategy), with differences and similarities observed between the two phases.² Industrial strategies are of particular interest because they are thought to combine several interventions, considering synergies and tensions between different objectives. Consistent with other industrial strategies, the UK strategies address a range of objectives, including economic but also societal and strategic concerns. Of interest is also the polarised geographical context of the UK, which can provide relevant experience for other countries that experience similar economic and technological differences across regions. The UK has also experienced rapid changes in governments, adjusting its industrial strategy at each turn. Finally, the UK is a highly studied country, providing a relatively rich source of academic and policy documents that can be analysed systematically.

¹ Industrial policy, industrial strategy, and productive development policies are used in different contexts and literatures to refer to similar government interventions aimed at improving (sustainable) economic development leveraging the private sector. We refer to these interventions using these different terms interchangeably, unless we explicitly refer to the UK interventions called industrial strategy.

² Which partially overlaps with the change in government happened in July 2019, which also changed the approach to the industrial strategy.

The review of the UK industrial strategy in this report proceeds by combining information from two corpora of literature —policy documents and academic publications— and official documents published by the UK Government. The approach proceeds in four steps. Firstly, we map the recent evolution of industrial policy in the UK by conducting a comprehensive review and comparison of government documents and policy documents since the first Industrial Strategy published in 2017. We compare this strategy with the following strategies published just before and after the Covid pandemic. The pandemic coincides with the end of the first Industrial Strategy which had guided UK industrial policies for the previous three years. We consider the relevant grey literature as a complement to the information provided in government documents, particularly to elaborate on the rationales of the industrial strategies. Building on the government and policy documents we map differences in the objectives, rationales, and implementation over the pre- and post-pandemic phase of industrial strategy. We expect that industrial strategies are designed based on the stated objectives and the rationales that justify specific public interventions (Ciarli et al., 2024). We thus assess the extent to which the UK industrial policy follows this framework.

We find that in both phases the Industrial Strategies combine a primary focus on economic objectives with social challenges, with the second phase (post pandemic) being more explicit about the climate challenge. The second phase also substantially increases the attention to strategic issues such as security and resilience. Overall, we observe substantial continuity in the (non-explicit) reference to traditional rationales for industrial policy: providing the conditions for and means of efficient production, along with the creation of framework conditions. Directing technological change and structural transformation rationales are less prominent, especially in the second phase. By and large, we further observe a continuation in the implementation with respect to technology and mission-oriented instruments, horizontal instruments and place-based instruments —although the latter become more explicit in the second phase. We do observe substantial change in sectoral policies, with the abandonment of sector deals.

Next, we systematically map the recent academic literature on industrial policies in the UK over the last decade. We code the literature using the classification of objectives and instruments proposed in Ciarli et al. (2024), and extract information about the design and instruments of industrial policies. We find that the objectives tend to reflect the discussion in the Government and policy documents, combining economic and social objectives (especially regional inequalities), and increasing the attention to strategic issues in the second phase. With respect to rationales, the academic literature differs with respect to the Government and policy documents. In the academic literature we observe a shift of emphasis in favour of justifications based on coordinated efforts and technological directionality in the post-pandemic period, largely at the expense of rationales based on the framework conditions. We do not observe such shift in the industrial strategies, quite the opposite.

Finally, we combine the information obtained from the above analysis to discuss the framing of the UK Industrial Strategies objectives and rationales, and how the lack of alignment between these have led to challenges in implementing the strategies. The discussion combines insights from several key experts. Based on this discussion we draw several lessons for industrial policy that can be drawn from the UK experience.

The document structure follows these three steps. Chapter I describes the data and methods used in the study. Chapter II describes in detail the UK industrial strategies and systematises the main objectives and rationales using the classification in Ciarli et al. (2024) and the implementation using the Organization for Economic Cooperation and Development (OECD) classification. Chapter III does the same systematically for the academic literature. Chapter IV brings together and discusses the main shifts in the UK industrial strategy objectives and rationales and challenges in implementing them.

I. Data and methods

We combine a detailed review of UK Government white papers and official documents describing the industrial strategies, a comprehensive review of policy documents and grey literature on the UK, a systematic quantitative review of the academic literature on UK industrial policy, and open conversations with experts. We proceed in five main steps.

Initially, to describe recent trends in UK industrial policy we compare the Industrial Strategy just before Covid-19 (*Industrial Strategy: Building a Britain fit for the future* (HM Government, 2017), with the subsequent strategies outlined in the following documents:

- (i) The Ten Point Plan for a Green Industrial Revolution (HM Government, 2020).
- (ii) Net Zero Strategy: Build back greener (HM Government, 2021c).
- (iii) Levelling Up the United Kingdom (HM Government, 2022a).

These official documents, drafted by departments within HM Government responsible for industrial policy, serve as comprehensive plans outlining the government's approach to industrial policy during their respective mandates. According to the Industrial Strategy Council (ISC, 2021a), the basic premise of the 2017 Industrial Strategy (HM Government, 2017) is "a program of supply-side policies to drive prosperity in and across the economy". While the white paper does not explicitly provide a definition of industrial policy, it describes the broader context and strategic direction for economic development and the role of the state in several domains, while also delving into specific goals, initiatives, and (in some cases) frameworks guiding the design of policy instruments.

In terms of budget, it was estimated that the 2017 Industrial Strategy comprised approximately USD 57 billion of committed funding³ across government departments, equivalent to around 2 per cent of GDP (ISC, 2020b). As per the subsequent strategies, the aggregated funding commitments are less

³ Equivalent to £45 billion (1 U.K pound = 1.27 USD, according to the IMF Representative Exchange Rates, on the 31st January 2024). We use this exchange rate throughout the report.

clear. Illustratively, the new UK Infrastructure Bank—one of the main initiatives of the Plan for Growth—comprises approximately USD 29 billion of financial capacity (HM Government, 2021a), and direct public funding to R&D accounted for USD 18.5 billion in 2021/22 (ISC, 2021a), while funding for other important initiatives have yet to be detailed. In the case of the *Ten Point Plan*, an investment of approximately USD 33 billion was pledged to finance the “green industrial revolution” (HM Government, 2021a).

These documents contain both high-level directions for policy efforts and specific examples of policy instruments. The overall number of initiatives is relatively high across the strategies: 142 initiatives were identified in the 2017 Industrial Strategy, and around 180 in the Plan for Growth (ISC, 2021a). These initiatives include direct allocation of funds to incentivize private investment in R&D (e.g., R&D tax credits), as well as new institutional arrangements (e.g., creation of the new Advanced Research and Innovation Agency), and/or regulatory changes (e.g., devolution framework reform for local governments). In some cases, technical annexes to the documents provide additional information on quantitative goals, benchmarks, and evaluation metrics (HM Government, 2022b). Some of the commitments expressed in the strategies announce additional plans for specific policy domains (e.g., Local Industrial Strategies, Export Champions Strategy), which may result in additional initiatives and policies. Overall, the industrial strategies underscore the government's commitment to achieving specific objectives and its priorities, spanning a range of policy areas and government departments.

In a second step, we conducted a review of relevant sources of grey literature within the UK context, encompassing materials from government entities, the higher education sector, and civil society. Specifically, we extensively consulted and gathered documents from institutions, academic research centres, and policy think-tanks, including the OECD, the Industrial Strategy Council, the Centre for Economic Performance, the Institute for Fiscal Studies, the Bennett Institute for Public Policy, The Productivity Institute, the Institute for Government, and the National Institute of Economic and Social Research.

Thirdly, we follow the method outlined in Ciarli et al. (2024) for the systematic review of the literature. We rely on the SALSA approach (Grant & Booth, 2009) and use the Dimensions database of Digital Science as the primary source of academic literature. In this report, we adapt the query used in Ciarli et al. (2024) to include keywords that refer to our context of interest, including “UK”, “United Kingdom”, “Brexit”, and “Britain”, among others. We keep the keywords relating to objectives, rationales, and other terms of interest such as “design” and “instruments” unchanged from Ciarli et al. (2024). We also keep the filters and parameters, limiting our query to articles, book chapters, and preprints published between the years 2013 and 2023 (inclusive), in the following fields of study: Human Society, Economics, Commerce, Management, and Tourism. We detail the key terms and parameters of the query in annex A1.

Based on these different queries we identified an initial set of 165 unique publications. Subsequently, we determined the relevance of these publications to our study by reading their title and abstract. In this screening process, we excluded publications where the level of analysis is not informative for our purposes such as publications concerned with an individual firm (e.g., case studies), publications that are purely analytical without a link to policies (e.g., computational models of the economy), and publications that are off topic (e.g., concerned with management practices or international businesses). The full text reading left us with 44 documents that constitute the final set of academic papers in this analysis. The list of 44 documents included in this analysis is available in annex A2.

Fourth, we examine the corpus of both policy documents and the academic literature employing the coding scheme proposed in Ciarli et al. (2024) to identify the rationales, objectives, and design features underlying industrial policies—the coding scheme is available in annex A3 of this report. We systematically study the rationales and objectives present in the corpus of policy and academic documents relevant for the UK, using the categories proposed in Ciarli et al. (2024).

In addition, the coding scheme captures the design and implementation features of the industrial strategies and policies in our corpus. Here, we examine the type of intervention, the existence of specific targets (sectors, technologies, products), institutional features, and other details informing the implementation of a given policy. Lastly, when appropriate, we also codify evidence of evaluation of specific instruments, recording the context of the evaluation, the methods employed, and the main results. Overall, the data allows us to examine the correspondence between different instruments, policy objectives and the set of rationales. We can also characterize the commonalities, gaps, and emerging trends in the context of the UK.

Finally, to deepen our understanding, validate, and contextualize our findings and interpretations of the recent evolution of industrial strategies in the UK, we engaged in six open conversations with experts.⁴ We used a set of open-ended questions to guide the discussions on industrial strategies within a timeframe of 45 minutes to 1 hour. The set of questions (available in the annex A4) reflect the main themes discussed in this report: policy objectives, rationales, implementation challenges, and emerging insights on industrial policy outcomes. All conversations took place in December 2023. Respecting the confidentiality of the experts' contributions, the material in this report reflects our own interpretation of the discussion and no comment can be attributed to individuals.

Experts were selected in consideration of their extensive experience with industrial policies in the UK, underpinned by a range of professional roles, including academic positions and advisory roles for various government entities on industrial policy and related matters such as productivity, skills, and digitalization. We underscore their active involvement at different capacities on industrial policy in the UK ranging from participation in round tables and consultations, to appointments in advisory councils. This involvement and engagement with government bodies, including the Office for Budget Responsibility, the Industrial Strategy Council, and the Economic Advisory Council, among others, provides a valuable understanding of policy mechanisms outside publicly available documentation and political processes related to the industrial strategy.

A potential concern regarding our selected set of experts is their proximity to the policy-making processes, which may introduce partisan biases in their perspectives, particularly if they have been directly involved with government administration. Selection bias may lead to an inclination/reluctance to recognize instances of policy failures/success and may pre-dispose assessments in certain directions (Mahoney & Collier, 1996). To reduce the bias in interpreting the information, during the conversations we asked for disclosure of conflict of interests to all experts, and none of them acknowledged a specific issue.

