

Institute for Public Policy Research



# MAKING MARKETS IN PRACTICE

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November 2023

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Registered charity no: 800065 (England and Wales),  
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This paper was first published in November 2023. © IPPR 2023

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## ACKNOWLEDGEMENTS

The authors would like to thank Pranesh Narayanan, Joshua Emden, Abi Hynes, Richard Maclean, and Sylvia Monkhouse for their help in preparing this report.

We would like to acknowledge the financial support of the European Climate Foundation and the Laudes Foundation.

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Alvis S, Dibb G, Gasperin S and Murphy L (2023) *Market making in practice*, IPPR.

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# SUMMARY

With Joe Biden's Inflation Reduction Act and CHIPS and Science Act, and the EU's Green Industrial Plan, industrial policy is back in vogue. Yet after years of neglect in favour of hands-off, agnostic policymaking, governments around the world are relearning what industrial policy is and how to use it.

- **Industrial policy** is a targeted action to shape the relative competitiveness of a specific industry.
- **Industrial strategy** is an economy-wide plan that brings together specific industrial policies to achieve an objective.

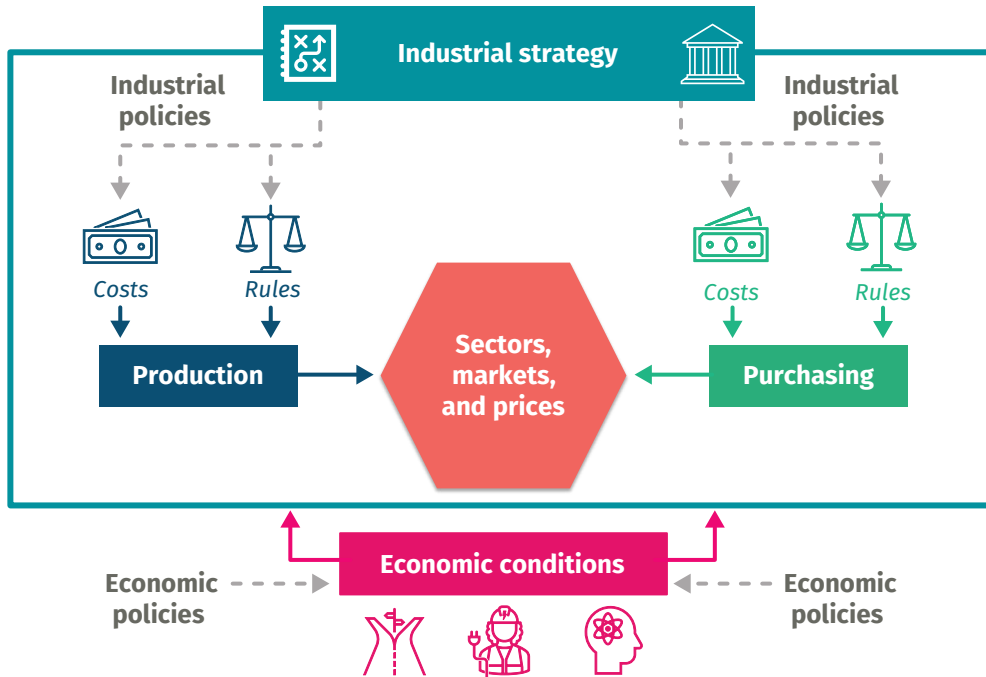
Responding to global economic shifts requires policymakers to move beyond the bare minimum, correcting the occasional market failure, to actively shaping and creating new markets. Non-intervention is as much an industrial policy as Biden's near \$1 trillion intervention in green technology, it's just a worse one. We need to counter the entrenched view that government is innately bad at things, and instead, with the right information, capabilities, and an understanding of the tools at its disposal, be a supportive and active partner to the private sector, workers, and their trade unions.

This is about more than just subsidy. Industrial policy should have four dimensions.

1. **Industrial strategy:** this should set an objective, such as reaching net zero emissions, how government intends to achieve it through a set of coordinated industrial policies, and the ongoing governance of that plan.
2. **Production:** interventions that affect how goods and services arrive in the market; these include rules like product standards or costs like low-cost financing.
3. **Purchasing:** interventions that affect how goods and services are bought or leave the market, again including rules like procurement conditions or costs like tariffs.
4. **Economic conditions:** the underlying aspects of an economy such as its workforce, infrastructure, or level of innovation – all of which can be targeted to support specific sectors as well as economy wide.

**FIGURE S1**

**Shaping markets requires a range of tools to reformulate industries acting within them**  
*A conceptual framework for a new industrial strategy for policymakers*



Source: Authors' analysis

These tools ultimately shape the interaction of industries in the market and should, if used effectively, lead to the reallocation of resources between them.

Industrial strategy means to choose. The transition to a low-carbon economy will see some industries, like oil and gas, shrink. It will transform others, like coal-cooked steelmaking to electric arc furnaces, and establish new ones, like floating offshore wind. Policymakers will need to choose the right blend of instruments to meet their objectives and avoid capture or dominance by a private sector merely seeking ever higher profits.

There is an urgency for policymakers to use this toolkit to implement a green industrial strategy – that is an industrial strategy for net zero. We advocate a social partnership approach that encompasses government, business, and workers and their trade unions. Businesses are currently being asked to solve the emissions problem set by government's net zero policy alone. This toolkit should help policymakers develop an alternative partnership approach.

Developing such a green industrial strategy requires two things. First, expanded government capabilities – bringing inhouse more expertise in market intelligence or in specific technologies. And second, set out clearly the expectations and accountability for both the private and public sector – these are the sticks (or conditions) that go along with the carrots (like subsidies).

# 1. UNDERSTANDING INDUSTRIAL POLICY AND INDUSTRIAL STRATEGY

Industrial policy – and a green one at that – is back in political demand. After Joe Biden’s Inflation Reduction Act, a green industrial strategy for the US economy, the EU has followed suit with its own Green Deal Industrial Plan. The UK, though, appears either unwilling or unable to shift in the same direction. While the government wobbles over whether it will maintain its green policies, investment, jobs and industries are being lost to competitors overseas (Wallace 2023; Jolly 2022).

The UK needs to rapidly develop its own green industrial strategy to ensure it benefits in terms of jobs and prosperity from the transition to net zero. But while many are once again talking about industrial strategy and industrial policy, there’s ambiguity about what industrial strategy *is*, or how to develop one.

This briefing sets out what makes up an industrial strategy, the tools policymakers have at their disposal to influence the size and shape of new green markets, and ultimately how to begin applying this strategy.

