

A UNIFIED INDUSTRIAL STRATEGY FOR THE EU

INDUSTRIAL POLICY RECOMMENDATIONS
TO PROMOTE DECARBONISATION,
COMPETITIVENESS AND COHESION IN EUROPE

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EXECUTIVE SUMMARY

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European Commission President Ursula von der Leyen has proposed a Clean Industrial Deal for 2024-2029 to ensure the EU remains competitive while implementing the European Green Deal.

The challenge now is the detailed design of such a strategy which will need to cover a broad range of policy objectives – ranging from Open Strategic Autonomy and competitiveness to decarbonisation and economic cohesion. This paper outlines three key aspects necessary for a successful EU industrial strategy which bridges multiple objectives and delivers for the whole of Europe.

Firstly, we emphasise the need to focus on strategic industries and key value chain segments. To address all the policy objectives of an EU industrial strategy, we propose different processes for identifying strategic industries for each objective. To prioritise the most strategic industries, we propose an approach that combines both quantitative data and qualitative expertise.

Secondly, the paper introduces a regional potential map. This tool can be used to conduct multidimensional analysis of the long-term economic potential of all EU regions. In two case studies we demonstrate the effectiveness of this approach by identifying high-potential regions for strategic industries. These examples show how unlocking the economic potential of EU regions can promote economic cohesion and facilitate a just transition for workers and regions.

Thirdly, we propose a multi-level governance model, combining centralised coordination within the Commission and active involvement from Member States and regions. As part of this, the European Semester could also support industrial coordination with a dedicated focus on industrial modernisation.

Through this paper we aim to advance discussion on a cohesive EU industrial strategy that balances multiple policy objectives and benefits all Member States and regions.

1. INTRODUCTION

1. INTRODUCTION

*"We are determined to strengthen the basis of our long-term competitiveness and improve citizens' economic and social wellbeing. [...] We will reinforce our sovereignty in strategic sectors and make Europe a technological and industrial powerhouse, while promoting an open economy."*¹

A new world riddled by geoeconomic competition and geopolitical tensions has reshaped the EU's priorities, complementing existing objectives such as decarbonisation with new ones like competitiveness and Open Strategic Autonomy. The question of how Europe can regain its competitive edge is pressing and is set to preoccupy the incoming EU legislators. The EU's priorities for the years ahead, as outlined in the Strategic Agenda 2024-2029, incorporates competitiveness as a core theme.²

The unique strengths of EU regions are an essential but neglected lever for European competitiveness. Harnessing the economic geography of Europe can lower costs and thereby increase the cost competitiveness of European value chains.³ For instance, sourcing energy-intensive parts of value chains from very sunny or windy regions with high renewable energy potential can lower energy costs and thereby increase the cost competitiveness of more upstream producers in all regions.⁴ Similarly, technological upgrading through interregional collaboration, infrastructure development and investments in skilled labour and public administration capacities can enhance the conditions for businesses and industries to modernise and foster innovation along their value chains. This can unlock currently underutilised potentials and increase the competitiveness throughout the value chain.⁵ Unlocking regional strengths requires politicians and policymakers to look beyond party lines and national borders and to see the value of a unified EU industrial strategy. However, to date, Member States tend to fall back to fragmented

national industrial policy approaches operating with significant autonomy,⁶ as demonstrated by the striking imbalance in public financial support from Member States to industries.⁷ Succeeding in the fast-changing international industrial and technology landscape fundamentally challenges the established EU-level and national approaches,⁸ and requires Member States to collaborate and make use of the diverse strengths of all European regions.⁹

Fragmented national approaches that miss the opportunity to unlock regional potential come at high economic and socio-political costs. Mutually inconsistent national industrial policies create inefficiencies as they do not make use of economies of scale or the potential of integrated value chains.¹⁰ Moreover, the absence of a unified EU industrial approach risks inefficient allocation of EU resources, particularly when the potential of fiscally weaker regions remains untapped. Additionally, the growing pressure from global competition demonstrates that individual European economies cannot compete alone.¹¹ This highlights the need for a unified approach for Europe to remain competitive on the international stage. Finally, without addressing increasing divergence, left behind regions may backlash which can threaten the overall cohesion and socio-political stability of the European project.¹²

A truly European industrial policy requires a pan-European perspective. This includes a clear political mandate and appropriate administrative capacities as well as unprecedented levels of coordination and funding. In recent years, Europe has not achieved technological leadership in emerging industries and struggled to keep pace with major global economies. For example, Europe missed significant opportunities in the IT sector in the 1960s and 1980s due to insufficient strategy, coordination and funding, as an analysis of the unsuccessful Euro Chip project shows.¹³ Today, Europe continues to be hampered by similar problems. The European Commission has

recently embraced a more active industrial policy agenda to tackle fragmented national approaches, lack of coordination of tools and insufficient funding. Examples include the Net-Zero Industry Act (NZIA), the Critical Raw Materials Act (CRMA), the European Chips Act, the Strategic Technologies for Europe Platform (STEP) as well as the relaxation of state aid rules under the Temporary Crisis and Transition Framework (TCTF) and the approval of Important Projects for Common European Interest (IPCEI) on batteries, hydrogen and microelectronics. However, inadequate capacity, unclear responsibility and accountability, a lack of genuine political mandate, and insufficient financial resources to act still hamper decisive action.

With Ursula von der Leyen's announcement of a Clean Industrial Deal for the EU and a competitiveness fund, the direction towards a more coordinated industrial policy is set.¹⁴ The deal operates within a complex framework of diverse and sometimes conflicting policy objectives. Hence, the primary challenge will be to reconcile the various objectives and navigate tensions within a unified EU industrial strategy. Interrelated policy objectives include:

- 1. Decarbonisation:** The EU is committed to achieving climate neutrality by 2050, making swift decarbonisation of the economy a central policy priority. The European Green Deal is presented as the EU's new growth strategy, viewing a decarbonised economy as an opportunity for European economies and companies to modernise and shape future markets. If designed to harness untapped potential in left behind regions, the shift to a decarbonised economy can align with promoting a just transition and economic cohesion. For example, Central and Eastern European countries could increase renewable energy six-fold by 2030.¹⁵
- 2. Global leadership in future technologies:** Connected to achieving a decarbonised economy is the international race between major powers like the US and China to gain geopolitical influence and economic strength through supremacy in future industries such as clean technologies and semiconductors. Therefore,

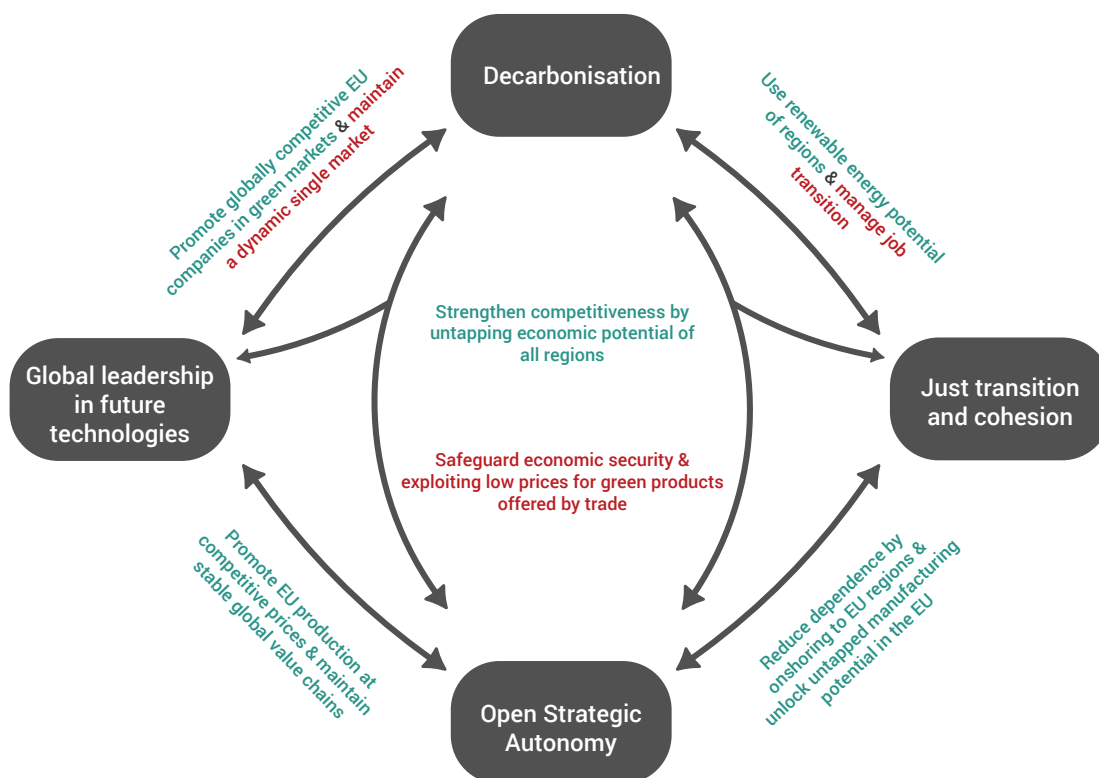
with the EU joining this race, the decarbonisation goal is intertwined with promoting home-grown European companies that are globally competitive. However, decarbonising industries while promoting global leadership in future technologies means the EU has the challenge to preserve the dynamic nature of the internal market. Simply relying on incumbent firms can lead to unintended consequences, as demonstrated by the IT sector in the 1960s and 1980s, where a small number of large corporations disproportionately benefited from subsidies. This resulted in rent-seeking behaviour and a resistance to innovation and change.¹⁶ Continuing this strategy and path dependency would risk misallocating resources, reducing productivity, fostering inefficient practices, and creating companies too big to fail, which stifles innovation.¹⁷ A successful industrial strategy should encourage new entries and support the expansion of young emerging businesses as well as enhance technological capabilities in high-potential regions. This can drive innovation, boost long-term productivity, create high-quality jobs, and ensure a more diversified and localised impact of projects.

