

1 Industrial policy in Europe: past and future

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1 Europe's industrial policy debate: a brief history

The debate about industrial policy has traditionally been about the role of the state in the economy, driven by difficult questions such as: why and to what extent should governments intervene in steering market mechanisms? When they intervene, how should they do it? Should governments pick 'winners' to be supported?

Over time, Europe's approach to industrial policy has evolved depending on different political and policy cycles.

After the Second World War, when the process of European reconstruction began, the focus was notably on the strategic industries of coal, steel, electricity and railways. Between the early 1950s and the mid 1970s, referred to as the heyday of industrial policy (Owen, 2012), most European countries were concerned with closing the income gap and reducing their dependence on the United States. During those years, some European governments, most notably France, ventured into interventionist, winners-picking sectoral policies, also defined as vertical industrial policies. These policies targeted sectors thought to be strategic and promising for the future, including steel, chemicals, machinery, communications and technology, aircraft and nuclear power. Europe went through a wave of nationalisation and strong intervention involving state-owned enterprises and other state-powered initiatives. It was during this period that France, for example, launched a programme to promote its national computer industry – the 'Plan Calcul' – and engaged in '*Grands Projets*'.

The European Coal and Steel Community (ECSC) was set up in 1952 with the goal of reducing overcapacity and modernising coal production. This first European-level industrial policy was considered a success, both in terms of outcome and coordination between participating states. The ECSC provided an interventionist framework within which national companies had to modernise.

The European Economic Community (EEC), established after the ECSC, progressively reduced tariffs in European markets. The first technology policy initiative at European Community level was PREST (*Politique de Recherche Scientifique et Technologique*), aimed at facilitating common European research projects. The motivation for this initiative was fear of European technology lagging behind the US. A notable milestone in this era was the Davignon Plan, adopted in 1977, under which European-wide solutions were sought for the so-called ‘sunset’ industries, while keeping national control of ‘sunrise’ industries, such as computers. It was in this context that the Airbus consortium was established, as a European industrial alliance for the production of aircraft.

The 1980s saw a new phase of liberalisation with market-oriented industrial policies, limited to setting the right framework within which economic processes could take place (horizontal industrial policy). Countries liberalised markets, trying to avoid the government failures of the typically vertical industrial policy and winner-picking initiatives of the past.

At European level, the inefficiencies of uncoordinated national industrial policies became clear, leading to the development of two important instruments at EU level: the internal market and competition policy, including state aid. The Single European Act (1986) laid the legal basis for affirmative action of the state in the area of research and development. During this period, different initiatives were undertaken at European Community level to promote cooperation on research and innovation. One example was ESPRIT (European Strategic Programme for Research and Information Technology), a five year-programme

focused on collaborative research with the aim of “*bringing together companies, universities and research institutes across Europe*” with a specific focus on information technology (Owen, 2012). ESPRIT was born as an attempt to respond to the government-led initiatives that the Japanese Ministry for International Trade and Industry undertook, initiatives that successfully enabled Japan to catch-up quickly with the United States as a technological and economic leader, particularly in the field of semiconductors. ESPRIT is typically considered the precursor of the European Commission’s framework programmes (starting in 1984), through which the Commission carries out science, technology and innovation policy and collaborative research initiatives. The current framework programme is Horizon Europe.

During the 1990s and early 2000s, liberalisation programmes continued in Europe. A consensus emerged at EU level on the preference for a more holistic, integrated and ‘horizontal’ approach to industrial policy. The role of the EU was to ensure the right framework conditions, focusing on the use of internal market and competition instruments, and stimulating R&D and innovation. This cumulated in the 2000 Lisbon Strategy: a programme “*to transform the EU into the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion*” (European Council, 2000). Its goal was to implement a comprehensive strategy of structural reforms by boosting innovation and investment in R&D and creating a more integrated and competitive internal market.

2 Europe’s industrial policy revival

The Great Recession of 2008 marked the start of a new era, characterised by an industrial policy revival across Europe.

In 2012, the European Commission published a new industrial policy communication, ‘A Stronger European Industry for Growth and Economic Recovery’ (European Commission, 2012), which started from the premise that “*Europe needs industry*” and sets out a roadmap

for reindustrialising Europe, with the aim of “*raising the share of industry in GDP from the current level of around 16 percent to as much as 20 percent in 2020*”. Although the Commission stressed the need for a comprehensive vision “*mobilising all the levers available at EU level, notably the single market, trade policy, SME policy, competition policy, environmental and research policy in favour of European companies’ competitiveness*”, the communication returned to a more targeted approach, identifying six priority action lines, including key enabling technologies, clean vehicles and smart grids. The communication was followed by action plans for specific sectors, such as steel (European Commission, 2013)¹.