⁴ We shared an earlier draft of this manuscript with experts and asked them to express their perspectives on the main findings during the conversation.

II. Shifting industrial strategies in the United Kingdom

A. Pre Covid-19 pandemic: building a Britain fit for the future

"Building a Britain fit for the future" was the title of the Industrial Strategy presented to parliament in November 2017. The strategy was drafted in the context of the United Kingdom's post-Brexit environment as a plan to address the challenges of Brexit and stagnant productivity growth and set a direction for the UK's economic development outside the European Union (EU). It was set to provide a long-term policy framework, enabling private and public actors to invest in the skills, industries, and infrastructures of the future, ensuring that the country could "embrace and benefit from the opportunity of technological change".

The 2017 strategy devised a role for government to "coordinate and convene efforts to develop and disseminate new technologies and industries" (p.22) and make "long-term investments that no single commercial or academic player can take alone." (p. 22), extending "beyond promoting competition". This included: (i) setting the framework conditions; (ii) creating partnerships with a range of actors including business, academia, workers, educational institutions, and local administrations, thus coordinating market actors, beyond creating framework conditions; and (iii) having a strategic role in directing technological change and structural change, promoting specific technologies and industries. Arguably, the rationales behind this strategic role of the state in weaving and directing is a radical change with respect to earlier industrial policies in the UK (Bailey et al., 2017).

The 2017 strategy is also motivated by four "grand challenges": artificial intelligence and digitisation; ageing society; clean growth; and the future of mobility. These grand challenges are framed as transformational forces that shape the future, and that therefore require "a truly strategic government" (p.32). Although the challenges cut across a range of domains, the overarching objectives of the strategy are essentially economic, and include: (i) making the UK the world's most innovative economy; (ii) generating good jobs and greater earning power for all; (iii) a major upgrade of the UK's infrastructure; (iv) making the UK the best place to start and grow a business; and (v) building

prosperous communities across the UK. As stated in the strategy, these objectives are coherent with "the five foundations of productivity: ideas, people, infrastructure, business environment, and places" (p.14), that are used as guiding elements for initiatives and policy instruments.

Hence, the strategy goes on to provide a list of initiatives and key policy instruments closely aligned with these five foundations of productivity. Although most initiatives can be categorized as conventional horizontal instruments (Ciarli et al., 2019), some of the horizontal instruments are implemented selectively (as vertical policies). For example, in the domain of "ideas", the government aimed at increasing the overall R&D tax credit to 12% (horizontal), while at the same time the Challenge Fund was aimed at "investing in strategic innovation challenges" (p. 73), such as artificial intelligence (AI), batteries for the electrification of vehicles, and robotic systems for extreme environments (vertical).

The most important chapter of the selective instruments within the industrial strategy were the Sector Deals. As of 2021, 11 Sector Deals were launched, including: Aerospace, Life Sciences, Artificial Intelligence, Automotive, Rail, Offshore wind, Nuclear, Creative industries, Construction, and Tourism. These Sector Deals were characterized as "partnerships between the government and industry on sector-specific issues with the potential to enhance productivity, employment, innovation, and skills." (p. 192) The strategy paper recognized that the Deals were to support both established and emerging sectors, identifying specific interventions to improve productivity and thus suggesting systematic thinking on these issues from government actors.

The rationales underlying the Sector Deals primarily lie in promoting coordination and managing complexity, creating the conditions for (and the means of) efficient production, and creating framework conditions. By forming strategic partnerships, these Deals aimed to promote industry confidence and encourage significant long-term investments. The Deals were also explicitly built upon perceived strengths of the UK and were expected to induce new collaboration among various actors, harmonize different existing policy instruments, and establish sector-wide institutions (i.e., quasi-public goods). The Sector Deals received a mixed reception by experts and commentators. While some doubted whether the Sector Deals reflected a departure from "neoliberal statecraft" (Berry, 2022), some concerns regarding the transparency of the sector selection process, the role of powerful incumbents, and market competition effects were also raised (Crafts, 2018).

In terms of implementation, the establishment of the Industrial Strategy Council (ISC) was an important institutional arrangement for "monitoring" the Industrial Strategy. The ISC was devised as an independent advisory body composed of representatives from business, academia, and civil society to assess the government's progress in implementing the Industrial Strategy and providing an impartial expert view on the impact of the strategy.⁵ The ISC was instrumental in developing benchmarks and metrics to assess the success and impact of different policy instruments and initiatives. The metrics were developed in the context of a more general methodology and were also informed by several policy documents commissioned by the ISC. Nevertheless, the ISC did not match the intention to maintain a long-term assessment of UK industrial policies, influencing strategic decision making independently, as proved by its closure in 2021 following a change in leadership within government.

In fulfilment of its role of providing independent scrutiny, the ISC published a series of reports assessing the implementation progress, discussing difficulties, and tracking emerging results of the Industrial Strategy (ISC, 2020a, 2020b, 2021a, 2021b). At the beginning of 2020, it had identified 142 policy initiatives, albeit many of them with very limited, or even any, associated funding. Overall, the ISC estimated that the Industrial Strategy represented a public funding commitment of approximately USD 57 billion, equivalent to 2% of the GDP.

⁵ More details in <https://industrialstrategycouncil.org/>.

B. Post Covid-19 pandemic: plan for growth and levelling-up

In a March 2021 article published in the Financial Times, the chair of the ISC and former Chief Economist of the Bank of England Andy Haldane asserted, "UK industrial strategy is dead, long may it live." To the surprise of many, the Industrial Strategy launched in 2017 was officially being terminated, including the abolition of the ISC. The decision marked the end of the formal industrial strategy framework put in place by Theresa May and gave way to the "*Build back better: our plan for growth*" put forth by Boris Johnson's administration (HM Government, 2021a; House of Commons, 2021).

The new strategy, commonly referred to as the "Plan for Growth", built on earlier documents presented by Johnson's administration, reflected a revised prioritisation of government's industrial policy and an effort at re-labelling some of the existing initiatives. Namely, in 2020 the "10 Point Plan for Green Industrial Revolution" outlined a vision for the UK economy based on "green growth". On paper, the "10 Point Plan" pushed a change in the perceived importance of the industrial strategy's objectives, increasing the focus on sustainability, in addition to the conventional economic goals of productivity and economic growth. More specifically, the "10 Point Plan" outlined in the strategy can be paired to a set of economic sectors, indicating some degree of continuity in terms of the sector-specific support within the Sector Deals of the 2017 Industrial Strategy (House of Commons, 2021):

- (i) Advancing offshore wind --> energy.
- (ii) Growth of low-carbon hydrogen --> energy.
- (iii) Advanced nuclear power --> energy.
- (iv) Zero emission-vehicles --> automotive industry.
- (v) Green public transport --> transportation.
- (vi) Jet zero and green ships --> transportation and logistics.
- (vii) Greener buildings --> construction.
- (viii) Carbon capture, usage, and storage --> manufacturing, new technology.
- (ix) Natural environment protection.
- (x) Green finance --> financial services.

In practice, the backbone of the strategy lies in the encouragement of private R&D and the uptake of low-carbon technologies by private firms across different economic sectors. The transition to a low-carbon economy (which also coincided with a new context of the recovery from the pandemic) was left to the market with a reduced emphasis on the role of the government in directing technological change (despite the direct interventions following the Covid-19 pandemic).

Marking a continuation with its predecessor, the "Plan for Growth" also identified three pillars to guide the strategy: infrastructure, skills, and innovation. These pillars were supposed to align with the broader objectives of achieving net-zero emissions, levelling up regions, and asserting global influence. Arguably, these three pillars also align well with the creation of framework conditions as the prime rationale for the strategy.

The "Plan for Growth" thus focused on promoting innovation, productivity, and employment while ensuring inclusivity and sustainability. An interesting corollary of the renewed priority on increasing domestic production of renewable energy is the UK aim to reduce its dependence on imported fossil fuels, thus enhancing energy autonomy. In other words, the promotion of renewable energy sources also serves as a resilience measure against fluctuating fossil fuel markets and geopolitical uncertainties in the post-pandemic period.

In terms of interventions, the focus on low-carbon technologies takes a sectoral approach, targeting established sectors in which the UK has some comparative advantage and that can contribute to the transition toward net-zero, such as offshore wind energy. It combined dedicated funds for technology development with the announcement of an agenda of regulatory changes to facilitate the transition (such as ending new sale of petrol and diesel vehicles by 2030), public-private partnerships (such as the Green Finance Institute) and devising conditions for market-based solutions (e.g., the market for carbon capture technologies). Some of these initiatives were already announced in the 10 Point Plan, but their narrative was revised to better align with the new strategy.

According to ISC, the main weakness of the “Plan for Growth” is related to the “scale and scope” of instruments, with an accompanying proposal to widen the policy framework beyond “traditional drivers of productivity” and making a plea for increasing the engagement and involvement of businesses and local actors (p. 5, ISC, 2021a).

Moving to 2022, the new government presented the “Levelling Up the UK” (LUP) strategy, with an increased attention to regional disparities and stimulating local growth across the country, something also featured in the 2017 Industrial Strategy. Beyond the economic objectives and addressing regional imbalances, the Levelling Up agenda aims to contribute to the resilience of the UK to future shocks (p.128). For instance, by investing in local industries and technology sectors, the UK government can foster more self-reliant regional economies and enhance the capacity for jobs and business recovery.

The LUP strategy is based on a framework that outlines different forms of capital: physical, intangible, social, institutional, financial, and human (HM Government, 2022a). It recognizes that differences in these interdependent forms of capital drive spatial disparities and economic prosperity. Hence, the role of government lies —primarily— in creating the framework conditions to improve all these different forms of capital across the country. Furthermore, the strategy devises “medium-term missions” (p. 118), that provide the direction for specific initiatives and policy instruments. Like the 2017 strategy, the LUP strategy emphasizes the creation of framework conditions across regions, while also acknowledging the need for structural transformation of regional economies and coordination among stakeholders (business, local authorities, central government) in addressing large disparities that, allegedly, hinder the UK's full economic potential (HM Government, 2022a).

In between the “Plan for Growth” and the “Levelling-Up” strategy, the UK government also released the “Net Zero” strategy (2021c), which outlined proposals for achieving decarbonization by 2050. Interestingly, the “Net Zero” included “carbon budgets” and scenarios for meeting the carbon emission targets across different economic sectors, bridging economic analysis with climate science, and policy making. It is also worth noting that the “Net Zero” strategy makes references to the “Plan for Growth” and is further taken up as part of the LUP strategy. As such, we included it as a relevant strategy in our analysis. In the next sections, we elaborate and compare the objectives, rationales, and policy implementation across these two phases of industrial strategies in the UK.