- 3. Open Strategic Autonomy:** Geopolitical tensions raise concerns about economic security. As a result, trade policy is shifting from primarily focusing on opening markets to explicitly aiming at enhancing resilience, security and influence.¹⁸ For a unified EU industrial strategy, this means that deliberate decisions must be taken regarding which segments of the value chain should be produced in Europe to safeguard economic security. However, onshoring production to Europe can conflict with the benefits of accessing lower prices through global trade. In addition, the EU economy remains heavily dependent on global trade and open, diverse supply chains, much more so than the US or China.¹⁹ Therefore, maintaining stable global value chains through the diversification of supply and demand and ensuring well-functioning global institutions is crucial for the success of an EU industrial strategy.²⁰

4. Just transition and cohesion: Industrial modernisation as outlined in the prior goals would change economic structures. This transformation creates new opportunities but also carries risks for people and has the potential to jeopardise jobs, especially in regions where industries may need to be downscaled or phased out. In this context, the EU aims for a just transition to secure quality jobs and help workers from particularly declining industries to move into adjacent industries that require similar skills. Additionally, there is a risk that industrial policy could exacerbate a two-speed Europe, with some regions being highly competitive and others stuck in development traps. A lack of economic cohesion would undermine political support for European integration and values and leave economic potentials untapped.²¹ Thus, fostering cohesion is a critical EU objective that deserves special attention in the context of the industrial modernisation.²²

Reconciling these multi-layered objectives and navigating tensions under a common EU industrial strategy requires making active political choices with political and distributional consequences. In this new reality characterised by multiple objectives in which new industrial policies are designed, McNamara observes a "new market activism".²³ While the EU has always shaped markets, the market shaping process was considered neutral under neoliberal market governance. However, relying solely on a universal approach based primarily on comparative advantage has proven insufficient in recent decades, as demonstrated by the missed opportunity in the photovoltaic industry.²⁴ Instead, Mazzucato's concept of the "Entrepreneurial State" emphasises the role of government agencies as market creators.²⁵ She advocates for a "mission-oriented" approach to industrial policy, in which missions are societal goals supported by citizen engagement and multi-stakeholder consultations.²⁶ In this light, the diverse industrial policy objectives

Figure 1: Overview of different policy objectives within an EU green industrial strategy. In green: synergies between goals; in red: challenges and tensions amongst them



described above call for an open and strategic discussion amongst EU leaders to prioritise industries and activities most in need for support by the "Entrepreneurial State". However, this "new market activism" in which government agencies have an active role in creating markets has political and distributional implications and poses new challenges for the political legitimacy of the EU, as McNamara emphasises.²⁷ These challenges highlight that the process of formulating industrial policy can be just as important as the policy itself. Following principles of effective governance, decisionmakers are advised to base their choices on data-driven analyses.²⁸

In this context, this paper first outlines a methodology that untangles policy objectives and provides a data-based approach to identify strategic industries that should be promoted under a common industrial strategy. In a second step, the methodology introduces a concept for harnessing Europe's vast regional potential in a joint industrial approach. This place-based approach leverages the untapped potential of different regions by supporting production where conditions are most favourable. This approach strengthens competitiveness, promotes cohesion, and ensures a just transition by managing the shift more effectively at a local level. The methodology aims to offer policymakers guidance in reconciling different policy objectives and navigating tensions connected to these decisions. To this end, the paper proposes a multi-level governance mechanism for implementing a place-based industrial strategy for the EU. To involve all relevant stakeholders on different governance levels, this means integrating existing structures into a larger governance framework that can orchestrate unprecedented coordination and collaboration efforts on industrial modernisation.

2. STRATEGY DEVELOPMENT: A METHODOLOGY FOR IDENTIFYING STRATEGIC INDUSTRIES AND HIGH-POTENTIAL REGIONS

2. STRATEGY DEVELOPMENT: A METHODOLOGY FOR IDENTIFYING STRATEGIC INDUSTRIES AND HIGH-POTENTIAL REGIONS

To use limited public resources and capacities effectively, an industrial strategy needs to target public support for industries and regions that promote the overarching objectives of the EU's industrial strategy. As delineated in the introduction, these primary policy objectives of a unified EU industrial strategy include decarbonisation, global leadership in future technologies, Open Strategic Autonomy, cohesion, and just transition.

As outlined in the following chapter, the Commission has already launched several initiatives like the NZIA or the CRMA to identify strategic industries. However, each of the processes is related to individual policy goals and none of them addresses multi-layered objectives. Moreover, most of these initiatives for selection and prioritisation of industries are not underpinned by a data-driven analysis and thus likely to be subject to political discretion. Using data analysis to make strategic industrial policy decisions allows more objectivity to these decisions that are prone to political influence. To address this gap, Section 2.1 outlines a data-driven methodology for identifying strategic industries that contribute to decarbonisation, global leadership in future technologies, and Open Strategic Autonomy. Then, Section 2.2 presents a concept for leveraging Europe's regional economic potential through a place-based approach, thereby promoting territorial cohesion and a just transition.

2.1 Step 1: Identifying strategic industries

The following overview presents three processes for identifying strategic industries based on the

objectives described above, evaluates the adequacy of existing EU initiatives in covering these objectives, and suggests ways to close existing gaps.

Process 1: Decarbonisation

Which industries should be identified? Process 1 purposes to identify industries that provide technologies and other inputs like critical raw materials needed for decarbonisation.²⁹ To ensure coherence with other policy goals, the selection of strategic industries should prioritise those where the EU faces significant supply risks.

Why identify these industries? Given their high economic relevance, many emissions-intense industries will not be completely phased out and therefore require decarbonisation technologies and other inputs. Access to and scaling of market-ready decarbonisation technologies are often necessary but not sufficient conditions for decarbonising these emissions-intense industries. It is important to identify such industries, to direct public support towards them instead of reinforcing the status quo of emissions-intense industries. For example, to decarbonise the automotive industry, public support should target the battery industry to incentivise the transition from combustion engine to electric vehicles.

What has the EU already done to identify these industries? The NZIA defines a list of strategic net-zero technologies for which the EU's manufacturing capacity shall meet at least 40% of the EU's annual deployment needs by 2030. Additionally, the CRMA defines a list of critical raw materials for which the

EU shall ensure sustainable and secure supply. Likewise, the Innovation Fund, financed by the EU Emissions Trading System, supports scaling up net-zero technologies towards full technological and commercial maturity, playing a key role in the EU green deal industrial strategy.

What is the gap? While the NZIA and the CRMA mark crucial steps in identifying the industries that are central to the decarbonisation of other industries, a prioritisation among these industries through a unified EU industrial strategy is missing. Given the tight financial leeway in which the EU and its Member States currently operate, more clarity is needed on which industries are most promising to be supported by a coordinated industrial strategy at EU level. This prioritisation should consider various dimensions. First, understanding the relative importance of different industries for decarbonisation is needed. Second, priorities must be set as to which of the selected industries should be onshored and for which import remains the best strategy. As recommended by Jansen et al., the focus should be on industries where onshoring production is necessary to ensure security of supply.³⁰

How to close this gap? Prioritising decarbonisation technologies requires understanding in which industries decarbonisation is most urgently needed. This in turn requires identifying industries that are both emissions-intensive and of high economic importance. The higher the economic importance and the emissions intensity of an industry, the more important the technologies that can decarbonise these industries. To identify these industries, a data-based approach can help making the selection of industries more objective. Useful data includes industries' emissions intensity, value added, growth of value added as well as number and growth of jobs in individual industries.³¹ Qualitative expertise about the available and necessary technologies for decarbonising the industries that the data highlights should then be consulted to determine which decarbonisation technologies should be prioritised. For the next step, strategic decisions are needed about which of the industries that provide the selected decarbonisation technologies as well as which parts of their value chain should be onshored

and which should be imported. Security of supply can be ensured by diversifying import partners, importing from allied countries, or onshoring production to the EU. Onshoring only becomes necessary if the aforementioned options are not viable and sustainable.

Process 2: Competitive edge in key industries

Which industries should be identified? The purpose of Process 2 is to identify key industries that can provide the EU's long-term competitive edge. These include industries that can be of high future economic importance and in which the EU has the potential to become globally competitive.

Why should these industries be identified? By promoting these industries, the EU can secure its prosperity by providing good jobs and generating private and public revenue (for example, through tax revenues).

What has the EU already done to identify these industries? Early attempts to identify these industries date back to 2008, when the Commission defined six key enabling technologies (KETs) that play a crucial role in driving industrial innovation and addressing societal challenges.³² More recently, several initiatives have been launched to identify and bolster competitive industries. For example, the IPCEI strategic forum 2019 aims to boost Europe's competitiveness in strategic value chains in six future-oriented industries.³³ The Strategic Technologies for Europe Platform (STEP) supports investments in critical industries like clean tech. Additionally, the European Chips Act aims to strengthen European innovation and leadership in semiconductor technologies by promoting their development and manufacturing. The topic remains highly relevant, as reflected in Ursula von der Leyen's political guidelines for the next European Commission 2024-2029 which emphasise the importance of supporting competitive industries. Similarly, the European Council's strategic agenda for 2024-2029 highlights the need to build capacities in sensitive and key future technology industries to ensure the EU's technological sovereignty.

What is the gap? These initiatives already provide a comprehensive cluster of industries in which the EU could strive to build a competitive edge. However, like the decarbonisation process, this process could benefit from a data-based approach to identify key industries with high productivity.

How to close this gap? Using data to identify industries that can strongly contribute to the EU's prosperity by providing good jobs, generating tax revenues and so on, requires understanding which characteristics create a competitive edge in key industries.

First, due to the necessity of the green transition and the continuation of the EU's Green Deal, these industries should not be polluting industries. To measure an industry's ecological footprint, data on the nine planetary boundaries could be used, such as emissions intensity, land and water footprints or marine pollution.³⁴

Additionally, the data-based approach should select industries that have the potential to be of high economic importance for the EU. Most straightforward, the value added by an industry, that is, its share in overall GDP, could be used to measure the economic relevance of an industry. However, using this indicator to measure the economic relevance of an industry comes with a status-quo bias. The economic relevance of industries changes over time and measuring it based on value added fails to capture the dynamics of growing and shrinking industries. Thus, what is needed is an indicator that can measure the *potential* economic relevance of industries.³⁵ Hidalgo and Hausmann have shown that economic complexity is a useful concept for assessing the economic relevance of industries.³⁶ A product is complex when its production demands a high level of expertise, advanced technology, and diverse inputs, indicating that it leverages and integrates a broad spectrum of specialized knowledge and capabilities. This complexity often manifests in intricate supply chains, multidisciplinary collaboration, and significant innovation. Consequently, complex products often drive technological advancement by pushing the boundaries of what is technically and logistically

feasible. The economic relevance of industries in the EU could therefore be evaluated based on data of weighted sectoral complexity.³⁷ Moreover, data on supply chain linkages can complement the product complexity data. The rationale for this is that the more linkages a value chain segment has to other value chain segments, the higher its economic importance.

