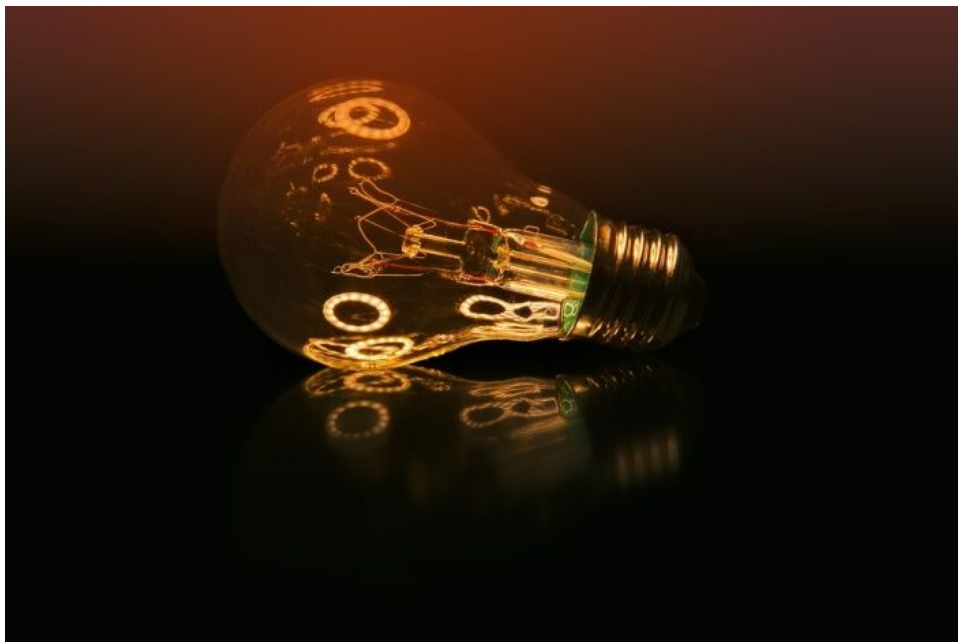


STUDY

Requested by the ITRE committee



# How to tackle challenges in a future-oriented EU industrial strategy?



Policy Department for Economic, Scientific and Quality of Life Policies

Directorate-General for Internal Policies

Authors: CSIL, University of Bari and CERPEM, University of Warsaw and EUROREG

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EN



# How to tackle challenges in a future-oriented EU industrial strategy?

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## Volume 1

### **Abstract**

This study provides a critical assessment of the 2017 EU industrial strategy and of the policy measures it comprises. Even though the EU industrial strategy is still a “meta-policy”, it successfully promotes a more integrated and innovative approach. However, it should more clearly identify mission-oriented strategic goals and mobilise the necessary effort and means to reach them.

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<b>CEF</b>	Connecting Europe Facility
<b>CF</b>	Cohesion Fund
<b>CIVITAS</b>	City-VITality-Sustainability
<b>COM</b>	Commission Communication
<b>COMPET</b>	Competitiveness Council
<b>CoR</b>	Committee of the Regions
<b>COSME</b>	Competitiveness for Small and Medium Enterprises
<b>CSR</b>	EU country-specific recommendations
<b>DG CNECT</b>	Directorate-General for Communications Networks, Content and Technology
<b>DGs</b>	Directorate-Generals
<b>DIH</b>	Digital Innovation Hubs
<b>EAFIP</b>	European Assistance for Innovation Procurements
<b>EaSI</b>	Employment and Social Innovation programme
<b>EASME</b>	Executive Agency for Small and Medium-sized Enterprises
<b>EC</b>	European Commission
<b>EDP</b>	Entrepreneurial Discovery Process
<b>EEA</b>	European Economic Area
<b>EESC</b>	European Economic and Social Committee
<b>EFSI</b>	European Fund for Strategic Investment
<b>EGF</b>	European Globalisation Adjustment Fund
<b>EGNOS</b>	European Geostationary Navigation Overlay Service
<b>EIB</b>	European Investment Bank
<b>EIT</b>	European Institute of Innovation and Technology
<b>ENISA</b>	European Union Agency for Network and Information Security
<b>ERDF</b>	European Regional and Development Fund
<b>ESCALAR</b>	European Scale-Up Action for Risk Capital
<b>ESIF</b>	European Structural and Investment Funds
<b>EU ETS NER</b>	European Emission Trading System New Entrants' Reserve
<b>EUIS</b>	EU Industrial Strategy Programme

<b>EUR</b>	Euro
<b>FDI</b>	Foreign Direct Investments
<b>GDP</b>	Gross Domestic Product
<b>GNSS</b>	European Union's Global Satellite Navigation System
<b>GPS</b>	Global Positioning System
<b>H2020</b>	Horizon 2020
<b>HLG CompGro</b>	High-level Group of Competitiveness and Growth
<b>HLRT</b>	High-Level Industry Roundtable
<b>HR</b>	Human Resources
<b>ICT</b>	Information and Telecommunication Technology
<b>IPCEI</b>	Strategic Forum for Important Projects of Common European Interest
<b>IPR</b>	Intellectual Property Rights
<b>ITRE</b>	Industry, Research and Energy Committee
<b>JRC</b>	Joint Research Center
<b>NER</b>	New Entrants' Reserve (NER) 300 Programme
<b>NGOs</b>	Non-governmental organizations
<b>PCP</b>	Pre-Commercial-Procurement
<b>PPI</b>	Public Procurement of Innovative Solutions
<b>R&amp;D (I)</b>	Research and Development (and Innovation)
<b>RAPEX</b>	Rapid Exchange of Information System
<b>REFIT</b>	European Commission's regulatory fitness and performance programme
<b>S3</b>	Smart Specialisation Strategy
<b>S3P-Industry</b>	Smart Specialisation Platform for Industrial Modernisation
<b>SMEs</b>	Small and Medium-sized Enterprises
<b>VAT</b>	Value-added tax



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## EXECUTIVE SUMMARY

Following years of disregard for industrial policy, the field has found renewed interest within several industrialised countries. This has been accompanied by a paradigmatic shift in the way industrial policy is envisaged and implemented. A “systemic approach” overcomes the opposition between two historically radical positions: a sectoral approach adopted in the 1950s and 1960s, and a horizontal approach adopted between the 1970s and 1990s aimed at improving framework conditions. The systemic approach emphasises market creation, strategic and mission-oriented objectives, the place-based principle, and policy learning and experiments. Relying on decentralised initiatives, systemic approaches require effective integration of the complex web of horizontal and vertical mechanisms of stakeholder coordination. In this context, *how* to implement industrial policy is decisive, and raises the issue of policy capacity.

In the near future, EU industrial strategy will face challenges (“megatrends”) from multiple sources: technological changes, socio-political changes (including globalisation and geopolitics) and climate change. EU-specific events (the next budget, Brexit, etc.) will also contribute to shaping the contours of the next EU industrial policy. All these factors will represent threats and/or opportunities, depending on the capacity of the EU industrial policy strategy used to address them. Whether the EU industrial policy strategy is fit to address these future challenges is assessed against four criteria, dealing with the capacity of the strategy to:

- Set long-term strategic objectives;
- Propose an integrated (coherent and coordinated) framework;
- Account for territorial specificities;
- Adopt an effective governance framework and consolidate policy capacity.

The 2017 Communication “Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy” is the continuity of the previous initiatives by the European Commission in the field of industrial policy. Within a single document, it defines six pillars: two of them reflect thematic concerns for digitalisation and the green economy, while the remaining four provide an articulation of EU initiatives in the fields of the Single Market, internationalisation, investment and innovation. Specific emphasis is placed on governance issues, with an attempt to delineate arrangement procedures and the main actors at the EU level. Partnership is the expected driving force of the governance system.

The numerous policy measures and areas covered by the 2017 EU industrial strategy can be grouped under three main categories reflecting the different intervention logics underlying the EU industrial strategy: horizontal approach, sectoral/thematic approach and territorial approach. The horizontal approach is the historically privileged area of intervention of the EU. Initially concentrated on the regulatory environment (completion of the Single Market, competition, etc.), it increasingly addresses other framework conditions intended to have a broad scope, such as skills, support for innovation and SMEs, and trade policy. Measures under the sectoral/thematic approach testify to a shift from the usual reference to sectors to that of value chains, implying support to ecosystems and enabling technologies. The EU is also multiplying measures ascribable to a nascent mission-oriented strategy in the fields of digitalisation and the green economy. Finally, the territorial approach is a *de facto* feature of the EU industrial strategy because of the territorial orientation of Cohesion policy.

Increasingly, policy measures and areas develop at the intersection of the broad approaches underlying EU industrial policy interventions – for example, at the fringe of horizontal and thematic approaches (e.g., the value chain approach) or combining horizontal and territorial characteristics (e.g., clusters

development). This shows that the EU industrial strategy is more than the sum of existing measures and that more integrated approaches can take place. The most dynamic areas of intervention are “around” the sectoral/thematic approach. However, this approach comprises different packages which are not yet entirely aligned, unlike the more ambitious strategy in the field of climate change (“2050 long-term strategy”).

On the contrary, the territorial dimension is not emphasised in the overall policy mix of the EU industrial strategy. As a matter of fact, Cohesion policy, the budget of which is one of the main contributors of the strategy, is mobilised to support many different fields and initiatives that do not necessarily integrate a territorial dimension.

The key strategic value chains recently identified by the European Commission through partnership with Member States and industry are promising developments that reflect how the value chain approach permeates different policy areas, in conformity with State aid rules. This has important implications in terms of governance as it requires intensified coordination and collaboration between stakeholders.

Evidence from case studies shows that the same instruments are mobilised through very different patterns across the cases reviewed, illustrating the importance of the institutional setting in which they are implemented. The EU influence is critical for regional industrial policies in less developed regions, as EU funding is by far the most relevant source for regional authorities. However, EU policies are not always considered to be sufficiently adapted to regional/local specificity, and much expectation is placed on Smart Specialisation Strategies to fulfil a place-based mission. In more developed regions, new modalities of policy learning develop through the participation and contribution to “soft” instruments (e.g., a smart specialisation platform) which promote good practices and improved governance.

For the time being, the EU industrial strategy is still a “meta-policy”, established on the basis of a set of existing policies. As a matter of fact, there is little in terms of an effective EU-wide coordination mechanism to combine the different available sources of funding into an integrated set. However, there is evidence that the EU industrial strategy is acquiring its own fully fledged status and that an integrated approach is being developed, which contributes to finally breaking the “silos” between policy areas and measures. The value chain approach is instrumental in this respect. Another remarkable feature is the emergence of thematic or mission-oriented priorities around digitalisation and green growth, but with no marked concentration of effort and resources. Also, there appears to be some neglect for territorial cohesion, even though this area is fundamental to ensure the success of the strategy, among other things by contributing to forge the social acceptability of measures taken in response to technological, climatic and other challenges.

In order to further strengthen the thrust initiated with the 2017 Communication and consolidate the future-orientation of the EU industrial strategy, consideration should be given to three main areas:

- **Make sharper strategic choices:** identify a clear overarching strategic objective – most likely addressing the environmental challenges – and related specific priorities. These priorities – including, for instance, the circular economy – should be coordinated and aligned in a common thrust to contribute to the wider overall strategic objective;
- **Engage regions:** Smart Specialisation Strategies and interregional cooperation favouring the development of value-added chains should be an integral part of the EU industrial policy strategy;
- **Keep experimenting:** in a fast-changing context, policy experiments and a risk-taking attitude should be encouraged at all levels of governance.

# 1. INTRODUCTION

## 1.1. Study background

European industry is at the core of European growth and development and of EU values. It provides more than 52 million direct and indirect jobs, it represents more than 50% of European exports, and it accounts for approximately 65% of investments in research and development. Yet, as in other developed countries, Europe is at risk of de-industrialisation. (Szczepański and Dobрева, 2018)

There is renewed interest for industrial policy internationally since the 2000s and even more so in the aftermath of the 2008 crisis when it was reaffirmed that industry is a source of resilience, innovation, and even social stability. At EU level, several initiatives have emerged since 2000s, paving the way to the adoption in 2017 of an important Communication on “Investing in a smart, innovative and sustainable industry – A renewed EU industrial policy strategy”. This Communication proposes an integrated EU industrial strategy to whether the different challenges at work in the age of globalisation, climate change and new technologies. With the aim of re-organising all the policies, regulations and financial programmes in a comprehensive document, the 2017 Communication outlines the main direction and priorities for the implementation of the EU industrial strategy approach at EU level in cooperation and partnership with Member States, regions, cities and the private sector. It identifies six pillars on which the integrated approach relies and envisages a governance framework for promoting the involvement of relevant stakeholders at EU, national and regional levels.

## 1.2. Objectives and research questions

The primary aim of this study is to assess whether the new EU industrial policy strategy is adapted to the future challenges it will have to address. The objective is to provide Members of the ITRE Committee of the European Parliament with a comprehensive overview of the issues at stake in the development of an EU industrial policy strategy, and a critical assessment of the various measures and areas covered by the 2017 document.

The EU industrial strategy pursues a series of objectives, which, according to the 2017 Communication, should be addressed through an overall integrated approach. It brings under the same umbrella a vast array of policy measures and areas. For analytical convenience, this study classifies these measures in three groups governed by distinct underlying intervention logics. These policy measures and areas correspond to (i) the horizontal nature of industrial policy and the necessity to improve framework conditions; (ii) the challenges ahead with respect to the impacts of future technologies as well a mission-oriented approach addressing challenges of societal relevance; (iii) the need to address regional challenges and support regional development through a territorial approach.

## 1.3. Research design and methodology

The approach designed to address the questions above relies on an assessment framework elaborated in Chapter two on the basis of a review of changes industrial policy paradigms, and of the main challenges ahead. The following methodological tools are engaged to collect evidence and form judgement:

- Documentary analysis to identify policy measures and areas, and available assessment evidence;
- Semi structured interviews with EC officials responsible for the implementation of policy measures covered by the EU industrial strategy;
- On-line consultations to explore the views of stakeholders affected at national levels by these measures;

- 4 regional case studies + 1 national case study to understand how EU policies are implemented on the ground;
- Peer review with 4 academic experts to test preliminary conclusions derived from findings.

## 2. SETTING THE SCENE – CONSTRAINT AND OPPORTUNITIES FOR A FUTURE-ORIENTED EU INDUSTRIAL STRATEGY

### KEY FINDINGS

- There is renewed interest for industrial policy in developed countries, as well as a change in paradigm with the diffusion of a “systemic approach”. In this approach, the emphasis is on market creation, on strategic and mission-oriented objectives, place-based principles, and policy learning and experiment. How to implement industrial policy has become decisive, at least as much as the objectives pursued.
- The new features of the systemic approach are at work across Member States, even if there are specific national pathways, rooted in historical traditions.
- In the future, the EU industrial strategy will have to face “megatrends”, related to technological and socio-economic changes as well as EU specific developments (a particular concern for environmental sustainability, and future changes in the political and institutional setting).
- In this context, four main criteria can be identified to assess whether the EU industrial strategy is fit to tackle future challenges:
  1. identify and commit to a (set of) long-term overarching objectives;
  2. bring together several policy domains in a holistic and integrated approach;
  3. account for local dynamics of change so as to preserve socio-economic and territorial cohesion across Member States and regions;
  4. vertically and horizontally coordinate stakeholders and favour experimentation and policy capacity development.

This chapter explores the different factors that need to be taken into account in order to assess how fit for the future the EU industrial policy strategy is. This includes new conceptual trends in the field of industrial policy, and their concrete implementation through different national approaches, as well as global megatrends. On this basis, a set of hypotheses are inferred that the study will consider in order to determine whether the EU industrial strategy is appropriately designed to address future challenges.

### 2.1 A new paradigm for industrial policy

#### 2.1.1. A new Industrial Policy approach

Over the past two decades, the global manufacturing landscape has been reshaped by profound structural transformations. These structural dynamics have been mainly driven by changes *within* and increasing interdependences *across* national manufacturing systems as well as alterations to their underpinning sectors and technologies. In this respect the global financial crisis has been accelerating ongoing structural trends in terms of redistribution and polarization of manufacturing production across countries and regions. Deindustrialization, increasing trade imbalances, and decreasing technological dynamism are now major concerns in advanced industrial economies.

The need to “reindustrialise” countries has been advocated by several international programmes, such as the Juncker Plan in Europe, the Made in China 2025 programme, and the Indian National Manufacturing Policy.

The European Commission published a series of Communications explicitly addressing the issue of an “EU industrial policy”. In particular, the Communication “Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy” (in 2017) highlights the importance of a more integrated approach in order to achieve the European industrial policy’s objectives.

This renewed interest has come after decades of disengagement of public intervention in the realm of industrial policy. The controversial nature of industrial policy is testified to by the fact that there is actually no universally agreed definition of the term (Chang, 1996; Stiglitz and Greenwald, 2015; Stiglitz and Lin, 2013; Warwick, 2013). According to Rodrik (2009), industrial policy “denote[s] policies that stimulate economic activities and promote structural change”. The reference to “structural change” suggests that industrial policy should ensure that the economy is able to keep growing over the very long term by guiding industry towards new opportunities and from traditional activities to new activities, which involve producing new goods with new technologies. Moreover, it suggests that industrial policy is broader in scope than manufacturing sector development alone. It is well known that the boundaries between manufacturing and services have become blurred and that the services-manufacturing interaction is growing across industries. The term “industrial policy” embraces any policy affecting the sectoral composition of the economy or the choice of technology.

Current thinking about industrial policy results from an attempt to overcome the opposition between two historical radical positions: (i) a vertical approach adopted in the 50s and 60s aimed at correcting market failures and using instruments such as sector-based production subsidies, the promotion of national champions, nationalisation, etc.; and (ii) a horizontal approach adopted in the 70s to 90s aimed at avoiding public failures, based on trade liberalization, privatization, etc.. Indeed, the more recent theoretical developments go beyond the old dichotomies and advocates a “systemic” approach in which paying attention to the complex nexuses linking structures, institutions and policies in a particular context (Andreoni et al., 2018). A modern industrial strategy should provide the umbrella for ensuring the coherence and complementarity of public sector policies, based on clear objectives and without shying away from institutional change.

### 2.1.2. New industrial policy rationales

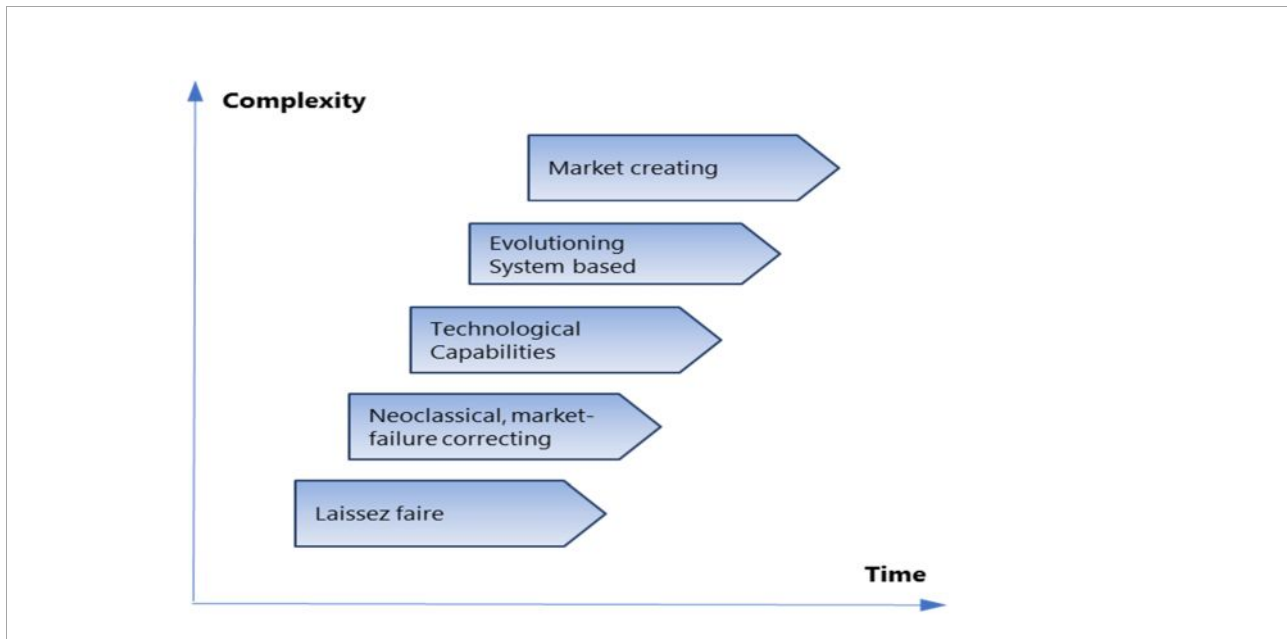
The global financial crisis in the late 2000s, and the following economic depression, led to two important shifts in the theory and the practice of industrial policy in the industrialised economies:

- A number of economies introduced strategies addressing deindustrialisation, declining industrial competitiveness and, thus, industrial restructuring;
- Particular emphasis has been given to the ‘new’ industrial policy rationales and the opportunities offered by specific ‘new’ policy areas, such as those targeting green industrial and technology transitions (Rodrik, 2014).

A number of scholars challenge the mainstream “market failure” paradigm as a main justification to carry out industrial policy along different research lines (Figure 1). Here we briefly discuss some of the more relevant ones.



Figure 1. The evolving rationale for industrial policies



Source: Authors

First, the Systems of Innovation literature has identified new policy rationales for innovation policy (Freeman, 1987; Lundvall, 1992; Nelson, 1993) that are relevant for industrial policy. These include infrastructural and institutional problems; technological lock-in, path dependency, and transition failures; quality of linkages and networks configuration failures; and issues related to learning dynamics at the firm, local network, and system levels (Klein Woolthuis et al., 2005; Malerba, 2002). Some of these policy rationales have been gradually adopted in the industrial policy debate under the heading of *systemic or network failures* (Chaminade and Edquist, 2006; Cimoli et al., 2009; Coe et al., 2008; Kuznetsov and Sabel, 2014; Stiglitz and Greenwald, 2015; Wade, 2012). All these contributions share a multilayered representation of industrial systems whereby agents (i.e., firms, research centres, intermediaries, etc.) are embedded in a network of horizontal and vertical interdependencies that determine their production and innovation performances. Systemic failures may unfold both within and across regional and national industrial systems.

Second, there is the “information externality” argument of Hausmann and Rodrik (Hausmann and Rodrik, 2002, 2006; Rodrik, 2004). In this argument, in addition to the failures of the market to coordinate investments between related industries and to supply “public goods” (such as rules, standards, or R&D), information externality is seen as a major obstacle to industrial diversification. An example is a situation wherein the benefits of investing in a new line of economic activity may spill over to other agents. In this case, the social value the initial investors generate exceeds their private costs. This could lead to underinvestment in new economic activities and, therefore, to a low level of diversification and innovation.

An alternative framework goes beyond fixing market and/or system failures, suggesting the need for industrial policy to transform, create and shape markets, thus moving from a static perspective to a more dynamic one that can create new innovation and industrial landscapes (Mazzucato, 2016). This alternative view justifies a more strategic and mission-oriented approach. In this context, industrial and innovation policies are about how to achieve transformational change. Mission-oriented policies are advocated to address grand societal challenges ranging from the demographic/ageing problem to the global challenges concerning climate change.

These mission-oriented policies require long-term commitment to the development of many technological solutions and a continuing high rate of technical change and a set of institutional changes.

### 2.1.3. Place-based approach

An important feature of a modern industrial policy should be the regional dimension. This dimension is relevant especially in Europe. Indeed, the European economy presents specific challenges in terms of sectoral specialisation and, relatedly, territorial polarisation. The existing divide between the “German-centred core” and the “Southern periphery” constitutes one of the greatest challenges that the European Union will have to tackle in one way or the other.<sup>1</sup>

A modern industrial policy should aim at reversing the polarisation process and its dangerous implications for territorial and social cohesion through a more tailored approach to regional development. This means:

- Building typologies that recognise differences between traditionally backwards regions, declining manufacturing regions and territories stuck in a “middle-income trap”;
- Defining new targets and creating new policy frameworks to better identify (and address) the asymmetric effects of horizontal measures;
- Achieving an inclusive structural change by favouring inclusive innovation.<sup>2</sup>

Promoting alternative development models require policy experimentation and greater risk-taking in regions facing specific challenges, such as the lack of an appropriate skill base or low level of innovation absorption capacity. Experimentation should become the building block of a learning process that would help to discriminate between the effective development approaches from the inefficient ones.

In line with this view, a multilevel governance model offers greater flexibility in the composition of an industrial policy package, and it allows for more selectivity in policy design, better monitoring, and policy enforcement. The composition and management of overall industrial policy packages are increasingly a major source of countries’ advantage, since policy measures are intrinsically interdependent.<sup>3</sup> However, it also requires building an articulated institutional infrastructure and achieving an industrial policy governance coordination among all the government actors in order to allow for interactive learning (Figure 2). Vertical interactions offer potential for the up scaling of best practices via higher level policies and policy support for the lower levels. Vertical and horizontal interactions are central to interactive learning process and to the diffusion of technical and political innovation. In addition, multilevel industrial policy governance is usually also conceived as multi stakeholder governance, making it a model that can address not only all scales but also all relevant interest groups in industrial policy governance.