We don’t debate what the objective of a strategy should be, rather we put forward a broader framework of tools. However, we stress the urgency of applying this framework to develop a green industrial strategy for the UK.

## INDUSTRIAL STRATEGY AND INDUSTRIAL POLICY ARE CONNECTED BUT DISTINCT

Industrial policymaking is awash with terms that are distinct but often used interchangeably. Crucially, we distinguish between ‘policy’ making and ‘strategy’ making, which are often confused.

- **Industrial policies** are targeted government actions aimed at promoting the specialisation, competitiveness or capabilities of specific sectors and industries.
- **Industrial strategy** is a broader economy-wide planning process, combining industrial policies, to achieve economic, social, or developmental outcomes. It should set a framework that allows for the use of specific policy instruments within industries.

Historically, industrial policy has sought to nurture and develop infant domestic industries; however, the transition towards a low-carbon economy means policymakers must also manage the transformation or, sometimes, the planned downsizing of high-emission industries. For example, a strategy to achieve net zero emissions will mean reducing the size of the oil and gas sector, or transforming the use of coal-coking steel plants in favour of renewables and electric arc furnaces.

Some draw a distinction between horizontal industrial policy that seeks to achieve change *across* the economy as a whole, and vertical industrial policy that seeks to achieve change *within* specific sectors. As discussed below, we recognise the distinction but see them both as useful sets of policy instruments that may be

effective depending on the strategic purpose. Both sets of ‘tools’ should be in the ‘toolkit’ of policymakers.

Previous work by IPPR described industrial strategy as the purpose-driven coordination of economic policy (Jacobs et al 2017). This split of strategy and policy is in line with others. The Roosevelt Institute defines industrial policy as “any policy that encourages resources to shift from one industry to another” with industrial planning (which here we term strategy), “the aggregation and coordination of industrial policies” (Tucker 2019). Similarly, Mariana Mazzucato and the UCL Institute for Innovation and Public Purpose describe mission-oriented strategies as the directing of the economy towards solving societal challenges, including the structural transformations that this will cause (Mazzucato and Willets 2019).

### STRATEGIES CAN VARY IN AMBITION OR SCOPE

There is no single, universal goal of industrial strategy. Objectives vary in their ambition or scope. One way of thinking about this is put forward by the OECD (Crisuolo et al 2022). They classify several ‘types’ of strategy.

- **Mission-oriented:** “a coordinated package of policy tailored to specifically address well-defined objectives” (Larrue 2021), for example the UCL Green Innovation Policy Commission (Miedzinski et al 2020).
- **Place-based:** aim to alter the regional distribution of industrial activity towards particular economic outcomes in particular places, for example the levelling up white paper (HM Government 2022).
- **Technology-focused:** foster the research, development, uptake, adoption and/ or diffusion of either specific or general purpose technologies, for example the national AI strategy.

**TABLE 1.1**

#### Terms and definitions

<b>Societal challenge</b>	A society, or economy-wide issue with no single solution, for example climate change or regional inequality.
<b>Mission</b>	A concrete target or achievable step towards a societal challenge that contextualises projects, for example net zero emissions by 2050.
<b>Moonshot</b>	A particularly ambitious mission, named after the Apollo programme’s goal to put a person on the moon.
<b>Leapfrogs</b>	Using investment to directly alter comparative advantage, attempting to imitate other countries to jumpstart growth.
<b>Snail crawls</b>	Gradual improvements in the business environment, correcting market failures under business as usual. They tend to lead to low growth, and lack of catch-up with advanced economies (Cherif and Hasanov 2019).
<b>Industrial strategy</b>	Government direction of supply side economic policy with a specific aim such as improving the productive capacity of the economy. It should be distinguished from the more neutral growth policy, that is, the passive use of fiscal and monetary policy.
<b>Industrial policy</b>	The instruments applied within a sector that influence its ultimate size or distribution through, for example, access to finance, labour or technology.

Source: Authors’ analysis



## **UK INDUSTRIAL STRATEGY HAS BEEN RENDERED INEFFECTIVE BY CHOPPING AND CHANGING**

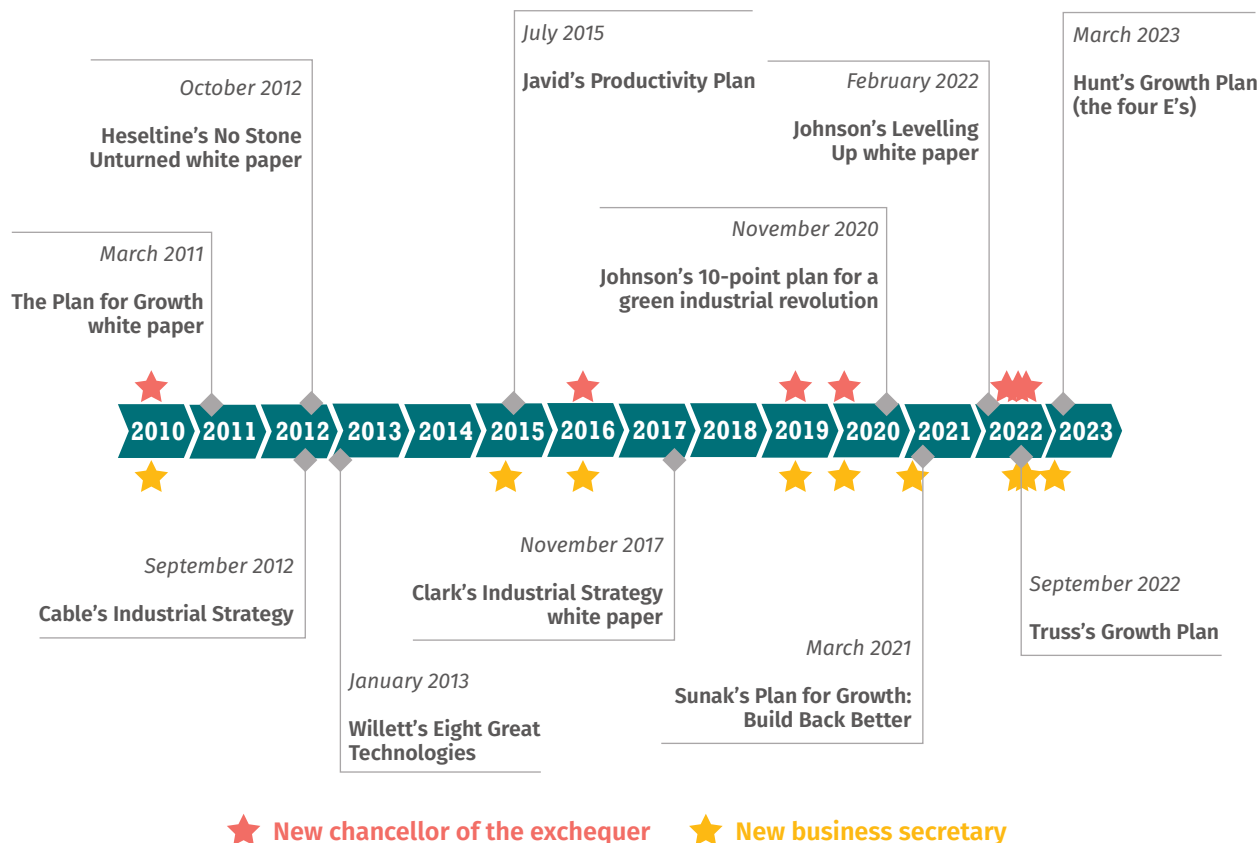
One of the most crucial parts of industrial strategy is that public policy has to influence business decisions. This means two things. Firms have to be aware of government policy that impacts them, and they have to believe that the policy will be in place long enough or be effective enough to have impact on future business activity. In practice, given business decision making often occurs on a longer timescale than policymaking, industrial strategies have to be in place, with a degree of certainty, over several years to be most effective. As Giles Wilkes has written (2020), “A lack of consistent commitment from the government makes it hard for a strategy to succeed, in large part because it makes it less likely that a non-credible strategy can inspire the right actions from the private sector”.