This data-based approach would yield a list of industries that have a high product complexity and strong supply chain linkages while not being polluting. As in the decarbonisation process, this quantitative process should be complemented with qualitative expertise, for example by a review of the list of industries by sectoral experts.

Once the combination of quantitative and qualitative knowledge has produced a list of key industries in which the EU should aim to develop a competitive edge, decisions need to be taken regarding which segments of the value chains of these industries should be onshored and which should be imported. Value chain segments which account for a large share of the industry's value added or for which diversifying import partners or importing from allied countries is not an option, should be onshored.

Process 3: Control over critical goods

Which industries should be identified? The purpose of Process 3 is to identify industries that produce indispensable goods for which critical dependencies exist.

Why should these industries be identified? Recent crises such as the COVID-19 pandemic and Russia's invasion of Ukraine, and the resulting confrontation with critical dependencies on non-allied countries have created a sense of urgency for the promotion of Open Strategic Autonomy in the EU. Thus, critical industries in which external dependencies exist should be among the strategic industries of an EU-wide industrial strategy.

What has the EU already done to identify these industries? The European Union has undertaken significant measures to identify and mitigate its

strategic dependencies on critical goods, particularly in light of the disruptions caused by the COVID-19 pandemic. The EU's strategic dependencies were unveiled by DG GROW in 2023, highlighting vulnerabilities in critical goods and sectors.³⁸ The European Commission's monitoring efforts revealed that the EU is highly dependent on foreign sources for 137 products within sensitive ecosystems, which are essential for health and industries pivotal to the green and digital transitions.³⁹ An in-depth analysis of Europe's strategic dependencies by the European Commission pinpointed five critical areas where Europe faces strategic dependencies on third countries: rare earths and magnesium; chemicals; solar panels; cybersecurity; and IT software.⁴⁰ The Versailles Declaration of March 2022 emphasised sensitive sectors instrumental in addressing strategic dependencies.⁴¹ The Critical Raw Materials Act strengthens production, processing and recycling of raw materials of high importance for the EU economy for which there is a high risk of supply disruption. The Act identifies Strategic Raw Materials that have a high strategic importance considering their use in advanced technologies. This includes, for example, battery materials such as lithium, manganese, graphite and other materials.

What is the gap? The EU has made significant progress in identifying indispensable goods with critical dependencies through various initiatives. However, like in the processes for decarbonisation and for identifying competitive edge industries, there is still a need for the EU to continuously monitor the value chain segments of critical industries to ensure Open Strategic Autonomy of the EU.

How to close this gap? It is important to not only consider onshoring of critical parts of the supply chain but also diversifying import partners and importing from allied countries in the strategic decisions to secure supply of critical raw materials. However, onshoring might still be necessary if other options are not viable and sustainable.

Overall, using these different processes to identify strategic industries helps disentangling the different priorities the EU pursues with an industrial strategy. Where possible, the identified strategic industries

can be promoted in a way that they contribute to more than one objective. For example, this can be achieved by tying the support for industries that are identified because they provide critical goods to decarbonisation conditionalities.

However, the final decision which classifies industries as strategic depends on the capacity that EU regions have for developing and scaling these industries. Strategic industries will be most successful in the long-term if they are located in the regions with the best long-term conditions. If an industry lacks favourable location conditions within the EU, for example, due to inadequate technological capabilities, it is unlikely to become a strategic industry for the EU. Thus, only industries for which EU regions have the right economic potential should be considered strategic. The following section will therefore introduce a method to identify economic potentials of regions to inform the allocation of value chain segments for strategic industries.

2.2 Step 2: Identifying untapped economic potential of regions

At present, industries in the EU are not necessarily located in the regions with the highest long-term economic potential. Various factors often hinder regions from exploiting their full economic potentials. This can be due to unequal availability of national state aid to support industries between Member States. Moreover, lock-ins can occur when other regions offer better infrastructure or when network effects cause industries to expand where industrial ecosystems already exist. These factors have led to a partially inefficient status quo of regional industrial distribution. For instance, Germany is home to many energy-intensive industries although producing parts of the value chain in Southern Europe could be more cost-efficient.⁴²

Overcoming these lock-ins and making full use of the EU's economic potential requires supporting regions with untapped economic potential. To identify these high-potential regions, each regions' economic potential for each value chain segment of strategic industries needs to be assessed. Since different industries require different conditions like

physical inputs or skills, the criteria for evaluating the regions' potential need to be industry dependent. For example, when evaluating the economic potential of regions with respect to an energy-intensive value chain segment, the potential availability of cheap renewable energy could be a central decision criterion. However, the following criteria can be expected to be relevant for many strategic industries.

- **Technological capacities:** Where technology is involved in the value chain segments of strategic industries, the availability of existing technology and the region's capability of adopting or developing new technologies is an essential determinant of the economic potential of regions for strategic value chain segments. For example, examining technological relatedness between products and industries can reveal whether regions possess capacities that are technologically close to what is needed for the industry at hand, thereby facilitating smoother modernisation and more effective integration into the desired value chains.
- **Skills capacities:** As the workforce in many value chain segments needs very specialised skills, the availability of the respective skills in the region's workforce is an essential determinant of the economic potential of regions for many strategic value chain segments.
- **Renewable energy capacities:** As many value chain segments, especially in manufacturing industries, require substantial amounts of energy as input, the long-term availability of cheap renewable energy is an essential determinant of the economic potential of regions for many strategic value chain segments.⁴³
- **Transition pressures:** The phasing out or scaling down of industries in the industrial modernisation causes a substantial amount of job losses in the EU. Offering displaced workers new employment alternatives is crucial. First, the public acceptance for the industrial modernisation would be at risk if displaced workers perceive the industrial modernisation as an economic threat. Second, companies experiencing a shortage of skilled

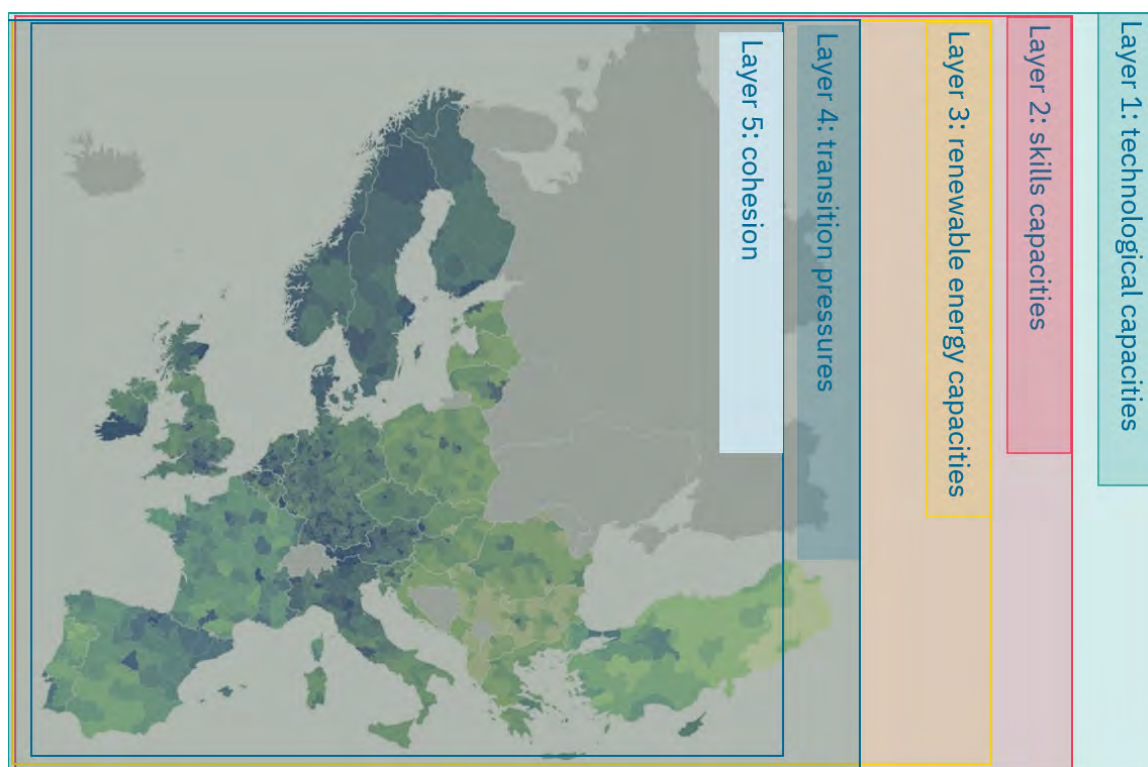
workers would benefit from absorbing workers from industries with similar skill profiles. Hence, identifying the industries that are at risk of decline in each region and matching their workers with related, strategic industries is not only politically favourable but can also address skill shortages when reskilling workers properly.⁴⁴

Additionally, a cohesion criterion can ensure that the EU's industrial strategy fosters economic cohesion and provides economic opportunities for all regions. However, since this does not directly measure the economic potential of regions, this should not override the other criteria, but rather ensure that cohesion regions are preferred over already more developed regions when both have similar economic potentials.