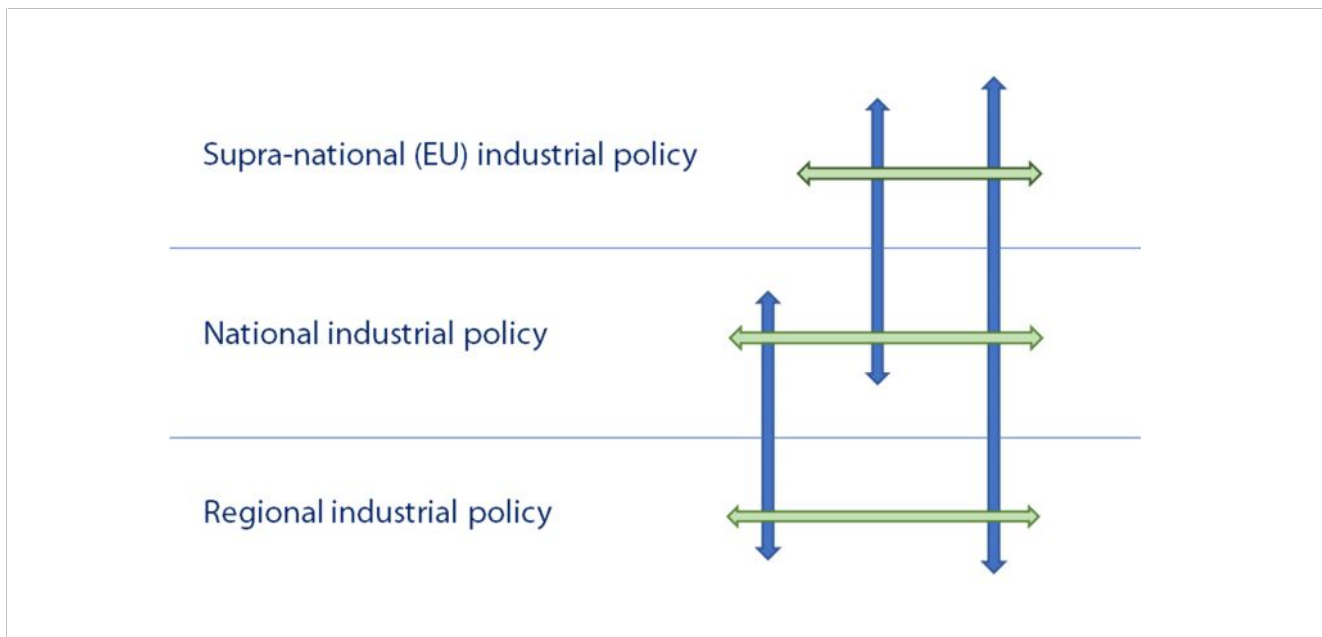
Adopting a multilevel governance model implies a need to pay attention to potential interactions, conflicts and tensions between goals, rationales, instruments and implementation approaches of different instruments at different levels and at different times.

<sup>1</sup> The current combination of globalisation and technological change favours geographical concentration of the best jobs and most innovative activities. There is therefore the risk that “traps” emerge in the less favoured regions.

<sup>2</sup> Inclusive innovation aims to enlarge the access of places (and individuals) to innovation processes and not to leave behind places (and categories of workers) (Ciarli et al., 2018).

<sup>3</sup> Industrial policy measures alignment within policy packages is a response to the need of managing interdependencies among different policy measures and their cumulative effects.

Figure 2. The multilevel governance model



Source: Authors

#### 2.1.4. Policy capacity

According to the new emerging paradigm of industrial policy the question about industrial policy is no longer the *whether* or the *what to do*, but rather the *how*. *How* individual countries or regions can design industrial policies in support of the political objectives set as well as *how* their respective public sectors can implement such policies efficiently and effectively. From this perspective recommendations on industrial policy should be judged not ideologically, but on the basis of whether they address systemic challenges that hinder an economy from delivering desired socio-economic outcomes.

All the above justifications of industrial policy, of course, do not mean that industrial policy measures are bound to succeed. Industrial policy measures that are theoretically sound can also fail because of various types of “government failure”: from the lack of political commitment to the lack of bureaucratic capabilities. The implementation issues are getting renewed attention and more refined discussions in the recent industrial and innovation policy literature (Karo, 2018).

The capabilities of the organisations implementing industrial policy matter. Not only the relevant government ministries and public agencies but also the private sector agencies (employers’ association, industry associations, trade unions, etc.) need to have adequate policy capabilities. At the same time, the interactions between the organisations implementing industrial policy are important. The relevant bodies (public and private) need to have good working relationships with each other and organisational structures that make coordination easier.<sup>4</sup>

The existence of desired capacities to deal with industrial development and structural change as a policy goal should not be assumed as given. On the contrary, by gaining a better understanding of public authorities’ capacities to deal with industrial policies, we also gain a better understanding of what the public authorities can do in this policy arena.

<sup>4</sup> These mechanisms are key to creating an entrepreneurial ecosystem in which familiarity and trust encourage investment in the capabilities needed to generate new competitive activities. At the same time, dialogue and feedback help to correct mistakes and minimize their costs, reducing the likelihood of abuse and capture of bureaucrats by business interests.

Innovative public organizations need to be equipped with specific capacities for bringing about innovation in government policies and institutions, or for supporting innovation in markets and society in general. Industrial policy has both a technocratic and a political economy dimension. Technocratic knowledge of the issues at hand are certainly needed and, therefore, building a qualified and dedicated bureaucracy with sound knowledge of the portfolio of policy instruments is part of the structural transformation challenge. In this respect, it is important that bureaucrats make informed decisions when designing public policy.

The political economy dimension stems from the fact that specific governments, agencies and bureaucrats are embedded in evolving economic, political and social context. Successful economies are those that are able to adapt their institutions and behavioural conventions to changing economic circumstances and evolving political and social preferences (North, 1993). Consequently, given the highly uncertain and contextual nature of the public intervention, the central issue is not simply to modernize the bureaucracy, but to move towards organizations, which support experimentation and risk-taking and develop “dynamic capabilities” in order to coherently explore innovative industrial policies and provide long-term visions. Here the technocratic and political economy dimensions interact closely. Examples of “dynamic capabilities” are:

- The ability to engage with a wide set of social actors and to encourage bottom-up engagement;
- The capacity to integrate social experiments and system level reflection in policy evaluation practices;
- The ability to develop new organizational forms in which (apparently) unrelated knowledge areas and organizational fluidity (e.g., cross-departmental teams) are present.

#### 2.1.5. Member States’ approaches to industrial policy

The trends inferred from the literature and reported in the sections above materialise to different extents at national and EU level. To illustrate this point, this section offers a brief account of the main historical evolutions of industrial policy at national level in selected countries. Over the last two centuries, European countries have implemented a wide spectrum of industrial, technology, and manufacturing policies. There is evidence of a variety of industrial policy pathways but there is also a number of similarities in countries’ industrial policy experiences and their common fundamental goals, which reflect some of the features characterising the emerging policy paradigm depicted in the previous section.

##### Germany

During the first two decades after the WWII, German industrial policy mainly focused on four axes: (i) regulation of the labour market, (ii) the development of an integrated vocational training system, (iii) creation of a basic science and industrial research infrastructure, (iv) public support for industrial finance. In particular, the public vocational training (the so-called “dual” training system) played a central role in increasing the functional flexibility of workers and their adaptability to technological change.<sup>5</sup> Since the mid-1970s, the German government increasingly developed its public R&D infrastructure built around two publicly funded networks of institutes: the Fraunhofer Society (for applied research) and the Max Planck Society (for basic research). With the reunification, a dual system of industrial policy was adopted: continuity for West Germany and specific policies directed towards East Germany.

<sup>5</sup> For more details on the German “dual” training system, see <https://www.bmbf.de/en/the-german-vocational-training-system-2129.html>.

In addition, strong support has been historically devoted to small, usually family-owned companies collectively known as the *Mittelstand*.<sup>6</sup> *Mittelstand* sustain a strategy of specialisation based on access to technological information available at regional level, and on the possibility of relocating part of the production process in the nearby Central and Eastern European countries. In turn, this has important implications for specialisation and industrial policy approaches in the latter countries (Katzenstein, 1998).

Recent changes in German industrial policy agenda put much effort on a stronger coordination of policies around “central missions”: climate/energy, health/nutrition, mobility, security, communication. The implementation of industrial and innovation policy involves not only various Federal government ministries but also the *landers* and the municipalities (multi-layered governance).

## Italy

Italy has had a long tradition of state intervention to promote industrial development; the extent of public ownership in manufacturing and utility companies has been by far the largest in the western world. Throughout the 1960s and 1970s state-owned enterprises were very active in the modernisation of utilities, building of infrastructure, and investments in heavy industries. The IRI (Istituto per la Ricostruzione Industriale), a multi-sectoral holding company fully owned by the state, and the Cassa per il Mezzogiorno (Cassa), a development bank, were the major tools for supporting the central government’s industrial policies aimed at reducing the North-South gap.

The early 1990s were a key turning point: Italy started implementing privatisation and liberalisation policies.<sup>7</sup> In addition, there was the definite end of “extraordinary intervention” in the Mezzogiorno. In the subsequent decades resources devoted to industrial policy were drastically reduced (Prota and Viesti, 2012). During the mid- 2000s there has been a tentative to start a new industrial policy course by proposing a new national industrial policy agenda called “Industria 2015”. This strategy should have promoted investments in innovation projects in specific areas, network amongst firms and new national venture capital funds. The results of this strategy have been modest.

Since the early 1990s the Italian public sector has undergone radical reforms pursuing higher decentralization. Nowadays the Regions play an important role in the field of industrial policies. The financial resources derive mainly from the European Structural Funds.

## France

France has been for a long time characterized by a centralized and Colbertist approach to industrial policy. The policy interventions were mainly sector based, aimed at promoting “grand projects”(Cohen, 2007). During the 1980s and the 1990s, due to the changed economic conditions, France had to give up its interventionist approach and especially its vertically integrated industrial policies.<sup>8</sup> Two major policies took center stage during this period: the deregulation of the big and the privatization of state-owned firms.

At the beginning of the 2000s, a new consensus favourable to active industrial policies emerged. One of the pillars of the new French industrial policy was the program “pôles de compétitivité”, designed to foster strategic, territorial collaborations among large firms, SMEs, academic labs and universities and, as a consequence, to enhance innovation through industrial partnerships and joint innovative projects.

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<sup>6</sup> The *Mittelstand* is often described as the heart of the German economy (Katzenstein, 1993).

<sup>7</sup> In the early 1990s, Italy was hit by a political-economic crisis and the government conducted restrictive economic policies.

<sup>8</sup> This change was in part due to the constraints imposed by the Maastricht criteria and the loss of control of the monetary policy as well as by the competitive system that characterises the European Union.

In 2012 the government has launched a “National Pact for Growth, Competitiveness and Employment” to revise a number of existing policy instruments (e.g. a reform/refocus of the cluster policy) and introduce new ones focusing on the emerging challenges of the French techno-industrial system (e.g. the implementation of new tax credit scheme for employment and competitiveness or the creation of a new national public investment bank).

## Central and Eastern Europe

In the period from the onset of transition the scope for industrial policy was determined by the overarching objective of strengthening European integrations and the measures were nested in the new classical framework of the Washington Consensus (Estrin and Uvalic, 2016). Within such a framework, policies promoting privatisation and FDI were recognised as one of the main channels for fostering capital accumulation, stimulating exports and subsequent expansion of employment and favouring structural change (Blazek et al., 2019).

Policies promoting FDI are still important, however nowadays, the economic policy has focused also on the goal of increasing the competitive environment and on the creation of programmes of regional development that embodied new formulations of horizontal industrial policy such as: (i) support for SMEs at a local level through the creation of decentralised business networks and industrial clusters; and (ii) an emphasis on “regional innovation systems” and knowledge transfer from public research and higher education institutions to the business sector (Stojil and Aralica, 2018).

## 2.2. Threat and opportunities: global megatrends and other challenges

In the next future, the EU industry will be exposed to particular threats but also to opportunities that are linked to existing and emerging challenges. A critical element to successfully tackle these challenges will thus be the ability of public and private stakeholders first to identify these challenges, and second, to design, adapt and implement an adequate industrial policy in response to them. Such challenges are ascribable to ongoing transformations relevant for industry at the global level or “**megatrends**”, defined as “large social, economy, political, environmental or technological changes that are slow to form but continue relentlessly over several economic cycles” (Naisbitt, 1982). In the following, a forward-looking approach is adopted in order to make explicit the threats and opportunities associated to these challenges (European Observatory of Clusters and Industrial Change, 2019).

The European Observatory of Clusters and Industrial Change has identified ten megatrends of high relevance to industrial development in Europe (European Observatory of Clusters and Industrial Change, 2019). They can be broken down into three categories, with specific threats and opportunities (Table 1):

- **Technological megatrends**, including Automation, Integration of subjects and objects, Data-driven world (including cybersecurity);
- **Socio-political megatrends**, covering Globalisation and geopolitics and Demographic shifts;
- **Environmental and smart-economy megatrends**, which are more specific to the EU context, including Green and circular economy, Urbanisation and smart city and Smart mobility.



Table 1. Main threats and opportunities associated to megatrends with high relevance to the EU industrial strategy

MEGATREND TYPES	THREATS	OPPORTUNITIES
<b>Technological megatrends</b>  (Automation, Integration of subjects and objects, Data-driven world and Cybersecurity and blockchain)	<ul style="list-style-type: none"> <li>• Inadequate regulatory approach to keep pace with technological advances and social demands (e.g., regarding rules on data protection, cybersecurity...)</li> <li>• Low levels of cybersecurity (risk for operations and innovation)</li> <li>• Limited social acceptability of technological change</li> <li>• Limited environmental sustainability</li> <li>• Limited interoperability and standards</li> <li>• Limited integration of the different technologies into business processes</li> <li>• Technological unemployment (especially in sectors such as transportation)</li> <li>• Changing skills requirements and difficulties for redundant workers</li> </ul>	<ul style="list-style-type: none"> <li>• Combination of mass production and customisation/flexibility using advanced technologies</li> <li>• Greater implication of the customer in the production processes</li> <li>• Development of new markets (especially using ICT)</li> <li>• Emergence of new job opportunities</li> <li>• Reduction of labour shortage risks in the context of an ageing population (robotisation)</li> <li>• Increased productivity</li> <li>• Potential for reshoring industrial activities to developed countries (e.g. use of 3D printing)</li> </ul>
<b>Socio-political megatrends</b>  (Globalisation and geopolitics and Demographic shifts)	<ul style="list-style-type: none"> <li>• Political tensions (domestic and international level)</li> <li>• Opposition to migration</li> <li>• Trade war, escalation of protectionism (e.g. commercial tensions with China)</li> <li>• Increased unfair competition (e.g. dumping)</li> <li>• Increased global competition and its negative consequences (e.g. closure of traditional industries)</li> <li>• Failed adaptation of healthcare and welfare systems (ageing population context)</li> <li>• Labour shortages due to ageing/retiring population</li> <li>• Environmental adverse effects of globalisation and population growth</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in business opportunities related to population ageing</li> <li>• Increase in business opportunities in developing countries (population growth and economic development)</li> <li>• Successful integration of migrants and older workers into the workforce (changing HR, education and training practices)</li> <li>• Increase in global talent pool (rising and more educated population)</li> <li>• Emergence of a new/more balanced model of globalisation (e.g. glocalisation)</li> <li>• Emergence of shorter / regional and/or circular value chains</li> </ul>
<b>Environmental and smart-economy megatrends</b>  (Green and circular economy, Urbanisation and smart city and Smart mobility)	<ul style="list-style-type: none"> <li>• Inadequate regulatory approach (e.g. targets on recycling, environmental norms, safety rules on autonomous vehicles...)</li> <li>• Inertia of current economic models, lack of social acceptability (e.g. regarding increases in fuel or carbon taxes)</li> <li>• Conflict between environmental and other economic and social objectives</li> <li>• Technical difficulties in adapting business models</li> <li>• Burdensome rise in costs (energy, natural resources...)</li> <li>• Technological unemployment (especially in the transportation/logistics sector)</li> <li>• Disadvantages of intensive urbanisation (e.g. congestion costs)</li> </ul>	<ul style="list-style-type: none"> <li>• Emergence of new business models (circular economy, ICT integration in cities and transportation...) and challenges to incumbents</li> <li>• Development of new sectors with potential benefits for first-movers (green economy, smart cities and mobility...)</li> <li>• Rise of a urban middle class in the developing world, unlocking new markets</li> <li>• Emergence of shorter / urban-regional value chains</li> <li>• Better integration of cities into value chains and business strategies</li> <li>• Emergence of new forms of mobility / improved logistics</li> <li>• Increased sustainability, reduced ecological impact of human activities</li> <li>• Climate change mitigation and adaptation</li> <li>• New models of cities (especially smart cities)</li> </ul>

Source: Authors based on European Observatory of Clusters and Industrial Change (2019).

Threats and opportunities induced by global megatrends are obviously strongly interconnected in a complex system, which makes the adaptation of the EU industrial policy particularly challenging. In particular, technological megatrends and the uncertain future of globalisation are expected to have very high impacts on the European industries (European Observatory of Clusters and Industrial Change, 2019). Recently, there has been an important focus by private and public stakeholders on the potential treats to the EU industry connected to the actions of the USA, with a tendency towards more protectionist policies under Trump administration (OCP Policy Center, 2017; Standard Chartered, 2017), and of China, with a series of unfair trade and competition policies (European Commission, 2017a).

Moreover, the impacts of the megatrends will differ depending on the industrial sector, but also on territorial characteristics. Indeed, the same megatrend can have diverging effects, i.e. rather be an opportunity or a threat, based on sectoral characteristics (e.g. age structure, technological intensity, diversity of activities...) and territorial aspects (e.g. differences in governance and institutions, distance to markets, level of integration and position in the value chains, level of development...). For instance, digital industries will likely be the most affected by the megatrends at play, securing a high number of opportunities because of its transversal nature (European Observatory of Clusters and Industrial Change, 2019). Similarly, while globalisation might be a threat to some territories that are falling behind, technological megatrends can reduce the importance of location and contribute to renewed value chains and reshoring to some areas (European Observatory of Clusters and Industrial Change, 2019; McKinsey Global Institute, 2017).

These differentiated impacts represent a serious challenge in the European context. Long-term megatrends such as globalisation and technological change have differentiated territorial impacts which can aggravate economic disparities and social fragmentation and have disproportionate effects on some EU regions. On one side, leading regions and cities benefit from agglomeration effects, innovation spill-overs, and the concentration of productive, innovative firms that employ high-skilled people, with high growth and investment results, while, on the other side, for middle-income regions with a modest skill base and declining labour force and low productivity, their lack of capacity to keep up with industrial and technological innovation leads to declining investment as well as stagnating growth and income.

In order to adapt the EU industrial policy to the challenges posed by megatrends, the following elements can be considered (European Observatory of Clusters and Industrial Change, 2019):

- Social acceptability of the different available options, and their potential consequences;
- Scenario-building and analyses of alternatives in order to avoid potential biases;
- Balance between potentially conflicting objectives (e.g. environmental protection might restrict growth under some conditions);
- Balance between the interests of different groups, e.g. on territorial, technological or sectoral bases;
- Establishment of concrete pathways or roadmaps towards objectives and consideration of the risk of delays.

Besides “megatrends”, the EU industrial policy will also be confronted to challenges arising from changes in the EU institutional and political context. In particular, two issues should be scrutinised concerning the evolution of the European budget (next Multiannual Financial Framework): the evolution of the overall budget and the breakdown between different approaches and priorities.



The Brexit complicates the future of the EU budget, with different credible scenarios (Haas and Rubio, 2017), notably a reduction in total resources which could threaten the potential of the EU industrial policy. Similarly, Brexit could have negative consequences on trade and industrial value chains, especially for some Member States.

## 2.3. Assessment framework of the EU industrial policy

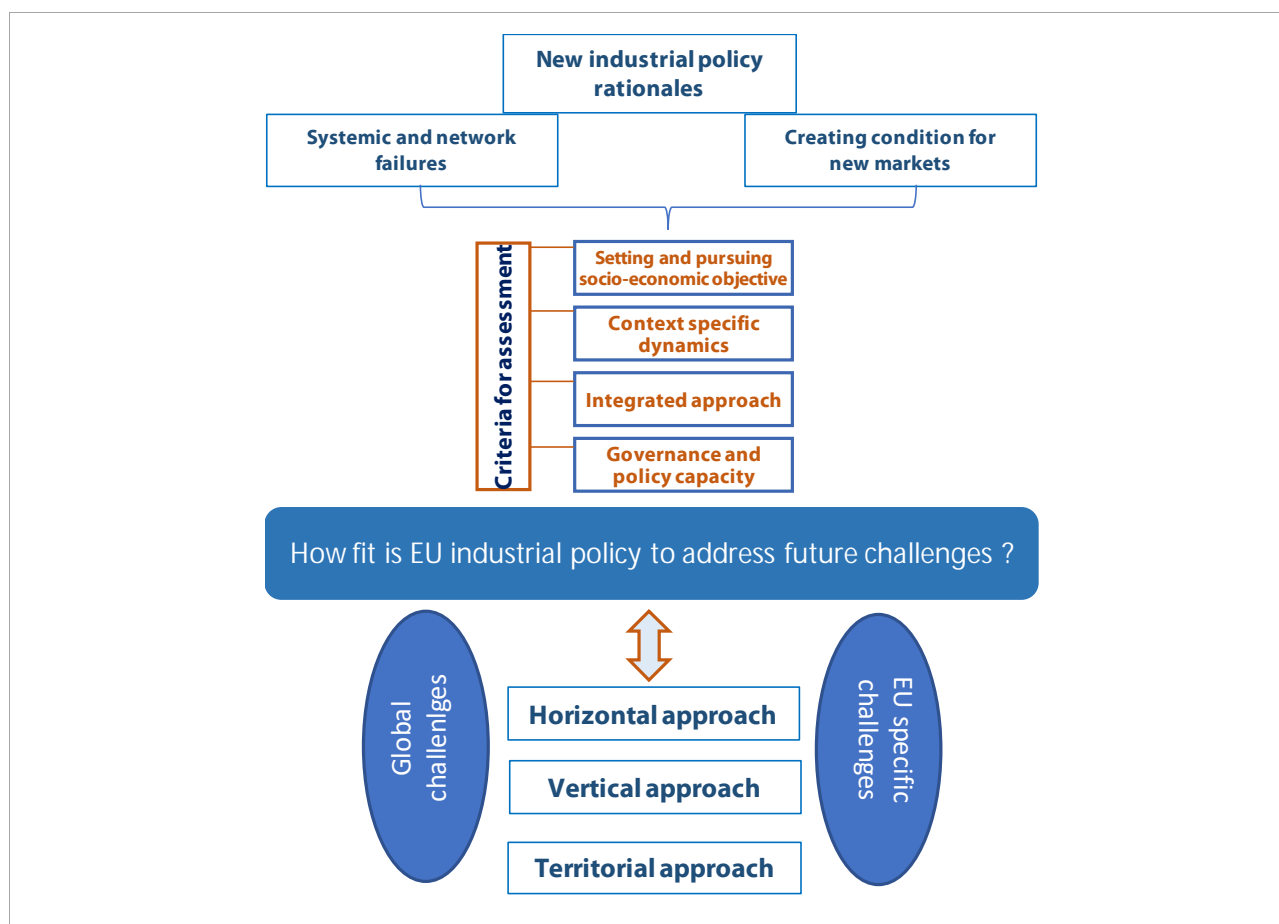
The present study relies on a specific assessment framework to determine the capacity of the EU industrial strategy to address future challenges. This framework draws from the implications of a new policy paradigm for industrial policy presented above. Four main criteria are thus identified along which the EU industrial strategy will be assessed (see also Figure 3 below):

1. The first criterion is about the idea of providing a direction to the change by selecting socio-economic objectives, which address societal challenges and respond to the megatrends discussed above. This means that industrial policy should frame the process and provide the direction towards new techno-economic paradigms that did not emerge spontaneously out of market forces. **The EU industrial policy strategy should be assessed against its capacity to identify a (set of) pertinent long-term overarching objectives**, and to throw its weight behind them in terms of instruments and budgetary means.
2. A second criterion concerns the necessity to adopt an integrated industrial policy framework that captures the different socio-economic and institutional dimensions of structural change. This requires to mobilise and combine different policy domains (innovation, education and training, employment, etc.). These different policies pursuing different (often pre-existing) objectives through different approaches should form a coherent and coordinated set, which tries to avoid or mitigate conflicts of objectives. Such an umbrella approach should be able to cope with trade-offs such as competitiveness vs. cohesion, growth vs. environmental protection, etc. Hence, it should be **assessed whether the EU industrial policy strategy provides an integrated framework bringing together different policy domains in a coherent and coordinated way**.
3. A third criterion has to do with the importance of considering the historical and context-specific dynamics of structural change. The challenges countries or regions face in benefitting from technological change and global production – or in mitigating their potential drawback depends on a range of factors that are highly variable and of different nature (socio-economic, institutional, historical and cultural factors). As a result, policies pursuing structural change bring about differentiated outcomes depending on the specific setting in which they are implemented. In the European context, the risk is that this leads to industrial polarisation both across and within countries and threatens economic, social and territorial cohesion, with leading regions consolidating their advantages and less developed ones at risk of falling behind. **The strategy should therefore be assessed for its capacity to design policies that account for the specificity and diversity of different contexts so that all countries and regions keep the pace with the challenge of competitiveness**.
4. All three criteria above require building an articulated institutional infrastructure achieving an effective industrial policy governance. This governance structure has to acknowledge the fact that economic and social agents are embedded in a network of horizontal and vertical interdependences that determine their economic and innovation performance. On the one hand, the vertical coordination between levels of government is necessary in order to define a differentiated and tailored approach taking into account the specific regional endowments and the context specific interdependences between actors.

On the other hand, this structure should ensure the inclusion and horizontal coordination of public and private stakeholders (Member States, NGOs, civil society) at all levels (EU, national, and regional levels). This requires adapted skills within the organisations implementing industrial policy (both public and private entities) and adequate interactions between them. This criterion also covers the ability of the strategy to be reactive and experimental. The strategy should engage into constant learning processes based on trial and error allowing for incremental adaptation.

A key aspect of this criterion thus refers to the “policy capacity”<sup>9</sup> necessary to carry out the strategy successfully. Overall, **the EU strategy should be assessed regarding its governance arrangement, i.e., its ability to vertically and horizontally coordinate stakeholders as well as to favour experimentation and policy capacity development.**

Figure 3. How to analyse the EU industrial strategy: a graphical representation



Source: Authors

<sup>9</sup> Intended in broad terms i.e., not only skills for designing and implementing policies, but also the suitability of the governance arrangements themselves to adapt and experiment.

This report critically analyses whether the EU industrial strategy is coherent and provides convincing answers to the criteria discussed above. To ease the analysis, rather than addressing the concerned measures and policies as a whole, the latter are regrouped under three main categories characterised by distinct underlying intervention logics. These categories, or streams of policies, are identified as follows:

1. **Horizontal approach and framework conditions:** Interventions shaping framework conditions, general business and growth environment (including human capital or innovation system). They notably rely on regulatory instruments;
2. **Thematic-sectoral approach:** Interventions with respect to specific sectors (e.g., steel, space...) and themes (including thematic missions, such as the struggle against climate change). They usually mobilise funding and/or groups of stakeholders to achieve specific objectives;
3. **Territorial approach:** Interventions accounting for place-specific challenges and supporting regional development. They typically use funding and multilevel governance arrangements.