This unfortunately has been the characteristic of British industrial policymaking over recent years. Industrial strategy in the UK is largely understood to have seen a resurgence late in the New Labour parliament under business secretary Peter Mandelson. Mandelson’s tenure as business secretary lasted less than two years before the 2010 general election resulted in a change of government. In the 13 years since, during the coalition and then subsequent Conservative governments, industrial strategy has swung in and out of vogue. As shown in figure 1.1, since the 2010 general election there have been 11 growth plans or industrial/economic strategies, nine business secretaries, and seven chancellors of the exchequer.

This ‘chop and change’ of strategy has undoubtedly harmed the effectiveness of government policy. While many of the same themes reappear across these documents, and there has been micro-level policy consistency in some areas, the inconsistent approach has dented the effectiveness of strategic policy (Coyle and Muhtar 2021).

**FIGURE 1.1**

**Thirteen years, 11 growth strategies, nine business secretaries, and seven chancellors**  
*A timeline of government economic strategy since 2010*



Source: Authors' analysis

Note: Government documents reflected here represent the major published economy-wide, industrial, technological, or transformational strategies of prime ministers, chancellors and business secretaries of the time. There is no perfect science to determine what does and doesn't count. Inclusion on this list reflects the judgement of the authors.

**APPROACHES TO INDUSTRIAL POLICY INSTRUMENTS VARY BUT THERE ARE CONSISTENT THEMES**

Once a strategy is set, policymakers need to know how to implement it. That comes down to the individual policy instruments (or tools) available to a government, and how they work together.

Conceptualisations of industrial policy vary more than strategies. Some, like Rodrik (2014), focus not on a list of specific policy tools but instead on the process, ensuring there are the right institutions and capabilities required for creating policy. This is similar to Mazzucato et al (2020), whose ROAR framework (routes; organisations; assessments; risks and rewards) sets a direction of travel and increasing public sector capabilities before working out what the right carrots and sticks are to achieve that.

However, most agree industrial policy is not the entirety of economic policy. Industrial policy is constrained to tools that will shift resources between industrial sectors, not, for example, between individuals or households.

There is also dispute about whether industrial policy is just concerned with maximising supply (the production of goods or services), or also includes demand-side policies (the consumption of goods and services). The UK's offshore wind industry was able to rapidly reduce prices because of demand-side support, while many have noted that a lack of demand pull-through for green innovation has held back the growth of such technologies and industries (Miedzinski et al 2020). This contrasts with, for example, the United States, where the advanced market commitments (AMCs) or procurement of the Department of Defense have allowed for the security and scaling of novel technologies financed through their innovation agency DARPA. One of the UK's Industrial Strategy Council's main learnings from the successful development of the AstraZeneca Covid-19 vaccine programme was that the use of AMCs and procurement guarantees were critical to reducing risks for AstraZeneca to an acceptable level (Balawejder et al 2021).

Demand-side interventions conventionally aim to stimulate more supply of innovative technologies, increasing economies of scale and learning by doing, and thus bringing down prices. However, in the context of a modern green industrial strategy aimed at decarbonisation, supply-side interventions are also able to meet other objectives, such as ensuring the fair distribution of access to cleaner cost saving technologies like electric vehicles, and can be targeted at specific socio-economic groups to ease consumer cost pressures (Mazzucato and Rodrik 2023).

Successful examples of industrial policies – such as those adopted in Japan during the 1950s to 1970s and in South Korea from the 1970s (see also boxes 1.1, 2.1, 2.2 and 3.1 for further examples) – have focused on developing specific industries by protecting them through tariff measures, subsidising their costs, creating a domestic market for their products through targeted procurement, training specialised engineers, and so on (ibid). This was also part of the European tradition of industrial policy (Grabas and Nützenadel 2014), with the French and Italian indicative industrial planning, or the British sectoral mergers of the late 1960s. While this approach was later abandoned in Europe with the embracement of privatisation and liberalisation policies, in Asia it survived and was revamped by the reformation of China's five-year planning process.

Organisations such as the OECD lean towards horizontal, technology- or sector-agnostic policy. This is in keeping with, for example, the government's current approach embodied in its 'growth plan,' with its focus on economy-wide skills, innovation, and infrastructure. But "economic growth has both a rate and a direction" (Mazzucato 2018). Agnostic policies fall short of what is needed to capture the economic benefits of the transition from a high- to low-carbon economy. The objective must be supporting specialisation in the specific technologies and industries that are required in a zero-carbon economy but may not be cost competitive today. To put it bluntly, green industrial policies cannot be agnostic, they are about picking based on a desired outcome.

## **BEYOND INDUSTRIAL STRATEGY TOWARDS MAKING AND SHAPING MARKETS**

Governments always shape markets, regardless of whether they do so intentionally or not. Whether it is providing infrastructure, basic education or healthcare, or a system of law, the state underpins the private sector. More specific decisions on investment or regulation often favour one set of market actors over another.

Here we draw from the work of Mariana Mazzucato (2016), though economics has long recognised that without the state there are no capitalist markets to speak of. Karl Polanyi wrote in 1944, "the road to the free market was opened and kept open by an enormous increase in continuous, centrally organized and controlled interventionism".