The evaluation of the economic potential of all regions can be guided by a regional potential map of the different criteria. Figure 2 presents an example of such a regional potential map of NUTS-3 regions. Depending on which conditions are needed for the respective value chain segment, the first three layers can be adjusted and weighted accordingly. For instance, for energy-intensive value chain segments, the renewable energy capacity could have the highest weight. The transition pressures and cohesion layers can ensure that when regions have similar potentials, regions facing strong pressures from industrial job transitions as well as cohesion regions are favoured over other regions. The extent to which the availability of data already permits a quantitative analysis or needs to be increased depends on the layers used, which in turn vary from industry to industry.⁴⁵

Once high-potential regions for the different value chain segments have been identified, the focus needs to shift to what regions need to establish the strategic value chain segments. High-potential regions are selected because of their long-term economic potential. But promoting strategic value chain segments in these regions also requires conducive short-term conditions. Some regions might already have these conducive conditions, but others might need to improve economic conditions for strategic industries, for example by expanding

Figure 2: Example of a regional potential map to identify economic potentials of regions (Hafele et al., 2024)



Note: The data for the regional potential map can come from various sources. For example, renewable energy data could come from the IRENA Global Atlas, skills data from the OECD Skills for Jobs database, and technological data from the OECD Science, Technology and Innovation Scoreboard. Cohesion and transition pressures could be assessed using the regional development trap indicator (Diemer et al., 2022) or traditional GDP-based economic indicators.

infrastructure, accelerating permitting procedures or digitising administration. Chapter 3 outlines a governance mechanism that can help provide these conditions through a joint European approach that gives preferential treatment to high-potential regions while still maintaining the integrity of the single market and promoting competition within.

In general, identifying high-potential regions requires striking the right balance between leveraging untapped regional potentials and building on already existing production capacities. On one hand, supporting regions with significant long-term economic potential can be the best option in the long run. These regions often face disadvantages due to lock-ins and cluster effects that concentrate production elsewhere.⁴⁶ For example, technological

lock-ins where less developed regions only contribute the technologically less complex segments to the value chain, trap these regions in situations that prevents technological upgrading and hence long-term industrial and economic development.⁴⁷ Overcoming these lock-ins by supporting regions based on their long-term rather than short-term economic potential can help overcoming these lock-ins, thus fostering a diverse and competitive industrial landscape in the whole EU.⁴⁸ This can also address existing inequalities between regions, whereas identifying high-potential regions solely based on short-term conditions would likely intensify these inequalities as more developed regions often offer better conditions for industries in the short-term. On the other hand, the economic benefits of established cluster effects, which drive industry

success, cannot be overlooked. Thus, in cases where clusters have fostered thriving industries without hindering the long-term potential of other regions, it is sensible to capitalise on existing structures rather than solely focusing on new high-potential regions. The complexity of these challenges underscores the need for complementing this data-based approach with further decision-making criteria.

2.3 Calibration with qualitative expertise

Overcoming these challenges and finding common ground for an EU Industrial Strategy requires complementing the proposed data-based method with qualitative expertise from a wide range of stakeholders. Grounding the decisions about which industries to promote in which regions in data helps to make highly political debates about the future of the EU's industries and regions more rational, increases the credibility of the EU's industrial strategy, and reduces the risk of unbalanced and opaque interference from interest groups. Nonetheless, these quantitative methods need to be complemented by qualitative evaluations. In particular, qualitative expertise about the industries and value chains at hand as well as stakeholders from the regions should be consulted when selecting strategic value chains and identifying high-potential regions.

For the selection of strategic industries, sectoral experts would be consulted to verify the suggested prioritisation of industries. For example, the data on emissions intensity could not be the only determinant of the industries' ecological future-fitness. Instead, sectoral technical experts can help uncovering blind spots in the data, such as when innovations that can drastically reduce an industry's ecological footprint are very close to market maturity. Qualitative expertise is also needed to verify whether the data on supply chain linkages actually identifies all industries that are critical for strategic supply chains.

Similarly, qualitative expertise about the characteristics of the different regions could complement the quantitative identification of high-

potential regions. For regions that are identified as high-potential regions, experts from politics, industry, and CSOs in that region could be consulted to verify whether the region is actually best-placed for establishing the value chain segment at hand. Chapter 3 presents how the governance of selecting strategic industries and regions can look like to make use of existing expertise and incorporate all relevant stakeholders.

2.4 Summary of the presented methodology

Figure 3 summarises the presented methodology for identifying high-potential regions for selected strategic industries and value chains. The colour coding shows which parts of the methodology are geared towards which of the four policy objectives mentioned at the beginning.

2.5 Case studies of high-potential regions

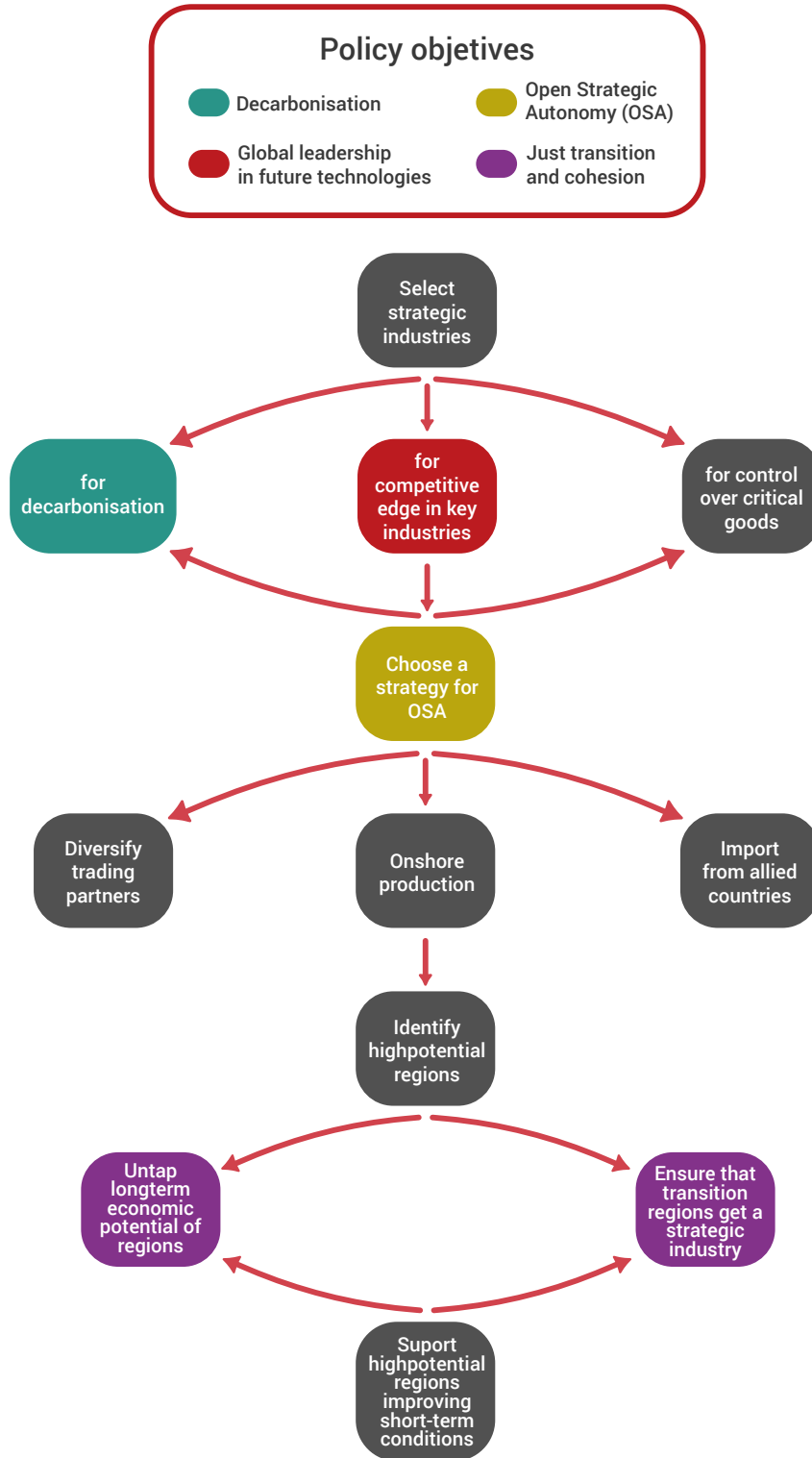
To demonstrate the identification of strategic industries and high-potential regions as proposed in the methodology summarised in Figure 3 above, the following section presents two case studies. The heat pump industry serves as an example for Process 1 as an industry that provides a technology that is critical for decarbonisation. The pharmaceutical industry serves as an example for Process 3 as an industry that produces critical goods that the EU aims to have control over.

2.5.1 Technologies for decarbonising emissions-intensive industries: heat pumps

Heat pumps as a strategic industry for industry decarbonisation

As Chapter 2.1 demonstrates, the EU has already identified critical decarbonisation technologies in the NZIA but a prioritisation among these industries is missing. To address this, the first step of the presented methodology suggests a data-based approach to identify the most crucial technologies for decarbonising emissions-intensive

Figure 3: Summary of the presented methodology for identifying high-potential regions for selected strategic industries and value chains



but economically important industries. When using data to identify the industries with high emissions intensity, high value added, and a large number of jobs it can be expected that many industries will be identified that require heat in the low to medium temperature range. For instance, energy-intensive industries, such as iron and steel, minerals, refineries, and chemical industries, often require high-temperature processes essential for producing materials used in other industries. Thus, they play a crucial role in supporting high-tech production and contribute up to 15% of the total value added of manufacturing in the EU27.⁴⁹ Heat is emissions-intensive because it is typically generated through the combustion of fossil fuels, which releases large quantities of carbon dioxide and other greenhouse gases into the atmosphere.⁵⁰ Thus, there is a need to decarbonise their heat generation. Electrification technologies can potentially decarbonise the entire steam demand of these industries, which accounts for approximately 30% of total industry emissions.⁵¹

A central technology for decarbonising the heat generation of these industries is the heat pump.⁵² Current advancements indicate that by 2035, direct electrification technologies, including heat pumps, could supply up to 90% of the energy needs for European industries not yet electrified. Presently, technologies like heat pumps can already meet over 60% of this demand.⁵³ Heat pumps provide significant efficiency benefits when used at optimal temperatures, particularly in industries such as food processing, chemicals, and pulp and paper industries.⁵⁴

After having identified heat pumps as a technology for decarbonising emissions-intensive and economically important industries, policymakers need to decide whether security of supply for each segment of the value chain of heat pump production should be ensured by domestic production or whether it can be achieved by diversifying import partners or importing from allied countries.