Each stream is associated with a set of specific issues at stake (Table 2).

Table 2. Types of approach and key issues at stake

TYPE OF APPROACH	ISSUES AT STAKE
<b>Horizontal approach and framework conditions</b>	Impact of the regulatory environment; role of public procurement as a driver for smart, sustainable and innovative technology; framework of intellectual property rights; impacts of standardization
	Impacts of changing value chains, sustainability challenges, shifts in global demand and structural weaknesses
	Shortage of skills issue
	International issues: globalization, trade agreements, relocation, reshoring, critical raw materials etc.
	Framework conditions for SMEs; innovation and impact on new marketable industrial products; market relevance of innovative activity and uptake of technologies, especially by SMEs and in traditional industries; SMEs upscaling.
<b>Thematic-sectoral approach</b>	Industrial modernisation; digitalisation; cybersecurity; low-carbon and circular economy; lean energy initiatives; low emission mobility.
	Sector-specific measures (steel, space, defence and other industries); possible rebalancing structure of EU industry; key enabling technologies
<b>Territorial approach</b>	Deindustrialization / reindustrialisation in certain EU regions; severe underdevelopment of industrial activity and regional disparities.

Source: Authors based on Terms of Reference

### 3. A LONG-TERM PERSPECTIVE ON THE DEVELOPMENT OF AN EU INDUSTRIAL POLICY STRATEGY

#### KEY FINDINGS

- The EU approach to industrial policy has gone through different phases since the 1950s. A horizontal approach to industrial policy has emerged at the EU level since the 1980s, gradually complemented with more sector-specific measures since the 1990s.
- Since the 2000s, the ambition of an integrated approach to industrial policy has gained momentum, highlighting the combination of multiple relevant policies in a holistic perspective. The consideration of how individual sectors might react differently to identical horizontal interventions was stressed. Industrial policy started to be seen as a response to emerging challenges such as globalisation and technological progress since then.
- The 2017 Communication “Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy” proposes a comprehensive summary of all the EU policies contributing to industrial development, emphasising the ambition of an integrated approach consistent with developments during the 2000s and 2010s.
- The 2017 Communication defines six pillars: two thematic (digitalisation and green economy) and four more horizontal in nature (Single Market, internationalisation, investments and innovation).
- Specific emphasis is placed on governance and cooperation between stakeholders.

As mentioned in the 0, there have been long-term evolutions in the rationales and intervention modalities of industrial policy since the 1950s worldwide, with linkages between theoretical developments, political-economic context and implemented strategies and measures. In particular, this process is noticeable at the EU level, with different phases of industrial policy distinguishable. As a *sui generis* organisation, the EU has specificities that can explain parts of the observed evolutions, including the gradual move towards a closer and deeper Union (more integration), the particular distribution of competences between levels of governments and the coexistence of different national traditions influencing the EU industrial policy approach.

In this Chapter, the strategies of the EU regarding industrial development are first reviewed using a long-term perspective. A specific focus on the 2017 Communication is then provided, because it presents the current framework of the EU industrial policy, as of early 2019. It paves the way for a review of individual measures included in this 2017 Strategy (0) and a critical analysis of the current strategy regarding its ability to tackle future challenges (0).

#### 3.1. Synthetic overview of historical developments

##### 3.1.1. Major phases and definition of the EU industrial policy strategy

Three major phases of EU industrial policy can be distinguished (Authors based on Bianchi and Labory, 2010; Dhéret and Morosi, 2014; European Parliament, 2015; Gouardères and Horl, 2017). Table 3 below summarises the political and economic context, the main industrial objectives and key instruments used during each historical period.

Table 3. Major phases of the EU industrial policy in a historical perspective

HISTORICAL PERIOD	POLITICAL AND ECONOMIC CONTEXT	MAIN INDUSTRIAL OBJECTIVES	KEY INSTRUMENTS	DOMINANT INDUSTRIAL POLICY APPROACH
1950s – 1970s	<p>Post-World War II economic boom</p> <p>Catching up phase with the United States</p> <p>Oil crises / stagflation</p>	<p>EU level:</p> <ul style="list-style-type: none"> <li>• Expand and coordinate specific industrial sectors (coal and steel)</li> <li>• Promotion of high-tech industries</li> </ul> <p>Member States' level:</p> <ul style="list-style-type: none"> <li>• Creation of a single market, support to trade</li> </ul> <p>Member States' level:</p> <ul style="list-style-type: none"> <li>• Sectoral restructuring and sector-specific support</li> </ul>	<p>EU level:</p> <ul style="list-style-type: none"> <li>• Reduction of tariffs and trade barriers</li> <li>• Price controls</li> <li>• Collaborative R&amp;D</li> </ul> <p>Member States' level:</p> <ul style="list-style-type: none"> <li>• Sectoral subsidies, mergers and national champions</li> <li>• <i>Grands Projets</i> (Great projects)</li> <li>• Protectionist measures</li> </ul>	Thematic – Sectoral
1980s – 1990s	<p>Neoliberalism and deregulation</p> <p>Consolidation of EU integration</p>	<p>EU and Member States' level:</p> <ul style="list-style-type: none"> <li>• Competitiveness, innovation and growth</li> </ul>	<ul style="list-style-type: none"> <li>• Openness of markets</li> <li>• Focus on framework conditions / business environment</li> </ul>	Horizontal
2000s – onwards	<p>Globalisation</p> <p>Fast technological progress</p> <p>Major EU enlargements</p> <p>Deindustrialisation of advanced countries</p> <p>2008 crisis and its aftermath</p>	<p>EU and Member States' level:</p> <ul style="list-style-type: none"> <li>• Competitiveness, innovation and growth, but also inclusion, sustainability...</li> </ul>	<ul style="list-style-type: none"> <li>• Mainly framework conditions and business environment in an extended meaning (e.g. training...)</li> <li>• Complemented by sectoral (e.g. tech-specific) and territorial instruments</li> </ul>	From horizontal to mixed/integrated?

Source: Authors based on European Parliament (2015) and EPC (2014)

The three major phases highlighted in the table above clearly demonstrate that there is a lack of stable definition of industrial policy in the EU in the long-term, in terms of goals, approaches and individual instruments mobilised. Moreover, EU interventions that contribute to industrial development have not always been explicitly identified as contributing to a well-defined industrial policy, especially before the 1970s (European Parliament, 2015).

These long-term shifts in the EU industrial policy can be explained by general contextual changes (e.g., political ideologies, technological progress...) and by the interactions between the EU institutions and the Member States. Indeed, Member States tend to be reluctant to share the competence of industrial policy with the EU level (Dhéret and Morosi, 2014). It is strengthened by the relatively fragile legal basis for EU intervention in the field (Dhéret and Morosi, 2014; Gouardères and Horl, 2017), which is set out mainly in article 173 of the TFEU (European Union, 2010). In fact, interventions in the field of industry are considered as a “supporting competence” of the EU (European Commission, 2019a).

Therefore, despite the recognition of the role of the EU in promoting specific measures in support of the action taken in the Member States to achieve specific objectives<sup>10</sup>, the EU has legally only a function of coordination between Member States’ industrial policies. Moreover, an additional paragraph stipulates the exclusion of any harmonisation of the laws and regulations of the Member States, further limiting EU intervention (European Union, 2010).

### 3.1.2. 1950s – 1970s: Member States’ interventionism and early EU industrial support

The first successful steps of the European integration process have deep industrial roots, as shown by the European Coal and Steel Community (ECSP). Founded in 1951, the main aim of this Community was to improve the provision of coal and steel, then in short supply (European Parliament, 2015). It used interventionist instruments to reach that goal, including minimum prices, quotas and trade protection. After the consolidation of the sector and its transition to over-supply, the policy was conserved as a form of community coordination. As a consequence, the ECSC can be considered as the first EU-wide industrial policy, though limited to a single sector.

With the birth of the European Economic Community in 1957, industrial policy was not explicitly mentioned at the Community level. However, this phase is characterised by very intensive economic State interventions in most Member States, according to different modalities and with a considerable influence of the French model (European Parliament, 2015). Interestingly, these developments occurred while concomitant actions at the Community level aimed at increasing competition and moving towards a more unified market with free flows of goods.

The first step towards a more explicit industrial policy at the Community level was the release of a memorandum in 1970, which highlighted the “improvement of the conditions in which firms operate in the Community, the ability of the Community’s industry to adjust, and the promotion of technologically advanced industries.” (European Parliament, 2015). During the 1970s, crises (such as the 1973 and 1979 oil crises), as well as political dynamics (e.g. rise of monetarist influence) transformed the industrial policy approach in several countries (Bianchi and Labory, 2010).

<sup>10</sup> The objectives are set out in art. 173.1 and are respectively: speeding up the adjustment of industry to structural changes, encouraging an environment favourable to initiative and to the development of undertakings throughout the Union, particularly small and medium-sized undertakings, encouraging an environment favourable to cooperation between undertakings, and fostering better exploitation of the industrial potential of policies of innovation, research and technological development.

### 3.1.3. 1980s – 1990s: EU integration and horizontal approach

Starting from the late 1970s and the 1980s, the traditional industrial policy approach based on State interventionism have been increasingly criticised at the global level, for instance based on inefficiencies and risk of capture by industrial lobbies (Bianchi and Labory, 2010). At the European level, this period was accompanied by a focus on building the single market and further integration, with milestones such as the Single European Act of 1986, the 1992 Maastricht Treaty founding the EU and the four freedoms of 1993 (European Commission, 2016a).

Consistently with these developments, the EU Member States typically adopted horizontal policies rather than sector-specific support in their national policies. Even though the concept of industrial policy itself was less popular in policy-making during this period, it is in 1990 that one of the first explicit references to a European industrial policy approach since the foundation of the European Community was made, through the Communication entitled “Industrial Policy in an Open and Competitive Environment: Guidelines for a Community Approach” (European Commission, 1990). The emphasis of the EU approach was placed on the importance of structural adjustment, with the idea of maintaining a favourable business environment and an open approach to market. Moreover, for the first time a Commission Communication reflected a convergence of views and an implicit agreement on common principles for industrial policy between Member States. Consolidating the 1990 Communication, the Maastricht Treaty establishing the European Community in 1992 (European Union, 1992) provided the sound legal basis for this Industrial Policy at the Community level.

This phase is also notable for the explicit acknowledgment of the importance of advanced technologies, such as ICT, at the EU level. It is in particular demonstrated by the attention dedicated to Information Society in the EU (European Parliament, 2018a). Critically, industrial policy and innovation policy were seen as deeply intertwined during that phase (European Parliament, 2015).

### 3.1.4. 2000s – onwards: Renewed interest in a more extensive EU industrial policy

With the advent of the new millennium, several factors contributed to a renaissance of the interest for industrial policy at the national level, highlighting the importance of a pragmatic approach compared to highly politicised debates in the 1980s (Bianchi and Labory, 2010). Such factors include globalisation, EU enlargements, deindustrialisation (both due to technological progress and to a lesser extent to delocalisation to low-wage countries), slow growth and lagging productivity gains compared to the US and emerging countries (Aiginger and Sieber, 2006; European Parliament, 2015). However, it was especially the global and financial crisis of 2008 and the severe recession that followed, which prompted governments to give financial support and favoured the return of the view of the active involvement of governments in strengthening the position of European industry (Owen, 2012).

The high number of Commissions Communications on the topic of industrial policy since the 2000s reveals that this policy has also experienced a rise in interest at the EU level. All of them emphasise the need to raise the EU industry's production and improve its competitiveness across all different dimensions, calling EU Member States to pursue an integrated approach to industrial policy mobilising several policy domains and to fine-tune their strategy to reach these goals (Dhéret and Morosi, 2014). Overall during this phase, both the national and European approaches have been characterised by the continued commitment to horizontal actions targeting the improvement of framework conditions in which businesses operate. However, it has been complemented by a broader vision, taking into account sectoral specificities (European Parliament, 2015) and technological issues (e.g. support to Key Emerging Technologies).

More precisely, the evolution of the EU approach during this period, as reflected in the different Communications published by the European Commission, is synthesised in Table 4 below.



Table 4. Evolution of the EU industrial policy approach since the 2000s

REFERENCE PERIOD	MAIN COMMUNICATIONS ON EU INDUSTRIAL POLICY		SPECIFIC POLITICAL AND ECONOMIC CONTEXT	MAIN FEATURES OF THE EU APPROACH
2000s - onwards	"Industrial Policy in an Enlarged Europe"	COM (2002) 714	<ul style="list-style-type: none"> <li>• Globalisation</li> <li>• Increased global competition (e.g. industrial conglomerates from emerging countries such as China)</li> <li>• Emergence of new technologies</li> <li>• Fear of deindustrialisation</li> <li>• Rising attention to challenges related to ICT, climate change...</li> <li>• Adoption of the single currency and expansion of the internal market to the European Economic Area (EEA),</li> <li>• EU enlargements in 2004-7</li> <li>• 2008 economic and financial crisis and the consequent attention towards the need to stimulate economic recovery</li> <li>• Renewed interest for industrial policy in the academic and grey literature</li> </ul>	<ul style="list-style-type: none"> <li>• Continuing primacy of the horizontal perspective (versus more interventionist stances)</li> <li>• Rising advocacy for an integrated multi-policy approach (mobilisation of different relevant policies for industrial goals)</li> <li>• Ambition to exploit synergies between different EU policies and consideration of how different industrial sectors might react to the same horizontal interventions.</li> <li>• Gradual development of wider and balanced policy objectives (e.g. consideration of sustainability beyond sole competitiveness)</li> <li>• Attention towards deep structural reforms (especially post-crisis)</li> </ul>
	"Key Issues in Europe's Competitiveness"	COM (2003) 704		
	"Fostering Structural Change: an Industrial Policy for an Enlarged Europe"	COM (2004) 274		
	"Implementing the Community Lisbon Programme: A Policy Framework to Strengthen EU Manufacturing — Towards a More Integrated Approach for Industrial Policy"	COM (2005) 474		
	"An Integrated Industrial Policy for the Globalisation Era - Putting Competitiveness and Sustainability at Centre Stage"	COM (2010) 614		
	Industrial Policy: Reinforcing Competitiveness"	COM (2011) 0642		
	"A Stronger European Industry for Growth and Economic Recovery"	COM (2012) 582/3		
	"For a European Industrial Renaissance"	COM (2014) 0014		

Source: Authors based on European Commission's Communications on EU industrial policy

**Note:** The 2017 strategy will be analysed in further details in the Section 3.2., at it serves as the basis for the review of EU industrial policy measures in Chapter 4 and for the critical analysis in Chapter 5.



As shown in the Table above, the core feature of the period beginning in the 2000s has been the development of the ambition of the EU to move towards an integrated approach of industrial policy, i.e. able to articulate different relevant policies for industrial development. It has also aimed at accounting for sectoral specificities in horizontal interventions (i.e. take into consideration how different sectors might react differently to horizontally designed policies, such as innovation or training). The integrated approach ambition was notably developed with the 2005 Communication entitled “Implementing the Community Lisbon Programme: A Policy Framework to Strengthen EU Manufacturing — Towards a More Integrated Approach for Industrial Policy” (European Commission, 2005). While re-assessing the horizontal nature of industrial policy, the European Commission also pushed for the introduction of sector-specific measures to make the horizontal interventions effective (European Parliament, 2015).

This paradigm set out in the context of the Lisbon Agenda in 2005 was pursued with continuity in the following years. The “Mid-term review of industrial policy - A contribution to the EU’s Growth and Jobs Strategy” (European Commission, 2007) was issued to provide a first assessment of the horizontal and sectoral policy initiatives introduced with the 2005 Communication. Based on the economic developments as well as experiences and feedback on the key pillars of the 2005 Industrial Strategy, the 2007 Communication stated that the integrated approach had proved to be successful. Nevertheless, it also advocated for a better coordination between the EU industrial policy and national policy actions. Last but not least, it championed the need to introduce additional policy initiatives aimed at responding to the main challenges of the time, namely technological developments and climate change. It thus testifies of the tendency to connect industrial policy to wide social and economic objectives.

The ambition of a more integrated approach and the connection of industrial policy to wide socio-economic objectives have been reaffirmed in Communications after the crisis. In particular, the importance of industry has been highlighted with a dedicated flagship initiative in the framework of the Europe 2020 Strategy (replacing the Lisbon Agenda). In line with the overall ambitions and macroeconomic goals of the Europe 2020 Strategy, this flagship initiative on “An Integrated Industrial Policy for the Globalisation Era” has claimed to propose “*an ambitious strategy framework for a new industrial competitiveness policy*” by putting the “*competitiveness and sustainability of European industry at centre stage*” (European Commission, 2010). It has thus claimed to combine objectives sometimes seen as conflicting, i.e. competitiveness and sustainability. Concretely, the flagship initiative have encompassed several policy initiatives and reaffirmed the complementarity of horizontal policies and sectoral specificities. Communications related to industry have also explicitly prioritised structural reforms for economic recovery in the aftermath of the crisis (European Commission, 2011) and the importance of industry for future jobs and growth (European Commission, 2012, 2014a).

As a consequence, it is clearly observable that there have been major shifts in the EU industrial approach in the long-run. However, some elements should be nuanced by highlighting a potential gap between stated ambitions in policy documents and actual implementation. For instance, the actual degree of integration of different policies to reach industrial objectives promoted by the recent Communications can be challenged by the fact that different “definitions” of industrial policy still appear to coexist in official documents and strategies, e.g. the expression can be used in a meaning emphasising the role of manufacturing activities or in a much broader sense, covering services (Dhéret and Morosi, 2014). It can lead to inconsistencies, especially for some potentially conflicting objectives (e.g. sustainability versus innovation/competitiveness). Moreover, because of the limited legal basis for EU actions in industrial policy, its actual levers of action to impulse structural industrial change rely on instruments from other policies and coordination/consultations soft tools with Member States and other stakeholders (Dhéret and Morosi, 2014).

Tensions between the EU and Member States regarding the approach to adopt for industrial policy are also continuing, for instance around the issues of competition law (Alstom-Siemens merger case).

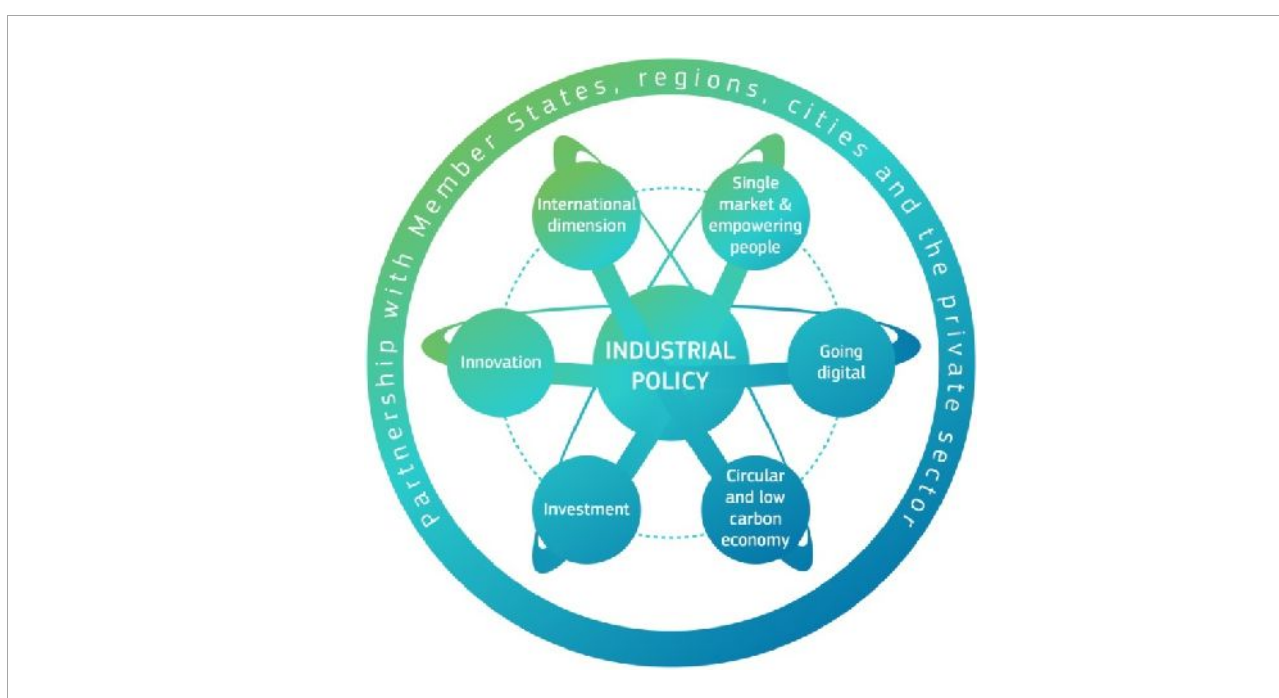
The 2017 EU industrial strategy at the centre of this study is clearly in the continuity of previous developments since the 2010s. It will be presented in further details in the following section.

### 3.2. The 2017 Communication “Investing in a smart, innovative and sustainable industry – A renewed EU industrial policy strategy”

With the aim of presenting an organised view of all the policies, regulations and financial programmes relevant to industry in a comprehensive document<sup>11</sup>, the 2017 Communication outlines the main directions and priorities of the EU industrial strategy approach in the current period (European Commission, 2017b). It does not explicitly mention an integrated approach, but is consistent with it in the continuity of the 2000-10s Communications. Indeed, it mobilises a wide range of EU policies, combining the traditional horizontal approach with sector-specific measures. It also aims at tackling several wide socio-economic objectives, especially digitalisation and the green economy.

According to the 2017 document, the EU industrial strategy rests on six different pillars, that are briefly summarised below:

Figure 4. The six pillars at the heart of the 2017 EU Industrial Policy Strategy



Source: European Commission (2017b)

These pillars are placed on an equal footing in the Commission Communication, but this classification system is fluid, in the sense that the identification and names of the different pillars can vary across the different policy documents of the Commission (European Commission, 2017b, 2017c). For instance, some European Commission officials regroup the pillars in the following categories (Authors based on interviews, 2019):

- Two main thematic concerns: digitalisation and green economy
- Four “i”: Internal market; Investments; Innovation; Internationalisation

<sup>11</sup> Even if the 2017 Communication lists the vast majority of EU policies and measures that contribute to industry, it does not include some that can be critical for the development and competitiveness of some sectors. For instance, REACH and the SEVESO directives are not mentioned, while essential to the chemical industry.

Sector-specific consideration, such as the EU space strategy or Key Enabling Technologies, should also be added. As a consequence, the description of the different pillars will be briefly presented in Table 5 below, but the assessment framework developed in this study will be used for the further presentation of measures (Chapter 4) and critical analysis (Chapter 5).

Table 5. Description of the six pillars of the EU 2017 industrial policy strategy

PILLAR	MAIN OBJECTIVE	EXAMPLE OF POLICY OR INSTRUMENT
<b>Green and low carbon economy</b>	Sustainability plays a key role in the EU industrial strategy. In particular, the transition to a low carbon and a circular economy is at the basis of the fight towards climate change and of the fulfilment of sustainable development goals.	<ul style="list-style-type: none"> <li>• Sustainable Development Agenda for 2030</li> <li>• EU Raw Materials Initiative</li> <li>• Action Plan on Sustainable Finance</li> <li>• ESIF funding for sustainable development projects</li> </ul>
<b>Digitalisation</b>	As digital transformation is at the heart of the current industrial revolution, boosting the uptake of smart technologies in the European industrial value chains is one of the objectives to foster Europe's competitiveness.	<ul style="list-style-type: none"> <li>• Digital Single Market</li> <li>• Digitising European Industry Initiative</li> <li>• EFSI, ESIF and H2020 funding for digitalisation</li> </ul>
<b>Investment</b>	With the aim of driving industrial transformation, additional and increasing investments are needed in order to facilitate the uptake of promising innovation and improve the framework conditions for the scale-up of dynamic SMEs.	<ul style="list-style-type: none"> <li>• Capital Market Union and Start-Up Initiative (Single Market Strategy)</li> <li>• Fintech initiative</li> <li>• European Venture Capital Funds</li> </ul>
<b>Innovation</b>	Supporting industrial innovation is one the key objective of the strategy as it will accelerate and improve the uptake of technologies in Europe, thus preventing that risk-bearing disruptive innovations will create new markets outside the EU.	<ul style="list-style-type: none"> <li>• Innovation Union</li> <li>• H2020 and COSME funding for industrial innovation</li> <li>• European Innovation Council Pilot</li> </ul>
<b>Internal market</b>	The completion of the single market is conceived both in terms of further integration of companies in European and global value chains and of higher fairness in the access to education, training and technological skills.	<ul style="list-style-type: none"> <li>• EU Skills Agenda</li> <li>• EU Pillar of Social Rights</li> <li>• Services packages</li> <li>• Intellectual property package</li> <li>• ESF, Erasmus+ and EGF funding</li> </ul>

PILLAR	MAIN OBJECTIVE	EXAMPLE OF POLICY OR INSTRUMENT
<b>Internationalisation</b>	With the aim of ensuring that Europe operates on a global level playing field, an open and rules-based trade is necessary to prevent the threats of globalisation. Therefore, the issue of internationalisation should be addressed through the strengthening of trade defence instruments and a new framework for screening foreign direct investments	<ul style="list-style-type: none"> <li>• Trade agreements with other countries</li> <li>• International Procurement instrument</li> <li>• Screening framework for FDI</li> <li>• H2020 international cooperative projects</li> </ul>

Source: Authors based on the 2017 Communication on “A renewed EU Industrial Policy Strategy” and “State of the Union”.

The 2017 Communication also emphasises the importance of partnership with Members States, regions, cities and industry itself, which is intended as the co-creation, co-development and co-delivery of support measures for European industry. It includes reference to several governance mechanisms. Box 1 below details some examples of these governance mechanisms.

**Box 1. Examples of governance mechanisms included in the 2017 Strategy on the EU industrial policy**

**EU Industry Days:** Launched in 2017, it is a forum focusing on key industrial challenges such as sustainability, digitalisation, investment and globalisation. It brings stakeholders from different EU Member States and backgrounds together (industry, trade unions, national and regional authorities, and civil society) to discuss the EU industrial policy and its benefits, while generating inputs for future policies.