The increasing pressure to put Europe on a trajectory towards climate neutrality and the need to respond to growing international tensions added to the significance of this policy development. This has been particularly the case since the adoption in 2019 of the European Green Deal as Europe’s flagship programme or, as the European Commission defines it, as its “*new growth strategy*”². In March 2020, the Commission presented a ‘New Industrial Strategy for Europe’, built on the twin objectives of managing the green and digital transitions while avoiding external dependencies in a new geopolitical context, especially with China considered a “*systemic rival*” (European Commission, 2019). Among the key policy goals in the strategy were securing the supply of clean technologies and critical raw materials, stepping up investment in green research, innovation, deployment and up-to-date infrastructure, and creating lead markets in clean technologies by making more strategic use of single-market regulations, public procurement rules and competition policy.

On the day after the publication of the new strategy, the World Health Organisation declared the COVID-19 outbreak a pandemic.

1 See also Veugelers (2013).

2 See European Commission press release of 11 December 2019: https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6691.

That shock, with all the issues related to the emergency procurement of personal protective equipment and vaccines, triggered a substantial revision of the new industrial strategy, which came in May 2021. The updated strategy centered on the strengthening of the resilience of the single market. It did so by putting a strong focus on the need to improve Europe's "*open strategic autonomy*" in key areas including health and green and digital technologies by diversifying international partnerships, developing Europe's strategic industrial capacities and monitoring strategic dependencies (European Commission, 2021).

Since then, the issue of 'open strategic autonomy' has become more and more central to Europe's industrial policy debate, also as a result of the war in Ukraine, the subsequent energy crisis and the overall increase in international tension linked to the geopolitical decoupling of the United States and China. At the core of this issue stand the risk of supply disruption for critical items (including vaccines during a pandemic, natural gas during a major energy crisis, and critical raw materials and clean technologies during the green transition) and the consequent quest for 'de-risking'.

This paradigm change first became evident with the European Chips Act proposed by the European Commission in February 2022 to address the shortage of chips during the COVID-19 crisis. The Act has the double objective of improving the resilience of the semiconductor ecosystem in the EU to minimise future supply chain disruptions and increasing Europe's domestic capacity for chip production. It rests on three pillars: research and innovation policies, subsidies for cutting-edge chip manufacturing plants, and measures to monitor and intervene in chip-supply crises. The Act seeks to attract foreign investment and coordinate with global partners (European Commission, 2022). Yet, it has also raised concerns about its emphasis on protectionism and its potential to create competition distortions (Poitiers and Weil, 2022).

When it comes to resilience in the face of supply risks associated with the green transition, the European Commission published in

March 2023 two legislative proposals reflecting its new policy framework in this area: the Critical Raw Materials Act (CRMA) and the Net-Zero Industry Act (NZIA).

The CRMA is an attempt to respond to the supply disruption risk in critical raw materials, mainly by boosting their domestic production, refining and recycling. The proposed Act identifies a list of strategic raw materials that are considered crucial for the manufacturing of green, digital and defence technologies, and then sets precise domestic targets to be achieved by 2030. The CRMA aims to make the issuing of permits to relevant industrial projects subject to a common EU deadline. The proposed act also includes provisions on supply chain monitoring, stockpiling and improving the recyclability of CRMs. The CRMA acknowledges that, while important, domestic actions will never make the EU self-sufficient in critical raw materials. The Act thus also puts forward an international strategy to diversify the EU's imports of critical raw materials and strengthen its global partnerships with emerging markets and developing economies, and to consider a 'critical raw materials club' for like-minded countries.

The proposed NZIA meanwhile aims to tackle the supply disruption risk in clean technologies by:

1. Listing the net-zero technologies that are considered to be strategic: solar photovoltaic and solar thermal technologies; onshore wind and offshore renewable technologies; battery/storage technologies; heat pumps and geothermal energy technologies; electrolyzers and fuel cells; sustainable biogas/biomethane technologies; carbon capture and storage (CCS) technologies; grid technologies.
2. Adopting an overall headline target of reaching a manufacturing capacity for these technologies of at least 40 percent of the EU's annual deployment needs by 2030. It also proposes a target for an annual injection capacity in CO₂ storage of 50 million tonnes of carbon dioxide by 2030, to spur the development of CCS.