The EU is already home to a large and successful heat pump manufacturing industry that provides high quality-jobs and is the leading European renewable energy manufacturing industry in terms

of employment.⁵⁵ EU companies have a strong technological edge in ground-source and large heat pumps, with opportunities arising from district heating and cooling (DHC) development, alternative refrigerants, and integration with smart grids.⁵⁶ In 2022, the EU's heat pump industry employed 416,200 full-time equivalent jobs, of which 56% are in manufacturing. Moreover, the EU has already established a comprehensive strategy to promote deployment under the REPowerEU plan⁵⁷ and manufacturing under the Net-Zero Industry Act.⁵⁸ In 2022, Europe's heat pump manufacturing capacity was 22 GW. The Net-Zero Industry Act targets 31 GW per year by 2030, but the European Heat Pump Association estimates it could reach 47 GW annually, even under conservative growth scenarios.⁵⁹ Thus, for the purposes of this case study, focusing on further onshoring the heat pump industry highlights how a place-based approach can effectively stimulate regional development and meet strategic industrial needs.

Identifying high-potential regions for heat pump production

Once the decision to onshore heat pump manufacturing is made, high-potential regions for the different value chain segments of this industry need to be identified. This case study focuses on the more downstream segment of the heat pump production and leaves aside the very upstream parts such as compressors.⁶⁰ Identifying high-potential regions for the downstream part of the value chain requires understanding economic conditions favourable for heat pump production. The most critical economic conditions for heat pump production include:

- **Regulatory and policy inconsistencies:** Varying regulations and policies across EU Member States create a fragmented market, complicating uniform expansion. Delays in the EU Heat Pump Action Plan and inconsistent policy approaches add to industry uncertainty, affecting investment and planning and resulting in hurdles to industry scaling up manufacturing and increased cost competitiveness.⁶¹

- **Financial factors:** High electricity prices and favourable tax breaks for fossil fuels make heat pumps less economically attractive in some regions.⁶² Financial barriers, such as high initial costs and a challenging economic environment with high interest rates, hinder securing necessary funding for expansion and innovation.⁶³
- **Skills shortage:** There is a significant shortage of professionals skilled in installing and maintaining heat pumps. This highlights the need for retraining and upskilling workers, especially those transitioning from declining industries like traditional manufacturing and heating. The industry's need for a skilled workforce proficient in advanced manufacturing and system maintenance is significant, evidenced by its support of 416,200 full-time equivalent jobs in 2022 and requirement of up to 750,000 new skilled workers by 2030 to overcome bottlenecks in heat pump manufacturing and deployment.⁶⁴
- **Grid capacity:** The increased electricity demand from widespread heat pump use puts a strain on existing grid capacities, necessitating substantial upgrades to avoid potential blackouts.⁶⁵
- **Consumer acceptance:** Misconceptions about heat pump efficiency and high upfront costs deter adoption. Public education and financial incentives are essential to overcome these barriers and emphasize the long-term benefits of heat pump technology.⁶⁶

Following the approach presented in Chapter 2.1, the extent to which EU regions can fulfil these criteria should be analysed (as visualised by the regional potential map in Figure 2). The decision of which regions should be identified as high-potential regions for the value chain segments of heat pump production requires a careful managing of tensions and trade-offs. Not only will the regions' conditions differ among the criteria, as regions will often provide good conditions for certain criteria but less for other criteria. The challenge will also lie in balancing the approach's purpose of identifying regions that provide the best economic conditions

for the respective value chain segment in the long term, with the need for good economic conditions in the short term that do justice to the urgency of the EU's industrial modernisation. This challenge underscores the importance of combining the quantitative approach with qualitative expertise to ensure for context-specific decisions rather than a one-size-fits-all approach.

Given that the EU's heat pump industry is already developed and accounts for a 45% global market share in new heat pump innovations, it is likely that policymakers would in this case decide to leverage existing regional potentials to lower production costs, accelerate industrial scale up and enhance international competitiveness.⁶⁷

In the EU, the heat pump industry is particularly concentrated in Southern Germany, Northern Italy, and the Visegrad region, comprising Poland, Slovakia, and Czechia, also known as the "Visegrad heat pump valley". Italy has 27 heat pump production facilities, Germany has 24 and the Visegrad-4 have 33 facilities.⁶⁸ Private RD&I investment was highest in Germany with around €250 million compared to €50 million in Italy, and below €25 million for any single CEE country.⁶⁹ However, the Visegrad region accounted for around 35% of the EU's total planned investment in heat pump manufacturing, exceeding German and Italian combined share of around 29%.⁷⁰

These numbers show that these regions have strong existing potentials and could all be classified as high-potential regions. However, taking into account transition pressures, as suggested in Chapter 2.2, the Visegrad region corresponds best to the conditions for high-potential regions. Promoting the heat pump industry in this region can offer displaced workers from non-future-fit industries an alternative in strategic industries. Poland's Południowo-Zachodni and Południowy regions, which are bordering Czechia and Slovakia, are undergoing significant structural changes due to the coal phase-out. These regions, traditionally dominated by coal industries, are now hosting major investments in heat pump manufacturing.⁷¹ This industrial modernisation is pivotal for Poland's move towards cleaner energy technologies, and can play a pivotal role in lowering

the costs of electrification for domestic industries.⁷² In Czechia, strategic investments into the heat pump value chain can support workers transitioning from the automotive industry, which is experiencing substantial structural changes.⁷³

Once the decision to select the Visegrad region as a high-potential region for heat pump manufacturing is taken, the focus needs to shift to which economic conditions need to be improved to further strengthen the region's capacity to manufacture heat pumps. For example, for the discussed worker transition to succeed, the Visegrad region needs focused support with the skill development of the workforce through initiatives like the EU Pact for Skills.⁷⁴

2.5.2 Open Strategic Autonomy: Pharmaceuticals

Pharmaceuticals as a strategic industry for producing critical goods

As Chapter 2.1 demonstrated, the EU has already identified critical goods. Among these are pharmaceuticals which the European Commission has identified as critical goods due to their indispensability for public health.

After having identified pharmaceuticals as a critical good, policymakers need to decide whether security of supply for each segment of the value chain of the pharmaceutical production should be ensured by domestic production or whether it can be achieved by diversifying import partners or importing from allied countries.

Over the past years, the dependency on non-EU countries, particularly China and India, for active pharmaceutical ingredients (APIs) has led to significant vulnerabilities. For instance, a 2020 survey by the Pharmaceutical Group of the European Union (PGEU) reported that 65% of the surveyed countries faced shortages of over 200 medications, with eight nations encountering shortages of more than 400 drugs. These shortages predominantly affected older off-patent drugs and generics, with average shortages lasting 137 days.

To overcome these vulnerabilities and enhance strategic autonomy in the critical field of public health, the supply chain for pharmaceuticals could be onshored.

Identifying high-potential regions for pharmaceutical production

Once the decision to onshore pharmaceutical production is made, high-potential regions for the different value chain segments of this industry need to be identified. This requires understanding economic conditions favourable for pharmaceutical production. The pharmaceutical industry is a high-tech industry that focuses on the manufacture of basic pharmaceutical products and preparations.⁷⁵ Key economic conditions include:

- **Technological and skill capacities:** Regions with existing technological infrastructure and a skilled workforce are preferable, as these capacities lower operational costs and enhance the competitiveness of local production.
- **Production costs:** Areas where production costs are relatively low but there is potential for technological advancement have a strategic advantage.
- **Access to Renewable Energy:** Given the high energy costs associated with pharmaceutical manufacturing, regions with access to renewable energy sources are advantageous.

Following the approach presented in Chapter 2.1, the extent to which EU regions can fulfil these criteria should be analysed, as visualised by the regional potential map in Figure 2. The decision of which regions should be identified as high-potential regions for the value chain segments of pharmaceutical production requires a careful managing of tensions and trade-offs. Not only will the regions' conditions differ among the criteria, as regions will often provide good conditions for certain criteria but less for other criteria. The challenge of the approach is to balance identifying regions with the best long-term economic conditions for each value chain segment, while also addressing the need for good short-term

economic conditions to do justice to the urgency of the EU's industrial modernisation. This challenge underscores the importance of combining the quantitative approach with qualitative expertise to ensure for context-specific decisions rather than a one-size-fits-all approach.

In this specific example, API production could be promoted in less-developed regions in the EU since segments on which Europe has high import dependencies are less complex.⁷⁶ This would not only strengthen economic cohesion but would also go along with lower production costs due to lower labour costs, offering increased local production for underserved markets.⁷⁷ Nonetheless, to also leverage existing potentials, the focus should be on less-developed regions that have at least some existing API production capacities. Thus, regions with a notable employment share in the pharmaceutical industry could be selected.

Among those are Severen Tsentralen in Bulgaria, which has a 2.1% employment share in the pharmaceutical industry as part of manufacturing employment, and the Bucharest capital region in Romania, which has a 3.4% employment share. Both regions are significantly above the EU median of 1.6%. Sud-Muntenia, the Romanian border region surrounding Bucharest, while having a small pharmaceutical workforce of 0.3%, has a foundational industrial base and proximity to renewable energy resources, particularly offshore wind potential.⁷⁸

Once the high-potential regions for API manufacturing are identified, the focus needs to shift to identifying economic conditions that need improvement to further strengthen the region's capacity to manufacture pharmaceuticals. This can include leveraging the regions' combined capabilities in skills and technology as well as developing infrastructure.

3. STRATEGY IMPLEMENTATION: HOW CAN THE EU IMPLEMENT SUCH AN INDUSTRIAL STRATEGY?

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A place-based approach instead of a centralised approach is crucial for the success of a joint industrial strategy. European orchestration in prioritising strategic industries and identifying the economic potentials of regions must be grounded in a multi-level governance process. The previous chapter presents a guideline for navigating the various target levels in the promotion of strategic industries and a data-based procedure for identifying economic potential. This chapter introduces a governance mechanism that grounds this methodology in a place-based approach and relies on increased coordination and collaboration to implement a unified EU industrial strategy. This includes a structured multi-level governance process for enhanced industrial coordination in the EU, detailing how this can be integrated into the European Semester. Additionally, requirements for a new EU funding architecture to support a joint EU industrial strategy will be discussed, including a regional potential map, as described in Figure 2, for a merit-based disbursement mechanism.