**Strategic Forum for Important Projects of Common European Interest (IPCEI):** Gathering policy-makers, experts and business organisations, this group provides the Commission with advice and expertise to build a common vision on the key value chains for Europe and facilitate agreements to push for new joint investments in those key value chains.

**European Semester (CSR):** Introduced in 2010, the European Semester enables the EU Member States to coordinate their economic policies throughout the year. It addresses the economic challenges facing the EU through an open dialogue between the Commission and Member States.

**Structural Reform Support Programme:** This programme complements the European Semester by providing hands-on assistance to Member States requesting its support for the implementation of proposed structural reforms.

**REFIT Platform:** Set up in 2015 in the context of the Better Regulation Communication, this platform advises the Commission on how to make EU regulation more efficient and effective while reducing potential burdens – without hindering policy objectives.

**High-Level Group on Key Enabling Technologies:** Established for the first time in 2010, this expert group includes representatives from academia and industry associations. Since 2017, it aims at reviewing the Key Enabling Technologies and the best possible ways to maximise their industrial deployment.

**Horizon 2020 Policy Support Facility:** This mechanism provides practical support to design, implement and evaluate reforms that enhance the quality of the research and innovation investments, policies and systems of the countries benefiting from the Horizon 2020 programme. It operates through independent high-level expertise groups and guidance channels, with different services: peer-reviews, mutual learning exercises and specific support to individual countries.

European Platform of national initiatives on Digitisation: Launched in 2017 by the European Commission, together with Member States and industry, the platform sets up a governance framework to mobilise stakeholders, exchange best practices, and support the coordination of EU and national initiatives in the field of digitisation.

Smart Specialisation Platform: Established in 2011, the role of the S3 Platform is to provide information, methodological guidance, expertise and advice to national and regional policy-makers around the concept of Smart Specialisation, which is central to the Cohesion policy framework. It includes promotion of mutual learning, transnational cooperation and academic debates.

Source: Authors based on the 2017 Communication on “A renewed EU Industrial Policy Strategy”

## 4. REVIEW OF THE CURRENT EU INDUSTRIAL POLICY MEASURES AND AREAS

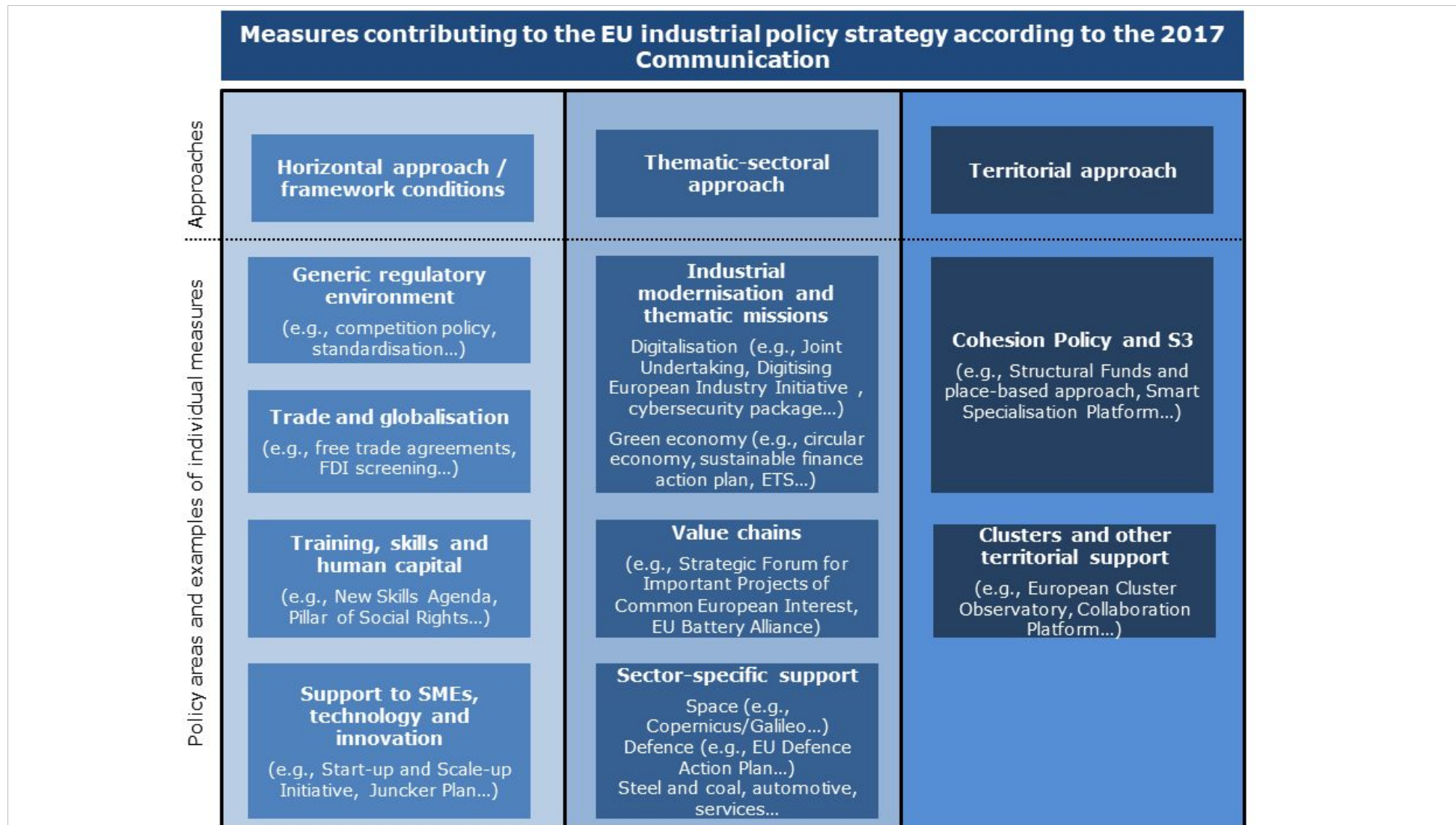
### KEY FINDINGS

- The different policy measures mentioned in the 2017 EU industrial strategy can be classified under the three broad policy approaches: horizontal-framework conditions, thematic-sectoral and territorial.
- Numerous measures of the 2017 Communication belong to the horizontal approach, covering the general regulatory environment (e.g., trade, standards...) but also broader framework conditions such as the development of skills and innovation systems.
- Measures falling under the thematic-sectoral approach reveals the recent development of the EU effort towards the realisation of mission-oriented objectives linked to industry (e.g., digitalisation, green economy) and an adoption of a value chain perspective, complementing more traditional support to individual industrial sectors.
- Few recent measures related to a territorial approach are explicitly mentioned in the 2017 Communication. However, the importance of Cohesion policy funding for economic and industrial development makes it relevant to the overall strategy in order to support measures presented in the two other approaches.
- In general, the frontiers between these different categories of policy measures are blurred, and increasingly, new policy areas develop at their intersection, as the example of initiatives to promote value chains shows.

The content of the 2017 Communication presenting the current EU industrial strategy is extensively reviewed in this Chapter. As the mentioned measures cover a wide range of issues, they are regrouped by the different policy approaches of the assessment framework, as well as by more specific policy areas when applicable. It allows a review with an in-depth level of detail while highlighting with great clarity the composition of the overall policy. It thus directly paves the way for the critical analysis developed in 0.



## 4.1. Synthetic overview of measures



Source: Authors

## 4.2. Horizontal approach

### 4.2.1. Generic regulatory environment (procurement, taxation, IPR, standardisation)

Generic regulatory environment measures that are included in the EU industrial policy share the objective to consolidate the single market (European Commission, 2017b) and ease the barriers and the costs of doing business within the EU.

The **completion of the single market** draws upon different policies and measures. The improvement of **competition policy**, an exclusive competence of the EU, is a major lever to ensure that European enterprises benefit from optimum sourcing and outlet conditions (European Commission, 2017a). State aid rules, the cornerstone of EU competition policy, ensure fair public intervention (European Commission, 2017b). In general, EU rules prohibit state aids, i.e. advantages in any form whatsoever conferred on a selective basis to undertakings by national public authorities (European Commission, 2019b). However, there are several exemptions, some of which are expected to channel resources towards innovation. Taken together, they form a complex system of rules; they include the provision of services of general interest, correction of some market failures, sector-specific or aids not exceeding a threshold (typically EUR 200,000 over three fiscal years), funding of R&D and innovation below a certain threshold and up to ten years (European Commission, 2019b; William Fry, 2017). The current design and potential changes in these rules are an important element of the EU industrial policy, as they condition several policy interventions. A 2019 directive aims at introducing minimum guarantees and standards to “empower national competition authorities to reach their full potential” (e.g. ensuring impartiality, human and financial resources, coordinated leniency programmes, etc.).

Competition in the single market is also associated with consumers’ protection and safety. Rules related to these goals have different effects on industry. They strengthen the quality of products (and hence their competitiveness) but can also impose constraints on designers, manufacturers and distributors. Current proposals of reforms aim at simplifying and fastening restriction and removal of unsafe products from the market.<sup>12</sup>

More globally, the European Commission has been committed to a cross-cutting effort on regulation improvement at the EU level, in cooperation with other levels of government (European Commission, 2017b). This “**Better Regulation**” approach aims at fulfilling targeted objectives with minimal costs and red tape, especially for SMEs. It is based on a series of core principles, such as strong preparation (including impact assessment), consultation with stakeholders, ensuring quality (e.g. guidelines and toolbox), supporting proportionality and subsidiarity and strengthening cooperation (European Commission, 2018a). The “innovation principle” will also be applied through the Better Regulation Agenda to account for the impact of new regulations on research-development and innovation activities (European Commission, 2017b). This approach includes not only new legislation, but also the review of the existing one, notably through the REFIT platform (European Commission, 2017b, 2018a).

<sup>12</sup> The Rapid Exchange of Information System (RAPEX) is a rapid alert system enabling quick exchange of information between 31 European countries and the European Commission about non-food products deemed to be dangerous and to pose a risk to health and safety (European Commission, 2014b). See also (Council of the European Union, 2018a; European Commission, 2017b).

## Box 2. REFIT Platform

Conceived as an integral part of the Commission’s Better Regulation Agenda, the **REFIT Platform** was set up in 2015 with the aim of **supporting the simplification process of EU law, reducing the regulatory burden** for both businesses and public authorities, and making **recommendations to the Commission** (European Commission, 2015a). To this end, the platform is composed of a government group with representatives from all Member States and a **stakeholders’ group** gathering representatives of business, social partners and civil society, members of the European Economic and Social Committee and of the Committee of Regions. On the basis of the follow-ups to the REFIT Platform opinions and recommendations, **detailed information on the work programme is provided in the REFIT Scoreboard** in order to monitor proposals throughout their lifecycle.

Source: Authors based on European Commission (2015), Decision establishing the REFIT Platform. COM (2015) 3261 final

**Standardisation** efforts can improve the safety of consumer goods as well, but also have benefits for companies. The modernisation of the EU standardisation system aims at developing “timely and market-driven standards in emerging industries” (European Commission, 2017b). Concretely, it implies a renewed system of public-private cooperation – a Joint Initiative on Standardisation, alignment of instruments in a comprehensive policy and specific attention to services and ICT (European Commission, 2016b), by focusing on core technologies and promoting voluntary standards in services.

Balanced **Intellectual Property Rights** are also considered as critical to favour the introduction of innovation and creativity on the market (European Commission, 2017c). The 2017 IPR package aims at favouring these goals by providing guidance and cooperation to ensure predictable and homogenous enforcement of IPR, cooperating with industry, national authorities and the public against infringements, consolidate control-monitoring and cooperation on the issues of IPR infringements at the international level (European Commission, 2017d).

Beyond the single market, the EU industrial policy also includes adaptation of the regulatory environment to consider the needs of businesses in **taxation** and other public policies. Tax simplicity and fairness is expected to provide adequate incentives for businesses to grow and expand (European Commission, 2017b). Recent initiatives to support these goals include the Common Consolidated Corporate Tax Base (relaunched in order to reach a “single set of rules to calculate companies’ taxable profits in the EU”) (European Commission, 2016c) and pathways towards a simplified/common EU VAT.

The EU industrial policy also covers **procurement**, i.e. the rules shaping the most direct involvement of public authorities into industrial activities. As public authorities engage a large amount of resources (EUR 2 trillion) each year to buy services, works and supplies, public procurement constitutes important market opportunities (European Commission, 2017c). In a 2017 initiative, the Commission focuses on improving public procurement in the EU, through the definition of common areas of improvement, voluntary ex-ante assessment of large infrastructure projects (helpdesk...), recommendation of professionalisation of buyers (business and technical skills...) and a consultation on innovation in procurement (European Commission, 2017e). This initiative goes in the direction to bring together different stakeholders, for instance public buyers and providers of new technologies, in order to match demand and supply for the benefit of business and society. Different DGs of the European Commission support this approach to procurement in their respective area of competence.

As relevant rules are now considered in place by the Commission, specific emphasis is put on tools and soft support to help public authorities, especially local authorities, to apply the existing regulatory frameworks. An example of such initiative is the “Big buyers and networks” initiative or the European Assistance for Innovation Procurement (Kracun, 2019)(see Box 3 below).

## Box 3. EAFIP

The European Assistance for Innovation Procurements consists of a European Commission's initiative aimed at **appointing experts to train, promote and offer local and legal assistance on Pre-Commercial-Procurement (PCP) and Public Procurement of Innovative Solutions (PPI)** (European Commission, 2019c). It is targeting **ICT-based solutions for public procurers** in several sectors (e.g. construction, health, education, environment, public administration, water, postal services etc.).

Its implementation was conceived as an integral part of the Horizon 2020 programme, under which the EU planned to increase support for groups of public procurers working in relation to innovation procurement.

A **Toolkit** for the design, the implementation of PCP and PPI procurement procedures as well as the **provision of assistance to selected procurers** and the **organisation of several events and workshops** on the issue were the main key components of the initiative.

Source: Authors based on EAFIP's website (2019)

#### 4.2.2. Trade and globalisation

The EU is strongly committed to free trade and has an exclusive competence in that domain (European Commission, 2019a). Recent or ongoing negotiations for **trade agreements**, such as EU-Canada and EU-Japan agreement, are removing tariffs (up to 99%) and other trade barriers (especially for services) and allowing unprecedented access conditions to procurement markets (European Commission, 2017b). These agreements are expected to bring about new business opportunities for European industry. However, emerging challenges, such as increased competition from emerging economies and China, along with strategic and technological considerations have contributed to an adaptation of the EU trade policy.

To ensure fair competition on international markets, the EU supports the adoption of adjusted legislation to react quickly and efficiently to market distortions (European Commission, 2017b). EU **trade defence instruments** and anti-dumping calculation methodologies have been modified to be more transparent, predictable, and SME-friendly (helpdesk). Higher and more proportionate duties are proposed without risks of retaliation for industry, social and environmental standards (European Commission, 2018b). A new International Procurement Instrument should be adopted in the future to ensure reciprocity in access to procurement markets (European Parliament, 2018b). The preservation of the EU's interest is also favoured by the adoption in 2018 of an **FDI screening instrument**, to face situations where FDI pose security/strategic issues. It implies the emergence of an EU framework for screening FDI (with transparency, equal treatment and adequate redress possibilities obligations), cooperation mechanisms between the Commission and Member States, and direct screening by the Commission for FDI altering projects of EU Interest (e.g. H2020, Galileo...). This screening could be valuable for EU strategic sectors (European Commission, 2017f).

#### 4.2.3. Training, skills and human capital

Attention to skills, human capital and working conditions at the EU level has been explicitly linked to the industrial policy in EU strategic documents. In 2016, the Commission has introduced new actions for skills and training under the **New Skills Agenda**, aimed at employability and prosperity (European Commission, 2016b). It includes increased collaboration, analysis and consolidation of skills and training policies, a focus on graduate tracking and vocational training/education, harmonisation of qualification frameworks, support to the development of digital skills (Digital coalitions) and sectoral skills (in specific industrial sectors with the **Blueprints for Sectoral collaboration on Skills**, adopted in a range of sectors, from textiles to green technologies (European Commission, 2016b). These actions are typically conducted through partnerships/coalitions with multiple stakeholders (see Box 4 below).

#### Box 4. Digital Skills and Jobs Coalition

The Digital Skills and Jobs Coalition is a collaboration platform launched in December 2016 by the European Commission (DG CNECT). It regroups different types of stakeholders, including representatives from Member States, companies, social partners, non-profit organisations and education providers. Its goal is to reduce digital skills gaps in Europe. The members are committed to conduct actions in the following areas (European Commission, 2016d):

- Digital training for the youth
- Upskilling of the workforce
- Modernisation of the education and training systems
- Improvement of citizens' digital skills

The Coalition notably shares scalable projects and good practices that are deemed efficient to achieve these goals, for instance through the Digital Skills Awards (European Commission, 2017g).

Source: Authors based on European Commission (2017), *Digital Skills Initiatives*, European Commission (2016), *The Digital Skills and Jobs Coalition Members Charter*.

Unlike most initiatives falling under the horizontal approach, EU funding is available for training and skills, especially through the European Social Fund (EUR 80 billion for 2014-2020), the Erasmus+ programme (EUR 14.47 billion for 2014-2020) or the European Adjustment to Globalisation Fund (EUR 150 million for 2014-2020). In parallel, the Commission has also launched in 2017 the European Pillar of Social Rights, aimed at preparing the future of labour market and work conditions, such as new non-standard forms of employment relationships or adaptation of access social protection (European Commission, 2017b).

#### Box 5. European Pillar of Social Rights

Announced in the 2015 Juncker's State of the Union Address and finally launched in 2017 after a process of consultation (European Commission, 2016e), the European Pillar of Social Rights **responds to the need for a more inclusive and fairer Union** by setting out a number of **key principles and rights to support fair and well-functioning labour markets and welfare systems** and which can be structured around **three categories** (European Commission, 2017h):

- **Equal opportunities and access to the labour market**
- **Fair working conditions**
- **Social protection and inclusion**

A key role in the **implementation of its principles** is played by **operational programmes** in the framework of the **European Social Fund** as well as by **other financial programmes** such as **Youth Employment Initiative, Erasmus+, the European Globalisation Adjustment Fund and the Fund for European Aid to the most deprived**.

To complement the Communication introducing the Pillar, a number of **legislative and non-legislative initiatives** have been planned to be adopted in the field of **work-life balance, information for workers, access to social protection and working time**. Moreover, a social scoreboard has been established with the aim of monitoring progress on the ground.

Source: Authors based on European Commission (2016), Launching a consultation on a European Pillar of Social Rights. COM (2016) 127 final; European Commission (2017), Establishing a European Pillar of Social Rights. COM (2017) 250 final

#### 4.2.4. Support to SMEs, technology and Innovation

Support to SMEs and innovation has been a key theme of overall EU strategies, e.g. in the Lisbon Agenda or Europe 2020. At the strategic level, the **High Level Group on Key Emerging Technologies** review key emerging technologies and ways to facilitate their industrial deployment. Several organisations and institutions



exist at the EU level to operationalise this attention to industrial innovation, especially for SMEs, by providing networking and advisory services.

This attention to innovation and SMEs is accompanied by access to funding. For example, the SME instrument (under the European Innovation Council pilot, EUR 1,6 billion for 2018-2020) can get support for breakthrough innovation projects. Horizon 2020 for industrial R&D benefiting industrial enterprises in general, including innovative SMEs is also a major source (EUR 18 billion for industrial leadership for 2014-2020).

All SMEs – whether innovative or not – are also the target of the **COSME programme**, which include valuable support schemes such as **Enterprise Europe Network** (with an overall budget EUR 2 billion for 2014-2020 – see Box 6).

#### Box 6. COSME

Introduced in the context of Europe 2020 Strategy and of the Small Business Act, COSME is the EU programme for the **Competitiveness of Enterprises, particularly SMEs** (European Commission, 2017i). It is managed by the Executive Agency for Small and Medium-sized Enterprises (EASME) and is running for the period 2014-2020 with a planned budget of EUR 2.3 billion. At least 60% of this budget has been planned to be allocated **to financial instruments facilitating the access to loans and equity finance for SMEs in case of identified market gaps:**

- The Loan Guarantee Facility
- The Equity Facility for Growth

Access to finance is not the only focus of the COSME programme. **Additional objectives are:**

- An **increased openness of markets**, supported through the **Enterprise Europe Network** and **Your Europe Business Portal**
- A **strong support to entrepreneurs** achieved through the strengthening of **entrepreneurship education, mentoring and guidance**
- The improvement of business conditions with the reduction of administrative and regulatory burden on SMEs

Source: Authors based on (European Commission, 2017i)

Recently, the EU industrial policy has been enriched by specific initiatives to improve the conditions for young innovative SMEs. Innovative companies, such as Start-Ups and Scale-Ups are indeed deemed essential to industrial modernisation. In order to facilitate their development, especially in early phases but also consolidating their development, new instruments and policies have been introduced, such as the **Start-Up and Scale-Up Initiative** bringing existing instruments (e.g., Start Up Europe Network, the Enterprise Europe Network) and new ones in a single scheme (see Box 7). These initiatives recognise the specific needs of innovative start-ups and are geared towards supporting their growth in the internal market.

#### Box 7. Start-Up and Scale-Up Initiative

The Start-up and Scale-Up initiative has been introduced in 2016 to help entrepreneurs reach the Scale-Up status for innovative companies at the global level, by securing the opportunities of the EU Single Market (European Commission, 2016f).

- To reach this objective, it has developed **the following tools:**
- The **Pan-European Venture Capital Fund of Fund** with EU cornerstone investments of up to a maximum budget of EUR 400 million. Combined with private sources, it will reach a minimum of EUR 1.6 billion in venture capital funding for EU innovative companies
- A **new proposal on insolvency law**, to ensure a second change for honest entrepreneurs. The goal is to allow early restructuration in order to avoid bankruptcy and associated layoffs.

- **Simplified tax fillings**, to facilitate the expansion of innovative companies beyond domestic borders at the EU level, especially regarding VAT

The Initiative also puts emphasis on helping navigate **regulatory requirements**, **improving innovation support** through reforms to Horizon 2020, and fostering **ecosystems** where start-ups can connect with potential partners such as investors, business partners, universities and research centres.

Source: European Commission (2016), Commission gives boost to start-ups in Europe

In parallel, existing rules for the European Venture Capital Funds and the Prospectus regulation have been amended to allow for easier funding of SMEs (European Commission, 2017b). A new European Scale-Up Action for Risk Capital (ESCALAR) is under study and could be introduced to increase the investment capacity of venture capital funds (European Commission, 2018c). Finally, the European Commission is supporting **Financial Technology** through a dedicated action plan with three main strands of action: development of business models, support to technologies (e.g. blockchain) and cybersecurity/integrity of the financial system financial system (European Commission, 2018d).

Different funding sources available at the EU level for industrial modernisation in general: Horizon 2020, Structural Funds, COSME, CEF, etc (see Annex A.2) (European Commission, 2017b). Recent measures have particularly focused on the consolidation of the **Juncker Plan**. This Plan has been heavily debated since its inception, e.g. regarding its scope (“too little”), timing (“too late”) and modalities that are sometimes regarded as inadequate to promote recovery in Europe (Le Moigne et al., 2016), while the Commission highlights its achievements (European Commission, 2018e). Recent initiatives aim at extending the duration of the Juncker Plan and at facilitating its synergies with other sources of funding in order to develop businesses (including industrial ones) and reach societal goals. Other new features include improved transparency and governance, more focus on sustainability and specific attention addressed to SMEs and less developed regions (European Parliament, 2018c). The adoption of the Omnibus regulation is also expected to make possible a simpler use and combination of different EU funds (e.g. simplified cost options, flat rate options, etc.) (European Parliament and Council of the European Union, 2018a).

#### Box 8. Juncker Plan

Launched in 2015 jointly by the European Commission and the European Investment Bank (EIB), the Juncker Plan or Investment Plan for Europe **three main objectives and corresponding pillars** (European Commission, 2014c):

- The creation of the **European Fund for Strategic Investments (EFSI)**: with the aim of removing obstacles and to mobilise private investments, the Fund provides an EU guarantee. The EFSI supports strategic investments in key areas such as infrastructure, energy efficiency and renewable energy, research and innovation, environment, agriculture, digital technology, education, health and social projects. It also helps small businesses to start up, to grow and to expand by providing risk finance.
- The establishment of the **European Investment Advisory Hub** and **the European Investment Project Portal**: to provide visibility and technical assistance to investment projects, these two instruments play a key role in the realisation of investment opportunities
- The introduction of complementary actions both at national and EU level: the objective is to improve the business environment through the removal of regulatory barriers to investments. The following actions have been introduced at the EU level: the **Single Market Strategy**, the **Capital Markets Union**, the **Digital Single Market Strategy** and the **EU Action Plan for the circular economy**.

Under the first pillar, at least **EUR 315 billion** of additional investments were mobilised for a period of three years, through a EU guarantee of EUR 16 billion and an EIB commitment of an additional EUR 5 billion. Since its launch, investment rates have picked up significantly, but they remain quite low in respect to the pre-crisis level. Consequently, the European Commission has proposed a new programme over 2021-2027, the **InvestEU Programme** (European Commission, 2018f).

The InvestEU Fund will support four policy areas: sustainable infrastructure; research, innovation and digitisation; small and medium-sized businesses; and social investment and skills.

Source: Authors based on European Commission (2014), An Investment Plan for Europe; European Commission (2018), Investment Plan for Europe: stock-taking and next steps.

### 4.3. Thematic / sectoral approach

#### 4.3.1. Industrial modernisation and thematic missions

EU efforts to support industrial modernisation, in particular through its funding instruments, pursue mission-oriented goals, in relation with specific societal, economic or environmental challenges. Such mission-oriented goals are put forward by the Europe 2020 strategy (Wyns, 2017) and by the 2017 industrial strategy (European Commission, 2017b). This connection between industrial modernisation and mission-oriented goals emerges in particular in two pillars of 2017 industrial strategy: digitalisation and green economy (European Commission, 2017b).

#### Digitalisation

Digitalisation is one of the thematic missions addressed by the EU industrial strategy. It is a core priority addressed in the framework of the Digital Agenda for Europe and Digital Single Market (European Parliament, 2018a).

This area is extremely dynamic with different new interesting new developments. For example, **Joint Undertakings** (research projects funded by Horizon 2020) foster wide partnerships and federate European investments around priorities.<sup>13</sup> Two of them concern digital technologies, microelectronics and high performing computing. Interestingly, synergies develop with the key strategic value chains (IPCEI).