C. Objectives and rationales pre and post COVID-19

As the ISC points out (2021a), the basic premise for industrial strategy in both the 2017 Industrial Strategy and the subsequent “Plan for Growth” is “a programme of supply-side policies to drive prosperity in and across the economy”. Here, we analyse the continuities and changes in the objectives and rationales of the two phases of industrial strategy in the UK.

As we outline in table 1, in both phases the objectives went beyond the traditional economic ones that were dominant in earlier UK industrial policies. First, the “Building Britain fit for the future” strategy (2017 Industrial Strategy) has boosting productivity and earning power throughout the UK as its main

objective, with this further unpacked in 5 different objectives: (i) make the UK the world's most innovative economy; (ii) create good jobs and greater earning power for all; (iii) upgrade the UK's infrastructure; (iv) make the UK the best place to start and grow a business; and (v) create prosperous communities across the UK. In the post-pandemic phase, these economic objectives are largely repeated –perhaps using different phrasing. For instance, the “Plan for growth” also mentions the aim of making the UK the best ecosystem in the world for starting and growing a business, together with the aim to sustain productivity growth and international competitiveness. Similarly, the LUP strategy aims to “boost productivity, pay, jobs, and living standards by growing the private sector.” Essentially, the economic objectives outlined across the strategies encompass economic growth, productivity, innovation, jobs, and competitiveness.

Table 1
United Kingdom: overview of objectives across industrial strategies, 2017, 2021 y 2022

	Industrial Strategies		
	Building Britain fit for the future 2017	Plan for growth 2021	LUP 2022
Economic objectives	Economic growth Productivity Innovation Jobs Competitiveness	Economic growth Productivity Innovation Jobs Competitiveness	Economic growth Productivity Innovation Jobs Competitiveness
Societal challenges	Ageing society AI & Digitalization Clean growth Regional inequality	Net zero Regional inequality	Regional inequality Net zero
Strategic objectives		Resilience	Resilience Autonomy

Source: Authors' elaboration.

In addition to the traditional economic objectives, both strategies emphasized the need for industrial policies to also tackle societal challenges. The 2017 strategy explicitly mentioned several societal challenges, including an ageing society, and sought to leverage innovation to address the evolving needs and demands of an ageing population. In addition, the 2017 strategy mentioned clean growth, digitalization, and regional inequalities as “grand challenges” that are needed to be tackled by the industrial strategy. The social challenges that appear most relevant in the post covid strategy are regional disparities and carbon neutrality. These include specific objectives such as positioning the UK as a global leader in clean technology markets and focusing on environmental sustainability in driving future growth—an aspect that is largely common to the strategies both before and after the pandemic.

Besides economic objectives and social challenges, which are similar between strategies before and after Covid-19, the most distinct feature of the latter strategy, largely due to challenges posed by the pandemic and the regional conflicts, is the aim to cultivate a resilient economy. The Industrial Strategies “Plan for Growth” (2021) and “Levelling-Up the UK” (2022) implemented in the post-Covid period emphasized the critical importance of national security capabilities, highlighting the need for safeguarding sensitive operational sectors to ensure the overall stability and resilience of the nation, and improve preparedness to future shocks (HM Government, 2021b).

These objectives largely seem to be suggestive of the evolving priorities of the different government administration and reflective of the evolving narrative that each administration pushed for.

Given the breadth and depth of objectives in both strategies, we expect them to build on nuanced rationales (Ciarli et al., 2024; Criscuolo et al., 2022a). Yet, the official documents of the industrial strategies contain little explicit discussion of the justification for government intervention and the choice of policy instruments.

These narratives put forward, from “building a Britain fit for the future” to “addressing the long-standing disparities between different regions of the UK”, are geared at garnering public and political support for the interventions as solutions to the stated aims, more than providing a rationale for those interventions. The Government documents are a launching pad that serve to frame the future allocation of resources, engage with stakeholders, and propel other events that further provide the materialization of the strategies. Therefore, our discussion of rationales is mainly informed by the policy documents described in the Methodology (chapter I).

We infer the connections between objectives and rationales of specific policy instruments by reading between the lines of the official documents and reviewing the grey literature that discuss the strategies (summarized in table 2). It should be noted that in the grey literature rationales are usually not discussed in connection to specific policy initiatives or instruments, but rather in relation to the general approach taken by the government to address the objectives.

In our interpretation of the documents, the most salient rationales underlying both phases of industrial strategies relate first to the creation of framework conditions, and second, to the creation of the conditions of (and means for) production (see Ciarli et al. (2024) and its annex A2). Under both sets of strategies the creation of the conditions of (and means for) production is reflected in a range of policy instruments that are intended to tackle the provision of skills (e.g., the National Retraining Scheme, Further Education Program), investment in infrastructure (e.g., the National Rail Plan, the Rail Sector Deal, National Infrastructure Program, Digital Connectivity, UK Infrastructure Bank, etc.), and other innovation-related initiatives that aim to generate the ‘crowding-in’ of private sector investment (e.g., the announced New Energy Vehicles Manufacturing Hub). In the case of the “Levelling-Up” strategy, this is further observed through efforts to create agglomeration economies in specific geographical areas, efforts that are seen as a crucial step toward economic prosperity in the “left behind places”. In coherence with the 2017 strategy, the Net Zero strategy is designed to “capitalize on core strengths” (e.g., the offshore wind market, London as a hub for green finance, etc.), with the main initiatives being to provide government funding to support commercializing clean technologies and boosting private investment.

The initiatives put forward in the “Net Zero” strategy relate also to the creation of framework conditions needed, for instance, when there are information failures (i.e., the lack of effective price signals leading to under-investment by private actors). The plan to establish a UK Emissions Trading Scheme along with de-risking long-term investments to avoid lock-in to high-carbon investments and the establishment of a UK Infrastructure Bank are considered key policy levers for developing low carbon technologies. In terms of regulations, the strategy mentions the need for setting technical standards in technological areas (e.g., indirectly present in a range of Net Zero initiatives such as phasing out natural gas boilers by 2035).

The third most common rationale across the phases is coordination and managing complexity. This is relevant in justifying government intervention to coordinate complementary investments in interconnected activities (e.g., as in the Rail Sector Deal and subsequent Integrated Rail Plan) and concerns around the lack of feedback and information sharing across agents (e.g., the cross-modal freight initiative part of the Transport Decarbonisation Plan).

Directing technological change is relevant mainly in the case of the Net Zero strategy, where specific ‘clean’ technologies and ‘sustainable’ solutions are pushed forward by the industrial strategy (e.g., the stated relevance of Wind and Nuclear Energy in the energy mix). In the case of digital and AI

technologies there is also an aspect of directing technological change, though this is more general to the overall set of technologies, with policies aimed at supporting and diffusing such technologies.

Finally, we observe that the structural transformation rationale (i.e., managing change and shifting resources from low-productivity, slow-growing sectors to high-productivity sectors with strong prospects for future growth) is less relevant than other rationales and has become even less relevant in the post-covid phase. Key examples that fit under this rationale in the pre-pandemic phase are (some of) the calls of the IS Challenge Fund, including the UK Battery Industry as part of the Future of Mobility grand challenge, that aims to support the “growth of a strong battery business in the UK”. Likewise, the impetus behind some of the Sector Deals lied in nurturing emerging sectors linked to digital technologies, most notably in the case of the Artificial Intelligence Sector Deal.

Several policy reports, suggest that the objectives and interventions of the Industrial Strategies would fit better under rationales that expand beyond traditional market failures (see for example Bennet Institute (2021), Jacobs et al. (2017), Keep (2023), and Institute for Government (2020a, 2020b)). For instance, several reports suggest that the main rationale should be structural transformation. Keep (2023) indicates that simply funding innovation, infrastructure, and skills is insufficient, as it neglects the existence of a large sector of low-skill and low-productivity sectors that do not benefit from such horizontal policies, missing the levelling-up objectives. Instead, he suggests a view geared towards structural change: targeted intervention leading to structural change away from the low-performing sectors. Similarly, the Jacobs et al. (2017) suggests that the reasons behind the poor productivity performance in the UK relate to its economic structure—the prominence of the financial sector over productive activities—that creates incentives in favour of short-term profits over long-term investments. Therefore, they suggest industrial strategy in the UK should seek to alter the structure of investment and production in the UK.

In table 2 below we summarize examples of policy instruments across the two phases of industrial strategy in the UK in relation to objectives and instruments classified in Ciarli et al. (2024). Overall, we observe substantial continuity in the preponderance of traditional rationales: conditions for (and means of) production along with the creation of framework conditions. The coordination and managing complexity rationale seems to be the third most prominent rationale, while in terms of the discourse and the number of policy initiatives the directing technological change and structural transformation rationales are less prominent. We observe a similar emphasis on structural transformation and directing technological change, particularly in connection to the Grand Challenge Funds in the pre-pandemic phase and subsequently in the Net Zero Strategy in the post-pandemic phase. A key takeaway of this exercise, therefore, seems to be that there has been little change in the policy rationales between the two successive phases.

Table 2
United Kingdom: examples of objectives and rationales of policy instruments across industrial strategies

Objectives	Examples	Coordination and managing complexity	Creation of conditions for (and means of) efficient production	Creation of framework conditions	Directing technological change	Structural Transformation
Economic	Growth Productivity Innovation	Integrated Rail Plan (2022) Rail Sector Deal (2017)	National Retraining Scheme (2017; 2022)		IS Challenge Fund: UK Battery Industry (2017)	
Societal Challenges	Inclusiveness Sustainability Regional disparities		UK Investment Bank (2022) South West Regional Defence and Security Cluster (2022)		Advanced Nuclear Fund (2021)	
Strategic	Resilience Autonomy					

Source: Authors' elaboration.

D. Implementation

In Ciarli et al. (2024), we observed that when dealing with the complexity of social challenges and of economic systems, it is advisable to coordinate instruments rather than focusing on single instruments and policies separately (Criscuolo et al., 2022a). The design and implementation of both phases of the UK Industrial Strategy (pre- and post-covid) combines different instruments. These instruments can be grouped based on the OECD classification (Criscuolo et al., 2022a), which distinguished four strategies: sectoral, mission-oriented, technology-focused and place-based strategies.⁶ In table 3 we classify the main components of the design of the UK Industrial Strategy based on the OECD classification, plus policies that are more horizontal, according to the common literature.⁷ In table 4 we report some examples of policy instruments using the same classification.

Table 3
United Kingdom: main components of industrial strategy design, 2017, 2021 and 2022

Industrial Strategy		
	Pre-pandemic	Post-pandemic
	Building Britain fit for the future (2017)	Plan for Growth (2021) Levelling-Up the UK (2022)
Design approach (key features)		
Mission-oriented / technology focused	4 "broad" missions on: - AI and Data - Clean Growth - Future of Mobility - Ageing Society	12 "narrow" missions tackling living standards, digital connectivity, housing, public services, etc.
Horizontal	Based on "productivity foundations": - Skills - Ideas - Infrastructure - Business environment - Places	Based on "capital framework": - Physical and intangible capital - Human capital - Financial capital - Social capital - Institutional capital
Sectoral	11 "Sector" Deals: Life Sciences, Automotive, Creative Ind., AI, Nuclear, Construction, Rail, Aerospace, Offshore wind, Tourism	- Net Zero Strategy - Defence and Security Industrial Strategy - Export Champions Strategy
Place-based	Local Industrial Strategies	- Missions focused on regional disparities and local leadership - New regional governance ("devolution framework")
Monitoring/evaluation	Industrial Strategy Council	- LUP Advisory Council, Cabinet Committee

Source: Authors' elaboration.