As Mazzucato sets out (ibid), the state has often used these market-shaping abilities but only in the case where there is as provable and evident ‘market failure’ to be addressed (such as externalities). This is not commensurate to the challenge of shifting our economy towards net zero, and policymakers must shift from a regime of *fixing* markets to *shaping* them.

We conceive of industrial strategy as the state using the market-shaping potential of policies in an *intentional* manner. That is, establishing markets or shifting firm behaviour, not as a second-hand consequence of the policy process, but in a developmental, planned, premeditated, and aligned way. If industrial strategy means anything, it is the state using all the levers at its disposal in a strategic way, aligned to a broad strategic direction that the market allocation will not achieve alone.

### **BOX 1.1: CONTRACTS FOR DIFFERENCE AS A MARKET-MAKING POLICY**

The renewables obligation (RO) (2002–19) and contracts for difference (CfD) (2012 to present) are cited as transforming UK electricity, notably through the development of offshore wind generation. As Jennings et al (2020) describe, the “scale and level of support” offered by ROs got the offshore wind industry off the ground. This was further supported by CfDs which gave “investors a guaranteed return” and “sought to minimise uncertainty”. CfDs are contracts between the state and electricity generators which fix a guaranteed price for energy for 15 years. If the market price rises above the so-called strike price, then the generator pays the excess to the state, but if the market price falls below the strike price, then the generator is reimbursed. Contracts are allocated via a competitive auction process. CfDs further shape markets beyond simply price and certainty, as firms are obliged to submit a supply chain plan addressing competition, skills and innovation, not just for their own firm, but for the industry as a whole. These policies worked. Costs for offshore wind energy fell significantly. Jennings et al cite an industry source attributing this to CfDs saying “Targets, when backed with financial commitments, have been gold-dust” (ibid).

To take a recent example, the British government made a series of ‘market-making’ policies to establish the UK as one of the world’s leading installers of offshore wind electricity generation. The Climate Change Act set the direction for decarbonisation. Regulation facilitated investment and contracts for difference de-risked private sector installation (see box 1.1). The Green Investment Bank provided state finance. And yet, while this is a good example of policy successfully shaping a market for installation, it is also a cautionary example, as it failed to also shape the market for the manufacturing of wind turbines in the UK (Emden et al 2023).

Greg Nemet has studied the remarkable cost reduction of photovoltaics from the 1950s to today as a succession of state interventions from different countries. While this was undoubtedly a collaborative effort between academics, firms, and states, policies such as American R&D funding, Germany’s feed-in tariff, and Chinese subsidies for the scale-up of production all played important roles (Nemet 2019).

What is instructive from these examples is that entirely horizontal industrial strategies are insufficient to shift economic activity towards specific sectors or technologies. Developing low carbon technologies to shift our economy towards net zero calls for the state to pick. This doesn’t mean ‘picking winners’, the accusation so often thrown at industrial policy. The intention is not to select individual firms who will benefit and support their growth. Rather it is about influencing the characteristics of a certain sector or market to shift investment and economic

activity. As we set out below, that may be through rules or prices on the production or purchasing side. Making markets in this way shifts the actual driver of business investment: the expectation of future profits in a certain area.

This is not simply an academic question and there are indications that this is, increasingly, a new paradigm of economic policy which recognises the failures of the current set of tools. The director general of the UK's largest business body, the CBI, recently called for the government to explicitly adopt a 'market-making' position, saying, "This means doing what no-one else [apart from government] can – setting up the necessary market rules, pricing structures, institutional bodies, and incentives to get more private investment flowing in" (CBI 2021).

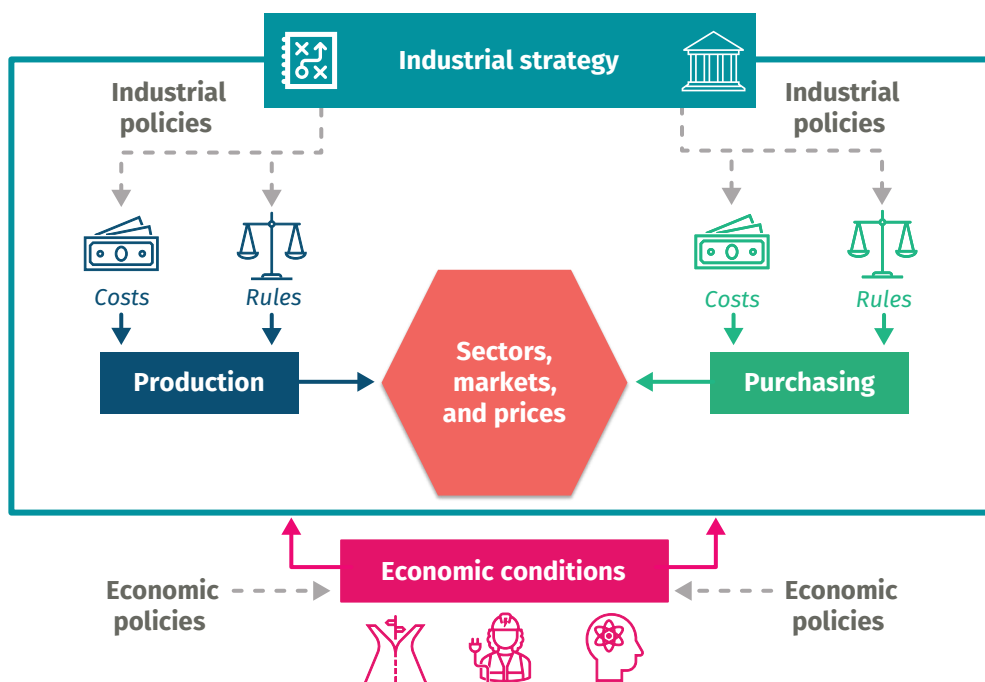
## 2. AN INDUSTRIAL STRATEGY TOOLKIT

Industrial strategy should aim to transform the economy. This will mean policymakers moving from using industrial policy only to fix market failures, to actively making and shaping markets. They will need to understand the different factors that determine how markets function and grow, how the state sets the ‘rules of the game’ in certain markets, and what available levers there are to shape markets.

Figure 2.1 visualises how policymakers might conceptualise developing, shaping, or steering different markets. Our industrial strategy ‘toolkit’ is made of production and purchasing industrial policies combined into an industrial strategy, itself supported by certain economic conditions. A combination of these elements will result in change in the structure, and in both the absolute and relative size of the example markets in the centre.