To favour competitiveness and productivity, the EU approach considers that European companies must increase their digitisation levels. The Commission is supporting several measures to reach that goal under the **Digitising European Industry Initiative** (European Commission, 2017b). It includes the coordination of national policies through the **European Platform of National Initiatives on Digitisation**, investments and support to the uptake and development of digital industrial solutions through dedicated platforms (industrial internet and industrial data platforms) and initiatives (such as the European Cloud Initiative and the Digitising ), public-private-partnerships on key technologies and the development of **Digital Innovation Hubs** (European Commission, 2017b; European Parliament, 2018a).

<sup>13</sup> Joint Undertakings are special legal instruments (article 187 of the TFEU) used to implement Horizon 2020 research projects through Public-Private Partnerships in key strategic areas. They notably conduct calls for research projects. They aim at conducting research and innovation activities to enhance competitiveness and tackle societal challenges, with an active engagement of industrial stakeholders (European Commission, 2017)). See for example <https://www.ecsel.eu/>.



### Box 9. Digital Innovation Hubs

The 2016 Action Plan for the Digitisation of EU Industries included several of initiatives to achieve the strategic goals of the Digital Agenda and Digital Single Market. A key initiative was the creation of a Network of Digital Innovation Hubs (DIH) (European Parliament, 2018a). DIH are "regional one-stop-shops to help businesses (especially SMEs) to gain competitiveness through digitalisation (e.g. adoption of technologies, adapted business models etc.)". They thus rely on a form of regional and multi-partner cooperation bridging different stakeholders (e.g., companies, public authorities, universities, research and technical centres...). Implementation is based on the action of Member States, consolidating the existing initiatives and organisations if relevant. There are about 100 DIH across Member States but a precise catalogue is not available yet. This initiative is funded under the Horizon 2020 programme (EUR 500 million), with support from the DG CNCT.

Source: Authors based on European Parliament (2018), *Digital Agenda and Cohesion policy*

Total funding for the digitisation of EU industry should amount to about EUR 50 billion of public and private investments (H2020, COSME, EIB, ESIF...) (European Commission, 2018g).

EU industry will also benefit from the consolidation of **digital infrastructures**. Indeed, a strong emphasis has been put on this aspect during the 2014-2020 period, especially for fast and ultra-fast broadband. Cohesion policy and Connecting Europe Facility are the main channels to implement this objective, considered critical for industrial competitiveness (European Commission, 2015b; European Parliament, 2018a).

Industrial modernisation through digitalisation is also supported by EU measures and initiatives without direct funding. The following horizontal priorities stand out: standardisation, cybersecurity and data policy. In addition to this, there are a number of specific initiatives which address specific digital technologies such as Artificial Intelligence.

### Box 10. 2017 Cybersecurity package<sup>14</sup>

The cybersecurity package of 2017 indeed builds upon existing measures and introduces new ones to consolidate EU's cyber resilience (European Commission, 2018h):

- It extends the role of the EU cybersecurity agency (ENISA) to support stakeholders in the implementation of the Network and Information Systems Directive;
- It aims at introducing an EU cybersecurity certification system;
- It favours international cooperation against different cyberthreats.

Source: European Commission (2018), *Cybersecurity*.

Moreover, the 2018 regulation on the free flow of non-personal data allows the free movement of non-personal data across the EU, while retaining access availability for control authorities. It is expected to make it easier for professionals to switch providers and is consistent with the General Data Protection Regulation and cybersecurity measures (European Commission, 2018i; European Parliament and Council of the European Union, 2018b). It could thus help building a **common EU data space** to favour modernisation (European Commission, 2017c).

<sup>14</sup> More detailed information is in (Gyorffi, 2017)

## Green economy

The EU industrial strategy targets the development of the green economy (including sustainability, energy transition or clean mobility). The related goals are tackled through different channels, usually implying some form of industrial modernisation (organisational and/or technological). In order to save costs, create business opportunities and jobs and reduce environmental impacts, the Commission promotes action for resource efficiency and circular economy through the **2018 Circular Economy package**.

### Box 11. 2018 Circular Economy Package

The Circular Economy Package of 2018, coordinated by the European Commission (DG ENVIRONMENT), contributes to the implementation of the Circular Economy Action Plan, and to wider EU goals to transform its economy by emphasising sustainability aspects. It consists of the following measures (European Commission, 2018j):

- A specific focus on the recycling of plastics with a dedicated EU Strategy and targets. It is complemented by a specific proposal on Port Reception Facilities, to tackle sea-based marine litter
- Support to bio-based products
- A reflection on the interface between chemical, product and waste legislation (Communication on potential options)
- A monitoring framework on progress towards the circular economy
- A report on critical raw materials, with a dedicated EU Raw Materials Initiative being implemented to complement this analytical work (European Commission, 2017b)

This specific package does not unlock budgetary envelopes, however the Circular Economy Action Plan itself is supported by several EU funding instruments (European Commission, 2015c), including Structural Funds and COSME (e.g., on recycling capacities and resource efficiency) but also H2020 (e.g., research projects on planned obsolescence).

Source: Authors based on European Commission (2018), Implementation of the Circular Economy Action Plan, European Commission (2015), Circular Economy Package: Questions & Answers

Other related measures concern the reduction of the use of some plastics in a dedicated 2018 directive, as well as a regulation for an improved reuse/management of water for irrigation (European Commission, 2018j). Support to the collaborative economy (e.g. through the dedicated Agenda) can also yield significant benefits in terms of resource efficiency (European Commission, 2017b).

Beyond these actions targeting specific aspects of sustainability, the **2018 Action Plan on Sustainable Finance** and related package have the overarching ambition to orient private capital flows towards more sustainable investments (European Commission, 2017c).

### Box 12. 2018 Action Plan on Sustainable Finance and related package

Concretely, the 2018 Action Plan on Sustainable Finance and its related package will develop the following tools to steer more private funding towards sustainable activities (European Commission, 2018k):

- A common taxonomy of sustainable activities
- EU green labels for sustainability
- Clarification of investors' duties for sustainability
- Strengthened transparency of environmental, social and governance policies of companies
- Introduction of sustainability into the EU prudential rules for banks and insurances

Source: European Commission (2018), *Finance durable*

A major goal of the EU falling under the broad green economy thematic mission is to move towards energy/low-carbon transition, within the strategic framework of the **Energy Union** and the **Paris Agreement**. Recent focus of the EU action is on the implementation of concrete measures to reach the goals of these strategies, requiring industrial modernisation. In particular, the **2016 Clean Energy for all Europeans package** includes several proposals for energy efficiency, renewables, electricity market design (e.g. new business models) and governance, security of supplies and governance in the EU and eco-design (European Commission, 2017c). The Clean Energy package serves the ambitious “2050 long term strategy” (see Box 19 in Chapter 5). It has the potential to mobilise an additional EUR 177 billion of public and private funding for clean energy transition in the 2017-2021 period (European Commission, 2016g). Support from the EU will notably be channelled through Horizon 2020 (research projects), Structural Funds, the Juncker Plan and the Emission Trading Scheme.

#### Box 13. Emission Trading Scheme

Conceived as a cornerstone of the EU’s policy to combat climate change, the European Emissions Trading System (EU ETS) is a carbon market based on the “cap and trade” principle, in which emission allowances are traded. It was introduced in 2005 as the EU major tool for meeting emissions reduction targets, but since then it has undergone an evolution process. The current phase began in 2013 and will last until 2020 and it is characterised by a single EU wide cap applying in place of the previous system of national caps as well as by an auctioning method for the allocation of allowances (European Commission, 2015d).

On the basis of the 2015 Paris Agreement, the EU has further contributed to the purpose through the revision of the legislative framework in 2018. The new legislation, which will be applied during the phase running from 2021 to 2030, is aimed at the achievement of the EU’s 2030 emission reduction targets set out in line with the 2030 climate and energy policy framework. It notably includes supporting sectors at risk in the EU Emission Trading System, a New Entrants’ Reserve in this Trading System for innovative projects and a Modernisation fund for the energy sector of lower income countries (European Commission, 2017b).

Source: Authors based on European Commission (2015), *EU ETS Handbook*

Finally, the EU goals regarding **clean mobility** have strong impacts on industrial modernisation, especially for the highly relevant ICT and automotive sectors. The **2016 Strategy for low-emission mobility** set three main goals for the future mobility policy: efficiency and digitisation, low-emission solutions and the transition towards zero-emission vehicles. Social fairness is also highlighted. Such an approach is expected to have positive impacts on industry and jobs (European Commission, 2016h). The **2017 “Europe on the move” package** aims at implementing this strategy on the ground (European Commission, 2017k).

#### Box 14. 2017 Europe on the move package

The Europe on the move package targets the realisation of the 2016 strategy for low-emission mobility’s goal through the following concrete measures:

- Tighter emission standards for vehicles
- Improved transparency for consumers (labelling regarding emissions)
- Mobilisation of Member States, regional and local authorities for mobility innovation, especially through public procurement
- Development of urban mobility projects (CIVITAS)
- Adjustments of social rules for the mobility sector
- Development of digital solutions and infrastructures (e.g. Commission assessment of national policy frameworks for the Alternative Fuels Infrastructure Action Plan) (European Commission, 2017k)

Source: Authors based on European Commission (2017), *Europe on the move*

Different sources of EU funding can be mobilised for transportation to achieve the objectives of package (European Commission, 2016h, 2017k), including the Structural Funds, Juncker Plan, Horizon 2020 (with a specific programme for smart and integrated transport of EUR 6.4 billion for 2014-2020) and the transportation axis of the Connecting Europe Facility (EUR 24 billion for 2014-2020).

#### 4.3.2. Value chains

Recent EU industrial initiatives aim at favouring the development of EU industrial value chains in response to emerging challenges, such as environmental issues, digital transformation or increased economic competition. This area of intervention is emerging and differs both from traditional horizontal interventions (regarding the regulatory environment and trade relations) and sectoral interventions. As the focus is on value chains rather than specific sectors, it also contributes to a redefinition of support to industries where the support is not directed at single companies, but at entire ecosystems stretching along value chains.<sup>15</sup> The focus is on enabling technologies which have a transformative power on sector and contribute to the creation of cross-sectoral industries. This support is adapted to competition rules<sup>16</sup> and requires extensive coordination between different stakeholders (including different DGs of the European Commission) and policies from different sectors. As such, related initiatives are at the intersection of the horizontal and thematic approaches, to varying extents.

An important means of operationalisation of the focus on value chains is the 2018-19 **Strategic Forum for Important Projects of Common European Interest**, a forum regrouping different European stakeholders (public authorities, industries, academia...). The objective is to identify “Important Projects of Common European Interest” and reach a common vision at EU level for investments and effort coordination in **key strategic value chains** (European Commission, 2018l). Criteria for the identification of such value chains included: sustainability-orientation, large scale and significant potential spillovers, security and sovereignty, as well as non-linearity (European Commission, 2018m). The selection of the final list of key strategic value chains was then based on qualitative and quantitative indicators (regarding value creation, competitiveness, security, climate and energy impacts) as well as members states’ preferences (European Commission, 2018n). The selected value chains presented during the industry days 2019 are (ASTER, 2019):

- Connected, clean and autonomous vehicles,
- Smart health,
- Low-carbon industry,
- Hydrogen technologies and systems,
- Industrial Internet of Things
- Cyber-security

The value chain approach is applied to specific industrial areas where it mobilises relevant stakeholders (industrials, academics, NGOs...) to design roadmaps and set goals<sup>17</sup>. It is for instance the case for energy-intensive industry or with the Battery Alliance (see Box 15 below).

<sup>15</sup> Interviews with stakeholders

<sup>16</sup> Interview with DG GROW official, 07/02/2019

<sup>17</sup> Interview with DG GROW Official, 21/02/2019

### Box 15. European Battery Alliance

Launched in 2017 and aimed at creating a stronger battery industry contributing to circular economy and clean mobility, the European Battery Alliance constitutes a cooperative platform gathering key industrial stakeholders, interested Member States as well as the European Commission and the European Investment Bank (European Commission, 2018o).

Following a consultation, a **Strategic Action Plan** has been developed in 2018, including targeted measures with the objective of promoting a cross-border and integrated European approach covering the whole value chain of batteries ecosystem and focusing on sustainability. Several key actions were proposed in particular to secure the sustainable supply of raw materials and to support European projects covering the different segments of the battery value chain in the field of research and innovation, skills and the regulatory framework. As a result, a number of industrial investments have been recently announced in the area of materials and battery cells also thanks to the **European Institute of Innovation and Technology** (EIT). InnoEnergy which has managed to mobilise and steer a network of around 260 innovation and industrial actors from all the segments of the batteries value chain committing to invest into related actions and projects. In addition, as from January 2019, in the framework of the Horizon 2020, EUR 114 million have been devoted to EU Research and Innovation projects for battery-related topics and for supporting the European Battery Alliance objectives.

Source: Authors based on European Commission (2018), Annex to EUROPE ON THE MOVE – Sustainable Mobility for Europe: safe, connected and clean.

Several initiatives in the context of the 2017 industrial strategy integrate this value-added approach. For instance, the non-linearity of value chains is emphasised in the **2018 Circular Economy package** (see above). Also, the **European Institute of Innovation and Technology** regroups businesses, universities and research labs to promote innovation capabilities in Europe in a value chain approach.

#### 4.3.3. Sector-specific support

The EU industrial policy also pursues traditional sectoral support to some industries (e.g., steel-making, automotive industry), though this approach is not as dynamic as the mission-oriented perspective since the 2000s (Wyns, 2017). Initiatives promoted in the framework of the EU industrial policy have however been newly introduced to support specific sectors seen as strategic<sup>18</sup>, such as space or defence (European Commission, 2017c).

Recognising the strategic nature of the **EU space sector**, the Commission has proposed a set of objectives and measures in a 2016 dedicated strategy. Major aspects of this strategy include facilitating the uptake and development of space services (especially in relation to specific EU programmes such as Copernicus, Galileo and EGNOS) with attention to emerging needs (e.g. sustainability/climate), supporting R&D and innovation in the space sector, fostering entrepreneurship and business development in the sector, securing an autonomous EU access to space (e.g. through aggregation of demand for launches, protecting critical infrastructures) and promoting international cooperation (European Commission, 2016i).

<sup>18</sup> Interview with DG GROW official, 11/02/2019

## Box 16. Copernicus and Galileo

Copernicus and Galileo constitutes the **two flagship programmes of the EU space policy**, with important expected social and economic benefits (European Commission, 2016i, 2018p).

**Copernicus**

Launched in 1998 in the framework of the Baveno Manifesto proposing the creation of a European environmental monitoring programme, Copernicus is the **European Earth Observatory programme** coordinated and managed by the European Commission. Its aim is to collect and process data gathered from multiple sources (e.g. earth observation satellites, ground stations, airborne or seaborne sensors) through a complex set of systems and services related to environmental and security issues. In particular, **six thematic areas** are addressed: land, marine, atmosphere, climate change, emergency management and security.

**Galileo**

More recently, in 2016, the Declaration of Initial Services marked the launch of the Galileo programme, which is the **European Union's Global Satellite Navigation System** (GNSS) also called the European GPS. By providing accurate positioning and timing information through a constellation of 26 satellites, the programme has several objectives, including:

- The achievement of technological independence with respect to other global navigation satellite systems
- An easier development of new products and services based on satellite signals
- The generation of related technological benefits for research, development and innovation

Source: Authors based on European Commission's website (2019) and European Commission (2018), *Copernicus, 20 years of History*.

A total EU funding of EUR 12 billion will be dedicated to space during the 2014-2020 period, using mainly Horizon 2020, European Investment Bank funding, Structural Funds and resources of the European Space Agency (European Commission, 2016i, 2017c).

Similarly, the **European Defence Action Plan** of 2016 provides sector-specific support to the defence industry. In this Action Plan, the Commission sets up a European Defence fund for research and common capability, fosters investments in defence (using the EIB) and skills and facilitates cross-border defence procurement (European Commission, 2016j, 2017c). The different funding sources (including the European Defence Fund) amount to a total of EUR 590 million dedicated to defence for 2017-2020.

Beyond these new initiatives targeting emerging sectors, the EU continues to provide support to sectors that are traditionally seen as strategic<sup>19</sup>, such as steel and automotive. In particular, EU sectoral support to the **steel and coal industries** can be tracked down to the birth of the European construction in the 1950s, with the European Steel and Coal Community. The Commission has recently proposed a series of new measures to address both short term and long term challenges for the EU Steel industry. It includes the consolidation of anti-dumping measures (e.g. higher duties), international meetings and cooperation to tackle global overcapacity, investments in modernisation and skills (especially through private public partnership) and inclusion into other policies (energy, competition, emission trading...) (European Commission, 2016k, 2017c). Various funds are available to support the modernisation of the steel sector, skill upgrade for workers and mitigation in cases of relocation (European Commission, 2016k). In particular, EUR 50 million are available yearly for research projects through the Research Fund for Coal and Steel.

EU's work regarding the **automotive industry** covers a wide range of topics to promote the sector and secure economic, social and environmental benefits (European Commission, 2017c). It is supported by the analytical work of a high-level expert group "GEAR 2030", regrouping different categories of stakeholders (European Commission, 2016l).

<sup>19</sup> Interview with DG GROW official, 11/02/2019



Concrete actions for the automotive industry at the EU level notably include global technical harmonisation, research and development, development of relevant skills, improvement of regulation, and funding of SMEs and infrastructures (European Commission, 2016m, 2016l). In particular, recent effort has focused on the transition towards clean and connected mobility (European Commission, 2017c), especially through the European Strategic Action Plan on Batteries/the Alliance (European Commission, 2018q) (see Box 15 above). Stronger safety standards and controls for emissions are being introduced that affect the automotive sector (European Commission, 2016n).

Several EU funding sources are available to support the automotive sector (European Commission, 2016l, 2018r), including COSME, Horizon 2020 (EUR 400 million for automated mobility R&D for the 2014-2020 period for instance), CEF (EUR 443 million for the digitalisation of road infrastructures), Structural Funds and Juncker Plan.

Sectoral **support to services** has also been recently introduced. It is not targeted at industry but it complements actions for industry Inputs from services (such as RD, accounting, advisory, ICT or after-sales services) are indeed considered crucial by the Commission for the development of manufacturing (European Commission, 2017c). In a 2017 package, concrete measures have been adopted to enable a successful services economy, with potential benefits to industry (European Commission, 2017l).

Overall, sector-specific support is still present in the context of the EU industrial policy. However, its de facto distinction from the fulfilment of thematic missions can be nuanced, as the frontier is sometimes blurry, e.g. between the mobility thematic mission and the support to the automotive sector.

#### 4.4 Territorial approach

The EU industrial strategy also has a territorial dimension, which de facto applies because one of its main funding instruments, the European Structural and Investment Funds have a territorial orientation. Different measures fostering a territorial approach are implemented within the Cohesion policy framework, but there are also initiatives with a territorial dimension outside this framework. Conversely, as industrial sites are embedded in specific socio-economic contexts (e.g. local labour markets...), EU policies and initiatives (e.g. H2020, COSME...) supporting their modernisation have de facto territorial effects, though not explicitly part of their policy design. Overall measures with a territorial dimension include generic support to regional development and place-based developments, support to industrial clusters and regional industrial transformation, and other context-specific and thematic support. It should be noted that in all the policy measures falling under the territorial approach, the governance dimension is particularly relevant, consistently with the involvement of multiple stakeholders that they require.

Regional authorities have access to **Structural Funds** (especially the ERDF and CF) under **Cohesion policy**, which have an explicit territorial dimension. Cohesion policy is a substantive source of funding for measures in support to general regional economic development, concentrating resources on the less developed regions (European Commission, 2015e). Under a shared management multilevel governance, regional stakeholders are able to implement interventions adapted to their priorities defined at regional level. An estimated EUR 295 billion were available for regional strategies and projects contributing to the EU industrial strategy over the 2014-2020 period<sup>20</sup>.

In the framework of the 2014-2020 programming period, Ex Ante Conditionalities have been set up to favour the development of adequate regional strategies using Structural Funds. In particular, **Smart Specialisation Strategies** are a prerequisite for Research-Development and Innovation investments, which are critical for industrial policy.

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<sup>20</sup> Authors' calculation, see Figure 6.

These strategies favour the concentration of resources on selected domains that are relevant for regional development, identified through the so-called “entrepreneurial discovery process” (Radosevic et al., 2017).

#### Box 17. Smart Specialisation Strategy (S3)

Smart Specialisation is a place-based approach for regional innovation policy that is characterised by the identification and selection of a limited number of strategic priority areas, in order to build a critical mass for intervention (European Commission and JRC, 2018). This selection should be based on existing assets, potential for growth and on a bottom-up process involving the different stakeholders known as the Entrepreneurial Discovery Process (EDP). It is therefore a non-neutral logic of intervention, emphasising both technological and practical innovation. Monitoring and evaluation, but also policy innovation and experimentation, are explicitly encouraged under this approach (Martínez-López and Palazuelos-Martínez, 2014).

The concept of Smart Specialisation was initially developed by the Knowledge for Growth expert group advising the European Commission and integrated into Cohesion policy during the 2014-2020 programming period. First results on the use of S3 within the Cohesion policy framework suggest that the approach is welcomed by most stakeholders and has benefits regarding its enabling potential, though with distinct perspectives and challenges depending on the regional level of development (European Commission, 2018s).

Source: Authors based on European Commission (2018), Smart Specialisation Strategies 2017 Survey Results, European Commission / JRC (2018), What is Smart Specialisation?, JRC (2015), Breaking with the Past in Smart Specialisation

The EU has created initiatives to support the development of high-quality S3 by regions, through the Smart Specialisation Platform<sup>21</sup>. One of them is specifically oriented towards industrial modernisation, making it a clear contributor to the EU industrial strategy (see Box 18).

#### Box 18. Smart Specialisation Platform – Industrial Modernisation Platform

The Smart Specialisation Platform is a tool allowing regional authorities and associated bodies (e.g. innovation and economic development agencies) to cooperate and receive support for the development of regional Smart Specialisation Strategies (S3). Under this framework, Thematic Platforms bring regions together on specific policy issues, with advisory services from the European Commission (European Commission, 2017m). Among these thematic platforms, the Smart Specialisation Platform for Industrial Modernisation (S3P-Industry) aims at supporting ‘EU regions committed to generate a pipeline of industrial investment projects following a bottom-up approach - implemented through interregional cooperation, cluster participation and industry involvement’ (European Commission, 2018t). It notably includes topics that are crucial to industry policy, such as the transition towards advanced manufacturing technologies (Industry 4.0).

Source: Authors based on European Commission (2017), What Is Smart Specialisation? - Smart Specialisation Platform; European Commission (2018), Industrial Modernisation

The European Commission has set up initiatives that provide support for the design and implementation of context-specific regional strategies under the form of advisory services rather than funding per se, though small envelopes can be tied to these initiatives. For example, since the late 2000s / early 2010s, the European Commission has put forward several initiatives to support **clusters** at the European level, combining territorial and sectoral / thematic dimensions. This support takes several forms (European Commission, 2016o), such as extensive monitoring and information sharing (with the “European Observatory of Clusters and Industrial

<sup>21</sup> <http://s3platform.jrc.ec.europa.eu/>



Change”<sup>22</sup>), cluster management excellence<sup>23</sup> (benchmarking) or support to partnerships between clusters and internationalization (e.g. European Cluster Collaboration Platform<sup>24</sup>).

The Commission also supports a pilot action for industrial modernisation as well as support to cluster excellence, with customised advice and funding for experimental/high-impact actions (European Commission, 2017b, 2018u).

Similarly, the European Commission provides other specific support to regions facing specific situations or challenges. For example, regions traditionally reliant on coal are covered by another pilot action “Coal regions in transition” with a dedicated platform (European Commission, 2014d).

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<sup>22</sup> <https://www.clustercollaboration.eu/eu-initiatives/european-cluster-observatory>

<sup>23</sup> <https://www.cluster-analysis.org/>

<sup>24</sup> <https://www.clustercollaboration.eu/>

## 5. CRITICAL ANALYSIS OF THE EU INDUSTRIAL STRATEGY APPROACH AND IMPLEMENTATION

### KEY FINDINGS

- The range of policy measures and areas mobilised by the EU industrial strategy is wide and the coverage is almost exhaustive. This raises the risk that potential conflicts of objectives develop between policies with different underlying intervention logics.
- The development of new policy areas at the intersection of the three broad approaches underlying the EU industrial policy strategy potentially mitigates this risk by combining different policy streams on the ground. The emergence of these new policy fields shows the potential for reactivity and adaptability of the strategy to changing conditions and heterogeneous stakeholders.
- The horizontal and framework policy approach remains a central traditional pillar of the EU industrial strategy. The extended competence granted to the EU in the corresponding policies (e.g., trade or competition policy) sometimes conflicts with Member States' positions.
- The thematic-sectoral approach identifies the wide socio-economic goals it aims at tackling and covers the most dynamic area of intervention. On the contrary, the territorial approach does not rank particularly high on the agenda of the strategy, even though Cohesion policy is a major financial contributor to the strategy.
- A large number of governance mechanisms develop at different levels of governance, bringing together different types of stakeholders, which contribute to break "silos". However, they form a scattered set and an EU-wide coordination mechanism to combine the different available sources of funding is missing.
- Evidence from case studies shows that EU policies favour the consolidation of policy capacity at regional level. Similarly, the institutional setting is a decisive factor determining the outcome of EU policies in support to industrial development.

Based on the detailed analysis of the proposed overall approach and the specific policy measures covered by the EU industrial strategy, this Chapter looks at the way in which the whole strategy is implemented and conducts a critical analysis of the EU industrial policy along the criteria identified in section 2.3. It looks at whether the EU industrial policy strategy adopts:

- A clear definition of socio-economic objectives with matching resources to achieve them;
- An attention to context-specific dynamics;
- An integrated perspective coordinating multiple policies;
- A system of governance providing for the vertical and horizontal coordination of stakeholders, including mechanisms favouring policy capacity.

To do so, it takes two perspectives. It both looks at developments at EU level, and adopts the regional / national standpoint. The first section reflects on the overall policy mix and related intervention logic that underlie the EU industrial strategy as well as on policy innovations that develop in the context of a renewed governance system. The second section draws the lessons from case studies looking at how the different measures covered by the EU industrial strategy are implemented in different typologies of regions and countries.