3. To achieve these targets, EU countries can identify Net-Zero Strategic Projects (NZSPs) that will be granted priority status at national level and fast-tracked in permitting procedures.

3 Europe's industrial policy trilemma

The final shape of the NZIA and CRMA will ultimately emerge from the EU legislative process, ongoing at the time of writing (Tagliapietra *et al*, 2023). However, both proposals are clearly underpinned by a de-risking approach, that has recently become an integral part of policy for both the EU (Von der Leyen, 2023) and G7³.

The historical discussion in section 1 shows how such concerns are not new to Europe or the world. Discussions about the economic and security challenges posed by China's emergence as a global economic power mirror the unease felt by European governments in the 1970 and 1980s about the technological leadership of the United States and Japan.

Old industrial policy questions are emerging again, yet with a new level of complexity because of the urgent need to move forward with the green transition. In a globalised world grappling with the impacts of climate change, industrial policy needs to address multiple objectives, including global decarbonisation, world competitive economic value and job creation, and strategic autonomy. When these objectives conflict, they present policymakers with a challenging trilemma: how to combine decarbonisation with economic growth and jobs and world competitiveness, while also reinforcing resilience and sovereignty/autonomy/security of supply? What is the best way socio-economically to achieve decarbonisation and resilience? How and how far to go in moving towards sovereignty/autonomy/resilience, and

3 See Council of the European Union press release of 20 May 2023: <https://www.consilium.europa.eu/fr/press/press-releases/2023/05/20/g7-hiroshima-leaders-communique/>.

what does this mean in terms of moving away from the traditional economic efficiency paradigm? How far to move away from a horizontal policy approach to shaping of framework conditions, such as through strong competition policy and open trade? To what extent can technologies and projects deemed to be strategic be selected, requiring resilience/autonomy to secure supplies? How can these trade-offs be minimised, for example by fostering technological innovation to substitute critical inputs, rather than investing in expensive import substituting local projects? How can resilience be turned into an opportunity to create quality jobs and accelerate, rather than impede, the decarbonisation process?

This book tries to tackle some of these difficult questions. In the volume, a consensus emerges on the legitimacy and significance of revitalising industrial policy. Authors agree that governments have a pivotal role to play in managing the transition from fossil fuels to low-carbon energy systems, while addressing social challenges. Leaving the challenges to market forces is not an option in view of the externalities and path dependencies that can slow down or interrupt the course of private actions. The focus lies on the necessity of a future-proof industrial policy infused with strong ‘green’ elements. The question is what such an industrial policy should look like.

Although the details of such an industrial policy are not yet clearly laid out, there is a consensus in this volume’s chapters that a mix of policy instruments is needed. Effective industrial policies should recognise the complementary nature of both supply- and demand-side instruments, combining public support with regulatory frameworks, target setting and carbon pricing. In the contributions, there is a strong consensus that priority should be given to support for innovation capacity building. Authors concur that governments can and should shape technological progress in line with societal needs and should enhance the skills of the workforce. The objective is to ensure that industrial policies coexist with competition, facilitating structural change and business dynamics. Safeguarding competition and

enabling the entry of new firms to challenge less efficient incumbents is crucial.

There is also agreement on the need for more directionality in industrial policymaking. *Ex-ante* choices will have to be made about technologies and projects that contribute most to the multidimensional objectives, but which are impeded by market, system and transition failures, even if the risk of selection failures is high. Managing this risk of government failure calls for a good mix of vertical and horizontal instruments, bottom-up and top-down selection, limiting support in time and the importance of ensuring competition as a level playing field. Recommendations range from establishing agencies modelled after the United States Defense Advanced Research Projects Agency (DARPA) to conducting complexity analysis of value chains, all with the goal of developing flexible policies that can be evaluated regularly and adjusted accordingly.

The success of industrial policy will be defined ultimately by whether it succeeds in unleashing private-sector investment to meet society's targets in a globally competitive and resilient manner, putting public-private partnerships at the core of industrial policymaking. The authors in this volume call for explicit policies and continuous collaboration between firms and governments to establish objectives that promote the creation of 'good jobs'.