**FIGURE 2.1**

**Shaping markets requires a range of tools to reformulate industries acting within them**  
*A conceptual framework for a new industrial strategy for policymakers*



Source: Authors' analysis

## INDUSTRIAL STRATEGY

As set out above, industrial strategy is the overall direction policymakers provide to the economy both in planning, making trade-offs, and subsequently in **governance**.

Planning is as much about the process of **setting a goal or target** as the eventual outcome – democratic or expert input for example. This also covers the typology of industrial strategy – such as widely supported mission-oriented strategies – and the required **public sector capabilities** to develop a coherent strategy. The UK government, for example, lacks capacity and capability in market intelligence or industry and technology expertise that is needed to work closely with, say, corporate engineers. More fundamentally, perhaps, it lacks the *willingness* to develop these capabilities.

Some of this expertise does exist in government but it sits in regulators, and much has been left to the private sector. Previous examples included the Agricultural Wages Board, National Skills Academy for Rail, or the private-led Engineering Construction Industry Training Board. These **institutions**, where the public and private sectors socialise ideas or challenges and arrive at common conclusions, matter. As the Japanese example in box 2.1 shows, the success or failure of policy instruments can rest on the capability of, and trust in, the institution that developed the policy.

Governance comes after a strategy is set and covers the policies that ensure a strategy is implemented effectively and efficiently. This must include **independent oversight** and scrutiny of strategies, in much the same way the Committee on Climate Change provide for climate policy.

## ECONOMIC CONDITIONS

The success and growth of a sector, or the attractiveness of investing in that sector, depend on more than just the characteristics of that specific sector; they are also dependent on wider economic conditions. These conditions form the underlying basis of a healthy economy and support many rather than single markets. Examples of wider economic conditions include barriers to trade, political instability, the fiscal outlook of the domestic economy, the skills and labour available, functioning and reliable infrastructure, and the depth of capital markets. These characteristics of an economy are traditionally addressed through the interventions of a horizontal or sector-agnostic industrial strategy.

However, despite being broad-based, interventions in wider economic conditions might disproportionately benefit certain sectors. For example, adjusting migration rules to increase high-wage, skilled migration is unlikely to support retail or social care sectors. We split interventions in economic conditions into three well-recognised areas: **skills, infrastructure and innovation**. While these cross-economy tools are important to market success, alone they are insufficient for a ‘green industrial strategy’ and will need to be made specific to sectors. This could come through the type of R&D that is subsidised – say green over blue hydrogen, or targeting education towards specific careers as South Korea did with electronic engineers in the 1980s and ‘90s.

## PRODUCTION

Production captures the interventions policymakers can make for goods or services entering the market (see example in box 2.1). These might seek to restrict certain products being sold or expand others – for example supporting cultured proteins to enter the food market through removing regulatory barriers, or banning the sale of petrol and diesel engines. We can capture interventions through **rules** (or regulation) and tools related to **costs**.

### BOX 2.1: JAPAN'S TOP RUNNER PROGRAMME

Introduced in 1998, the top runner programme (TRP) aims to improve the energy efficiency of consumer products. Starting with a limited list 15 years ago, it now covers 32 products that are domestically produced and exported to Japan. From electric toilet seats to sash windows, these products account for 70 per cent of Japanese residential electricity consumption (IEA 2019). The scheme replaced a largely failed previous iteration which was rarely updated and captured by negotiations with industry (UN ESCAP 2012).

The TRP works on a regular time base, with the best performing goods in one time period becoming the minimum standards for the next time period, driving continuous innovation and improvement. TRP benchmarks are regularly reviewed and aligned to ensure they match current market-leading practice. The new institution, an advisory committee with a diverse makeup, gives recommendations approved by the minister, providing engagement but ensuring decisions are political. A tandem 'name and shame' punishment for companies failing to meet standards has also proved effective, with the added tool of public pressure driving change.

### PURCHASING

Purchasing, on the other hand, affects how or for how much, goods or services are demanded or bought on a given market. This can make it easier or cheaper to buy, for example, subsidies or interest-free loans for low-carbon technologies, like heat pumps over fossil fuel boilers. As with production, policymakers can intervene on the rules and the costs of purchasing.

### INDUSTRIES

Markets (where industries interact) are far more complex and numerous than in our framework. What is important to understand is that it is almost impossible to limit the intervention to *one* industry. Policymakers are attempting to reallocate capital or labour between them to produce certain outcomes, but by doing so will impact on others up and down the value chain, as well as drawing resource from those markets benefitting from the status quo. What is crucial for policymakers to understand is how the combination of tools they use cause markets to interact differently. For example, by providing grants that reduce the cost of heat pumps over, say, hydrogen boilers, policymakers will also affect demand for electricity and its distribution, or electrical engineers and perhaps home insulation.