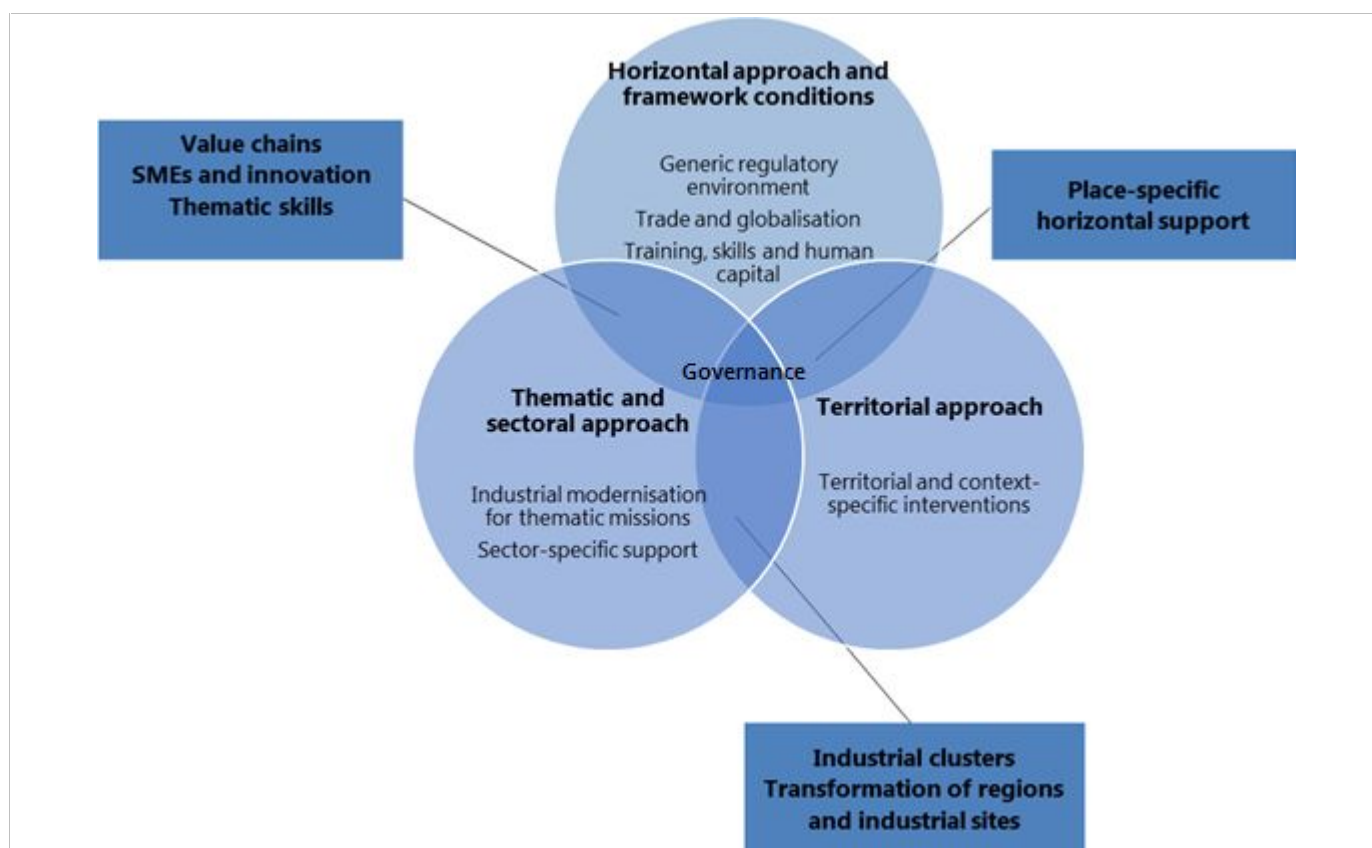
## 5.1. Policy mix and delivery

This section assesses the coherence and relevance of the entire policy mix of the EU industrial policy strategy, i.e. how the three composing approaches and their corresponding measures combine and complement each other. It also identifies the EU funding sources that contribute to several of the proposed measures and clarifies the governance arrangements underlying the strategy.

### 5.1.1 Overall policy mix

To facilitate the analysis and understand the global underlying logic of the EU industrial policy strategy, Figure 5 below offers a synthetic view of the different measures and initiatives that compose it, and of how the diverse approaches to which they belong combine together.

Figure 5. Policy measures and areas, and corresponding approaches composing the EU industrial policy strategy



Source: Authors based on the methodological framework and EU measures

An overall look at this figure confirms that the range of policy measures and areas mobilised by the EU industrial strategy is **extremely wide and the coverage potentially exhaustive** – even if some elements that would be essential such as SEVESO (industrial risk) and REACH (chemical risk) are not mentioned in the 2017 Strategy. The proposed strategy can therefore be considered to be “holistic” in the sense that it covers a large number of different policy areas. As such it responds to the views of stakeholders consulted (including governments and industry organisations) who consensually agree with the relevance and feasibility of the holistic approach advocated by the European Commission in this strategy (Authors based on online consultation, 2019), especially in order to give a sense of direction and to encompass the different EU policy initiatives coherently. However, how *really* integrated i.e., coherent and coordinated these different areas are is another question. Part of the answer is provided by looking at the governance arrangement in the following section. Here, an initial reflection can be conducted, concerning the substance of the policies mobilised in the strategy, their coherence and complementarity.

Before examining each approach, a bird's eye view of the strategy reveals different features of interest. One element of relevance for the assessment of the coherence of the entire strategy has to do with the fact that the **boundaries between the different approaches are increasingly blurred**. Even if some types of instruments are closely associated with a specific approach, different individual policy measures or areas can contribute to more than one policy approaches.

For example, regulatory instruments tend to be very relevant to the horizontal and framework conditions approach, but they are also mobilised in the thematic-sectoral approach. A related development has to do with the **multiplication of measures in policy areas at the intersection of broad categories of approaches** – or hybrid measures. For example, EU support to the development of digital skills address both horizontal and framework conditions (human capital development) and thematic-sectoral challenges (digitalisation). This shows to the emergence of new interwoven, integrated policy fields.

This entails several hypotheses to characterise the EU industrial policy strategy. First, these evolutions testify to the **reactivity of the strategy**. The interactions and content of the different approaches contributing to the holistic perspective of the EU industrial policy are evolving, which suggests a response to a changing context and the diversity of situations encountered on the ground, both in terms of policy paradigm and industrial, economic and social challenges.

Relatedly, interventions combining distinct approaches often take into consideration specific issues, and can thus be considered as **particularly adapted to address the heterogeneities of stakeholders and territories** affected by industrial change. For instance, thematic skills for digitalisation can support older workers not familiar with ICT or less advanced territories.

Another potentially positive development is that new policy area at the junction of different approaches contribute to **overcome possible conflicts of objectives** between policies. There is a priori potential trade-offs between the logics of intervention governing the different policy fields mobilised. As a matter of fact, some objectives of the EU industrial policy might be conflicting, such as competitiveness and environmental protection/adaptation to climate change. For instance, EU carbon prices are too low to be in line with decarbonisation objectives (OECD, 2018), though higher levels might harm industrial competitiveness. Another potential trade-off concerns competitiveness versus (territorial and social) cohesion. However, it can be argued that these potential contradictions are not necessarily impossible to mitigate. For instance, clearly spelling out the objectives of each policy and favouring coordination between individual policies might solve at least some of these potential contradictions.

Finally, the **definition of wide socio-economic objectives** is consolidated. Digitalisation and sustainable development are the two main wide socio-economic goals followed through a mission-oriented approach. The multiplication of policy areas at the junction of approaches contributes in diffusing these objectives across policy areas. Digitalisation and environmental sustainability i.e. industrial transformation become pervasive and mainstreamed in different policy areas.

That said, a closer look at the different approaches forming part of the EU industrial policy strategy reveals other deeper features and trends. The **horizontal and framework conditions approach** appears to form a key pillar of the overall EU industrial strategy (European Commission, 2017b; Wyns, 2017). A high number of measures and initiatives can be linked to this approach, but more importantly their contribution in setting the playing field for all industrial activities is decisive, especially those related to the exclusive competences of the EU. Interestingly, they are also those most addressed in the ongoing policy debates, e.g. competition and trade policy, etc. (European Commission, 2019a). This approach can be considered as highly aligned with EU core competence and relies on regulatory instruments. However, it also appeals to areas of competence where the EU has a shared or coordination role with the Member States, e.g. on taxation or general economic policy (European Commission, 2019a).

As these interventions apply relatively homogenously across Europe, there have been recent tensions embedded in national industrial policy traditions and on the ability of the EU industrial policy to account for new features in the world economy (e.g., the rise of China as a direct competitor).

A case in point is the Franco - German position regarding competition rules which developed in response to the Alstom-Siemens case (European Political Strategy Centre, 2019).

Moreover, there has been a gradual shift towards a broader definition of this approach, from a narrow understanding of framework conditions centred on key business environment issues (e.g., trade and taxation) to a wider mobilisation of broad policy areas (e.g. adaptation of the framework conditions for human capital and innovation, with implications for industrial development). It is demonstrated by the rise of important horizontal measures to support industry since the late 2000s (Wyns, 2017), which suggests the adaptation of the strategy to the diversity of situations and contexts that can be observed on the ground. There is thus a significant (and increasing) overlap with the thematic-sectoral approach, as creating the adequate framework conditions is strongly linked to thematic missions, for instance when innovation is expected to contribute to societal or environmental objectives.

The **thematic and sectoral approach** forms another key pillar of the overall EU industrial strategy (European Commission, 2017b; Wyns, 2017), which has been gaining momentum in recent years. Since the 2000s, there has been a gradual shift from traditional forms of support targeting specific industrial sectors towards thematic mission-oriented policies (European Commission, 2017b; Wyns, 2017). As such, the EU industrial policy has the ambition to mobilise multiple EU policies and initiatives to deliver results on challenges of high societal relevance (European Commission, 2017b). This relevance of thematic missions is clearly stated in the 2017 strategy, through the two pillars about digitalisation and green economy (European Commission, 2017b). It illustrates the willingness of the EU to set and pursue long-term socio-economic objectives. As the approach is increasingly contributing to wide societal and economic objectives, the frontiers with other approaches tend to get blurred. In particular, association with the horizontal approach and framework conditions is observable on topics such as value chains or innovation. Similarly, industrial clusters and transformation of specific industrial sites embedded in territorial contexts suggest an overlap with the territorial approach.

Yet, despite the increasingly clear identification and reference to wide objectives, these are addressed across scattered interventions, which do not seem for the moment to form a coherent and articulated set. In this respect, one example of well-structured thematic mission-oriented EU policy is given by the so-called 2050 long term strategy in the field of climate change (see Box 19 and (European Commission, 2016g, 2018j, 2018r)). This example illustrates how the EU is formulating an articulated strategy with dedicated means and milestones.

#### Box 19. Climate neutral Europe by 2050

On 28 November 2018, the Commission presented its strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050 – A Clean Planet for All.

The strategy shows how Europe can lead the way to climate neutrality by investing into realistic technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance, or research – while ensuring social fairness for a just transition. It will build on the new energy policy framework established under the Clean Energy for All Europeans package.

Following the invitations by the European Parliament and the European Council, the Commission's vision for a climate-neutral future covers nearly all EU policies and is in line with the Paris Agreement objective to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C.

The purpose of this long-term strategy is not to set targets, but to create a vision and sense of direction, plan for it, and inspire as well as enable stakeholders, researchers, entrepreneurs and citizens alike to develop new and innovative industries, businesses and associated jobs. It looks into the portfolio of options available for Member States, business and citizens, and how these can contribute to the modernisation of our economy and improve the quality of life of Europeans. The long-term strategy also seeks to ensure that this transition is socially fair and enhances the competitiveness of EU economy and industry on global markets, securing high quality jobs and sustainable growth in Europe, while also helping address other environmental challenges, such as air quality or biodiversity loss.

The road to a climate neutral economy would require joint action in seven strategic areas:

- energy efficiency
- deployment of renewables
- clean, safe and connected mobility
- competitive industry and circular economy
- infrastructure and interconnections
- bio-economy and natural carbon sinks
- carbon capture and storage to address remaining emissions

Source: Authors based on <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy>

There are mixed findings concerning the degree of importance of the **territorial approach** within the overall EU industrial strategy (European Commission, 2017b; Wyns, 2017). Indeed, the territorial dimension of the strategy is not strongly emphasised in the 2017 document. Reference is done to Cohesion policy, which in principle has a territorial claim / basis (especially ERDF and CF) but as argued below, this translates only weakly into reality. That being said, a limited but important number of recent measures can be considered to foster a truly territorial approach. Several instruments and initiatives take into consideration the heterogeneities and context specificities of territories and place-based factors that are relevant to industrial development, in particular Smart Specialisation Strategies.

Other recent developments have enlarged the scope of interventions that can be considered to contribute to a territorial approach of the EU industrial policy, mainly at the intersection with other approaches. Attention to industrial clusters combining territorial and thematic sectoral approaches (European Commission, 2016a) or policy support mechanisms focused at subnational governance since the late 2000s / early 2010s illustrate this trend, which testifies to the redefinition of the outlines of the paradigm underlying policy developments.

To complement the above qualitative considerations on the different streams forming the EU industrial policy, Figure 6 below shows a schematic representation of the **budget available** from EU funding instruments for specific policy themes and corresponding approaches. The total EU budget that can be linked to industrial policy (in a broad economic development sense) is estimated at about EUR 455 billion for 2014-2020. This amount and the other numbers in Figure 6 should be taken with much caution as they overestimate the actual budget available to support EU industry. Cohesion policy funding in particular covers a wide range of interventions, which might contribute to economic development but with loose effect on industry (e.g., infrastructures).<sup>25</sup>

Keeping in mind this caveat, Cohesion policy appears to be a major source of funding in the EU budget allocated to industrial development. About two-thirds of the EU funding contributing to industrial development during the 2014-2020 period come from Cohesion policy. H2020 is the second most important source of funding, followed by EIB, EFSI (Junker Plan), and CEF.

<sup>25</sup> Whenever made possible by the availability of appropriate breakdown and nomenclature, only the most pertinent categories of expenditure are counted. See Annex A1 for a full account.



As mentioned above, in principle Cohesion policy fosters a territorial approach. However, this view should be mitigated, as Cohesion policy covers especially the less developed regions of the EU, restricting its reach and is not always strongly context-specific. Its adaptability to contextual factors is de facto limited to a few instruments and approaches and in some areas (see case studies in section 0).

Cohesion policy is also important in fuelling the other two policy approaches underlying the EU industrial policy strategy. Cohesion policy contributes to the pursuit of EU wide socio-economic objectives. For example, a system of Thematic Objectives was adopted during the 2014-2020 programming period to encourage the concentration of resources over a restricted set of priorities, including digitalisation and sustainable development.<sup>26</sup> Overall, Cohesion policy covers approximately half of the total EU funding related to the thematic **achievement of specific socio-economic goals** (about EUR 370 billion for 2014-2020). This figure confirms that the EU is mobilised in pursuing these goals, but whether these sums are sufficient to reach these objectives is an open question and beyond the scope of this study. Cohesion policy also contributes to the horizontal approach mainly via the ESF in favour of training etc.

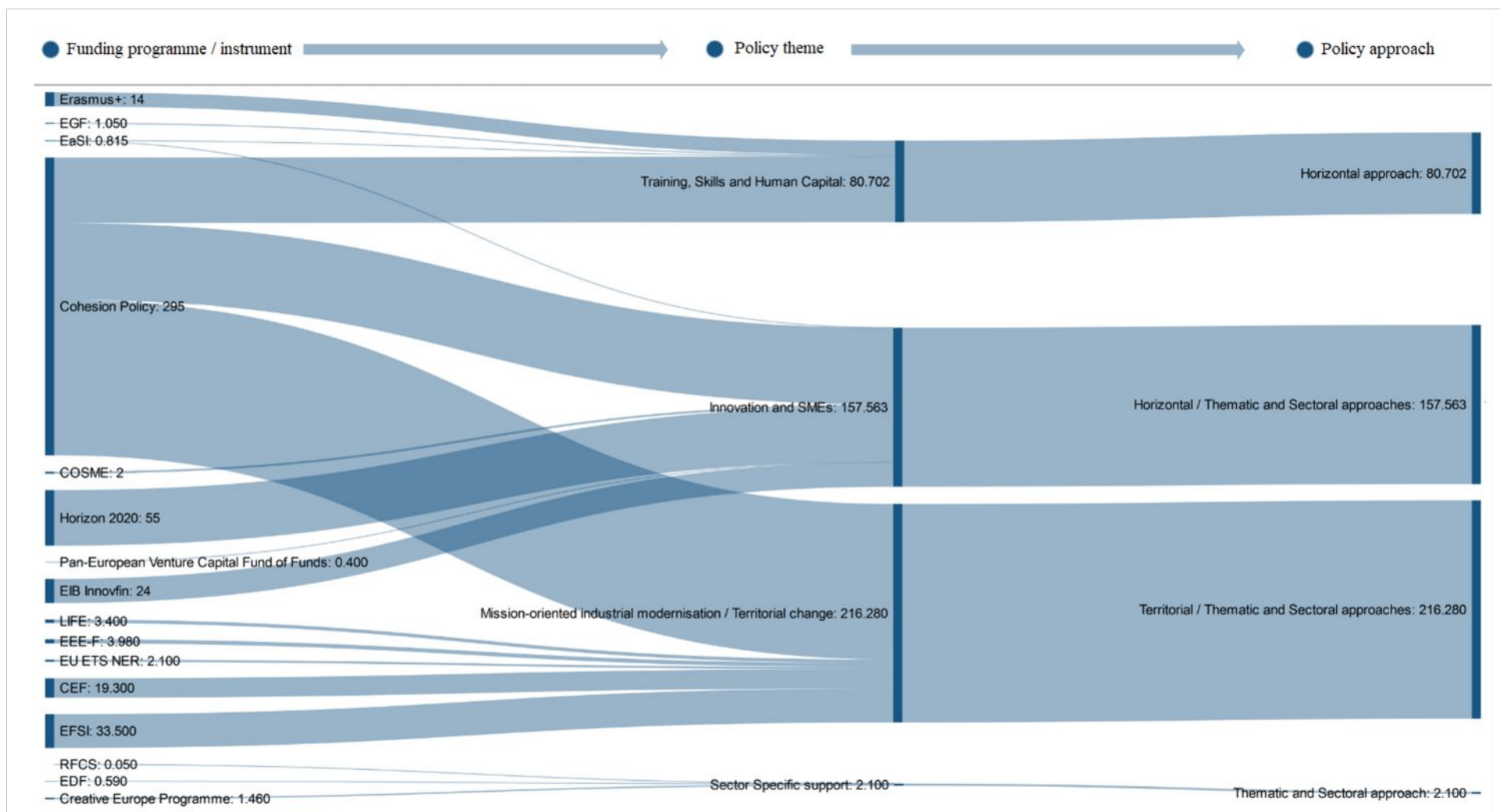
One difficulty with such a massive recourse to Cohesion policy as a funding source for the EU industrial policy strategy has to do with the possibility that this leads to conflicts of objectives of the approaches sustained through this funding. One example is the tensions between the objective of (socio-economic and territorial) cohesion and that of excellence pursued by respectively Cohesion policy and the EU research policy (H2020), which can only be reconciled by keeping distinct the funding and their fundamental *raison d'être*.

Insights from the consultation / peer review suggest that EU funding should not only be increased but also coordinated to successfully tackle challenges regarding digitalisation and circular/low-carbon economy (Authors based on online consultation, 2019).

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<sup>26</sup> This system ensures that regional authorities concentrate Cohesion policy funding on a series of priorities known as Thematic Objectives, including for instance “Enhancing access to, and use and quality of, information and communication technologies” or “Supporting the shift towards a low-carbon economy” (European Commission, 2015f). Importantly, Cohesion policy provides an interesting governance arrangement, the shared management principle, allowing regional, national and EU authorities to jointly design and implement the policy, which can ultimately contribute to the consolidation of policy capacity - see section 5.2 (European Commission, 2016p).

Figure 6. EU funding related to industrial policy for the 2014-2020 period (EUR billion)



Source: Authors based on European Commission, European Parliament and Wyns (2017)

**Abbreviations used:** EGF (European Globalisation Adjustment Fund), EaSI (Employment and Social Innovation programme), COSME (Competitiveness of Small and Medium Enterprises programme), EIB (European Investment Bank), LIFE (L'Instrument Financier pour l'Environnement), EEF-F (European Energy Efficiency Fund), EU ETS NER (European Emission Trading System New Entrants' Reserve), CEF (Connecting Europe Facility), EFSI (European Fund for Strategic Investments)



Overall, the combination between different types of approach and the emergence of policy areas at the nexus between these different categories suggest that the EU industrial strategy is developing towards a more integrated approach where the outcome is more than the sum of its parts. These are signs that the strategy is not just a juxtaposition of measures but that a virtuous circle is taking off even if it is still in its infancy. That being said, for the time being, the strategy still appears to be more an assembled set of pre-existing policies with some areas of integration, which are more intense than a fully integrated policy on its own.

### 5.1.2. Innovations in governance and policy delivery

The emergence of new policy areas described above goes hand in hand with a dynamics of policy innovation, which can be grasped at two levels:

- Governance mechanisms coordinating the different stakeholders
- Modes of policy delivery, with an increasing reference to the “value chain” approach.<sup>27</sup>

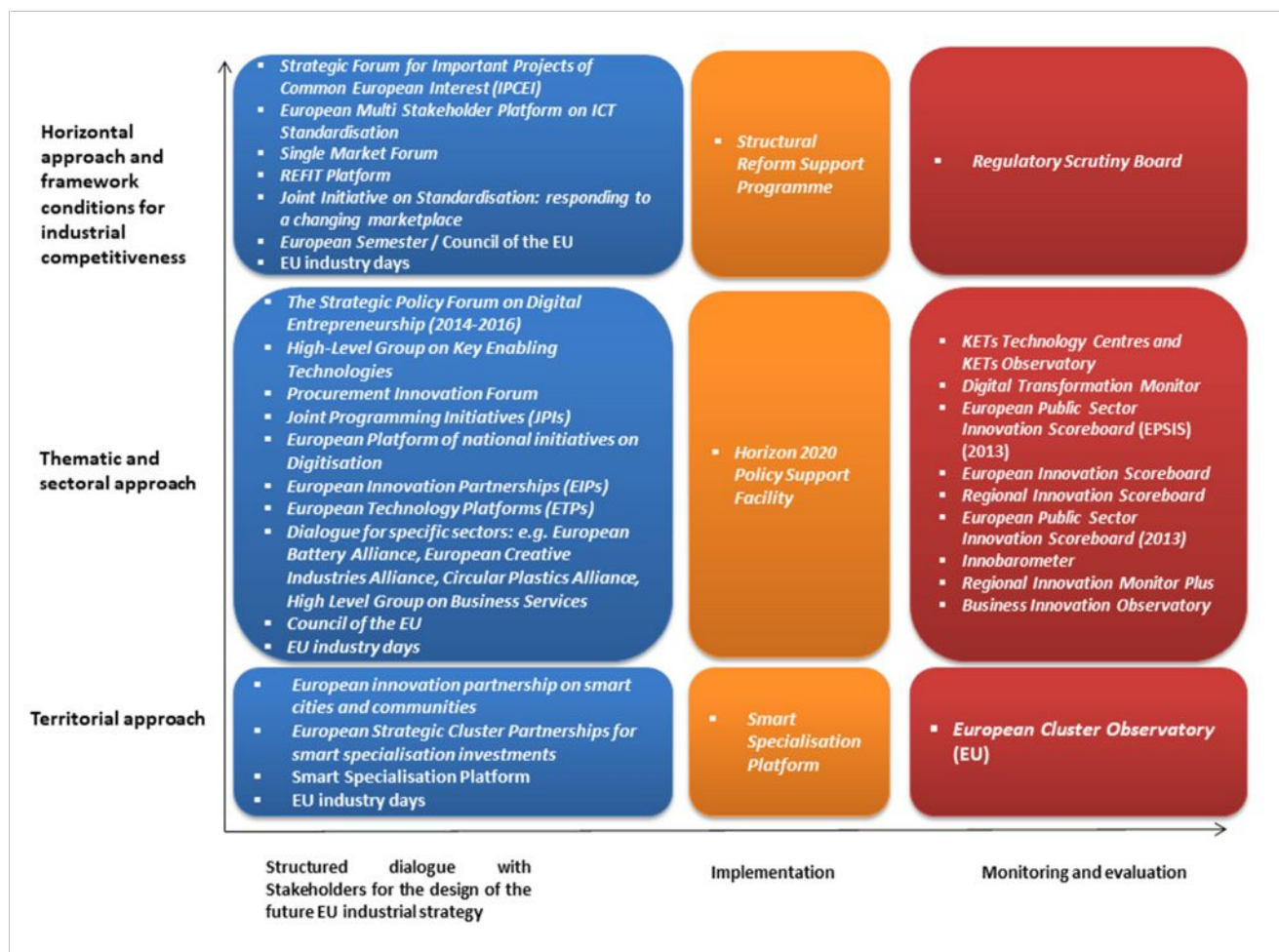
The governance instruments mentioned in the 2017 Communication show a multiplication of platforms of exchange and mechanisms of coordination, involving different types of stakeholders (public authorities, private sector, civil society), mobilising different possible levels of governance (from one to three) and through different configurations (from bilateral collaboration, e.g., European Commission – Member States relations, to multilateral coordination). These mechanisms of collaboration have different functions, ranging from strategic consultative role (e.g., High Level Industry Roundtable) to more concrete executive decisions (e.g., the IPCEI, see below). Several mechanisms are also available at the national level to support policy design and implementation, including the Structural Reform Support Programme and the H2020 policy support facility (European Commission, 2018v, 2018w). A comprehensive mapping of all the governance instruments currently envisaged in the context of the EU Industrial Policy Strategy has been summarised in Figure 7 below. This classification provides for each of the three approaches to EU industrial policy, the main governance instruments aimed at:

- Ensuring a structured dialogue with stakeholders for the design of the future EU industrial strategy;
- Implementing the EU industrial strategy;
- Monitoring and evaluating the EU industrial strategy.

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<sup>27</sup> Interviews with stakeholders.