Building coalitions at domestic and international levels, even among countries that may be rivals in other areas, is of paramount importance to navigate the green transition and other transformative processes effectively. The regional dimension is particularly crucial for a 'smart industrial policy', whether focused on green initiatives or not. While some argue that efficiency and a region's inherent comparative advantage should guide industrial policy, others caution against straying too far from industry economics. Caution is also advised when pursuing national interests through industrial policy, as this may trigger an international race for subsidies, adversely affecting developing countries and potentially accelerating deglobalisation. Overall, this

Blueprint offers recognition of the benefits of an industrial policy that supports international coordination and even cooperation, rather than adopting a short-sighted Europe-first approach. These reflections are addressed in different ways by the contributing authors, as follows:

Chapter 2, *An innovation-driven industrial policy for Europe* (Philippe Aghion), asserts that industrial policy is essential for the competitiveness of EU industry and to catch up with the technology frontier. The core question is how to redesign the governance of industrial policy to make it more compatible with competition and innovation-led growth. Governments should focus support on skill-intensive sectors or sectors subject to high competition, to stimulate productivity growth more efficiently. However, by subsidising incumbent firms, governments should not deter new, higher-performing firms from entering the market. The author also calls for updated interpretations of the Stability Pact, competition policy and the single market, and EU borrowing to enhance Europe's investment capacity, make it more competitive at the global level and avoid irreversible decline. The author also advocates a European DARPA to ensure the competitiveness of EU industry, with projects funded from participating nations' budgets and by joint-EU borrowing.

Chapter 3, *Productivism and new industrial policies: learning from the past, preparing for the future* (Dani Rodrik), turns to the labour aspect of industrial policymaking. The author proposes a new paradigm of 'productivism' to enhance the productivity of all parts of society through a collaborative effort involving government agencies and private firms. Productivism focuses on incentivising worker-friendly technologies and improving the quantity and quality of jobs available for less-educated and less-skilled members of the workforce. Industrial policies should encourage improvements on both the demand and supply sides of the labour market. This requires customised and targeted business incentives, and dialogue between government agencies and companies to identify constraints and opportunities and design interventions accordingly. To help create 'good jobs', regional business

bureaux should be set up – or strengthened – to work alongside public employment services to provide customised services to local firms and investors.

Chapter 4, *Industrial policy and technological sovereignty* (Uwe Cantner), focuses on the main driver of industrial policy at EU level: innovation and how to assure that innovation works as driver for industrial policy while assuring strategic autonomy or sovereignty in technology. The chapter discusses what obtaining technological sovereignty entails, what policies could be needed to achieve this, and when it is better to leave it to the market. The chapter sets this discussion in the context of relevant key technologies and of radical change and innovation.

Chapter 5, *Cooperation or conflict? A transatlantic look at whether industrial policy will produce solutions or generate unmanageable conflicts* (Laura Tyson and John Zysman), outlines how international collaboration among allies is essential for the success of industrial policies. The authors discuss the implications for the global economy and the international political economic order of US industrial policies, including the CHIPS and Science Act and green industrial policies. They argue that the success of these policies will depend on US cooperation with its allies, but the policies are likely to raise tensions precisely with those allies, even though industrial policies need not disadvantage foreign firms relative to domestic firms, and success will require allies to adopt complementary policies. Meanwhile, building domestic coalitions for industrial policies and rewarding local constituencies may generate conflicts between nations, whether allies or not. Competing national industrial policies, while well motivated, can quickly lead to counterproductive and wasteful bidding wars.

Chapter 6, *Green industrial policy: the necessary evil to avoid a climate catastrophe* (Alessio Terzi), offers an economic-development perspective on green industrial policy. The author considers industrial policy an essential but imperfect tool to tackle climate change. Market imperfections and distributional concerns imply that instruments

such as carbon pricing will be insufficient to ensure speedy decarbonisation. The use of industrial policy in the service of national interest may lead to an international subsidy race, to the detriment of developing countries. Moreover, policymakers need to be aware of the negative effects of industrial policy on innovation, particularly at the technological frontier. Protectionist approaches might slow technological innovation in a time when speed is of the essence.