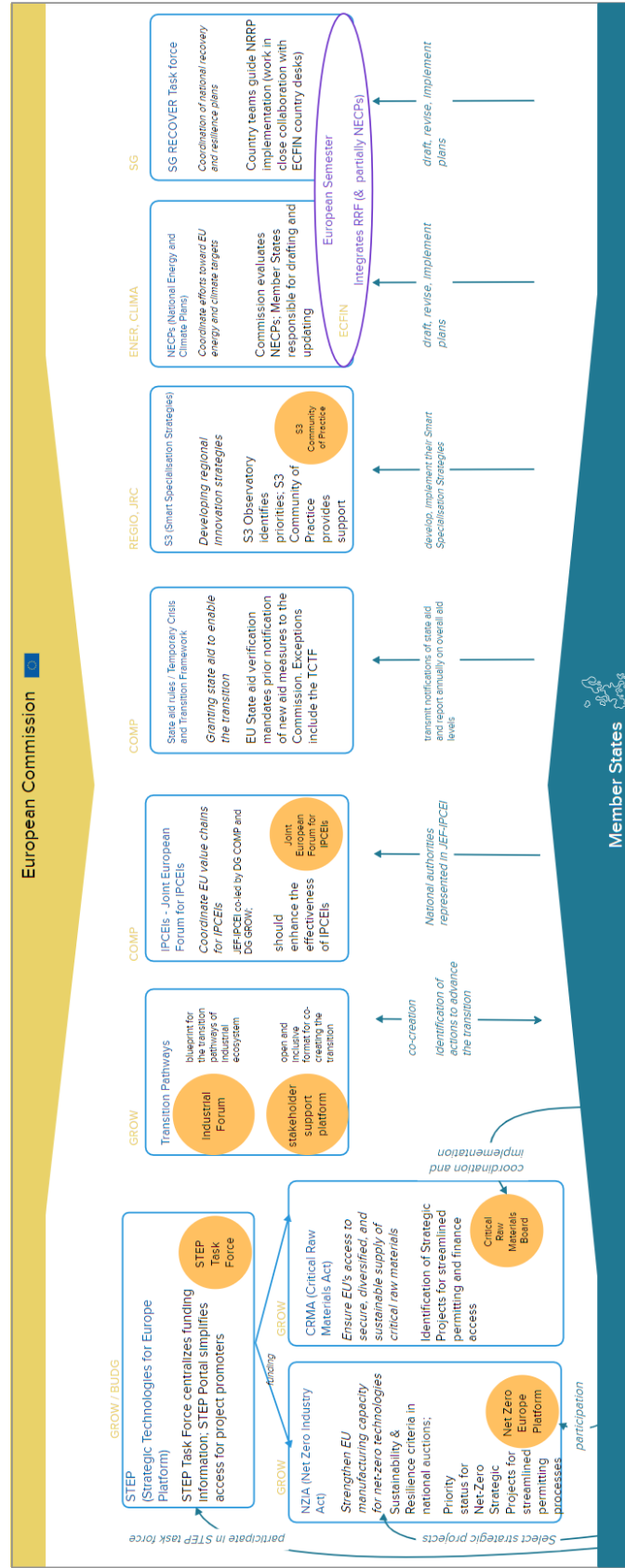
3.1 Missing coherence among current industrial coordination tools

Policy initiatives aimed at industrial modernisation and infrastructure development are currently dispersed across at least nine different Directorates-General (DGs) within the European Commission, suggesting high administrative costs and a lack of coherence. In recent years, the European Commission has launched several processes and legislative acts to advance the modernisation of European industry, most notably in the endeavour to accelerate the green and digital transition. Examples include the Net Zero Industry Act (NZIA), the Critical Raw Material Act (CRMA), the Strategic Technologies for Europe Platform (STEP),

the National Energy and Climate Plans (NECPs), the Recovery and Resilience Facility (RRF) as well as advancing Smart Specialisation Strategies (S3). For most initiatives, separate platforms, committees or working groups have been set up for collaboration and coordination, all of which fulfil narrow purposes but are not formally linked to each other. The governance mechanism varies; in some cases, like the Net Zero Europe Platform, national authorities are mandated with decision-making and coordination. In other cases, like the STEP committee, decision-making sits internally in the Commission. The current structure of industrial strategy coordination means a loss of efficiency due to the fragmentation of responsibilities, and for the Member States and the Commission this results in a considerable internal coordination effort to ensure the coherence of the work of the individual bodies.

The Commission's place-based approaches have already been tested and there are existing initiatives to identify regional specialisations. What is missing is a link between these bottom-up initiatives and a larger, comprehensive industrial strategy. DG REGIO and JRC S3 promote regional innovation strategies through place-based tools focusing on niche competitive strengths, demand-driven innovation, and cross-regional partnerships. Partnerships for Regional Innovation (PRI), launched as a pilot project, provide a framework, toolbox and support mechanisms to connect regional and national initiatives with EU initiatives, to foster co-creation and collaboration. Transition Pathways for European Industrial Ecosystems support the green and digital transformation of 14 key industries by developing actionable plans for business model and value chain transformation. Additionally, Horizon Europe's EU Missions tackle significant societal challenges with ambitious goals for 2030 including

Figure 4: Overview of existing industrial strategy coordination initiatives (own representation)



climate adaptation, cancer prevention, ocean restoration, climate-neutral cities, and healthy soil promotion. All these initiatives are anchored in strong stakeholder participation processes. However, there is a gap in linking these place-based approaches to a cohesive overarching industrial strategy that selects and supports strategic industries (as we describe in Chapter 2). A well-functioning multi-level governance framework is essential to achieve this.

3.2 A proposal for a multi-level governance framework for a unified EU industrial strategy

The conclusions of the Competitiveness Council from May 2024 underscore the need for a streamlined governance structure that promotes collaboration among all different actors within industrial ecosystems.⁷⁹ The Council encourages the Commission to undertake initiatives, including a thorough assessment of the existing governance landscape, to streamline structures, reduce unnecessary burdens on stakeholders and Member States, and avoid duplication. Likewise, in his proposal for an EU industrial strategy, Mario Draghi sees greater coordination and streamlining of regulation and funding instruments as a central tool to foster economic success for a competitive EU.⁸⁰ However, how to create a streamlined governance structure that is not only top-down but also participatory and promotes regional strengths through a place-based approach remains unaddressed.⁸¹

A multi-level governance framework requires a dedicated administrative capacity at the EU Commission level to serve as a one-stop-shop for industrial coordination. To this end, an industrial coordination task force shall be established, involving representatives from key Directorates-General (ECFIN, ENER, EMPL, GROW, COMP, REGIO, CLIMA, SG).⁸² Alternatively, such a task force could draw on the successful coordination model from the Recovery and Resilience Facility and build on the SG RECOVER task force that was created to support the implementation of the National Recovery and Resilience Plans. SG RECOVER's country teams could be modelled for this purpose. In addition, sectoral teams could be developed to bundle specific

expertise on certain industries. The centralisation of capacities within the Commission can reduce complexity by streamlining existing initiatives and facilitating access to information.

While responsibilities for orchestrating industrial modernisation are centralised at EU level for navigating the course of a unified EU industrial strategy, the multi-level governance mechanism proposes a greater national and regional involvement in the policy design and implementation stage. Regions and Member States would be given a greater role in actively shaping the policy design and implementation of a unified EU industrial strategy by leveraging existing policy frameworks and coordination tools. For example, the Smart Specialisation Strategies and the Partnerships for Regional Innovation could be harnessed to foster regional collaboration in the implementation of industrial modernisation initiatives.

Anchoring industrial coordination in a place-based approach can inform decision-making processes for selecting the optimal location for scaling strategic industries by identifying economic potentials through a regional potential map.⁸³ The new task force for industrial coordination would provide administrative support for a place-based and participatory approach to identify high-potential regions for developing cross-EU value chains in strategic industries.⁸⁴ The regional potential map for identifying economic potentials, as introduced in Chapter 2, could be used for decisions on the best locations for scaling and developing specific industries. For example, this approach can inform decision-making processes regarding the awarding of a Sovereignty Seal under STEP and the selection of strategic projects as part of NZIA and CRMA. In addition, the identification of economic potential beyond these policy initiatives could inform the allocation of support and funding for industrial modernisation initiatives, as described below. The application of a consistent and data-based methodology for identifying strategic projects could increase regulatory certainty through more transparency and accountability. Moreover, a formal integration of all relevant stakeholder groups in the decision-making process through a place-based