Note: The labelling used in this table is adopted from the OECD framework (Criscuolo et al., 2022). The 11 sector deals are generally technology focused and are not all sectors in the traditional sense.

In both phases we observe that the design of the UK Industrial Strategy covers all four types of strategies. In both phases we also observe an overlap between **mission oriented and technology focused** strategies. The Building Britain fit for the future (2017) Industrial Strategy focuses on four broad missions, whereas the Plan for Growth (2021) considers 12 narrower missions. Some of these missions aim to expand technological capabilities in the UK (e.g., AI and data or digital connectivity), while others are mainly concerned with societal challenges such as society's ageing.

⁶ In Ciarli et al. (2024) we discuss how they relate to rationales for and objectives of industrial policies.

⁷ Although we do agree that often horizontal policies are *de facto* vertical.

Notable examples of policy instruments motivated by an approach that blends mission-oriented and technology-focused approaches are the Industrial Strategy Challenge Fund (ISCF) announced in the 2017 Industrial Strategy and the Advanced Nuclear Fund (ANF) announced in the Ten Point Plan (2020).

Table 4
United Kingdom: examples of policy instruments mentioned in the industrial strategies, 2017, 2021 and 2021

Industrial Strategy		
Pre-pandemic		Post-pandemic
Building Britain fit for the future (2017)		Plan for Growth (2021) Levelling-Up the UK (2022)
Policy instruments		
Mission-oriented/ technology focused	Industrial Strategy Challenge Funds (ISCF)	<i>Net zero strategy:</i> Industrial Clusters on Carbon Capture, Utilisation and Storage; New Offshore Wind Ports; Advanced Nuclear Fund <i>Lev-Up:</i> City and Growth Deals, Community Renewal Funds
Horizontal	<i>Skills:</i> National Retraining Scheme (NRS); Further Education Fund (FEF); Apprenticeship Program Reform. <i>Ideas:</i> Increase R&D tax credit rate, Catapult network funding <i>Infra.:</i> Housing Fund, Digital railways <i>Business:</i> British Business Bank (state-owned development bank)	<i>Capital framework:</i> - UK Infrastructure Bank - New Freeports - Integrated Rail Plan - Fund for Low-carbon heating - Innovation Accelerators - Further Education Program - Digital Connectivity Plan
Sectoral	- <i>Life Sciences:</i> ISCF funding for medicines manufact. - <i>Creative industries:</i> Cultural Dev. Fund - <i>AI:</i> Fund for AI PhDs and targeted R&D - <i>Automotive:</i> Funding for driverless vehicles	<i>Net Zero:</i> New Energy Vehicles Manufacturing Hub, Transport decarbonization, Heat and Buildings Strategy <i>Defence and Security:</i> Defence S&T Lab, Security Procurement Program, Supply Chains Program <i>Export champions:</i> Shipbuilding Manufacturing support, Creative Scale Up Program
Place-based	- Local Economic Partnerships (LEP), Town Deals	- Regional Investments Funds through the British Business Bank - Regional Angels Program - Local Transport Plans - Local Skills Improvement Plans

Source: Authors' elaboration.

The ISCF, managed by the UK Research and Innovation, allocated USD 3.3 billion of public money that needed to be matched by funding from private sector beneficiaries, mainly to subsidize R&D projects addressing (one of the) 23 challenges that compose the four “wide” missions (see table 3). The ISCF reported to the BEIS department, which approved spending and scrutinized the proposals, while HM Treasury assessed the cost effectiveness of the overall intervention. ISCF projects generally funded partnerships between business and research-intensive organizations, encouraging stakeholder engagement, and allocating funds via competitive bids. The ISCF stated 5 objectives: increase UK businesses' investment in R&D, while also improving R&D capability, capacity, and technology adoption; increase multi- and inter-disciplinary research; increase engagement between academia and industry on targeted innovation activities; increase collaboration between new small companies and those that are established; and increase overseas investment in R&D in the UK.

The specific challenges were established through three sequential funding waves that followed a consultative approach, where specific criteria differed across waves, but where stakeholder engagement was a cornerstone to ensure relevance and scope of application. Furthermore, each challenge was led by a Director from industry or academia. For instance, one of the ISCF challenges was “Digital security by design”, part of the “AI and Data economy” mission, and is currently funding a technology platform

prototype, five business-led demonstrators of hardware architecture, and collaborative R&D projects for software development with the participation of universities across the UK. Its funding amounts to USD 89 million of government funding matched by approximately USD 148 million of industry co-investment, and is led by John Goodacre, a professor in Computer Architecture at Lancaster University.

In a similar vein, the ANF provides funding that is set to increase the share of nuclear power in the UK's energy mix —presented as consistent with the Net Zero Strategy (2021)— and which comprises USD 273 million for developing small-scale power plant technologies and USD 216 million for an R&D program targeted to deliver an Advanced Modular Reactor Research, Development and Demonstration (AMR RD&D) by 2030 (including cost-saving cooling systems, compact operation scales, etc.). The overall AMR RD&D program takes a three-phase “rolling wave” planning approach. According to the latest information online,⁸ funding totalling USD 3.2 million has been announced for six pre-front-end engineering design (pre-FEED) studies in Phase A of the AMR RD&D, while Phase B is underway and is an open, competition-based program aiming to produce HTGR Front-End Engineering Designs (FEED) of reactor systems. In Phase C it is expected that detailed design, construction, and commissioning activities will be made. The initiative also includes regulatory engagement sessions with the Office for Nuclear Regulation (ONR) and the Environment Agency (EA). This initiative aims to put the UK at the frontier of nuclear technology developments Johnstone and Stirling (2020).

Horizontal policies are also very similar across the two phases, focusing on the conditions for innovation and productivity growth, such as skills (or human capital), ideas (or intangible capital), and the business environment (or social and institutional capital). When it comes to instruments, though, the two strategies differ. The Industrial Strategy on Building Britain fit for the future (2017) is more focused on creating conditions for innovating and adopting innovations, both in terms of skilling and the creation of capabilities to generate new ideas, while the Plan for Growth (2021) builds on more general, less targeted, education and infrastructural programs.

A key example of horizontal instruments in the 2017 Industrial Strategy was the National Retraining Scheme. This program was aimed at preparing adults for changes to the labour market and the economy, including those related to digital technologies and automation, enabling existing workers to retrain and shift into better jobs. The program comprised USD 127 million for the testing phase of a service that consists of support and career counselling (e.g., training and employment opportunities) based on individuals' skills, the “Get Help to Retrain” initiative (HM Government, 2020). Initially, the program focused on employed adults, aged 24 or older, without qualifications and low-level earnings.

Moving to the post-pandemic phase, a flagship horizontal instrument is the UK Infrastructure Bank. The Bank's main rationale is to fund infrastructure projects that are “vulnerable to market failures,” given their “complex, large, novel and long-term” nature. The approach aims to crowd in private sector investment to “help tackle climate change” and “support regional and local economic growth” (HM Government, 2021e). According to its website⁹, the bank offers “financing to the private sector and to local authorities for economic infrastructure projects,” on projects that are assessed on a case-by-case basis. A series of “investment principles” are aimed at ensuring that financed projects fulfil certain sustainability criteria. For instance, the bank will not invest in “projects involving extraction, production, transportation and refining of crude oil, natural gas or thermal coal with very limited exemptions.” The bank also offers guarantees to qualifying infrastructure projects backed by the Sovereign Infrastructure Guarantee (agreement between the Bank and HM Treasury). Guarantees constitute USD 12.7 billion of the Bank's USD 28 billion of financial capacity, and are used to support proposals that fall within the scope of our mandate (ibid).

⁸ <https://www.gov.uk/government/publications/advanced-nuclear-technologies/advanced-nuclear-technologies>.

⁹ <https://www.ukib.org.uk/what-we-offer>.

In 2021 the National Retraining Scheme was scrapped and replaced by a new Lifetime Skills Guarantee scheme. In this new scheme, the aim is to deliver qualifications in the form of free and flexible courses, without an explicit link to the labour market conditions and/or disruptive forces therein. The Lifetime Skills Guarantee comprises two main interventions: an increase in government spending in apprenticeship and skills bootcamps (free short courses of “in-demand” skills) to support adults with low levels of qualifications and boosting the post-18 student finance system (i.e., reforming the loan schemes) for higher technical qualifications, undergraduate, and post-graduate studies (Sibieta et al., 2022).

In relation to **sectoral** policies, the strategies differ both in design and implementation between the two phases. The sector deals of The Building Britain fit for the Future (2017) were defined as “partnerships between the government and industry on sector-specific issues” and were designed to provide a mechanism to focus on the development of UK champion industries that could demonstrate their innovative and growth potential across regions. The main objectives of these instruments were economic, including raising productivity, employment, innovation, and maintaining the skill base. The main rationales were based on basic comparative advantage principles, but also on the idea that different industries have different innovative potentials and regimes, which require different interventions.

Moreover, the sectors were not identified in the design of the industrial policy in a “top down” fashion, but rather as a result of “competitive” proposals submitted by the industries in a “bottom up” process. The premise of these partnerships was to provide private actors in the industry the confidence to make substantial investments for the long term, build on the UK's existing strengths, enhance performance through collaboration between different (disconnected) actors, align different policies that may have an impact on certain sectors, and create sector-wide institutions. Interestingly, the sectoral scope of the Deals was very heterogeneous, including high tech manufacturing such as Aerospace and Life Sciences, technological fields of different levels of maturity such as Artificial Intelligence, Offshore Wind, and Nuclear Energy, heavy industries such as Automotive, Rail, and Construction, and services such as the Creative industries and Tourism.

Conversely, the Plan for Growth (2021) integrates the design of sectoral strategies, which are focused on the main challenges identified in the strategy—specifically the environmental and security challenges—and the economic objective of export competition, especially in the post-Brexit setting. Concretely, the approach involves generating sector-specific plans consistent with the Net Zero and/or the Levelling-Up strategy. The Heat and Buildings Strategy, for example, aims to phase out the installation of new and replacement natural gas boilers by 2035 (targeting a very specific service sector) and provides approximately USD 6,343 in capital grants and incentives for heating system manufacturers, while investing USD 76 million in heat pump innovations (linked to the construction and engineering sector). The strategy states that “reducing heat and buildings emissions will require installing energy efficiency measures and new heating systems, which rely on local supply chains and businesses”, with the approach thus expected to feed into the efforts of levelling-up across the UK.