**TABLE 2.1**

**Examples of industrial and economic policies in the categories of our ‘market shaping’ framework**

<b>Production</b>	<b>Costs</b>	<p><b>Subsidies on operating costs</b> where government incentivises particular goods, outcomes or methods of production – for example subsidies for sustainable agriculture through the Environmental Land Management system.</p> <p><b>Grants on investment costs</b> that reduce the cost of specific capital investments such as the UK’s former Energy Technology List.</p> <p>Innovation <b>prizes/competitions</b> that provide competitive funding for a variety of organisations to achieve a specified goal – for example industrial strategy challenge funds and the Automotive Transformation Fund.</p> <p><b>Low-cost financing</b> for example, UKIB loans, guarantees, BBB venture capital, or even public equity stakes, where publicly backed (but independent) organisations provide finance to certain sectors. This can be preferential to certain sectors or have exclusion lists (such as coal, as the UKIB does).</p> <p><b>Export credit</b> that allows national exporters to compete with overseas sales, including their restriction for certain products like coal.</p> <p><b>Business tax levels</b> increase or reduce costs for businesses and can be adjusted for those of different sizes or sectors.</p> <p><b>Business tax allowances</b> provide reliefs from tax to encourage activities, such as the energy profits levy investment allowance, or business rates relief on investment.</p> <p><b>Pigouvian (sin) taxes</b> that impose or reduce financial costs on activities that generate either negative or positive externalities, like the UK sugar tax or some proposals for a carbon tax.</p> <p><b>Emissions trading mechanisms</b> (carbon pricing), for example, the UK/EU Emissions Trading Scheme that differentially price carbon and allow for the trading of allowances. In this way they are affecting the cost of production as opposed to taxes on an end product which are born by purchasers.</p>
	<b>Rules</b>	<p><b>Product standards</b> and technical norms that could include, for example, content requirements, critical recovery, lifecycle emissions or efficiency like the Japanese top runner programme (box 2.1). This also includes deliberate (limited) experimentation in regulations through <b>regulatory sandboxes</b> such as Ofgem and Octopus demand tariffs.</p> <p><b>Bans or quotas</b> to restrict a particular product from entering the market, for example licencing restrictions for North Sea oil and gas, the zero emissions vehicle mandate, and the internal combustion engine phaseout.</p> <p><b>Competition and market rules</b>, for example anti-trust, or merger policy that allows or prevents businesses reaching a certain level of size or market dominance.</p>
<b>Purchasing</b>	<b>Costs</b>	<p><b>Tariffs</b> that will make the cost of certain imports and aspects of a supply chain more expensive, for example carbon border adjustment mechanism.</p> <p><b>Consumer subsidies</b> that reduce the cost for individuals/households to purchase certain products over others or against doing nothing such as electric vehicle grants and zero per cent loans for energy efficiency.</p> <p><b>Price controls</b> to either achieve price stability, such as contracts for difference, or to directly reduce prices like the energy price guarantee. This can either include reimbursements to the producer for the price differential or force producers to accept lower profits/losses.</p> <p><b>Procurement</b> including offtake agreements or advance market commitments, where government commits (or facilitates the private sector to commit) to purchase, or purchase in advance, a producer’s goods at a set price to provide certainty in demand – for example Covid-19 vaccines purchasing (GAVI 2020) or the payment company Stripe’s process for carbon removals (Orbuch 2020).</p> <p><b>Consumption taxes</b> that influence the price of certain goods over others, for example reduced VAT rates for energy saving goods.</p> <p><b>Market underwriting</b> where government covers the additional cost of a market that would otherwise struggle to exist – reinsurance, for example.</p>
	<b>Rules</b>	<p>Establishment and form of <b>regulators</b> – for example, the independence of Ofgem in comparison to the industry-backed North Sea Transition Authority.</p> <p><b>Procurement standards</b> where government purchasing affects the quality and demand for a given product through its tender specifications. This is in addition to where the public sector is the dominant end consumer of a good.</p>

Economic conditions	Skills, education and workforce	<p><b>School curriculum</b> and the balance of skills or knowledge it provides future workers – for example, compulsory STEM to aged 16.</p> <p><b>Post-16</b> provision, especially where it directs training to particular careers – vocational courses and retraining provision, for example.</p> <p><b>University</b> policy including admissions, level of tuition fees or subsidy for certain courses like medicine.</p> <p><b>Immigration</b> restricting or privileging migration to meet certain social or economic needs, such as profession-specific visas, qualification- or education-based travel, or tourism.</p> <p><b>Professional licences and qualifications</b> that dictate certain standards or education required to practice careers.</p>
	Infrastructure	<p><b>Land use planning</b> regulating how land is used for certain outcomes – for example, greenbelt designations.</p> <p><b>Planning process</b> – having to demonstrate local consent for onshore wind, for example, but also nationally important infrastructure projects, environmental assessments, or specifics such as the 0.6 metre distance a heat pump must be from a home.</p> <p><b>Public infrastructure investment</b> both nationally – such as roads, major trainlines, or certain forms of energy – and unblocking particular regional constraints, for example lab space or housebuilding in the Oxford-Cambridge arc.</p>
	Innovation: Research, development and commercialisation	<p><b>Bottom-up funding</b> for research-led science such as through government research councils.</p> <p><b>Support to commercialise</b> or <b>challenge-led funding</b>, for example the former Industrial Strategy Challenge Fund, or support to the Catapult network.</p> <p><b>Taxable allowances</b> for innovation activity such as R&amp;D tax credit or entrepreneurs’ relief.</p> <p><b>Intellectual property</b> and patent rules that expand or loosen protection and therefore use of new technologies.</p> <p><b>Business advisory</b> and support that advises businesses on how to grow or adopt technologies, or gives supply chain and value chain support – for example, Help to Grow or the British Business Bank’s regional, sectoral and financial advice networks. This might include <b>export promotion</b>.</p>
Industrial strategy	Planning (design)	<p><b>Strategy making</b> which encompasses the process of developing a strategy, its overall goal/target and its type – for example, mission-orientated, technology, sectoral or place-based.</p> <p><b>Public sector capabilities</b> including having the right roles and skills within government to inform industrial policy and work on an equal level with the private sector, such as engineering.</p> <p><b>Democratic input</b> and public consultation into the strategy, such as citizen’s assembly co-creation.</p>
	Governance	<p>Strategy <b>oversight and accountability</b> that can provide continuity, report on implementation, or publish relevant reviews on effectiveness such as Labour’s proposed Industrial Strategy Council, the Committee on Climate Change, or the Office for Budget Responsibility.</p> <p><b>Devolution</b> of both strategy making and the abilities/powers to implement, for example, local industrial strategies, planning capabilities regarding particularly constraints like housebuilding, and lab space.</p> <p><b>Institutions</b> are diverse forums that allow for an exchange of information between the public and private sectors. These might be on specifics such as wages and workforce (like the Construction Industry Training Board) or co-investment platforms like parts of the British Business Bank.</p>

Source: Authors' analysis

### **BOX 2.2: THE NETHERLANDS' DECARBONISATION STRATEGY**

The OECD has praised the Netherlands for its effective industrial decarbonisation policy (Anderson et al 2021). The policy rests on two pillars – carbon pricing and technology-led subsidy with complementing product standards.

Carbon pricing aims to increase the costs of the status quo and is additional to the EU emissions trading scheme and existing energy taxes. However, in practice many of these industries are sensitive to international competition and have strong political capital domestically. Tax exemptions, adjusted rates and free allowances for sectors limit the effectiveness of pricing alone.

The second pillar, the sustainable energy transition incentive scheme (SDE++), aims to address this by reducing the cost of deploying (not developing) a regularly updated list of alternative low-carbon technologies. The fund is in theory technology agnostic, but by allocating finance in increasing order of subsidy per tonne of CO<sub>2</sub> reduction, it ends up favouring scaled domestic industries and Dutch specialities like CCUS or bioenergy at the expense of new technologies, such as electrification, that need price reductions. As with lobbying over pricing, this makes the subsidy scheme liable to political capture; the Netherlands is small, and industry is concentrated, and like many schemes it excludes SMEs.

### **LIMITS AND LIMITATIONS**

The literature on industrial policy is clear that it is not all of economic policy. Bar promotion of explicit goods, for example, the OECD exclude international trade policy as a tool of domestic market creation. Here they differ from more security minded organisations, like CNAS in America, who see WTO litigation or trade dispute remedies as fundamental to the protection of domestic industries.