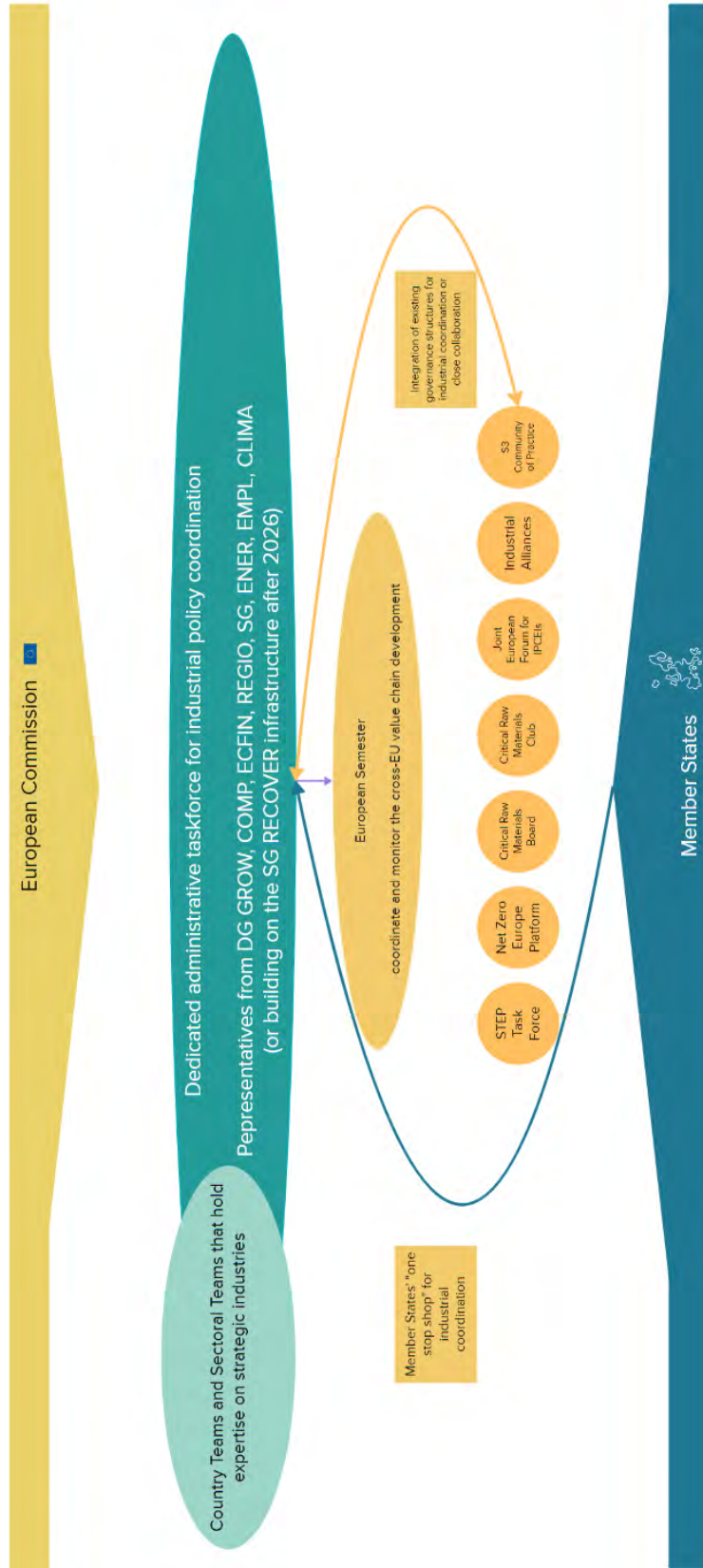
approach could ensure local participation, ownership and acceptance of industrial modernisation initiatives, thereby driving regional development.⁸⁵

The multi-level governance structure should be founded on principles of effective governance, including a robust evidence base supported by a data-driven methodology for implementing a unified EU industrial strategy, as well as active regional and national participation.⁸⁶ Equally important are the right competencies and capacities of Member States to effectively contribute to the policy design, regulation and implementation stages. These are essential pillars for an inclusive and effective governance structure, fostering collaboration and leveraging strengths at all levels.

The European Semester can serve as a guiding framework to steer economic policies of Member States. Embedding industrial strategy coordination into the Semester can ensure policy coherence and allow for consistent evaluation and monitoring of progress towards performance goals. Including the National Recovery and Resilience Plans in the European Semester has set a precedent for an enhanced use of the European Semester to steer national reforms and investments.⁸⁷ To adapt the structure for reinforced industrial strategy coordination, Member States would engage in bilateral dialogues with the Commission to determine national industrial modernisation priorities. Prior to these discussions, stakeholder dialogues, including labour unions and civil society organisations, could precede to inform national priorities on the industrial strategy. Member States would indicate economic potentials of regions identified through a regional potential map as a result of the stakeholder processes, in an additional chapter on industrial modernisation in the context of the European Semester, together with a time horizon, milestones and plans for industrial modernisation. The Commission could include a dedicated chapter on industrial modernisation for each member state in their country-specific recommendations. The milestones and targets of Member States' industrial strategies could be monitored as part of the Semester process.

Improving cross-border infrastructure is a critical enabler for scaling strategic industries. A criterion for cross-border collaboration could be introduced in Member State's European Semester documents detailing investments and reforms. A notable example of a gap in cross-border infrastructure development is the current electricity grid in Europe, which urgently requires upgrades to accommodate new forms of renewable energy with sufficient connections and capacity.⁸⁸ To incentivise cross-border infrastructure development, Member States could be required to fulfil a certain quota for cross-border infrastructure investment, similar to the 37% green and 20% digital spending criterion which was required in the RRF. For example, such a criterion could be introduced for Member States' fiscal-structural plans, that replace national reform programmes under the new EU economic governance framework. Granting an extension of the Member State's fiscal adjustment path would be dependent on fulfilment of this criteria. Moreover, building on European infrastructure planning through TEN-E, governments and stakeholders would work together on shared regional and sectoral industrial strategies. These strategies could be integrated into the industrial chapters of the European Semester. Subsequently, they would inform decisions regarding European industrial funding programmes. Close collaboration or integration with the Joint European Forum for Important Projects of Common European Interest (IPCEI) could be ensured, to use the potential of IPCEIs for cross-national collaboration on large-scale infrastructure projects.

Figure 5: A proposal for a dedicated administrative task force as a one-stop-shop for EU-level industrial coordination



3.3 An effective and efficient funding mechanism to support a unified EU industrial strategy

Given the annual public funding gap of €260 billion needed solely for green investments, it is uncertain whether existing funding sources are sufficient to achieve rapid industrial modernisation without worsening existing inequalities between Member States.⁸⁹ To date, the primary source of public financing for industrial modernisation has been state aid, facilitated by the relaxation of EU state aid rules under the Temporary Crisis and Transition Framework (TCTF), providing Member States with greater capacity to support industrial policy. However, this approach tends to favour fiscally advantaged Member States. Unequal financial resources among Member States risk leaving the economic potentials of many high-potential regions untapped. Moreover, some Member States will be very limited in their fiscal space to comply with the new EU fiscal rules, which is likely to further exacerbate political and economic fault lines emerging and social divergences between the Member States, especially if some Member

States are able to spend more on modernisation and just transition efforts than others.⁹⁰ Thus, supporting the development of strategic cross-EU value chains in high-potential regions and ensuring a just transition requires EU-level funding from which all regions can benefit. To effectively invest in industrial modernisation, Member States must collaborate and ensure their actions are consistent and aligned. It is crucial that they avoid mutual obstruction and work in synergy to achieve common goals. In response to this challenge, the Commission launched the Strategic Technologies for Europe Platform (STEP) and opened EU funds for flexible use to support strategic industries, though its financing power remains limited.⁹¹ STEP also lacks a consistent data-based methodology to guarantee that projects are awarded to high potential regions.

Any EU-level public support, financial or non-financial, for the development of strategic value chains in high-potential regions needs to be as effective and efficient as possible. Effectiveness can be ensured by making public support for strategic industries progress-dependent to avoid

Figure 6: A proposal for a multi-level governance structure for enhanced industrial coordination

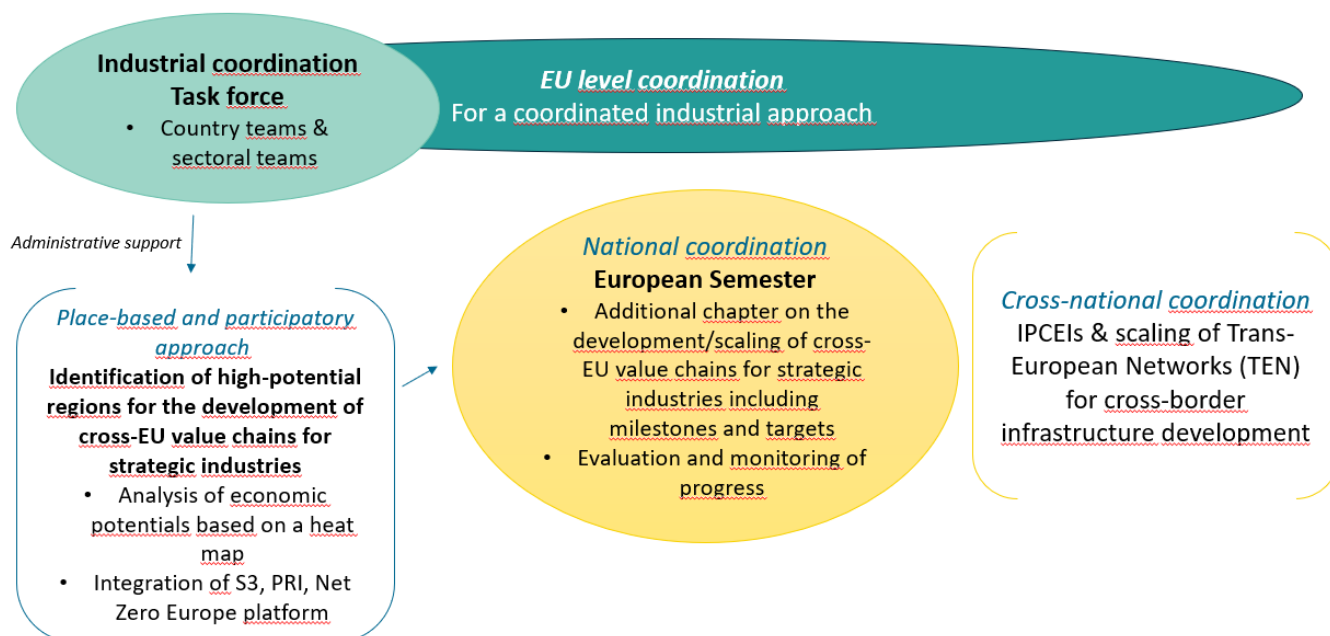
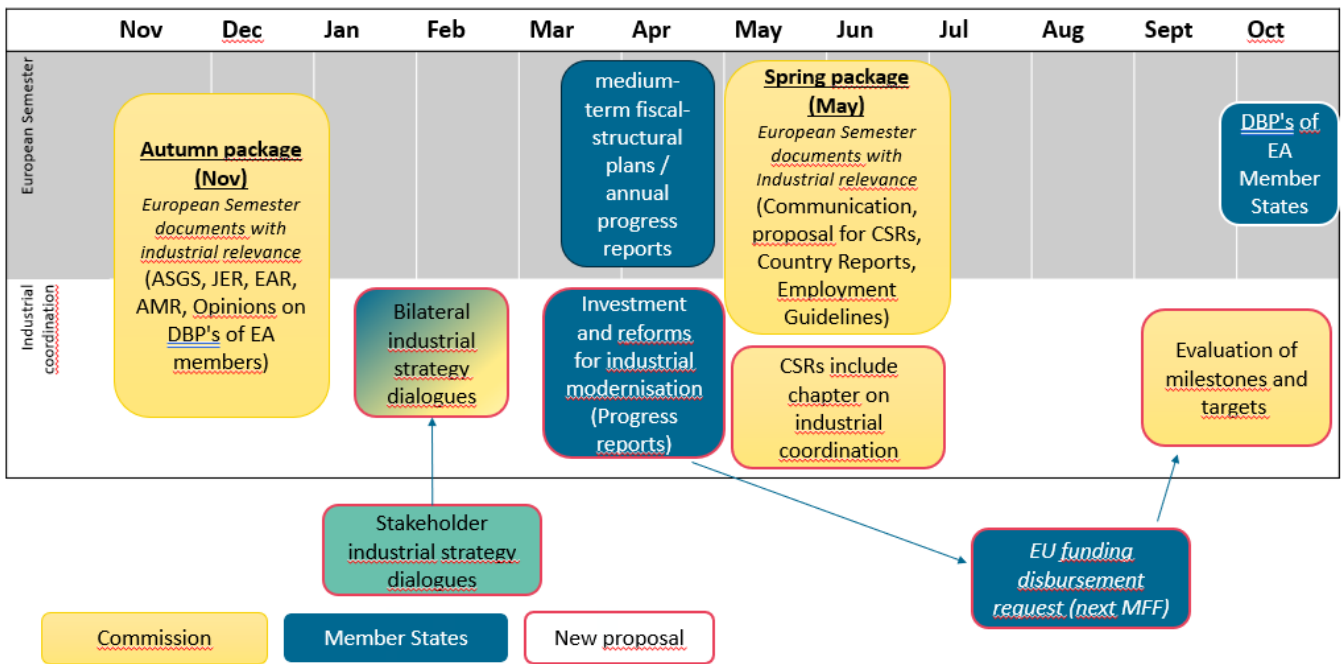