Figure 7. Comprehensive mapping of governance instruments per type of approach to EU industrial policy.



Source: Authors based on 2017 Commission communication, Commission's website and Wyns (2017)

Among the different collaborative mechanisms described above, one in particular, the **Strategic Forum for Important Projects of Common European Interest**, is instrumental in implementing a “value chain” approach. The goal of this innovative mode of delivery is to change the policy perspective from traditional sectors to value chains, stretching from downstream to upstream phases. It may favour the concrete achievement of socio-economic objectives by mobilising the full network of involved stakeholders. An example of this is the “Battery alliance”. The implications are important inasmuch as it requires enhanced collaboration across policy fields, between institutions that can no longer work in “silos”. As testified by different interviews with EC officials, this is apparent at the EC level, where the different DGs are increasingly actively cooperating to implement this approach, but it is a trend that also applies at other levels of governance, at national or regional level.

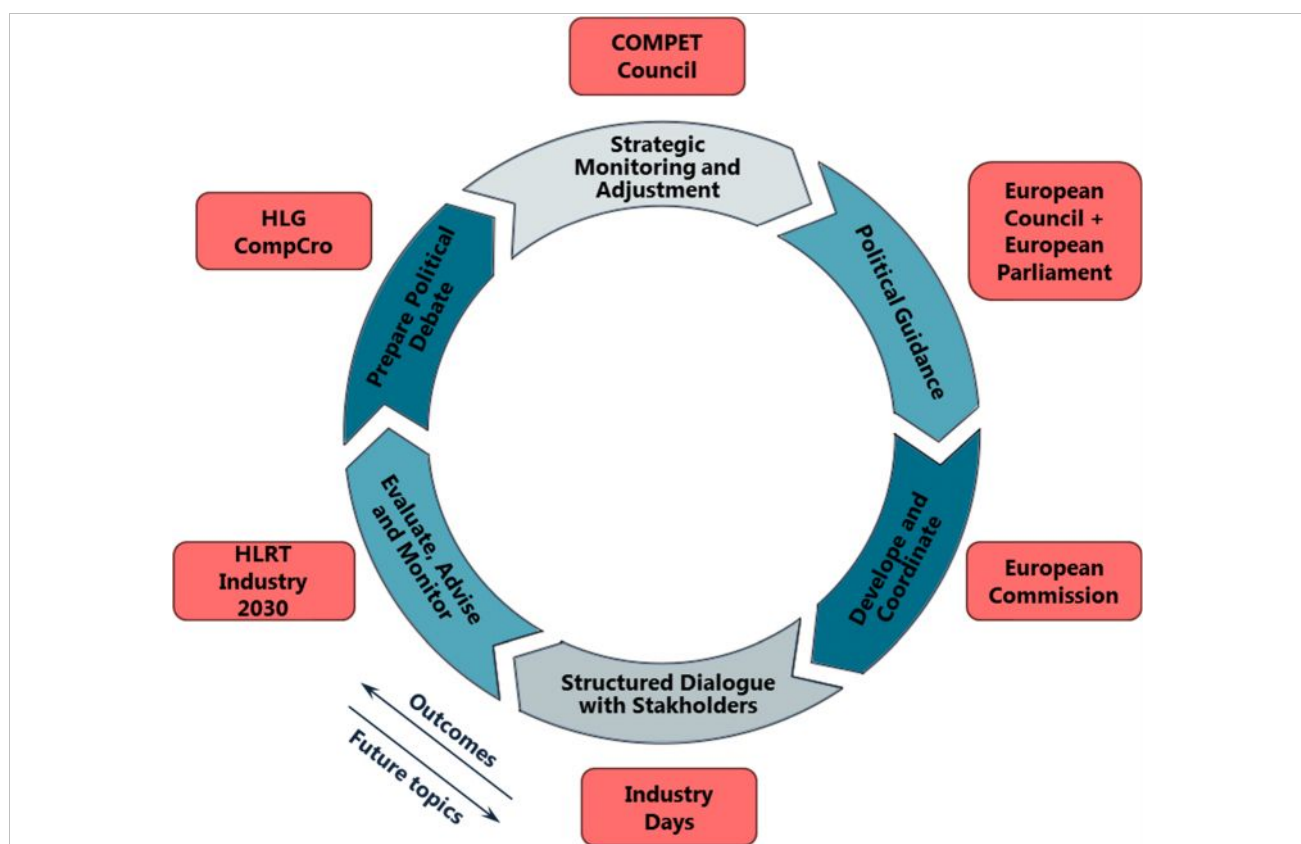
This wealth of governance approaches and mechanisms involved in the EU industrial policy shows an attempt to adapt to context-specific dynamics, which tend to favour the greater involvement of all kinds of stakeholders in public policies to face high complexity and social demands, for instance through the triple/quadruple helix models (Cresson, 1997; European Commission, 2013).

A corollary of these changes in governance is that a small but growing and lively community of stakeholders and practitioners involved in the different industry-related EU initiatives is currently developing at the EU and national levels. One immediate illustration is the success encountered by the Industry Days.

However, the risk is a lack of clarity and difficulties of alignment and communication between the multiple stakeholders involved, as mentioned by the national and regional authorities (Authors based on case studies, 2019).

Challenges regarding the governance structure of the EU industrial policy has been provoking substantial debates in the late 2010s, in line with the attention dedicated by the Commission to these aspects in its last Communications. For instance, responding to the need for a clearer multi-level governance structure for the EU industrial policy, a Presidency report on “Industrial Policy – Governance and Mainstreaming” (Council of the European Union, 2018b) has been sent to the Council in 2018. It proposes an arrangement for the future EU industrial policy based on existing and new fora, summarised in Figure 8 below<sup>28</sup>.

Figure 8. 2018 Proposal of the Council of the EU for the governance cycle of the future EU industrial policy strategy



Source: Authors, adapted from Doc. 14217/18. Presidency report on Industrial Policy – Governance and Mainstreaming

**Note:** Only a visualisation of the Council of the EU proposal, not implemented as of early 2019

A detailed description of the different phases and stakeholders involved proposed by the Council is provided in Table 6 below.

<sup>28</sup> The role of the European Parliament in this framework was not originally foreseen in the Presidency report, but it is included here below by this report's authors to account for the European Parliament's legislative and budgetary power.

Table 6. Description of the governance cycle proposed by the Council of the EU for the future industrial policy

Phase of the governance cycle	Description	Governance instrument	Stakeholders involved	Notes
<b>1. Develop and coordinate</b>	A prominent role is recognised to the European Commission in the development and implementation of the EU industrial policy, which should be implemented in close cooperation with Member States and stakeholders	European Commission's Communications on the EU Industrial Policy Strategy	European Commission in cooperation with Member States and relevant stakeholders relating to industry	The appointment of a Vice-President of the Commission dedicated to industrial policy and responsible for developing and coordinating the future EU industrial policy strategy
<b>2. Structured dialogue with Stakeholders</b>	Cooperation between European Institutions, Member States and industry is implemented in the context of the Annual EU Industry Days, serving as a forum for stakeholders to showcase their activities, learn from each other, discuss cross-cutting issues and develop joint vision for the future	Annual EU Industry Days*	Policy makers, experts and Industry at European, national, regional and local level	Extension of the Industry Days to an Industry Week with events all over Europe
<b>3. Evaluate, Advise and Monitor</b>	In order to support the Commission in drawing conclusions from the Industry Days and give advice in defining priorities for future measures as well as to monitor progress and implementation, the High-Level Industry Roundtable "Industry 2030" was set up in 2018 and its lifetime is limited to the mandate of the current Commission (until 2019)	High-Level Industry Roundtable "Industry 2030" *	Composed of 20 experts appointed for personal capacity or for representing common interest of industrial enterprises or employees	The successor should be provided with a permanent lifetime or a broader mandate to guarantee for a longer-term structure. Moreover, it should bring together not only high-level experts from academia and business representatives but also from the EESC and CoR

Phase of the governance cycle	Description	Governance instrument	Stakeholders involved	Notes
<b>4.Prepare the political debate</b>	With the aim of supporting the Competitiveness Council in monitoring and mainstreaming industrial policy across relevant policy initiatives at EU level, the HLG was set up in 2014	High-Level Group on Competitiveness and Growth (HLG)	High level representatives appointed by the three Trio Presidency Member States under unanimous decision and a Commission representative	The HLG should discuss the annual report of the Industry 2030 and includes of its conclusions on the implementation of the strategy in view of the November COMPET Council. Moreover, Member States should be included
<b>5.Strategic monitoring and adjustment</b>	Responsible for four major policy areas: internal market, industry, research and innovation and space	Competitiveness Council	National Ministers responsible for trade, economy, industry, research and innovation, and space and relevant European Commissioners	It should act as a platform to coordinate different groups, interests and stakeholders.
	Ministers can put forward priorities and respond to urgent issues and developments in all areas relevant to the core business of the Competitiveness Council	Competitiveness Check-up	Competitiveness Ministers from Member States	These discussions and the consequent views developed should be incorporated into legislative dossiers
<b>6.Political guidance</b>	Based on the input of the COMPET, political guidance for new policy goals concerning industrial competitiveness, jobs and growth is provided.	The Spring European Council and European Parliament	Heads of state or government with the President of the European Council and the President of the European Commission. Members of the European Parliament.	Not applicable

Source: Authors, adapted from Presidency of the Council of the EU (2018)

(\*) – Governance instrument mentioned also in the 2017 Commission communication for a “Renewed EU Industrial Policy Strategy

**Note:** Only a visualisation of the Council of the EU proposal, not implemented as of early 2019

Another example of such debates on industrial policy governance is the proposal featured in a recent paper by Industry4Europe<sup>29</sup> (See Box 20).

<sup>29</sup> Industry4Europe is a coalition of 138 member organisations from across the EU and spanning most sectors of the economy dedicated to campaigning for an ambitious EU industrial strategy. See <https://www.industry4europe.eu/>

## Box 20. Proposal of governance structure for the EU industrial strategy by Industry4Europe

The Industry4Europe Joint Paper on “A Governance Structure: For an ambitious EU Industrial strategy” considers that the future governance structure in the field of EU Industrial Strategy should be based on two pillars:

- An informed and permanent dialogue between the industry and policy-decision makers in association with civil society stakeholders;
- A structure of European institutions which allows to address and implement the EU industrial strategy at highest level.

By calling for a long-term vision for Europe’s industry which in turn demands for a long-term governance structure, the Industry4Europe coalition proposed to adapt the REFIT model used for Better Regulation in the field of the EU industrial strategy. Translated into practice, this suggestion consists of a set of recommendations which can be summarised as follows:

- The appointment of a Vice-President of the European Commission specifically dedicated to Industry and therefore in charge of developing and implementing the revised and longer-term EU Industrial Strategy;
- The creation of a Commission’s EU Industrial Strategy (EUIS) Programme through an EUIS Platform made of one representative per Member States, representatives from the European Parliament, the Council, the European Economic and Social Committee (EESC) and the European Committee of the Regions (CoR), as well as representatives from different industrial sectors (including clusters) and the Civil Society (trade unions, consumers organisations, NGOs, academia);
- The publication of an annual Report on the results of the EU Industrial Strategy touching upon all the Commission’s relevant policy fields (Investment & Competitiveness, Trade, Employment & Skills, Research & Innovation, Internal Market, Energy, etc.).

Moreover, a key role is proposed for the European Council and the Competitiveness Council in the monitoring of the EU industrial strategy in conjunction with the European Parliament’ ITRE Committee.

Source: Industry4Europe, “A Governance Structure: For an ambitious EU Industrial strategy” (July 2018)

**Note:** Only a visualisation of the Industry4Europe proposal, not implemented as of early 2019

Summing up, there is progress towards improved coordination and the end of a silo approach to the different EU policies, however the level of coordination between policies forming part of the EU industrial policy strategy that it is possible to reach given its costs still appears below what is desirable (Authors based on interviews with EU officials, 08/02/2019). There is no strong governance but a series of coordination mechanisms to design and adapt the policies that are covered by the strategy. The EU industrial policy strategy partially reconstructs its coherence from multiple pre-existing policies through decentralised mechanisms, but these tend to take place within the concerned policies, or at the intersection of the main approaches underlying the strategy. There is still little effective overall coordination mechanism to combine the different sources of funding into an integrated set. As such the EU industrial policy is still a “meta policy”.

## **5.2. Implementation and effects of the EU industrial strategy «on the ground»: evidence from case studies**

In order to capture the diversity of regional and national approaches to industrial policies, five case studies have been carried out. They provide a snapshot of how regional and national stakeholders implement industrial policy, and how this connects with EU initiatives and instruments in this area on the ground.

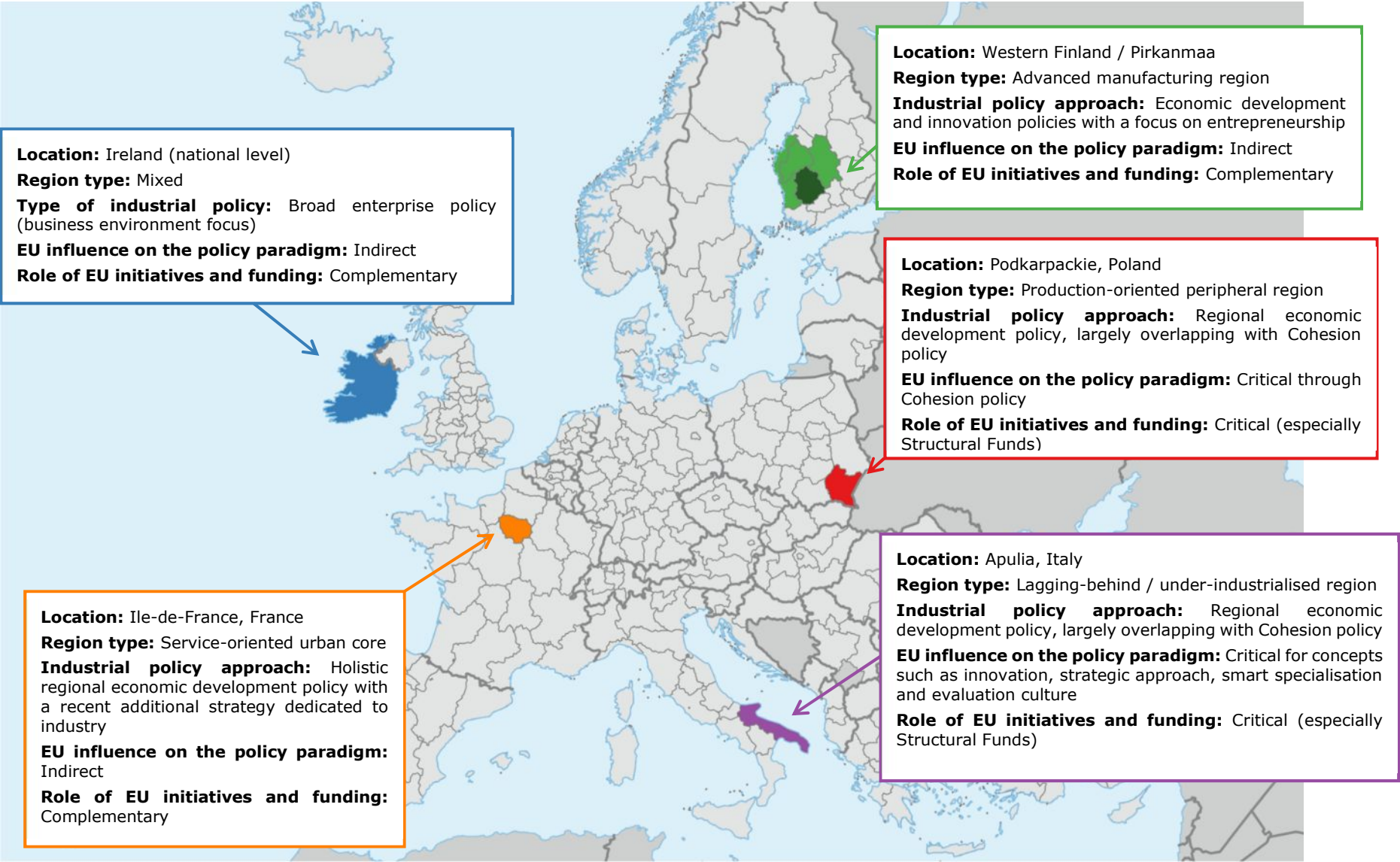
### **5.2.1. Selected case studies**

The case studies have been selected to cover the wide spectrum of situations and characteristics in which industrial policies are conducted (see Annex A2).

Map 1 below gives an overview of the selected case studies, as well as the rationales for their selection.



Map 1. Overview of the regional and national case studies

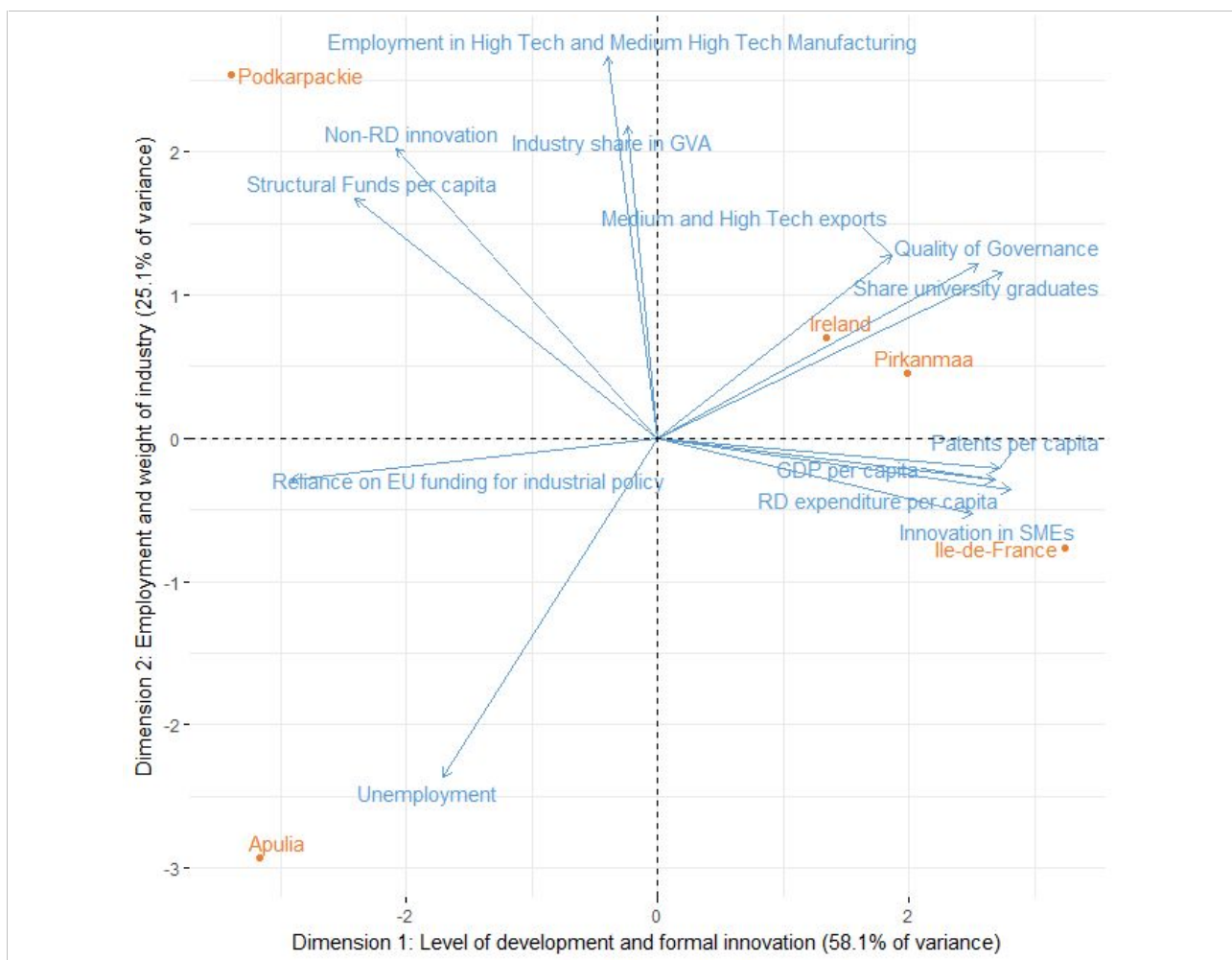


Source: Authors based on case studies



Quantitative associations between relevant indicators using a Principal Component Analysis<sup>30</sup> bring interesting information on the interplay between economic characteristics and the role of the EU, national and regional policies among the case studies. In Figure 9 below, arrows pointing in the same direction mean that the involved characteristics tend to occur together at the regional (national) level. Regions (or country) that are in the direction pointed by an arrow tend to be strong in the related characteristic (e.g. Podkarpackie has a high level of non-RD innovation). Symmetrically, regions (country) that are located in the opposite direction of an arrow tend to be weaker in this characteristic (e.g. Apulia has a relatively weak quality of governance). Moreover, arrows that are pointing in opposite directions show that variables do not occur together at the regional level, e.g. high Structural Funds per capita is not verified together with high R&D expenditure per capita.

Figure 9. Links between the EU influence, industrial and economic characteristics in the regional case studies (Principal Component Analysis)



Source: Authors based on case studies

The case studies clearly belong to distinct “clusters” that correspond to the categories used in the selection process. In particular, the characteristics of Apulia and Podkarpackie diverge substantially from those of Ile-de-France, Pirkanmaa and Ireland taken together.

<sup>30</sup> Please see the technical annex for methodological details

The graph also shows that the weight of industry in terms of employment or value added hides a wide range of situations and is not the main criteria to analyse industrial ecosystems and related policies. Moreover, the EU influence (proxied by Structural Funds expenditure per capita and the weight of EU sources of funding compared to national or regional sources for economic development) tends to be more important in contexts where levels of development and innovation are relatively low (e.g., Apulia, Podkarpackie), which mirrors attribution criteria based on GDP per capita. However more developed regions capture more of the funds that are allocated on a competitive base (e.g. H2020 for advanced research projects), though it is not directly comparable to Structural Funds in terms of budgetary envelope or goals.

### 5.2.2. Lessons from case studies

A number of lessons can be drawn from a comparative analysis of the case studies (see Vol. 2 for the detailed information on each case study). In general, the term “industrial policy” is not used at the regional level (and only in some Member States at the national level), and when it is the case it is usually as a complement to a more general economic development policy, for instance in Ile-de-France. Industrial policies at the regional and national levels are closely linked to innovation, entrepreneurship or general economic development policies in all studied cases.

**Long-term industrial history and traditions regarding policy approaches** are critical to understand regional industrial policies. In particular, regional and national patterns of development (e.g. openness to FDI for Ireland), historical events (e.g. fall of communism in Podkarpackie), political and intellectual influences (French interventionist tradition in Ile-de-France) or crises (2008 crisis and the demise of Microsoft and Nokia in Pirkanmaa) tend to shape the policy approaches, especially regarding the role of government.

The **institutional context** is also a key factor shaping regional industrial policies. This element, though correlated with more objective metrics of economic development, may also explain differences that are observed between regions that are relatively similar from a structural and economic perspective. In particular, the division of competence between levels of government directly influences the scope and priority of industrial policies. For instance, the ongoing decentralisation processes in France and Italy have consolidated the role of regional economic interventions in Ile-de-France and Apulia, with some tensions regarding the role of the central authorities. In the Finnish case, the governance arrangement emphasizes linkages between the national and local authorities, but innovation / industrial policy is mostly devised at national level. As a consequence, the policy mix is directly affected by organisational aspects, because institutional arrangements may restrict the scope of intervention of regional authorities and/or their financial capacity. This explains why the policy mix varies substantially across the different regions. Moreover, the “compartmentalisation” of government services in silos relative to different policy areas can limit the EU industrial policy influence on regional and national policies, as stakeholders designing and implementing economic and industrial policies may not be the same as or in close contact with those holding a EU-specific expertise, as seen in the Irish or French cases.

More generally, the influence of **EU policies on regional industrial policies depends on whether EU initiatives are in line with regional priorities, competence and capacity**. For instance, the regional industrial policy of Ile-de-France features a specific support service to secure H2020 funding, in line with policy capacity (e.g. dedicated counsellors to this task), competence (innovation is an exclusive regional competence) and priority (regional focus on technological integration and digitalisation of enterprises). In the Finnish case of Pirkanmaa, there is limited direct connections between EU policies and regional initiatives since industrial policies are mainly endogenously crafted at national level through cooperation with regional and local actors.

But the region is found to be congruent with trends in EU policies and could even be considered as influencing the EU industrial policy paradigm, e.g. via its participation to the “High Level Group on maximising the impact of EU research and innovation programmes”. More generally, a **shift towards a more holistic and horizontal approach** to industrial policy is observed in the case studies, which is consistent with the current EU strategy. Regions tend to emphasise specific aspects, such as entrepreneurship or innovation, depending on their policy priorities and economic characteristics. There is however no clear evidence that this overall shift observed at the regional level is the direct consequence of the EU influence, especially in the more developed regions such as Ile-de-France and Pirkanmaa.

More specifically, the EU has clearly contributed to the better inclusion of some emerging themes in regional and national industrial policies, such as digitalisation thanks to the Digital Agenda, as observed in Apulia or Ireland. On more operational aspects, in all the cases reviewed, the different EU funding instruments are rarely the object of an integrated approach per se. Moreover, the different conditions of access of the EU instruments (e.g., H2020 compared to Structural Funds) can be detrimental to the exploitation of their full potential, as mentioned in the Apulia case. In principle, the Smart Specialisation Strategies promoted in the context of Cohesion policy offer a useful frame to combine and coordinate different strategies and funds from different origins that are relevant for industrial development. However, there is little evidence across the cases that S3 have had such effect.

There is a clear **overlap between Cohesion policy and industrial policy in regions with a lower level of development**, such as Apulia or Podkarpackie. It is observable both in terms of financial resources and policy paradigm. Indeed, EU funding (especially through the Structural Funds) forms the bulk of resources that can be used by regional authorities to develop their industrial policy in these regions. The Cohesion policy framework also shapes the regional policy approach, going as far as being responsible for the introduction of the concept of regional industrial policy itself in some areas such as Apulia. However, this overlap can also be a form of constraint, with regulatory requirements of Cohesion policy hampering an autonomous definition of industrial policy, e.g. in Podkarpackie. In less developed regions, there is also a risk of substitution of regional and national sources of funding by EU ones, as explained in the Apulia case.