We also exclude measures which redistribute between people and groups rather than sectors – for example individual tax and benefits, or day-to-day spending on public services. Again, while these will have market impacts – such as expanding potential markets for green technology through improving financial outcomes for low-middle income groups (Fortherby et al 2022) – they are indirect consequences rather than purposeful change.

Place-based strategies often bridge this gap, as different locations hold different proportions of economic, social, or demographic groups. Improving economic outcomes, such as wages in the North of England, will change income distributions – but this is not, in the UK usually, done through spatially different fiscal policy.

### 3.

## USING THE TOOLKIT

Understanding what the tools of industrial policy are is only half the battle. The challenge comes in their implementation. Applying the right tools in the right combination requires a shift, both in how government works and how it works with the private sector.

### CREATING A NEW MODEL OF SOCIAL PARTNERSHIP

#### *Government capabilities*

Dani Rodrik (2008) describes the need for policymakers to exhibit ‘embedded autonomy’. While government has aspirations (or missions) it wants to achieve, it often lacks knowledge of what activities to support, and how and what behaviours to expect from the private sector in return. There is an information challenge that needs to be overcome through institutions.

Institutions take time to develop and can take many forms, but ultimately they allow for greater and more regular interaction between the private and public sectors. The UK’s market-based approach over recent decades has meant that public sector institutions have been hollowed out and they lack understanding of industrial policy, but also of particular sectors and technologies. This has in turn led to accusations from the private sector that the government is trying to get them to achieve goals (such as decarbonisation) that require difficult policy and political decisions to be made by government.

The UK does have some successful institutions in innovation – for example, the catapult networks, Innovate UK, and the British Business Bank. These organisations are often a-political and are better placed to think long term than central government. They are largely autonomous from political interference, but they do not set policy and are reliant on government to have a strategy they must operate within. As the Grant review of UKRI points to, they are also still affected by political cycles and ad hoc requests from government (Grant 2021).

The UK Infrastructure Bank (UKIB) is designed well and could offer opportunities through co-investment or blended finance. Without a full range of financing capabilities, such as venture capital or equity funding though, it will struggle to understand the breadth of the finance sector. For more on the UKIB and its risk appetite see Alvis and Murphy (2022). Elsewhere IPPR has recommended the establishment of a national investment fund (NIF) with an explicit green industrial strategy mandate, to provide loans and equity finance to the industries which will be key for the transition to net zero (Gasperin and Dibb 2023). This could come into play through the creation of a new public body with a dedicated mandate. Alternatively, it could be introduced by repurposing the existing capacity of the UKIB, in order to speed up implementation and investment.

Some of the skills required for industrial policy – or market shaping – currently sit with regulators. Ofgem, for example, has deep market intelligence on the development of the energy sector, and the Competition and Markets Authority has a track record of producing market studies of the highest quality (see, for example, CMA 2023). As the Green Jobs Taskforce has found, central government no longer has the capabilities to run, say, labour market intelligence, instead relying on inputs either from strong

non-departmental bodies like the Construction Industry Training Board, or the private sector.

The risk of this ability not sitting in government is that, despite a preference for ‘market forces’, it makes policymakers more liable to corporate capture. As Haley (2023) has described in Canada – which has a similar economic model to the UK – a hollowed out public sector and reliance on market-based instruments has left Canada struggling to respond to the US Inflation Reduction Act with its own tailormade industrial policy. Instead, corporates are attempting to push government to replicate American subsidies, which could simply result in higher profits.

Corporations pushing for subsidy that advances climate action is progress. In the UK, there is a real case for substantially higher public investment – because of our long-term failure to develop infrastructure, the need to embed fairness, but also because inflation raises the costs of building renewable energy. Successful use of industrial policy is not just to respond to what the private sector wants but to direct this enthusiasm towards the policy goals government wants to achieve, such as net zero or reducing regional inequalities. This may require government to impose conditions on public investment, but at present, the UK government lacks the capability and intelligence to do this effectively.

**Government needs to bring industrial policy capabilities in house but also recruit skill sets able to understand, interpret and act on information** that comes through ‘embeddedness’. The Treasury’s net zero review, for example, promised to upskill the ministry in dynamic economic modelling in addition to just steady state analysis – a vital step if we are to understand how the economy might be shaped by the transition to net zero (HM Treasury 2021). However, to date, little progress has been made.

There are concerns that bringing skills in house could raise the risk of corporate capture – or pose a challenge for hiring skilled professionals. However, it is professionalism and reputation that ‘ultimately safeguard an institution’ from day-to-day interference, rather than its structure (Rodrik 2014). The Defense Advanced Research Projects Agency, for example, is a highly successful industrial policy actor, with very little transparency, yet repeated success and technical competence, and the culture and hiring of its staff has meant it has remained stable and insulated from capture (see, for example, Greenwald 2013, Mazzucato and Willetts 2019).

We don’t always need new institutions. New institutions may take longer to develop the credibility required to deliver industrial policy. It is more the people, skillsets, and capabilities within existing organisations, and ultimately the power behind them, that is required.

### **Expectations and accountability**

Industrial policy cannot be a one-way street of public support to the private sector. But public and private sectors working together through institutions and with common goals create expectations in both directions. There are things the government expects of the private sector, in directing markets to achieve social goals or missions. That in turn creates expectations on the public sector to use policy to support those aims. Both expect new markets to be well run and competitive. Expectations and partnership are what separates strong industrial policy from either market capture on one side or nationalisation on the other.

IPPR recently set out one example of this partnership through transition plans (Alvis et al 2023). The state expects firms to publish transition plans of appropriate quality, ambition and transparency. Where transition plans identify constraints, such as technology cost or workforce availability, the private sector rightly expects the

state to use policy to address them. This should in turn lead to accelerated action and ambition from the private sector.

To avoid industrial strategy supporting individual firms, which is likely to lead to an extractive relationship, it is vital that policy explicitly aims for competition within the sectors it chooses. There is a distinction between policies that pick sectors and policies that pick firms, but only when competition exists.

It is also right that if the state is – in part – supporting the profitability of firms, it is entirely right and legitimate for the state to expect certain standards of behaviour from those businesses in return. For example, Dibb and Quilter-Pinner (2023) described how government should consider levels of profit reinvestment, the use of tax havens, fair levels of pay, trade union recognition, and having plans for net zero when considering supporting firms.

To avoid capture, and embody partnership, industrial policy needs to use both carrots and sticks. Often this means pairing regulation with public investment but can also include conditionality on subsidies. This is a key lesson from the Inflation Reduction Act (Murphy 2023a) but also from several other ‘green bargains’ (Meckling and Strecker 2022).