Figure 7: A proposal for embedding enhanced industrial coordination into the European Semester



profit-capture and the survival of unproductive firms.⁹² Only businesses that meet agreed economic, environmental and social objectives would be eligible for continued support. By requiring businesses to commit to objectives rather than specific measures, public support for strategic industries would become simpler and more efficient. Establishing time-bound performance indicators is key to achieving this objective. Meeting these targets should determine eligibility for public support.

The Commission has already applied such a performance-based approach with the RRF, which provides financial incentives for implementing crucial reforms outlined in the European Semester. As a performance-based instrument, the RRF allocates funds based on milestones and targets that measure progress towards tangible outcomes, such as the implementation of agreed reforms and investments within each national Recovery and Resilience Plan (NRRP). However, its governance lacks flexibility; Member States must revert to the Commission for changes, making it cumbersome and slow. Improving performance indicators to base

grant continuation decisions on robust KPIs would address these shortcomings.

The midterm evaluation of the RRF indicates considerations for integrating this performance-based approach into the design of EU funding instruments under the upcoming Multiannual Financial Framework from 2028 onwards.⁹³ These considerations include assessing the effectiveness of the performance-based approach in reform implementation, combining reforms and investments within a single instrument, and maintaining a clear alignment with EU political priorities, combined with a country-specific approach based on the European Semester process.

For a merit-based funding mechanism for industrial modernisation, the regional potential map can be applied to determine optimal locations for the scaling of strategic projects, rather than pre-determining how much funding each Member State would receive. This approach includes setting mandatory milestones and targets for national industrial modernisation strategies as part of the

European Semester, with investments frontloaded and payments continued only after demonstrating that key performance indicators (KPIs) have been met. Monitoring and evaluation would be integrated into the European Semester to ensure transparency and effectiveness.

To maintain a coordinated EU-level approach and prevent national measures from undermining it, the allocation of state aid for strategic industries would need to align closely with the regional potential map's identification of economic potentials in different regions.⁹⁴ Extending and revising the Temporary Crisis and Transition Framework (TCTF) is crucial in this regard, alongside modifying the Climate, Energy, and Environmental State Aid Guidelines to harmonise with this approach. This does not mean that regions outside this approach can no longer have access to public support, but it should be capped or limited. However, this step requires careful political balancing, which should occur after a more technical assessment of regions with high potential to calibrate the political and distributional consequences of this approach.

Alongside fostering economic potential, cross-border infrastructure investment with European value added could be prioritised. The RRF primarily focused on national projects, missing opportunities to have a specific focus on urgent cross-European initiatives that could add significant European value. Projects aimed at transforming energy and transportation systems have the potential to leverage additional public spending within Member States.⁹⁵ This is facilitated by the fact that national expenditure for co-financing such projects would be excluded from the European Commission's assessment of public expenditure under reformed EU fiscal rules. In addition, fiscal-structural plans could require a certain quota for cross-border investments, as outlined above.

4. CONCLUSIONS

4. CONCLUSIONS

Bolstering the EU's competitiveness in a rapidly changing world marked by geopolitical tensions will dominate the EU's political priorities over the next five years. To strengthen the EU's approach to long-term competitiveness, this paper proposes a framework to identify and promote strategic industries based on multi-layered objectives. Harnessing the distinctive strengths of Member States and unlocking regional potential is key to promoting competitiveness through a unified EU industrial strategy.

The governance process is critical to the success of a unified EU industrial strategy. Europe needs to move away from a purely centralised approach, embrace economic complexity and consider the geographical dimensions and impacts of industrial modernisation. This requires the pinpointing of regional economic potentials and the alignment of technological specialisations with local skills through a place-based approach involving diverse governance levels and stakeholders. We propose a regional potential map to identify economic opportunities. This tool can be used to inform decisions about the allocation of value chain segments in strategic industries and funding decisions.

By identifying untapped economic potentials, regions can actively contribute to shaping and implementing a unified EU industrial strategy. By linking regional development and industrial policy together, especially across borders, regions can unlock greater economic potential and achieve much needed scale and increased technological and cost competitiveness for Europe's strategic industries, such as heat pumps. Grounded in a multi-level governance framework, such a strategy can integrate existing structures into a cohesive governance framework capable of facilitating unprecedented coordination and collaboration in industrial modernisation efforts.

Recommendations:

- **As part of the new Clean Industrial Deal, European leaders should sketch out a unified EU industrial strategy that overcomes national fragmentation.** This strategy should be anchored in common EU priorities including a commitment to harness the potential of all regions to reduce existing economic inequalities.
- **The selection of strategic industries should be grounded in an evidence-based method.** Chapter 2 outlines different processes that policymakers should take into account when defining strategic industries that should be promoted through cross-European collaboration.
- **The decisions where strategic industries are promoted can be informed by quantitative methods,** considering multiple criteria corresponding to the needs and goals of the respective industries.
- **A multi-level governance process should ensure the participation of national, regional and EU level administration and stakeholders in the implementation of a unified EU industrial strategy.** Responsibilities within the Commission can be centralised through the establishment of a dedicated administrative capacity to orchestrate industrial modernisation initiatives. At the same time, Member States and regions should have a more active role in the policy design and implementation phase. Existing place-based formats can be leveraged and integrated into a unified EU industrial strategy.
- **The European Semester can function as a guiding framework for steering industrial modernisation.** Notably, cross-border infrastructure development initiatives should be incentivised.

- **A regional potential map, as introduced in this paper, can inform decisions about EU-level public support, financial or non-financial, for the development of strategic value chains in high-potential regions.** Such a tool can support a merit-based principle for the allocation of EU funding for the next European Multiannual Financial Framework. Only businesses that meet agreed economic, environmental and social objectives would be eligible for continued support.

ENDNOTES

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45 Note: To create a heat map based on the layers which were used as examples in Figure 2, several data sources could be considered. For skills, the skills-relatedness indicator data from Neffke et al. (2017) and Csáfordi et al. (2016) could prove useful, though additional data development may be required to ensure comparability at the NUTS 2 regional level. For assessing existing technologi-

cal capacities, patent data from the OECD REGPAT database provides a valuable indicator of technological capabilities across NUTS 2 regions. To gain a more comprehensive and dynamic understanding of technological potential, these capacities could be integrated with an economic complexity indicator, as proposed by Hausmann et al. (2014), utilising the Exiobase dataset developed by Stadler et al. (2018). Cohesion can be analyzed using Eurostat's GDP-based economic cohesion indicators or the regional development trap indicator by Diemer et al. (2022). Transition pressure insights could be derived from the Just Transition Fund Allocation data, based on criteria such as greenhouse gas emissions, fossil fuel reliance, and employment in affected emission-intensive industries, all available from Eurostat. Alternatively, transition pressure could be assessed using the European Commission (2018b) evaluation of industries expected to transform and decline, also readily accessible at the NUTS 2 level via Eurostat. Lastly, renewable energy potential estimates from Kakoulaki et al. (2021) provide data on green electricity potential at the NUTS 2 level.

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57 Note: This plan aims to reduce the EU's reliance on fossil fuels and promote clean energy technologies, with a specific focus on heat pumps. By 2030, the plan targets the installation of 60 million heat pumps, doubling the current annual sales to foster rapid industry growth. An intermediate goal of 20 million installations by 2026 marks a significant increase from the current 20 million in use. The REPowerEU plan also emphasizes the expansion of large-scale heat pumps for district heating and cooling.

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This paper outlines three key aspects necessary for a successful EU industrial strategy which bridges multiple objectives and delivers for the whole of Europe.

Firstly, we emphasise the need to focus on strategic industries and key value chain segments. To address all the policy objectives of an EU industrial strategy, we propose different processes for identifying strategic industries for each objective. To prioritise the most strategic industries, we propose an approach that combines both quantitative data and qualitative expertise.

Secondly, the paper introduces a regional potential map. This tool can be used to conduct multidimensional analysis of the long-term economic potential of all EU regions. In two case studies we demonstrate the effectiveness of this approach by identifying high-potential regions for strategic industries. These examples show how unlocking the economic potential of EU regions can promote economic cohesion and facilitate a just transition for workers and regions.

Thirdly, we propose a multi-level governance model, combining centralised coordination within the Commission and active involvement from Member States and regions.

Through this paper we aim to advance discussion on a cohesive EU industrial strategy that balances multiple policy objectives and benefits all Member States and regions.

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