In addition, the “Plan for Growth” contemplates instruments to support manufacturing and services trade and exports, packed under the “Made in the UK, Sold to the World” strategy (HM Government, 2021d). Specifically, the export strategy announces new Export Support Services and financial assistance for SMEs to internationalize via ad-hoc grants covering market research, visits, advice to protect UK intellectual property, attendance at trade fairs, and consultancy, among other activities. In terms of priorities, the following sectors are mentioned in the strategy: Agri-food and drinks; Financial, professional, and business services; Creative Industries; Education; Tech and Digital;

Consumer and luxury goods; and Clean Growth. It is worth mentioning that detailed definitions and sector-specific measures are not explicit in the export strategy.¹⁰

The Defence and Security Strategy has been put forward in connection with the Plan for Growth (HM Government, 2021a, 2021b). In this case, there is a more explicit definition of targeted sectors. On the one hand, the Defence sector is comprised of the (local) contractors from which the Ministry of Defence purchases supplies, equipment, and services. These amount to nearly 13,000 firms, although the top 15 firms account for nearly half of the total procurement expenditure (HM Government, 2021b). On the other hand, the Security sector represents around 6,000 firms –of which 95% are said to be small and medium business– that provide critical infrastructure protection, cyber security, policing and counterterrorism, major event security, border security, and other services including consultancy, training, guarding, and risk analysis. In terms of concrete instruments, the strategy combines government-industry engagement initiatives such as the Defence Suppliers Forum to address coordination problems and provide the industry with long-term commitments, and a reform to the Acquisition and Procurement Policy aiming at strengthening local capabilities and ensuring continuity of supplies, further proposing a defence R&D collaboration and engagement strategy in key technologies.

Moving to **place-based** policies, we observe a continuation between the two phases of industrial strategy, both in design and implementation. This follows sustained requests from local policymakers and civil society to redirect attention of industrial policies from the core to the periphery. According to the ISC (2020a), regional disparities already featured prominently in the 2017 Industrial Strategy, with the Local Industrial Strategies being an important feature of that strategy. Yet, progress in terms of implementation was modest: by 2020 only 7 out of 36 Local Industrial Strategies were effectively developed. In this regard, the ISC identified a range of obstacles to the effective development of local industrial policies, including policy and funding uncertainty, and “limited co-ordination and co-production between Local Enterprise Partnerships (LEPS) and central government” (ISC, 2020b).

In the post-pandemic phase, the “Plan for Growth” outlined several initiatives to tackle regional disparities, some of which were already announced in the 2017 Industrial Strategy. Funding streams associated with these initiatives include the Levelling Up Fund, the UK Community Renewal Fund, the UK Shared Prosperity Fund, and the Towns Fund. From the policy documents, it is not quite clear how these different schemes complement each other and what are their particularities. Overall, these initiatives aim to fund transformational projects, high street rejuvenation, and green spaces, and are allocated by central government through a competitive process (HM Government, 2022a). The ISC further expressed concern that “the approach in the Plan for Growth appears over reliant on infrastructure spending” (2021a). In fact, according to some commentators (e.g., Institute for Government, 2023), the most novel aspect of the post-pandemic place-based policy is the Levelling-Up white paper announcement of revising the devolution of powers to local authorities. The devolution framework revision is seen as an attempt to revise how central government can be reorganized to deliver effective long-term regional policy, and in practice entails the negotiation of devolution deals with local governments (HM Government, 2022a).

Finally, both strategies include a monitoring and evaluation process. As described above, during the pre-pandemic phase the ISC was set up as a key institutional piece to monitor and provide counsel on the delivery of the 2017 Industrial Strategy. By design, the council was a non-statutory advisory group composed of 15 voluntary members from business, academia, and civil society, which held quarterly meetings, and defined its annual programs and priorities in coordination with HM Treasury and the Business, Energy, and Industrial Strategy Department. A key contribution of the council was the elaboration of success metrics and a methodology to measure the delivery of objectives including the Grand Challenges and the Sector Deals (ISC, 2020a). This evaluation methodology puts forward a

¹⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033912/made-in-the-uk-sold-to-the-world.pdf.

theoretical background suggesting links between interventions, outcomes and objectives, and their distribution across places and sectors (ISC, 2019a). Furthermore, the council was quite active in contracting policy research to inform crucial issues for the strategy. These “insights projects” produced evidence on the UK skills landscape (ISC, 2019), sectoral policies (2020c, 2020d), regional policy (ISC, 2021b), and how to support the transition to net zero (ISC, 2021c).¹¹

Moving to the post-pandemic phase, with the publication of the Plan for Growth the ISC was scrapped, generating critiques from Parliament (House of Commons, 2021). Yet, in the Levelling-Up strategy new bodies in charge of monitoring and evaluation were announced. This involved a new Levelling-Up Advisory Council, composed of 12 external members mainly from business and academia, that is set to publish an annual report analysing progress and advising government on the design, delivery, and impact of the strategy. This new council is expected to draw research program to provide high quality research and analysis on spatial disparities and how to solve them. Overall, it is a body that resembles the ISC insofar as it is supposed to monitor the implementation of the industrial strategy, yet, the institutional details, attributions, capacities and plans to design evaluations measures and programs remain unclear. In addition, a Cabinet Committee (i.e., an executive coordination body) was announced to deliver on the strategy and work directly with local governments, and “embed” the levelling-up strategy across central government bodies.

E. How has industrial policy in the United Kingdom changed since the 2017 industrial strategy?

The industrial policy of the UK has evolved in recent years. This is reflected in table 5, which presents a simplified and visual picture of the shifts in objectives, rationales and design features that can be observed when looking at the major recent industrial strategies.

Table 5
United Kingdom: changes in the objectives, rationales and design features of the industrial strategies, 2017, 2021 and 2022

	2017 IS	2021 PFG	2022 LUP
Objectives			
Economic	++	++	++
Societal challenges	++	++	++
Strategic		+	++
Rationales			
Structural Transformation			+
Conditions for Production	++	++	++
Framework Conditions	++	++	++
Coordination & Complexity	++	+	+
Directed technical change	+	+	
Design features			
Mission-oriented/ technology focused	++	++	+
Horizontal interventions	++	++	++
Sectoral support	++	+	+
Place-based	++	++	++
Independent scrutiny	++		+

Source: Authors' elaboration.

Note: + indicates presence, ++ indicates presence and strong emphasis.

¹¹ More info here: <https://industrialstrategycouncil.org/index.php/insight-projects>.

The 2017 Industrial Strategy primarily emphasized economic objectives, focusing on fostering economic growth and development. While it also included societal objectives, referred to as 'grand challenges', they were connected specifically to innovation and competition. As reflected by the prominent role of the Sector Deals within the strategy, coordination and managing complexity among various economic agents was also prominent. However, the strategy placed significant importance on the creation of conditions for (and means of) production and the creation of framework conditions to support businesses and encourage investment. Directing technical change was less relevant, centred around the development of AI technologies and the prominence of (technology focused) mission-led challenges.

A noticeable difference with the 2021 "Plan for Growth" (PfG) is the broader scope of the objectives of this new Industrial Strategy, showing a more explicit balance between economic and societal objectives (e.g., emphasizing the transition to net-zero economy and the levelling up agenda). Furthermore, the strategies in the post-pandemic phase underscore strategic objectives, specifically resilience and strategic autonomy. Rationales, instead, continue to primarily emphasize the importance of creating conditions for (and means of) production and the creation of framework conditions. Moreover, directing technical change appears even less among the rationales, mainly focused on decarbonization and defence and security.

The complementary focus on economic and societal objectives continued in 2022 with the enactment of the "Levelling Up the UK" (LUP) strategy. In comparison to the earlier strategies there is an increased emphasis explicitly on inclusivity in relation to regional imbalances in the levelling up strategy, with strategic objectives also receiving greater prominence in this more recent strategy. In terms of rationales, the most recent strategy seems to underscore the importance of structural transformation within regions, while also recognizing the value of framework conditions across the country. In other words, the strategy introduces local industrial policy more decidedly. This indicates a recognition of the significance of tailoring policies to address regional disparities and promoting more inclusive economic growth. Although mission-led policies are again an important part of this industrial strategy, the emphasis on sector-specific support in the vein of the former "Sector Deals" has been relegated.

III. The recent literature on industrial policy: objectives, rationales, and implementation

We systematized the content of 44 selected academic publications on industrial policy in the UK (the coded documents are listed in Appendix 2) between 2013-23 (see chapter I for details). This set of publications is composed of 16 documents published in the pre-pandemic (2013-2020) and 28 published in the post-pandemic phase (2021-2023), with an overall average of 4.4 documents per year during the ten-year window covered in our analysis. The average is higher for the post-pandemic phase (7.5 documents by year) relative to the pre-pandemic phase (around 3 documents per year). This upward trend is consistent with findings presented in Ciarli et al. (2024) regarding the increased attention on industrial policy in the academic literature.

In terms of geographic scope, most documents are concerned with industrial policy at the UK level, while 20% focus on specific national or sub-national territories, including Northern England, the West and East Midlands, Coventry and Warwick, Scotland, and Northern Ireland. Interestingly, most publications having a sub-national focus were published after 2019.

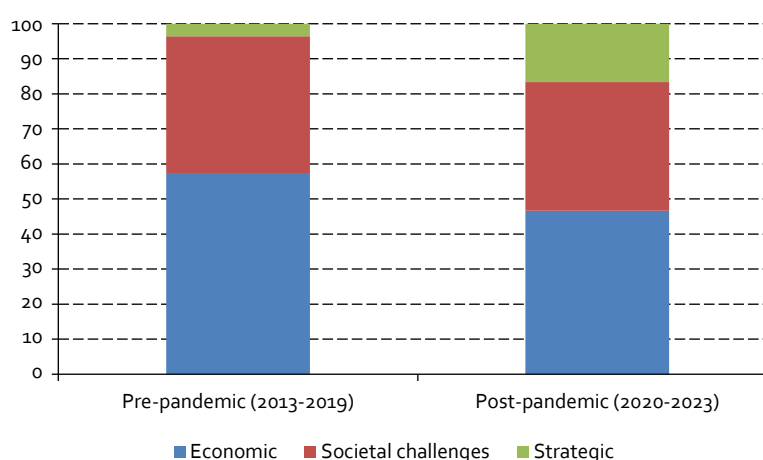
The academic literature presents various definitions of industrial policy (IP), ranging from more specific to more general. For instance, Morelli (2012) refers to IP as a means to improve competitiveness in particular economic activities. Similarly, Haar (2014) defines it as any form of intervention by governments in supporting certain industries that are expected to deliver better prospects for economic growth. Hannon (2016) provides a slightly broader definition, characterizing IP as the initiation and coordination of governmental initiatives to enhance the productivity and competitiveness of the entire economy and specific industries within it. More recently, Coulter (2022) describes IP as a government intervention program aimed at enhancing the business environment or transforming the economy towards more promising sectors or technologies for growth and societal welfare. In sum, while IP definitions are relatively similar, the most recent definitions are broader. Most frequently, definitions follow the OECD definition (Crisuolo et al., 2022b), in that IP is seen as a program of government intervention that aims to improve the business environment or alter the structure of the economy towards sectors or technologies that offer better prospects for growth or improving societal welfare.