When the French government bailed out Air France during the Covid-19 pandemic, unlike UK bailouts, the state attached conditions and targets to funding. The French government divided its bailout into two, covering both immediate costs and funding to modernise the industry. In return, the industry agreed to a series of targets intended to reduce emissions (see box 3.1).

While conditionality of spending is one tool, and setting targets allows for some future influence, governments should seek ongoing leverage rather than one off, and use industrial policy to broaden the scope of expectations beyond individual firms. This often comes through the investment mechanism. Public equity, sustainability-linked loans, or distributing grants over time all allow the state to act (or remove carrots) if conditions aren’t met. As in the Inflation Reduction Act, meeting certain conditions to receive tax credits or public subsidy can also set a floor on quality. This is a very different model to the UK’s, where the recent super-deduction and now full expensing has no strings or direction attached. Following investment, industrial policy needs to use institutions to ensure there is continual reporting and accountability.

### **BOX 3.1: AVIATION SECTOR BAILOUT AND REFORM, FRANCE 2020**

In June 2020, the French government provided its aerospace industry with €15 billion to deal with the impacts of the pandemic (French Government 2020). While providing €7 billion for bailouts, the French government also provided €8 billion to support the transition to green aviation.

To ensure that subsidy supported industrial development, the investment came with conditions including: reducing the emissions per passenger-kilometre by 50 per cent by 2030; lowering emissions from domestic flights (total) by 50 per cent by 2024, reducing competition with high-speed rail; and a mandate to burn 2 per cent of alternative fuels by 2025. While the conditions were voluntary (like the UK’s 2017 sector deals), there were other enforcement methods, including a range of performance-linked finance mechanisms.

Climate advocates were concerned the commitments didn’t go far enough (Transport & Environment 2020), though the package was negotiated in tandem with the International Air Transport Association, showing the potential for public-private partnership.

### **Including workers and trade unions**

Industrial strategy is more than just an opportunity to drive economic growth or technological specialisation. Done well, industrial strategy can be part of a wider programme of achieving economic and environmental *justice* and reshaping the British economy to work better for everyone, as well as for our climate and nature. To do this, it can't just be a partnership between government and business, but rather must encompass workers and trade unions too.

In its recent report on industrial strategy, the Trades Union Congress recently said this must “include dedication to quality union jobs, climate and environmental sustainability, equity and diversity (including on gender and race), democracy, and public good, as well as international justice and addressing historic exploitation” (Minio-Paluello and Markova 2023). It is not possible to ‘do’ industrial strategy blind to the economic history of people and places. Arguably, the collapse of coal mining in the north of England and Wales was an intentional economic strategy, but one that was poorly managed and left entire regions suffering economic deprivation (Murphy 2023b). Industrial strategy in the 21st century must do better. If we are to achieve net zero (if only to maintain its political consensus), people and places, notably workers, must be supported to transition too.

We can also learn from other countries' progress here. Provisions within the Inflation Reduction Act and the CHIPS and Science Act explicitly promote a fairer transition through industrial policy – for example, by quintupling tax credits for renewable energy and energy efficiency projects that pay workers at prevailing wage rates, and expecting firms in receipt of federal funds to guarantee high-quality, affordable childcare for their workers and to sign collective bargaining deals with trade unions (Emden et al 2023). The European Union has also put worker training at the core of its green industrial strategy plans (Murphy 2023b).

In the IPPR Environmental Justice Commission (2021), we recommended a new social contract that shifted away from individuals and siloes to a “whole-economy and all-society approach”. Our citizen jurors wanted to see a joined-up approach across governments and their departments, and a partnership approach across the whole of the economy and society, forged with wider civil society, workers and their trade unions, and businesses. For this to succeed, it must include support for workers in carbon intensive industries – up to 3.2 million jobs will need reskilling as part of the transition to net zero (Robins et al 2019).

For this to work, workers should have a voice in the institutions of industrial policy. From specific financing instruments to government advisory bodies, all should include worker or trade union representation. If reinstated, the short-lived Industrial Strategy Council (or its successor) should undoubtedly include strong trade union membership along with other academic, business, and local democratic stakeholders.

More broadly, to effectively manage the transition across all sectors of the economy, the IPPR Environmental Justice Commission recommended a net zero and fair transition delivery body. Its objective should be to involve stakeholders from across business, trade unions and workers themselves, local government and community voices, academia and civil society.

Practically, industrial (and wider economic) policies can also support the sharing of the proceeds of growth more broadly with workers and society, and support the shift to an economy with a more balanced power base between labour and capital. As noted in Dibb and Quilter-Pinner (2023) above, it is right for the state to expect the firms it supports through industrial strategy to be reinvesting their profits in workers and training, offering high-quality jobs, embedding the highest standards of corporate governance, and recognising trade unions.

Wider economic policies can go further by offering a ‘right to retrain’ scheme to support workers reskilling (Dibb et al 2021), repealing anti-trade union laws, implementing sectoral bargaining, strengthening employment protection for workers (and enforcement), and reforming corporate governance.

### **APPLYING THE TOOLKIT MEANS NEGOTIATING TRADE-OFFS**

The guiding principle of industrial strategy is that it requires a government to choose.

With the goal of a green economy agreed, it is up to industrial strategy to shape the flow of capital, and labour, between sectors to ensure that goal can be met. Industrial strategy should be privileging those sectors we need to grow, such as renewables, often at the expense of those that need to shrink, like oil and gas production. Policymakers will want to support oil and gas workers to work in new industries and push businesses to invest more in clean energy than in outdated fossil fuels.

For the toolkit, that means choosing which blend of policy instruments are most effective in any given sector. This is not for policymakers to do in isolation; effective industrial policy is done through regular engagement with the private sector, and with appropriate institutions that allow for that engagement.

Conversely, it is also not for the private sector to dictate or be asked to solve what acceptable industrial policies are. There is a risk that the green transition is dominated by focus on outsized firms or current market leaders, as the Dutch example in box 2.2 shows. Many UK firms are now asking for increased subsidy to match Biden’s efforts over the Atlantic. While calls for public investment in climate technology are encouraging, the public sector must be firm in using a wider range of tools to shape a market in its chosen direction.

Instead, a new social partnership between the state, business and workers is required. The government’s current hands-off approach isn’t working. Businesses are being asked to find the answers (decarbonisation) to a question set by public policy (net zero), without support from the state.

New partnerships are going to be required across the economy to support industries to reduce their emissions and be profitable in the green economy. We set out the beginnings of this partnership in the financial sector in our work on transition plans. While the UK had some successes in offshore wind, it’s going to need many more – from automobile and aviation, to steel and cement.



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