Chapter 7, *Industrial strategies for Europe's green transition* (Chiara Criscuolo, Antoine Dechezleprêtre and Guy Lalanne), postulates that green industrial policy should go beyond carbon pricing and should leverage the complementarities of supply- and demand-side instruments. The current pace of innovation is too slow to face the challenge of climate change; a range of barriers and market failures remain at the root of the problem. To resolve these, a mission-oriented industrial strategy for the green transition is needed. The authors suggest a taxonomy of industrial policy instruments to deploy in concert. Effective green industrial policy should make strategic use of different policy instruments supporting innovation and technology adoption, carbon pricing and framework instruments (such as standards and regulations and policies to encourage skills). Industrial policies are not necessarily incompatible with competition and should be designed so that they do not slow down structural change and business dynamics.

Chapter 8, *A more globally minded European green industrial policy* (Ricardo Hausmann and Ketan Ahuja), further enlarges the scope of the discussion by providing a Global South perspective on Europe's green industrial policy, illustrating how a more global European industrial policy would be better suited to deal with the trade-offs the continent faces. The authors argue that Europe should not pursue a 'Europe first' approach, but should only engage in strategic competition over the parts of the value chain in which Europe holds a comparative advantage. Bottom-up techno-economic cost modelling and economic-complexity analysis of emerging clean supply chains can help identify these parts. EU green industrial policy should also recognise

the economic reality of energy distribution, and relocate accordingly the production steps that can be more efficiently decarbonised. This means helping third countries build clean-tech value chains and developing economic constituencies and political forces behind green industries in Europe's trading partners, to counterbalance fossil-fuel interests that resist change in those countries. Finally, Europe should focus on growing the overall global green economy and increasing overall demand for the green products and services in which Europe has a comparative advantage. A global green industrial policy would benefit European workers, shareholders and consumers, as well as the rest of the world.

Chapter 9, *Europe's green industrial policy* (Simone Tagliapietra, Cecilia Trasi and Reinhilde Veugelers), gives an overview of the green industrial policy measures being implemented in Europe. The authors argue that the current fragmentation of policy measures calls for a new approach to green industrial policymaking at EU level. A new and effective EU green industrial policy should aim at an overall improvement in the attractiveness of the EU single market as a location for green investment, via both horizontal measures to enhance market functioning and specific measures in support of clean technologies. Examples of these measures include better regulation, better green procurement rules and EU-level financing to promote new or earlystage clean tech, in which EU firms can achieve sustainable competitive positions. An EU-scale green industrial policy will require a stronger governance model to ensure better coordination and longer-term commitment.

Chapter 10, *Smart green industrial policy* (Ben McWilliams and Georg Zachmann), takes a regional development perspective to illustrate how regions should develop a smart green industrial policy. Drawing upon empirical and theoretical literature, the authors argue that regions have unique technological, knowledge and institutional capacities, and that these are a crucial indicator of the ability of a region to absorb new knowledge. It is possible to identify these

comparative advantages at a regional level. Policymakers can map desirable green technological capacities against existing regional capabilities, and thus increase the likelihood that a region will respond successfully to green industrial policy.

Chapter 11, *Industrial policy for electric vehicle supply chains and the US-EU fight over the Inflation Reduction Act* (Chad Bown), examines how the Inflation Reduction Act (IRA) of 2022, its implementing regulations, policy decisions on leasing and potential critical minerals agreements all have the potential to affect the electric vehicle supply chain. This case study showcases the political-economic complications involved in US and EU attempts to cooperate over clean energy transition policy to address the global externality of carbon dioxide emissions. Electric vehicles are one example of the challenge facing partners with integrated supply chains and similar levels of economic development that share concerns about climate change, rising inequality, workers, other social issues and democracy itself. The author argues that the electric vehicles conflict laid bare the differing US and EU prioritisation of these issues relative to economic efficiency, World Trade Organisation rules, the approach to non-market economies and national security vulnerabilities

Chapter 12, *Developing a European industrial policy: lessons from COVID-19* (Mathias Dewatripont), focuses on the innovation part of industrial policy by bringing into the analysis Europe's experience with COVID-19 vaccines. While Europe has a solid foundation in the health sector, it suffers from suboptimal coordination between parties, especially between providers of funding. The author argues that the EU should put in place a renewed support strategy for the development and commercialisation of innovative technologies modelled on DARPA. This approach would enhance competition, mix top-down and bottom-up approaches, and support innovation while prioritising affordability. Industrial policy should also aim at improving bargaining positions through EU-wide coordination of negotiations with pharma companies, to limit their ability to play countries off against

one another. This would be valuable particularly for rare diseases, for which pan-EU purchasing could offer higher sale volumes to companies and make lower prices more sustainable for the industry.

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