A. Trends in policy objectives

Regarding objectives to be pursued through industrial policy, all academic publications in our analysis mentioned at least one of the following economic objectives: productivity, economic growth, competitiveness, and employment, and three quarters mention at least one societal challenge. Frequently, productivity and employment are emphasized along with inclusivity (regional, social and/or economic) and sustainability or decarbonization. In fewer cases, we observe that digitalization is mentioned as a distinct societal challenge. Overall, this is consistent with the multifaceted nature of the objectives described in Ciarli et al. (2024). In addition, we observe that one third of the reviewed articles mention strategic objectives. The most common among them is resilience, understood in terms of “preparedness” to deal with supply-chains disruptions (e.g., Bailey et al., 2022). Also present is (technological) security, in particular, trade wars, geopolitical conflicts, and control over certain technologies such as 5G (Coulter, 2022; Westwood, 2020).

Figure 1 reports the share of documents mentioning the economic objectives, societal challenges, and strategic objectives before and after the pandemic. We find that the relative importance of the economic objectives is slightly reduced between the pre- and post-pandemic phases while the importance of societal challenges seems to remain largely constant across time. This is consistent with Pemberton's (2016) view that the UK industrial policy has a long-standing tradition of paying attention to regional imbalances and the societal consequences of declining industries. The main challenge discussed in academia is that of regional inequalities.

Figure 1
Policy objectives in the academic literature, before and after the pandemic
(Percentages)



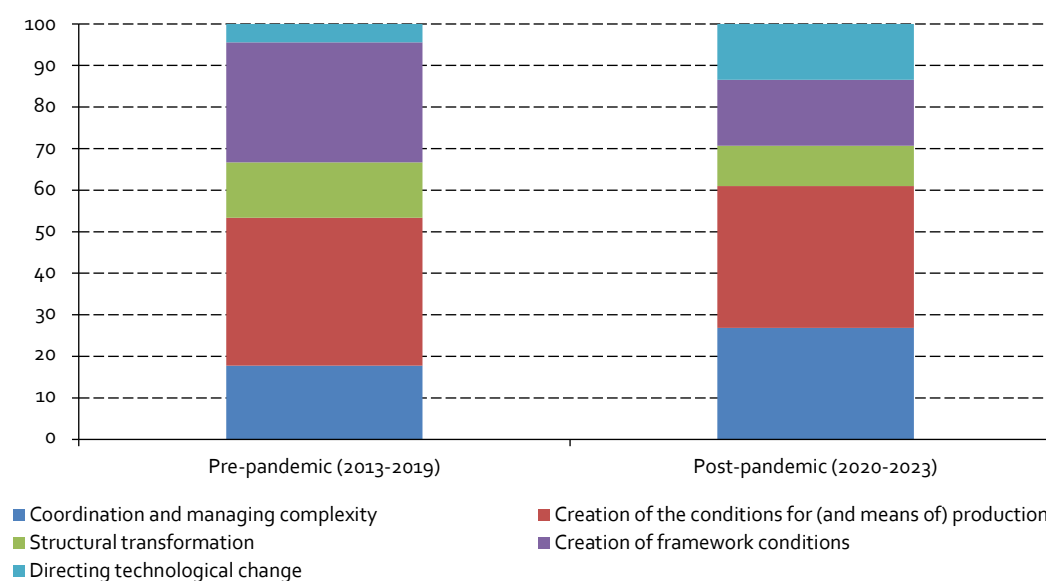
Source: Authors' elaboration based on the 44 reviewed documents.

Our analysis shows a marked increase in the relative importance of strategic objectives for industrial policy between the two phases. Strategic objectives accounted for less than 5% of objectives in the pre-pandemic phase, a share that increased to approximately 20% in the post-pandemic phase (see figure 1).

B. Trends in Rationales

In terms of rationales, the literature justifies industrial policies mainly based on the need for creating the conditions for (and means of) efficient production, coordinating and managing complexity, and the creation of framework conditions. More than 90% of the reviewed publications indicate that addressing some form of market failure —particularly, in reference to creating the conditions for (and means of) efficient production— as the core justification of industrial policy, with these covering many of the five groups of rationales considered in our analysis. Overall, we observe that approximately 70% of the documents mention coordination problems and around 60% mention the provision of framework conditions. In contrast, only 30% mention encouraging structural transformation and/or directing technological change as a rationale for IP (figure 2).

Figure 2
Policy rationales in the academic literature, before and after the pandemic
(Percentages)



Source: Authors' elaboration based on the 44 reviewed documents.

Interestingly, when comparing the pre- and post-pandemic phase we observe a shift in the relative importance of these rationales. As shown in Figure 2, the "Coordination and managing complexity" rationale experiences increased attention, from 8% in the pre-pandemic phase to 22% in the post-pandemic. Similarly, we see a substantial rise in the percentage of documents concerned with "Directing technological change", growing from a share of 2% in the pre-pandemic phase to 11% in the post-pandemic phase. In the case of "Structural Transformation", we observe a slight increase from 6% to 8% between the two phases, while the "Creation of framework conditions" is markedly less important in the post pandemic phase and the relative importance of "Creation of the conditions for (and means of) production" remains constant across the two periods. In other words, we see a shift of emphasis in favour of justifications based on coordinated efforts and the directionality of industrial policy in the post-pandemic period, largely at the expense of rationales based on the framework conditions.

C. Implementation

Moving to the design and implementation of industrial policies, we observe that in only 26 of the 44 reviewed documents (around 60%) are specific policy instruments and/or initiatives mentioned. Frequently, the policy instruments are mentioned as part of the contextualization or background of a given paper, but are seldomly the subject of in-depth analysis. This suggests that very often, the academic literature on UK industrial policy does not dive into the details of concrete industrial policies, unlike the policy reports examined in chapter II.

Moreover, the academic research concerned with specific instruments seems to focus on specific interventions that seem to attract considerable debate, such as Local Economic Partnerships and Local Industrial Strategies (Nurse & Sykes, 2020; Sunley et al., 2022) or the Sector Deals (Berry, 2022; Crafts, 2018), while most initiatives remain understudied. It is also worth mentioning that the industrial *strategies* have also been an important subject of academic research: nearly 20% of the reviewed documents discuss the 2017 strategy. Finally, we find very limited evidence of policy evaluation, with few exceptions such as Criscuolo et al. (2019).

IV. Discussion

Based on the above evidence, in this chapter, we discuss objectives, rationales, implementation, and evaluation of the UK industrial strategies pre and post Covid-19. The discussion is complemented by conversations with experts involved in the planning, implementation, and evaluation of industrial policies (IP) in the UK (chapter I). The discussion below is based on our own reading of the evidence and elaboration of the conversation, and cannot be attributed to any of the experts, whether alone or jointly.

A. Objectives

Based on the evidence from Government documents and policy reports (chapter II) we noted a shift in priorities in the UK industrial policy. Industrial policy in the post pandemic phase follows the trend that started in the aftermath of the 2008 crisis of a more cautious view of *laissez faire*. While this revival of state intervention was initially confined to moderating the (unrestricted) influence of the financial sector over the “real” economy, the impact of Brexit and the need to increase the competitiveness of the UK economy have propelled the need for more active and strategic state interventions across different sectors of the economy.

This is explicitly mentioned as an antecedent to the 2017 Industrial Strategy of the May administration and forms a significant part of its narrative. Beyond economic competitiveness, the strategy is also seen as an attempt (and perhaps a reaction) to address issues that were not solely about productivity, as framed in previous industrial policies, but also about socio-economic challenges. While societal challenges have been acknowledged in policy debates to varying degrees in the past, the more explicit connection between decades of stagnant productivity, economic precariousness across the UK, and the need for robust state intervention to stimulate supply-side reform became prominent in the Brexit scenario already in the pre-pandemic period. In this view, the expansion in objectives of the UK Industrial Strategies is intertwined with the move from fragmented and often “accidental” instances of industrial policy, to comprehensive strategies with more elaborated narratives that explain the intervention.

One example is the Digital Catapult centre, founded in 2013. Over time, the centre (one among several catapult initiatives) has shifted its thematic focus, scope of action, and intervention strategies. Initially, the centre was geared primarily towards bridging the gap between fundamental research and commercialization by providing accelerator programs, while later on they have also engaged in collaborative technological development in a number of testbed facilities across the UK, and have been involved in projects related to the diversification of supply chains in critical areas such as 5G. Additionally, they have recently played a more significant role in providing consultation for both business and government, as well as participating in drafting adoption guidelines for emerging technologies such as AI.

The effect of the shock on the delineation of state intervention is also apparent during the pandemic period, with a notable change in terms of the justification for—or attitudes toward—state interventions observed. Namely, government allocated resources to sustain jobs (employer-employee matches) at a scale and speed that was unprecedented because of the “state of emergency.” Experts envision the potential to tap again into this rationale, amidst comparable crises (e.g., because of disruptions in key supply chains or to counteract the impacts of the climate crisis), and in that way strengthen the case for comprehensive industrial strategies.

However, this perceived shift in priorities in the UK industrial policy from economic objectives to social challenges may also be purely focused on pursuing short term political agendas focused on economic growth and productivity, with the narrative in policy documents connected to political whims. Based on discussions with experts, an interesting observation is that existing industrial policy instruments have adapted their focus, but rather than changing the stated objectives, there has been an effort to demonstrate how planned efforts align with evolving priorities. For instance, existing initiatives were already asked to show how they contribute to closing the gap across regions, e.g., by creating jobs or investing in Northern areas of Britain or how they fit in critical supply chains in line with resilience objectives.

This perspective is supported by the consistent prominence of economic growth and productivity across both the pre- and post-pandemic phases that we have analysed. The inclusion of other objectives is in addition to these core objectives, suggesting that while new challenges have risen in importance, they are still considered less central than the traditional focus on growth and productivity.

As evidenced by the short-term oscillation in narratives and aims across various strategies—ranging from grand challenges and net zero to regional imbalances and the emergence of strategic autonomy—the shifting emphases on long lasting social challenges may reflect the changing priorities of short-term administrations. Therefore, these shifts may largely depend on the political context and serve as labels that do not necessarily reflect or guide significant changes in governments actions (e.g., policy instruments or investments). We come back to this issue below in discussing rationales and implementation.

The challenges that seem to concretely shift the ground of the Industrial Strategy post Covid-19 are those related to strategic autonomy and resilience, “real” concerns that are to be tackled by industrial policies (as also discussed in the academic literature). These challenges, largely propelled by the disruption of global supply chains caused by the pandemic and by geopolitical conflicts that have unfolded in recent years, emerge as novel in the policy discussion and are likely to continue over the following decades.

B. Rationales

Unlike objectives, there has been little change in the justifications for why the Government should intervene to promote welfare through industrial policies (besides reaction to short term shocks). Most of the justifications outlined across the strategy documents draw largely on market failures (chapter II.C), broadly defined. To some extent, market failures have been extended in their definition to also account for approaches such as the mission-led approach or the grand challenges, in line with the documented prevalence of the creation of framework conditions as a rationale (chapter II.C).

