Policies for the industrial transformation

Sectors, clusters and collaboration platforms

*A Policy Brief from the **Policy Learning Platform** for a smarter Europe*

SMART

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Summary

Industrial transformation in the European context refers to the profound, systemic shift in the structure, production, and functioning of industries in response to technological advancements, climate objectives, and geopolitical challenges. It encompasses mainly digitalisation, green transition, resilience, and strategic autonomy.

There are many ongoing Interreg Europe projects dealing with industrial transformation from different perspectives, such as:

- Sector-based transformation
- Digital and green (twin) transition
- Decarbonisation / Clean energy
- Digitalisation
- Circular economy
- Skills

While all those perspectives are highly relevant, they can hardly be dealt with altogether in a single policy brief. This policy brief focuses on policies addressing the industrial transformation at the level of industrial ecosystems, either through **strategic sector-based approaches** (e.g. food, bioeconomy, textile, automotive) or through regional **clusters and other collaboration platforms** (e.g. hubs, …). A common characteristic of those approaches is that they involve usually multiple stakeholders from policy, business, higher education and research as well as form the civil society. They are often a combination of top-down policy making and bottom-up initiatives. The policy brief presents European initiatives, good national and regional practices from the Interreg Europe community, and targeted policy recommendations for fostering sectoral transition pathways and aligning cluster policies and collaborative networks with the goals of a successful industrial transformation.

Further aspects of policies for the industrial transformation are expected to be addressed in further publication and events of the Interreg Europe Policy Learning Platform.

The knowledge, solutions and good practices showcased in this policy brief come mainly from Interreg Europe projects.

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From industry 4.0 to industry 5.0

Industrial transformation, often referred to as Industry 4.0, represents a fundamental shift in the manufacturing sector through the integration of advanced digital technologies. These include cyber-physical systems, artificial intelligence, and the Internet of Things, which together enable automation, data-driven decision-making, and self-monitoring production systems. The goal of Industry 4.0 is to improve efficiency, eliminate waste, and increase productivity by merging traditional manufacturing practices with digital innovation.

However, the European Union has critically assessed the limitations of this technology-driven model. While acknowledging the importance of Industry 4.0 in enhancing industrial efficiency, the EU argues that it is insufficient to address the complex challenges of today's world, such as the climate crisis, environmental degradation, and rising social inequality. Industry 4.0 is too narrowly focused on technological advancement and economic performance, and it risks reinforcing business models that contribute to monopolies and growing wealth disparities.

In response to these concerns, the EU has developed a more comprehensive and forward-looking framework: Industry 5.0. This new paradigm expands the scope of industrial transformation by embedding values such as sustainability, social inclusion, and resilience into the heart of industrial strategy. Unlike its predecessor, Industry 5.0 is not limited to enhancing technological capabilities but seeks to reshape industrial development to serve broader societal and environmental goals.

Industry 5.0 is built on three key pillars. First, it emphasizes **regenerative design, where circular economy principles and restorative feedback loops are integral parts of value chain design** rather than optional add-ons. Second, it introduces **a strong social dimension**, calling for technologies that support human labor instead of replacing it, and prioritising the well-being and inclusion of workers. Third, it mandates **an environmental commitment**, advocating for the elimination of fossil fuel dependency, greater energy efficiency, biodiversity restoration, and the use of nature-based solutions to mitigate climate change.

This shift in industrial policy marks a significant departure from the conventional approach. The EU no longer views industrial transformation purely as a means to boost competitiveness and economic growth but also as a strategic tool for achieving climate neutrality and building a fairer society. By redefining the concept of "value" to include environmental health and social well-being, Industry 5.0 represents a uniquely European vision for industrial development.

Industrial transformation in the EU context

Industrial transformation in the EU context refers to the **profound, systemic shift in the structure, production, and functioning of industries** in response to technological advancements, climate objectives, and geopolitical challenges. It encompasses **digitalisation, green transition, resilience**, and **strategic autonomy**.

Key characteristics of the industrial transformation include:

- **Decarbonisation**: Aligning industry with the EU's climate neutrality goal by 2050.
- **Digitalisation**: Integrating digital technologies (e.g. AI, IoT, 5G) into production and business models.
- **Circular economy**: Reducing resource dependency and waste.
- **Skills transformation**: Upskilling and reskilling the workforce for green and digital jobs.
- **Strategic autonomy**: Reducing dependency on non-EU technologies and raw materials.

This transformation is **policy-driven**, but also shaped by **global competition**, **supply chain reconfiguration**, and **disruptive technologies**.

The EU's industrial transformation is propelled by several interconnected pillars and drivers:

- **Twin Green and Digital Transitions:** This is the overarching driver, aiming for a climate-neutral economy by 2050 through **decarbonization, circular economy** principles, and the widespread adoption of **digital technologies.**
- **Skills and Workforce Development:** Addressing the growing skills gap by investing in education, training, and reskilling programs to prepare the workforce for the demands of new industrial landscapes.[9]
- **Innovation and Competitiveness:** Fostering technological breakthroughs, improving the commercialization of research, and closing innovation gaps to enhance the EU's global standing.
- **Resilience and Strategic Autonomy:** Strengthening supply chains, reducing critical dependencies on external actors, and bolstering European industrial capacities in strategic sectors, including defense.[8]
- **Single Market Integration:** Leveraging the power of the EU's vast single market to scale up innovative solutions and ensure fair competition.