In the **more developed regions**, the **EU has a more diffuse and indirect role**, compared with the less developed regions. In general, these regions have developed economic or industrial policies endogenously. As mentioned previously, this fact is also true regarding EU funding benefiting regional and national industrial policies. More developed regions, such as Pirkanmaa or Ile-de-France, are less reliant on EU funding to promote their industrial development. They thus mainly see these sources of funding as complementary with regional or national ones. However, EU funding instruments make an important contribution, even in these more developed regions, because they target key regional priorities and types of expenditure not necessarily covered by other instruments. It should also be noted that absorption capacity of EU funds remains an issue in several regions (more and less developed alike), which may reveal difficulties regarding regional or national policy capacity (see following paragraph for more information on this topic), for instance in selecting projects of adequate quality.

**In principle, policy capacity and/or governance can be improved by EU policies**, e.g. through a process of policy learning. However, evidence on the actual influence of the EU on these aspects is mixed in the context of regional (national) industrial policies. The observed impacts of the EU on regional (national) policy capacity and governance changes that are relevant to industrial development do not seem to depend strongly on the amounts of EU funding received, but there is a clear link to the

level of development, which itself conditions Cohesion policy funding. It also seems that the EU influence fluctuates in time, taking into consideration previous EU contributions and local context.

The Eastern European region of Podkarpackie is emblematic in this respect. It has benefited from a learning process in administrative capacity, strategic planning and governance, especially in the framework of Cohesion policy. It has been especially marked for the development of the partnership principle. However, the extent to which this process still takes place in current times is not clear. For example, business **players** are still not satisfactorily included in the design of the regional policies, including on industrial aspects. Similarly, the EU influence on policy capacity and governance has started years ago in Apulia, with important effects regarding conceptual underpinnings, strategic approach and monitoring and evaluation culture. The EU influence on regions and countries which traditionally have a relatively high quality of governance and policy capacity (e.g., Ireland, Ile-de-France, Pirkanmaa) is less decisive. However, recent emerging modalities of policy learning are being developed through the participation and contribution to “soft” instruments such as platforms or networks of exchange, which could also promote good practices and improved governance. More developed regions and countries, such as Ile-de-France and Pirkanmaa, but also Ireland are active in the European Enterprise Network, S3 platform, the National Contact Point Academy or High-Level expert groups.

The Smart Specialisation Strategies are mentioned to be vehicles of policy capacity improvements (e.g. for innovation or partnerships), especially in less developed regions such as Apulia and Podkarpackie.

Finally, **administrative burden and controls** are still considered as an obstacle by stakeholders in using EU funding and initiatives, regardless of the type of region (more and less developed). In particular, the ability of the EU framework to account for risk-taking behaviours (e.g., innovative projects) and ease cascade funding (combining EU with national and regional funding) remains a key administrative and implementation issue. The weight of administrative burdens and controls tend to be aggravated in less developed regions, especially for the access to competitive instruments outside Cohesion policy (e.g. COSME, H2020).

## 6. CONCLUSIONS: A FUTURE-ORIENTED EU INDUSTRIAL STRATEGY ?

### KEY FINDINGS

- The EU industrial strategy is still a “meta-policy” grouping together a set of existing policies. However, a more integrated approach is emerging, as exemplified by the diffusion of the “value chain approach” which makes possible better coordination between policies.
- Thematic or mission-oriented priorities are also being defined around the priorities of digitalisation and green growth. Different action plans and roadmaps are being designed in related areas, but they are not associated with ambitious means and clear long-term objectives.
- There appears to be limited policy attention for territorial cohesion, even though this is a particularly sensitive issue in the European context, and one which is decisive to ensure the success of the strategy.
- In order to further strengthen the thrust initiated with the 2017 EU industrial strategy, it is proposed to reflect around three main series of issues: Make sharper strategic choices, Engage regions, and Keep experimenting.

### 6.1. Emerging trends in EU support to industry

#### 6.1.1. Weak thematic mission-oriented priorities

Thematic or mission-oriented priorities emerge in the EU industrial strategy around the themes of digitalisation and green growth, showing the capacity of the strategy to identify the most important challenges bearing on the European economy, and to turn them into opportunities. However, there is no marked concentration of efforts and resources around these priorities, and there is little corresponding long-term planning, involving targets, means, instruments, and the definition of phases and intermediate milestones that make the achievement of these objectives realistic. Numerous innovative and ambitious action plans are being developed – for example, related to the development of the circular economy or key enabling technologies, but they appear scattered and insufficiently structured over the long term, with indeterminacy regarding allocated budgets. As such, the sometimes courageous choices (e.g., on the circular economy) are vulnerable to the next political cycle that the parliamentary election of May 2019 will inaugurate.

At the regional level, however, EU policies have a potential role to play in terms of agenda setting. The Digital Agenda, for example, was mentioned in the case studies as having a significant influence while the definition of Thematic Objectives in order to concentrate Cohesion policy funding illustrates a way to steer possible sharper strategic choices. This shows that there is a potential to seize.

#### 6.1.2. An integrated approach?

The 2017 Communication brings together different policies and instruments under the same umbrella. These policies are characterised by distinct underlying logics of intervention which might be conflicting (e.g., yielding a trade-off competitiveness vs cohesion) and may conflict with other EU policies (in particular competition policy). Weighing up the different components of the “policy mix” characterising the EU industrial strategy shows the importance of the horizontal and thematic approaches to industrial

policy, with some neglect for the third component – i.e., the territorial dimension of the strategy (see below).

Interestingly, the increasing development of policy initiatives at the junction of the three approaches is a way to combine them and reconcile potential contradictions. For example, there is much expectation placed on the “value chain approach”, which is being embraced in different areas, following the example of the Battery Alliance, and which culminated with the identification of six key strategic value chains early in 2019. Value chains require coherent combinations of policies from their upstream stages to downstream stages. As such, they reconcile potential conflict of objectives on the ground. Besides encouraging the adoption of new practices and approaches, the EU industrial strategy also fosters a sense of community among the stakeholders involved, which contributes to strengthening its overall coherence.

These developments augur well for the strategy to further develop in a more integrated way, but they are in their infancy, and the effects will take time to materialise and diffuse. Overall, the strategy offers few formal mechanisms of coordination between policies at the EU level. At the regional level, a trend towards more integrated horizontal holistic strategies is identified, but not necessarily as the result of EU policies. On the contrary, there is a persisting difficulty in combining instruments, while the potential of new developments, such as Smart Specialisation Strategies, to offer a pertinent framework where policies and strategies can be combined does not yet seem to have been grasped.

Summing up, the strategy is more an ex post coherent reconstruction of existing measures and programmes than a novel integrated approach per se. For this reason, the EU industrial strategy can still be seen as a “meta-policy”.

### 6.1.3. Context-specific dynamics

The case studies forcefully confirm the importance of specific local and regional (or national) factors in shaping the outcomes of EU industrial policy measures. Yet, the territorial dimension of the EU industrial strategy is weak. The fact that Cohesion policy is mobilised as a funding instrument on different fronts contributes to diluting its original *raison d'être* in terms of the pursuit of territorial cohesion. The case studies reveal that concerns of less developed regions fall by the wayside of the thrust of the EU industrial strategy. In addition, the case studies also show the limited capacity of EU policies to adapt to local specificities. In this respect, high expectations are placed on the implementation of Smart Specialisation Strategies (S3) to foster place-based approaches. However, S3 are a relatively recent development and evaluations are not yet available to document their real effects on the ground.

In general, the strategy does not seem to fully acknowledge that potential effects of challenges such as globalisation, the development of new technologies or climate change (whether threat or opportunities) are felt at the regional level, and that this is where they should also be addressed and treated. Along with territorial cohesion, little attention is paid to social inclusion. Both issues are treated as if they are unlinked to industrial developments, but the fast diffusion of new technologies and exogenous shocks are, more than ever, at the roots of social and territorial polarisation, causing asymmetric effects. The overall EU industrial strategy addresses re-skilling and lifelong adaptation of the workforce, but without a strong territorial reference. Overall, the priority originally placed on territorial cohesion seems to have faded away, probably because competitiveness is the driving force of the renewed EU industrial strategy.



#### 6.1.4 Governance and policy capacity

There is evidence that more cooperative and collaborative approaches are being adopted, involving stakeholders at different levels of governance and addressing traditional policy areas through new approaches. For example, the value chain approach necessitates vertical/horizontal coordination involving Member States and, possibly, regions. This contributes to overhaul “silos”, as more numerous and more effective collaborations take place within the EC (between DGs) and between stakeholders (the EC, national/regional authorities, industry, knowledge institutions, etc.).

While much emphasis is on vertical (multi-level) coordination involving the EU, Member States and regions, there is less policy priority placed on horizontal coordination at the regional level. There are several platforms where coordination between regional initiatives develops (e.g., Smart Specialisation Platform, Vanguard initiatives). These bottom-up and independent initiatives are interesting emerging developments, offering the concrete possibility to implement a value chain approach. They naturally expand across borders, and their increasing number represents an opportunity for all regions to take advantage of them. Regional and national authorities can support relevant regional stakeholders in this process. However, if these initiatives are not themselves coordinated at a higher level of governance – i.e., if this trend is not “governed” – the risk is that less advanced regions are left out of the (re)deployment of value chains promoted through these initiatives.

Also, all the above positive developments and multiplication of coordination mechanisms (platform, networks, value chains etc.) cannot conceal the fact that there is little in terms of an effective EU-wide coordination mechanism to combine the different available sources of funding into an integrated set.

As testified by the development of new policy areas and approaches (generally at the intersection of the traditional approach), the strategy contains elements of reactivity, and shows its capacity to devise new delivery mechanisms and adapt to new constraints. Also, at the regional level, there is positive evidence that EU policies contribute to policy learning and policy capacity development. At the same time, the regulatory framework underlying EU policies (of Cohesion policy in particular) still appears to be too rigid to encourage experimental and risk-taking endeavour.

## 6.2. Towards a future-oriented EU industrial strategy

### 6.2.1. Sharper strategic choices

Europe needs policies for transformative change and, therefore, to make social choices over alternative pathways of development (Schot and Steinmueller, 2018). In order to address the emerging challenges, the European public authorities, at the different levels of government, should provide the direction towards new “socioeconomic paradigms”, taking into account options beyond the narrow boundaries set by incumbents. This requires sharper strategic choices to steer and federate efforts, avoid dispersion or overlap and ultimately achieve transformational change. Focusing on well-defined options indeed makes possible to concentrate resources and build-up of capabilities. For the time being, digital transformation and climate change are broad areas prioritised by the EU strategy with related roadmaps and action plans. However, policy coordination and the dedication of adequate resources to match the identified priorities remain open issues even in these areas.

A future-oriented EU industrial strategy should rely on a limited set of specific priorities e.g., the development of the circular economy, that are coherent, coordinated and endowed with the necessary means of action. In parallel, a single overarching strategic objective should be clearly identified to give a sense of direction to these specific priorities and align them in a common reinforced thrust. The EU should throw its weight behind a clear overall objective on the model of its climate change policy (“2050



long-term strategy”). This overarching strategic objective would most probably have to do with the challenge of the environment and of climate change. This is an area where the EU has both a strong legitimacy and the capacity to act efficiently, given the supranational dimension of the issues at stake, and where the EU should ascertain its leadership.

Whether such sharper choices can be made in the European context, where the models of reference are still diversity and horizontality, remains to be seen. In principle, sharper choices and strategic goals (together with targets, means etc.) are easier in a centralised context. The EU should try and turn its apparent weakness into an asset. It should keep activating sophisticated mechanisms of coordination to organise actors willing to operate collectively and guarantee a broad, open and transparent dialogue with stakeholders at different levels in society, which would lead to the consensual identification of clear strategic objectives. For this, the principle of subsidiarity should be more forcefully complemented by an emphasis on shared responsibilities.

### 6.2.2. More effective involvement and coordination of regions

As confirmed by the case studies, economic outcomes of policy interventions are deeply influenced by the institutional setting in which the latter take place. This reinforces the case for dedicating policy attention to the regional level. This can be done along different lines.

First, this is where place-based approaches in the context of Smart Specialisation Strategies can be developed. This experiment initiated in 2010 should be pursued and evaluated.

Second, fostering interregional cooperation along with multilevel governance could be an effective way to boost cluster networks and to strengthen Europe’s competitive capacity to lead the way in new emerging industries that offer solutions to common challenges. At the same time, horizontal regional coordination could help less advanced regions to be part of the (re)deployment of global value chains. More formalised and systematic mechanisms of coordination at the regional level can help turn threats (e.g., linked to rising protectionism) into opportunities (e.g., reshoring, and shorter, more circular value chains).

The regional level of action is also fundamental to address arising disequilibrium and socio-economic digital and “environmental” divides because this is where their impact is ultimately felt. As part of its industrial strategy, the EU should more actively promote and coordinate the implementation of inclusion policies at the regional level.

While the trend towards more integrated approaches is observable at all levels – national and regional – independent of EU influence, there is room to foster a more integrated approach to available EU policy and funding instruments at the regional level. More effort could be invested to trigger *synergies* between EU instruments at the regional level. Smart Specialisation Strategies are the natural place for this, but regulatory incentives could also be imagined (e.g., devising an “enabling condition” on synergies).

### 6.2.3. Experimental approach

As illustrated in the section above, threats and opportunities are arising very rapidly and are often unexpected (as Brexit shows). In such a “fluid” context, it is necessary to adopt an experimental policy stance, to try and test solutions, and validate them rapidly. This requires specific governance arrangements but also a favourable state of mind which encourages greater risk-taking. Some regional authorities express concern that results orientation promoted in the current programming period might occur at the expense of policy experimentation. The two should be seen as complementary.

A crucial element is institutional learning, since, in a process of experimentation, policies are improved through dynamic feedback loops. This requires a high level of policy capacity – that is, “the capacity of government and other public actors to plan, develop, implement and evaluate purposeful solutions to collective problems” (Denis and Lehoux, 2014). In particular, the ability to find coherent policy mixes (instruments and funding) and coordination capabilities for a wide set of social actors becomes crucial. Equally important are evaluation capabilities, which rely on a system approach and, therefore, offer the opportunity of comprehensive, contextualised and evidence-based policymaking.

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## ANNEXES

### A 1. SOURCE OF FUNDING FOR THE EU INDUSTRIAL STRATEGY

Table 7. Overview of EU funding sources contributing to the EU industrial policy 2014-2020

FUNDING SOURCE		MENTIONED IN 2017 EC STRATEGY	MAIN CONTRIBUTION TO INDUSTRIAL POLICY PRIORITIES	MAIN POLICY APPROACH	TOTAL EU FUNDING
Erasmus+		Yes	Training, skills and human capital	Horizontal and framework conditions	EUR 14.47 billion for Lifelong training abroad for 2014-2020
European Globalisation Adjustment Fund (EGF)		Yes	Training, skills and human capital	Horizontal and framework conditions	EUR 1.05 billion (maximum budget) to support workers made redundant for 2014-2020
Cohesion policy – Structural Funds	European Social Fund (ESF)	Yes	Training, skills and human capital	Horizontal and framework conditions	EUR 80 billion for 2014-2020, including EUR 55 billion for sustainable and quality employment and educational and vocational training
	European Regional Development Fund (ERDF)	Yes	Innovation and SMEs / Industrial modernisation for thematic missions / Transformation of regions and specific industrial sites / Territorial and context specific interventions	Thematic-sectoral / Territorial	EUR 200 billion for 2014-2020, including about EUR 180 billion for core industrial policy themes (without technical assistance, support to administration and social inclusion)
	Cohesion Fund (CF)	Yes	Innovation and SMEs / Industrial modernisation for thematic missions / Transformation of regions and specific industrial sites / Territorial and context specific interventions	Thematic-sectoral / Territorial	EUR 60 billion for 2014-2020
	Competitiveness for Small and Medium Enterprises (COSME)	Yes	Innovation and SMEs	Horizontal and framework conditions / Thematic-sectoral	EUR 2 billion for 2014-2020

FUNDING SOURCE	MENTIONED IN 2017 EC STRATEGY	MAIN CONTRIBUTION TO INDUSTRIAL POLICY PRIORITIES	MAIN POLICY APPROACH	TOTAL EU FUNDING
Horizon 2020 (H2020)	Yes	Innovation and SMEs	Horizontal and framework conditions / Thematic-sectoral	EUR 77 billion for 2014-2020, including about EUR 55 billion with high direct relevance to industrial applications (e.g. without mobility actions and ERC grants)
Pan-European Venture Capital Fund of Funds	Yes	Innovation and SMEs	Horizontal and framework conditions / Thematic-sectoral	EUR 400 million (EU funding), EU 1.2 billion (private funding)
European Fund for Strategic Investments (EFSI)	Yes	Innovation and SMEs / Industrial modernisation for thematic missions	Horizontal and framework conditions / Thematic-sectoral	EUR 33.5 billion for 2014-2020 (EIB/EC)
European Investment Bank - Innovfin	No	Innovation and SMEs / Industrial modernisation for thematic missions	Horizontal and framework conditions / Thematic-sectoral	EUR 24 billion for 2014-2020
Employment and Social Innovation Programme (EaSI)	No	Training, skills and human capital / Innovation and SMEs	Horizontal and framework conditions / Thematic-sectoral	EUR 815 million for 2014-2020, with about EUR 163 million highly relevant to industrial applications (microcredit and social entrepreneurship)
Connecting Europe Facility (CEF)	Yes	Industrial modernisation for thematic missions	Thematic-sectoral	EUR 19.3 billion for 2014-2020
EU ETS Innovation Fund	Yes	Industrial modernisation for thematic missions	Thematic-sectoral	Post 2020
EU ETS Modernisation Fund	Yes	Industrial modernisation for thematic missions	Thematic-sectoral	Post 2020
EU ETS New Entrants Reserve (NER)	Yes	Industrial modernisation for thematic missions	Thematic-sectoral	EUR 2.1 billion for 2014-2020
European Energy Efficiency Fund (EEE-F)	No	Industrial modernisation for thematic missions	Thematic-sectoral	EUR 3.98 billion for 2014-2020

FUNDING SOURCE	MENTIONED IN 2017 EC STRATEGY	MAIN CONTRIBUTION TO INDUSTRIAL POLICY PRIORITIES	MAIN POLICY APPROACH	TOTAL EU FUNDING
L'Instrument Financier pour l'Environnement (LIFE)	No	Industrial modernisation for thematic missions	Thematic-sectoral	EUR 3.4 billion for 2014-2020
Creative Europe Programme	Yes	Sector Specific support	Thematic-sectoral	EUR 1.46 billion for 2014-2020
European Defence Fund (EDF)	Yes	Sector Specific support	Thematic-sectoral	EUR 590 million for 2017-2020
Research Fund for Coal and Steel (RFCS)	Yes	Sector Specific support	Thematic-sectoral	EUR 55 million for 2014-2020

Source: Authors based on European Commission, European Parliament and Wyns.

## A 2. CASE STUDIES - TECHNICAL APPENDIX

### Selection process

The case studies were selected to reflect a wide range of regional and national situations regarding industrial profiles and policies (see Annex). The following selection criteria have been used:

- Geographical coverage (East/West and North/South, rural and urban contexts)
- Variety of (national) traditions regarding industrial policy approaches (sectoral, horizontal...)
- Variety of economic and industrial profiles<sup>31</sup>:
  - **Lagging-behind and typically under-industrialised regions:** They face important structural issues and suffer from a long-lasting impact of the 2008 crisis in terms of employment, education, productivity and outmigrations. They have low innovation capacities and are typically under-industrialised or limited to low technology industries. They are mainly located in Southern Europe.
  - **Production-oriented peripheral regions:** They are the least economically developed regions, as well as those with the most limited education and innovation capacities. They are also characterised by severe outmigrations. However, the weight of industry is critical in these regions, though largely focused on low-tech and production activities, typically integrated into global value chains. They are mostly in Central and Eastern Europe.
  - **Service-oriented urban cores:** They are very dense, developed and attractive regions, typically capitals. They are characterised by high productivity, education levels and formal innovation capacities (e.g. patents, RD spending). However, they are mostly service-oriented, with a low share of GVA derived from industrial activities. In particular, they do not target low tech industries. They still export some medium to high tech industrial products. They are mostly capitals or dense urban regions of Western European States.
  - **Advanced manufacturing regions:** They have a development level that is similar to the service-oriented urban cores, but typically have stronger growth patterns with less unemployment and social difficulties. Their innovation capacities are high and cover formal as well as non-formal activities (e.g. patents and publications but also non-RD innovation and SMEs innovating in-house). Industry is a very significant contributor of the regional GVA, thanks to a specialisation in medium to high technologies. They are mostly located in Austria, Germany, the Netherlands and Scandinavia.
- Specific interest of regional characteristics or policies based on the experience of national experts

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<sup>31</sup> Authors based on a cluster analysis of sixteen indicators at the regional level: density, net migration, GDP per capita, average annual growth 2008-2016, unemployment rate, evolution of employment rate since the crisis, share of population with tertiary education, share of youth not in education, employment or training, public private co-publications, share of industry in GVA, share of employment in low tech manufacturing, medium or high tech exports, R&D expenditure per capita, patent applications per capita, Non-RD innovation expenditure, SMEs innovating in-house

## Quantitative overview of the case studies and Principal Component Analysis

Quantitative indicators allow the identification of different socio-economic and industrial profiles at the regional level, and can thus provide a basis to support qualitative findings (e.g. by providing contextual information modulating such findings).

As several, and typically highly correlated, indicators are available, a Principal Component Analysis (PCA) was used. Indeed, this method allows the reduction of data complexity by identifying main dimensions of variability through orthogonal linear combinations of the selected indicators. It can thus easily identify how variables are linked, and spot the different patterns of regions in the case studies.

Data used for the PCA are the common indicators of economic, industrial and political profiles used in the case studies, namely<sup>32</sup>:

- GDP per capita (2016)
- Unemployment rate (2016)
- Share of industry in the GVA (2015)
- Share of employment in high and medium high-tech manufacturing (2016)
- Exports medium and high tech manufacturing (2017)
- Quality of Governance Index (2013)
- Share of population with tertiary education (2016)
- Patent applications per million inhabitants (2011)
- RD expenditure per capita (2015)
- Non-RD innovation expenditure (2017)
- SMEs innovating in-house (2017)

Moreover, two additional indicators were constructed from the data collected by the national experts in the case studies:

- Structural Funds per capita (ERDF, CF and ESF, excluding rural development funds)
- Reliance on EU funding for national or regional industrial policy, i.e. the ratio of EU funds (including ESIF) to the total funding for national or regional industrial policy, including other sources of funding. It only encapsulates funding identified by the national experts and is standardised over a 7-year period for improved comparability. It shall be considered as a rough estimate and not as a precise value, however results are strongly in line with qualitative comments made by the experts themselves.

The different indicators have been scaled to ensure comparability in spite of their differences in units of measurement. The PCA has been implemented through R with the FactoMiner package. Results show that the PCA methodology is adapted, as the two main dimensions capture 83.2% of the total variance. Moreover, different regions are clearly distinct in ways that are consistent with qualitative analyses and with the categories of regions used during the selection process.

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<sup>32</sup> Sources: Eurostat, Regional Innovation Scoreboard 2017, Quality of Governance Institute



The two main dimensions can be described as following, depending on their level of association with the underlying variables.

Dimension 1:

	correlation	p.value
R&D expenditure per capita	0.9340416	0.020132350
Share university graduates	0.9136140	0.030080852
Patents per capita	0.9054446	0.034403748
GDP per capita	0.8953803	0.039977747
Reliance on EU funding for industrial policy	-0.9737437	0.005087048

Dimension 2:

	correlation	p.value
Employment in HighTech and Medium-HighTech Manufactur.	0.8886758	0.04383592

## A 3. INTERVIEWS AND CONSULTATIONS

### List of interviews

N°	ORGANISATION	DATE	METHOD
1	Committee of Regions and High-Level Industry Roundtable “Industry 2030”	15/02/2019	Phone interview
2	European Commission (Vice presidency for Jobs, Growth, Investment and Competitiveness team)	08/02/2019	Phone interview
3	European Commission DG CNECT (Artificial Intelligence and digital industry)	22/02/2019	Phone interview
4	European Commission DG EMPL (Skills and qualifications)	22/02/2019	Phone interview
5	European Commission DG GROW (Industrial transformation and advanced value chains)	21/02/2019	Phone interview
6	European Commission DG GROW (Innovation policy and Investments for Growth)	11/02/2019	Phone interview
7	European Commission DG GROW (Resource efficiency and raw materials)	07/02/2019	Phone interview
8	Multiple (EU industry days 2019)	05/02/2019	Meeting and conferences

### List of stakeholders consulted

N°	ORGANISATION	TYPE OF ORGANISATION	COUNTRY
1	BDI	Business/industry	DE
2	BIA	Business/industry	BG
3	BMW	Government	DE
4	Confederation of Danish Industry	Business/industry	DK
5	Confindustria (incomplete answer)	Business/industry	IT
6	DIGITALEUROPE	Business/industry	EU
7	EARSC	Business/industry	EU
8	EUROCHAMBRES	Business/industry	EU
9	Euromines	Business/industry	EU
10	Eurospace	Business/industry	EU
11	FEFAC	Business/industry	EU
12	IFIEC Europe (incomplete answer)	Business/industry	EU
13	industriAll European Trade Union	Trade union	EU
14	International Economic Relations Centre at Bulgarian Industrial Association	Business/industry	BG
15	Ministry of Economy of the Slovak republic	Government	SK
16	Ministry of the economy (Portugal)	Government	PT
17	SEV, Hellenic Federation of Entreprises	Business/industry	EL
18	Silicon Saxony	Business/industry	DE
19	SMEunited	Business/industry	EU
20	Zentralverband des Deutschen Handwerks ZDH-Representation to the EU (multiple answers)	Business/industry	DE

### List of peer reviewers

N°	NAME	AFFILIATION	SPECIALISATION
1	P. Bianchi	Università Ferrara	National industrial strategies
2	S. Iammarino	London School of Economics	Internationalisation
3	S. Radosevic	University College London	Innovation Systems

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This study provides a critical assessment of the 2017 EU industrial strategy and of the policy measures it comprises. Even though the EU industrial strategy is still a “meta-policy”, it successfully promotes a more integrated and innovative approach. However, it should more clearly identify mission-oriented strategic goals and mobilise the necessary effort and means to reach them.

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