On rationales, the policy debate in the UK seems to be lagging the academic debate. In the latter, the rationales discussed to guide industrial policies in the UK are more diverse, also reflecting the need to broaden the scope of policy instruments. Particularly, we observed that directing technological change has been gaining more attention in the post-pandemic period in the academic literature (c.f., chapter III.B).

Illustratively, although the aims of the “net zero” Industrial Strategy may be more comprehensively understood as a need to address a systemic failure, the discussion in the policy documents focuses on how to internalize the social costs of energy emissions (i.e., as a market failure). Even for the resilience of supply chains, the rationales behind intervention are framed as a negative spillover. The coordination and managing of complexity rationales are generally acknowledged as important in the narrative of the Industrial Strategy documents, but they never stand on their own as justifications for intervention.

Besides the specific category of rationales against which the Industrial Strategy documents were written, based on the discussion with experts it was noted that rationales, defined as the arguments for using government intervention, did not play a major role in crafting the Industrial Strategies. Moreover, there seems to be an important distinction between rationales understood as the overarching “narrative” behind the strategy (i.e., as presented to the public), and the more systematic, analytic thinking about industrial policy instruments within government bodies. In terms of the narrative, the changing views on the UK's role in the world, its perception of other countries, and how these countries interact with the UK, are likely to influence how the strategies are presented. For example, the 'Defence and Security Industrial Strategy,' which is largely concerned with resilience and strategic autonomy, acknowledges the importance of connections between UK defence and security companies, international partners, and key allies in establishing secure supply chains. It emerges from the documents and the discussion with experts how stated narratives are highly political issues that may naturally evolve with successive government administrations.

Furthermore, this distinction suggests the coexistence of a 'purely' political layer and a more technocratic layer within the policy process. The latter is closer to the academic understanding of industrial policy, as presented in chapter III, while the former may be more driven by short term political objectives. These two dimensions of rationales may diverge substantially. Timing is relevant here. The UK's industrial policy is often regarded as reactive or accidental, in the sense that it lacks strategic thinking or well-defined argumentation behind specific interventions—merely stemming from the belief that the market will not do it on its own. The evolution of industrial policies is predominantly about moving towards strategies, that is, a set of various policy instruments designed to tackle multiple objectives. Hence, these strategies may depend more on institutions and structural factors than on their underlying rationales.

C. Implementation challenges

If little attention is paid to the analytical rationales for Government intervention, how are the correct instruments identified, especially when they need to be combined in a comprehensive strategy that addresses several, related, objectives? An institution implementing coordinated strategies rather than individual policies needs to be capable of planning, sustaining, and adapting efforts over time, which is even more complicated than the difficulties associated with the specific tools. Industrial strategies thus present a range of challenges to the UK government.

A first challenge relates to the **knowledge base needed to design and implement the set of instruments needed to carry through the strategy**. Crafting a strategy demands comprehensive knowledge on existing and prospective technological and productive capabilities. At a minimum, the strategy requires defining aims, developing rationales (or narrative), and devising a set of instruments, where the “users” of the different policies need to be identified from the productive sector at wide.

The complexity of the task is further revealed by the range of choices that need to be made, ranging from identifying sectors or technologies requiring intervention, to selecting the most appropriate tools for achieving desired outcomes, determining the mode of intervention, designing technocratically, and navigating the administrative and political processes before enactment, among others. Yet, information gaps are abundant among stakeholders, including central and regional governments, politicians and bureaucrats, businesses, and government departments. This complexity only increases as the scope of industrial strategies expands in terms of objectives and tools, and as the focus shifts from individual policy instruments to comprehensive strategies that are concerned with emerging technologies and wicked problems.

Second, due to the systemic nature of industrial strategies, governments also need to consider the **coordination and coherence issues that may arise when multiple interventions are implemented simultaneously across various domains**. Coordination issues encompass both internal government levels (i.e., across sectoral departments such as the Department for Business, Energy & Industrial Strategy (BEIS) and the Department for Education and Skills (DFSE)) and cross-country governance (from the London-based offices to other parts of the country). The lack of coherence is compounded by the informational gaps described in the first point, and this may well explain why certain policy interventions experience zero net impact despite the presence of efforts and initiatives. As discussed in Ciarli et al. (2024), international organizations have also called for the alignment of instruments (i.e., the policy mix that constitutes a strategy) within comprehensive frameworks, based on the alignment between rationales objectives and instruments, which allow to maintain a stable coordination among multiple institutions. These frameworks are crucial because they explicitly reveal potential synergies and trade-offs between objectives, rationales, and initiatives (instruments). In this way, frameworks facilitate policy alignment, thereby making effective implementation more attainable.

Third, as emerged in discussion with the experts, **inconsistency between different government administrations hinders policy continuity**. Addressing long-term issues requires institutional mechanisms for sustained investments on an appropriate scale and with certainty over time, such that the private sector is significantly crowding in. However, the political system's short-term focus, driven by election cycles, makes it difficult to support long-term spending commitments over time. This leads to time inconsistencies that prevent policies from having an impact.

D. Policy outcomes and effectiveness

Evidence on 'what works' in industrial strategies is largely missing (not only in the UK). This lack of evidence arises for several reasons.

First, due to short termism, with it **always being too early to evaluate the effectiveness of policy instruments**. This relates to the high degree of 'policy churn' that has characterized the successive industrial strategies (Valero & Van Ark, 2023; Coyle & Muhtar, 2023). In other words, the oscillation in terms of priorities and initiatives across successive strategies (chapter IV.B) has prevented the evaluation of policies and may also explain the lack of documented policy effects for most instruments.

Second, **existing evaluations tend to focus on narrow instruments** for which there are sufficient conditions to conduct impact assessments, such as R&D tax credits, while the absence of evidence is particularly notable for more complex interventions, and even more so for entire strategies. A recent survey by the OECD (Criscuolo et al., 2022b) indicates that there is limited and inconclusive evidence on the effectiveness of targeted policies and demand-side instruments. To evaluate more complex interventions, a more holistic or systemic approach is needed, integrating experimentation, multiple methods, and new metrics, thus broadening the scope and kind of evaluation. While examples of such approaches can be

found in academic work (Bakhshi et al., 2015), they have yet to be applied in the context of industrial strategies and receive endorsement from key policy actors (e.g., the Office for Budget or the Treasury).

Third, given that industrial strategies in the UK have largely been built upon connecting emerging sectors and promising technologies (c.f. chapter II) to perceived strengths, establishing a clear baseline and finding appropriate counterfactuals can be challenging. The difficulty lies in discerning whether successes are due to the policy intervention or other inherent advantages. In other words, there is a clear **attribution problem in linking specific outcomes to the industrial strategies**, given the way they are currently designed.

This does not mean that there are no positive experiences in the UK Industrial Strategies. For instance, the Catapult centres are often mentioned as a successful experience. Extant research suggests that the Catapult centres play an important role as intermediary organizations supporting regional innovation systems (Kerry & Danson, 2016), with the Digital Catapult in particular contributing to long-term productivity gains by improving data infrastructure and critical technologies of firms (Parris et al., 2015). However, no systematic evaluation is available even though some centres were established more than a decade ago.¹² Likewise, other local initiatives, often led by universities, have shown promise. Perhaps a case in point of successful university-business collaborations yielding positive outcomes is the well-known case of the Covid-19 vaccine development by the partnership Oxford/AstraZeneca (Balawejder et al., 2021). It is worth noting, however, that these positive experiences are not reflective of the industrial strategies under discussion.

In relation to the more 'accidental' aspect of industrial policy, several experts suggested that the presence of advocacy coalitions capable of protecting investments in certain areas might explain their persistence. Specifically, the aerospace sector has thrived due to the relentless efforts of such coalitions. The same is true for sectors like pharmaceuticals, defence, and finance. These sectors have managed to continue receiving some form of support despite changes in strategies and the policy churn already mentioned.

E. Lessons for industrial policy

The first lesson concerns the relation between academic and policy thinking in contributing to improving industrial strategies. The evolution of the UK industrial policy since the introduction of the Industrial Strategy only partly follows the academic debate (and the policy discussion in the UK and elsewhere (Ciarli et al., 2024)). With respect to the objectives, we observe a broad alignment, with academic publications also focused on a combination of economic and social objectives throughout the different phases of the industrial strategy, and echoing an increase in the need for attention to recent strategic issues —also observed in most high income countries.

Substantial differences emerge with respect to the rationales to implement industrial strategies. Market failure and framework conditions seem to remain the key justification for intervention, but there's an increasing acknowledgment in academia of the relevance of systemic issues and a need for more holistic planning. In particular, the policy justification does not pay too much attention to the relevance of directing technical change and of coordinating the complex challenges of economic and societal objectives, which are areas to which the academic literature has recently dedicated more attention.

These differences provide an opportunity to reflect on the foundations upon which recent industrial policies have been based. Formulating effective industrial strategies seems to require more careful consideration of technological trajectories and better coordination with the complex interactions among the multiple objectives of these strategies. These questions are even more relevant

¹² For instance, the Digital Catapult was established by Innovate UK in 2012 (Parris et al., 2015).

in the face of the perceived failures in improving inclusion and addressing both economic and social challenges in the UK (including reducing inequalities among regions).

These differences between the academic thinking and the policy practice opens concrete opportunities for bridging the gap. On the one hand, design and implementation of industrial strategies may benefit from paying more attention to the evolving academic discussion, that may have a broader comparative understanding of the challenges, and how they are related, providing a more accurate foundation for the rationales. On the other hand, there is a dire need to improve the study of industrial policies and strategies, including developing holistic evaluation frameworks and tools. Evidence is much needed on several fronts, especially for the complex interventions needed to confront the socio-economic challenges.

The second lesson concerns the clear definition of industrial policy objectives and rationales.

Since the 2017 Industrial Strategy, UK industrial policy has evolved somewhat towards more strategic state intervention concerned with socio-economic challenges and global tensions. These strategies now incorporate broader objectives, including resilience and strategic autonomy, alongside traditional economic goals. However, skepticism exists regarding the depth of these changes, which may be perfunctory adjustments rather than substantive changes in the implementation. The differences between the strategies as described in the documents and their actual implementation do not contribute to crowd-in private sector investment or achieving the stated objectives. The design of the industrial strategies should be based on clear objectives and aligned rationales (see Ciarli et al. 20124), which are then coherently followed up. Industrial strategy documents should work as guidelines, rather than as political manifestos. Guidelines can be changed, but those changes should be clearly justified.

The third and related lesson is the relevance of long-term planning and evaluation. When analysing objectives and rationales from official documents, differences between the UK Industrial Strategies are rather marginal. However, instruments and design do change with any new government. Many of the challenges that form the objectives of industrial strategies are long term and need a long-term —albeit flexible— strategy. The approach of the UK Industrial Strategy has evolved from fragmented policies to more comprehensive strategies, but substantial challenges remain, including a lack of coherence and time inconsistency. Overall, while UK industrial strategies have evolved in focus and rationale since 2017, their implementation and impact continue to be influenced by ongoing challenges in policy design and implementation.

The fourth and related lesson is the relevance of the evaluation of industrial strategies. Changes should be based on understanding of what worked in addressing the objectives, rather than on agendas to attract political consensus. For instance, the demise of the Industrial Strategy Council (ISC) that made initial steps in monitoring and advising on implementation issues is seen as detrimental to the potential effectiveness and overall success of industrial strategies in the UK. Critiques on the institutional set-up of the ISC, which might have been inadequate for the ambitious task given, include that it yielded futile advice because it was not binding, and that the advice often encountered push back from other bodies and government departments. Such insights can be used to improve the monitoring of industrial strategies. A key lever to overcome implementation challenges is the set-up of robust institutions to lead monitoring and evaluation efforts as suggested for instance by Valero and van Ark (2023) in relation to the productivity agenda.

The fifth lesson concerns investment in capabilities. Crafting an industrial strategy demands comprehensive knowledge on existing and prospective technological and productive capabilities. Implementing an industrial strategy requires capabilities to coordinate the work of multiple departments, across multiple regions and social constituencies. Also in this case, robust institutions to advice and lead efforts of the type suggested by Valero and van Ark (2023) can help designing and implementing successful industrial strategies.

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Annexes

Annex A1

Table A1.1
Query for systematic search of academic literature

Key terms	Years	Fields of research	Type
("industrial policy" or "industrial strategy") and ((UK) or ("United Kingdom") or ("Brexit"))	(2013, 2023)	44 Human Society 38 Economics 35 Commerce, Management, Tourism	Article; Chapter; Preprint
("industrial polic*" and ((instruments) or (design) or (rationales) or (implementation) or (evaluation) or (effectiveness)) and ((UK) or ("United Kingdom") or ("Brexit"))	(2013, 2023)	46 Human Society; 38 Economics; 35 Commerce, Management, Tourism	Article; Chapter; Preprint

Source: Authors' elaboration.

Annex A2

Table A2.1
List of academic publications in the final sample

id	Short ref	DOI
1	Morelli 2013:	https://doi.org/10.1057/9781137263636_7
2	Peck et al 2013:	https://doi.org/10.1177/0269094213498470
3	Pemberton 2016:	https://doi.org/10.1111/newe.12014
4	Hannon 2016:	https://doi.org/10.1111/irj.12120
5	Sunley et al 2022:	https://doi.org/10.1080/00343404.2021.1983163
6	Haar 2014:	https://doi.org/10.1080/01442872.2014.886680
7	Sunley et al 2022:	https://doi.org/10.1177/02690942221149007
8	Brownlow 2023:	https://doi.org/10.1080/00343404.2023.2194332
9	Gray et al 2023:	https://doi.org/10.1080/00343404.2023.2179031
10	Conti et al 2023:	https://link.springer.com/referenceworkentry/10.1007/978-3-030-68074-9_176-1
11	Comment:	https://doi.org/10.1080/13567888.2023.2219579
12	Qamar et al 2022:	https://doi.org/10.1080/00343404.2022.2126449
13	Bailey et al 2022:	https://doi.org/10.1080/00343404.2022.2071421
14	Coulter 2022:	https://doi.org/10.1111/1467-923X.13128
15	Woodward et al 2022:	https://journals.sagepub.com/doi/pdf/10.1177/13691481221077854
16	McCann et al 2021:	https://doi.org/10.1080/00343404.2021.1922663
17	Turner et al 2021:	https://doi.org/10.1016/j.ecolecon.2021.106978
18	Mealy et al 2021:	https://link.springer.com/content/pdf/10.1007/s10797-021-09667-0.pdf
19	Johnstone et al 2021:	https://doi.org/10.1016/j.erss.2020.101889
20	O'Grady 2021:	https://doi.org/10.1126/science.371.6532.875
21	Berry 2021:	https://journals.sagepub.com/doi/pdf/10.1177/1024529421990845
22	Gibbs 2021:	https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1467-923X.12962
23	Kazim et al 2021:	https://doi.org/10.1007/s44163-021-00014-0
24	Moore et al 2021:	https://doi.org/10.1016/j.ssaho.2021.100113
25	Labrunie et al 2020:	https://doi.org/10.20396/rbi.v19i0.8658753
26	Shut et al 2020:	https://journals.sagepub.com/doi/pdf/10.1177/0269094220959299
27	Johnston et al 2020:	https://journals.sagepub.com/doi/pdf/10.1177/0269094220957977
28	Nurse et al 2020:	https://doi.org/10.1177/0269094220955113
29	Baranova et al 2020:	https://doi.org/10.1177/0269094220956509
30	Harris et al 2020:	https://journals.sagepub.com/doi/pdf/10.1177/0269094220953528
31	Harris et al 2019:	https://doi.org/10.1111/sjpe.12240
32	Glucker 2019:	https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/grow.12362
33	Zhengelis 2019:	https://doi.org/10.1177/002795011925000118
34	Besley et al 2019:	https://doi.org/10.1177/002795011925000117
35	Harris et al 2019:	https://doi.org/10.1093/cjres/rsz017
36	Fothergill et al 2019:	https://academic.oup.com/cjres/article-pdf/12/3/445/31082782/rsz016.pdf
37	Crafts 2018:	https://doi.org/10.1111/1475-5890.12174
38	Craig 2018:	https://doi.org/10.1080/13563467.2018.1526269
39	Hemphill 2018:	https://doi.org/10.1177/0270467620925710
40	Silverwood et al 2018:	https://doi.org/10.1111/1467-923X.12581
41	Carr et al 2018:	https://doi.org/10.1080/23738871.2018.1550523
42	Turner et al 2018:	https://doi.org/10.1016/j.enpol.2018.05.011
43	Bailey et al 2017:	https://doi.org/10.1007/978-3-319-60459-6_6
44	Coulter 2022:	https://doi.org/10.1111/1467-923X.13128

Source: Authors' elaboration.

Annex A3

Coding scheme¹³

General

- *Is IP definition given?*: This category indicates whether the industrial policy (IP) is explicitly defined in the publication or not.
- *If yes, what definition*: If a definition of the industrial policy is provided, this category captures the specific definition stated.
- *Geographical focus*: This category records the geographical scope or focus of the publication (e.g., national, regional, international) and indicates the country/region of study.

Rationales

- *Structural Transformation*: This category addresses whether the industrial policy involves an attempt to shift the structure – broadly defined – of the economy.
- *Creation of Production Conditions*: This category relates to whether the industrial policy involves efforts to provide infrastructure, the means of production (e.g., factor endowments), or the creation of demand.
- *Framework Conditions*: Captures whether the industrial policy addresses the broader framework conditions that influence economic activities, including regulatory frameworks and the creation of institutional arrangements.
- *Coordination*: This category addresses whether the industrial policy involves coordination between different stakeholders or entities.
- *Directed technical change*: Addresses whether the industrial policy targets directed technological changes or advancements.

Objectives

- *Economic objectives*: For instance, productivity, economic growth, innovation, employment, etc.
- *Societal challenges*: For instance, sustainability, inclusiveness (e.g., gender, regional), digitalisation, etc.
- *Strategic objectives*: For instance, resilience, autonomy, etc.
- *Other objectives (indicate)*: Allows for recording any additional objectives beyond the predefined categories.

Policy design and implementation

- *Selective IP*: Indicates whether the industrial policy is selective, targeting specific sectors, technologies, or products.
- *If yes, what sector/technology/product*: Specifies the sectors, technologies, or products targeted by the selective industrial policy.
- *Instruments*: Records the policy instruments used to implement the industrial policy.
- *Instrument description*: Provides a brief description of the instruments and their main characteristics.
- *Design features*: Indicates whether specific design/implementation features are available.
- *If yes, what features?*: Further details on design and/or implementation features.
- *Evaluation*: Indicates whether the industrial policy has been evaluated.
- *If yes, what type of evaluation? Main results*: Specifies the type of evaluation conducted and the main results obtained.
- *Methods*: Specifies the research methods used in the publication.

¹³ Authors' elaboration.

Annex A4

Open questions used during the conversations

Background

Can you please briefly describe your role, professional background and expertise in relation to industrial policies (IP) in the UK?

Have you been directly involved in the formulation, implementation and/or evaluation of IP in the UK since 2017? If yes, can you please briefly describe in what capacity?

On IP objectives and rationales (pre- and post- 2020)

Have you observed any shifts in emphasis in the declared and revealed aims of industrial strategies since the 2017 industrial strategy? Have you observed any change in the relative focus on economic, societal and/or strategic aims?¹⁴

What factors do you think may have contributed to this shift? Do they reflect changes in the UK priorities, or do they reflect political views and whims?

Have you observed any shifts in emphasis regarding *rationales* (i.e. justification of state intervention such as market failures, directing technological development, etc) in the declared and revealed aims of industrial strategies since the 2017 industrial strategy?

In your view, what is the relation (if any) between UK's industrial policymaking and the academic discussion on IP? Can you elaborate on examples of such (lack of) relation.

On policy implementation and possible lessons

What have the industrial strategies attained since their implementation? What have they failed to achieve?

What are the key challenges in effectively implementing industrial policies in the UK, particularly concerning [*Digitalization/ Lev-UP / Training / Sectoral policies*]?

Considering [*Digitalization/Lev-UP/Training/Sectoral policies*], can you point to successful/ effective initiatives? What key factors played a role in their success?

Conversely, can you share instances and or factors that play against the success/effectiveness of *these* initiatives? Are there any lessons to extract from these experiences?

How do you see these insights contributing to the refinement of future industrial policies in the UK?

¹⁴ By industrial policy objectives, we mean specific aims that a government wishes to attain with specific measures (e.g., industrial policy instruments). Examples of such objectives are "build a resilient economy and level up the UK", reflecting both societal challenges and strategic objectives, while "boost productivity, pay, jobs, and living standard" reflects a more conventional economic objective.

This report tracks the development of the Industrial Strategy of the United Kingdom, from its publication in 2017 through to the period following the coronavirus disease (COVID-19) pandemic. Using information from official policy documents, grey literature and academic publications—as well as conversations with experts—this document provides an overview of the Strategy's rationales and objectives and of the instruments adopted under it. The report also discusses implementation challenges and presents lessons for the future design and implementation of industrial strategies. Following the withdrawal of the United Kingdom from the European Union and in the context of debates over the country's role in the global economy, the situation in the United Kingdom presents an opportunity for an interesting case study. This document highlights how the comprehensive Industrial Strategy shifts from a primarily economic focus to a more balanced approach, in which societal challenges and strategic objectives figure more prominently. It also underscores disconnections between policy and academic thinking with regard to rationales, and the challenges of discontinuity in the design and evaluation of the policies implemented. The findings point to opportunities to improve the design, long-term planning and holistic evaluation of industrial strategies.