Focus on collaborative, multiple-stakeholder approaches within industrial ecosystems

In this policy brief we focus on policies addressing the industrial transformation at the level of industrial ecosystems, either through **strategic sector-based approaches** (e.g. food, bioeconomy, textile, automotive) or through regional **clusters and other collaboration platforms** (e.g. hubs, networks…). A common characteristic of those approaches is that they involve usually multiple stakeholders from policy, business, higher education and research as well as form the civil society. They are often a combination of top-down policy making and bottom-up initiatives.

We expect to address further aspects of policies for the industrial transformation (e.g. tools for the twin transition, decarbonization of the economy, skills development, etc.) in further publication of the Interreg Europe Policy Learning Platform.

European policies addressing industrial transformation

The EU has put in place over the past few years a comprehensive framework of policies and initiatives to drive industrial transformation. The most significant ones are:

- The **New Industrial Strategy for Europe** (2020, updated 2021)
- The **Green Deal Industrial Plan** (2023)
- The **European Skills Agenda** (2020)
- The **Digital Decade** programme (2021)
- The **Recovery Plan for Europe** (2020)

These initiatives are briefly presented hereafter. However, those are large programmes with multiple instruments each. A detailed presentation would go beyond the scope of this policy brief.

A New Industrial Strategy for Europe (2020, updated 2021)

The **2020 New Industrial Strategy for Europe** (Source: European Commission, 10 March 2020: **"A New Industrial Strategy for Europe"**) was introduced to **enhance Europe's industrial competitiveness**, **green** and **digital** transitions, and to ensure **strategic autonomy** in a rapidly changing geopolitical and technological context. Key pillars of the strategy are:

1. **Green transition**: Align industry with the **European Green Deal**, achieving **climate neutrality by 2050**.

2. **Digital transformation**: Accelerate adoption of **advanced digital technologies** (AI, 5G, data, cloud).

3. **Global competitiveness**: Reinforce Europe's position in global value chains, while preserving **open strategic autonomy**.

4. **SME support**: Empower **small and medium-sized enterprises** through reduced administrative burden and access to finance.

5. **Single Market resilience**: Address fragmentation and increase crisis preparedness.

2021 Update: "Updating the 2020 New Industrial Strategy"

Due to the COVID-19 pandemic, the Commission reassessed vulnerabilities and published an update in May 2021 (Source: European Commission, 5 May 2021: **"Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery")**, focusing on resilience, strategic dependencies, and open strategic autonomy. The 3 pillars of the updated strategy are:

1. **Strengthening Single Market resilience:** Better monitoring of disruptions (e.g., **Single Market Emergency Instrument**) and enforcement of free movement of goods, services, and people even during crises.

2. **Addressing strategic dependencies:** launching **large industrial alliances**, including the European Battery Alliance, the European Clean Hydrogen Alliance, and the European Raw Materials Alliance.

3. **Accelerating the green and digital transitions:** Promote **climate-neutral**, **circular**, and **resource-efficient** production, and support investment in **digital infrastructure and skills.**

The 2020 and 2021 strategies together form a **comprehensive framework for industrial transformation in the EU**, reacting both to long-term climate and digital goals and short-term shocks like the COVID-19 crisis. The 2021 update reinforced **resilience and autonomy**, key elements for sustainable competitiveness.

Green Deal Industrial Plan (2023) – Putting manufacturing at the heart of the Green Deal

The European Commission has announced on 1 February 2023 the **Green Deal Industrial Plan** as a blueprint for ensuring that the EU's climate neutrality ambitions are translated into competitiveness and jobs in the regions. The plan aims to make sure that Europe's dependence on Russian fossil fuels is reduced while reaching the goal of becoming climate-neutral by 2050. The Green Deal Industrial Plan puts clean technologies such as batteries, wind turbines, solar panels, heat pumps, and carbon capture and storage at its center. These technologies are essential to meeting the region's climate neutrality goals.

Ursula von der Leyen, President of the European Commission, said: "*We have a once in a generation opportunity to show the way with speed, ambition and a sense of purpose to secure the EU's industrial lead in the fast-growing net-zero technology sector. **Europe is determined to lead the clean tech revolution**. For our companies and people, it means turning skills into quality jobs and innovation into mass production, thanks to a simpler and faster framework. Better access to finance will allow our key clean tech industries to scale up quickly.*"

The Green Deal Industrial Plan represents the necessary step to combine Europe's climate neutrality ambitions with industrial competitiveness and job creation. The plan includes the **Net Zero Industry Act** to bolster the production of clean technologies in the EU and prepare for the shift to clean energy and the **Critical Raw Materials Act** to secure access to raw materials. The Green Deal Industrial Plan also aims to incentivize investment in clean tech production through the improvement of access to finance, including EU funding.

Net Zero Industry Act

The proposed legislation focuses on key technologies – the **Strategic Net-Zero technologies -** that can significantly contribute to decarbonization efforts. These technologies include solar photovoltaic and solar thermal, onshore and offshore wind power, energy storage and batteries, geothermal energy and heat pumps, fuel cells and electrolysers, carbon capture and storage, grid technologies, sustainable alternative fuels, advanced nuclear energy technologies with minimal fuel cycle waste, and small modular reactors, along with their associated high-quality fuels. Key instruments are:

- **Streamlined Permitting Procedures** to deliver faster authorization for net-zero manufacturing projects.
- **Net-Zero Europe Platform** to facilitate coordination and investment.
- **Net-Zero Accelerators** providing support for strategic projects.
- **Public Procurement and Auctions** encouraging the uptake of European net-zero products.
- **Skills Academies** to developing the workforce for net-zero industries.

Critical Raw Materials Act

The objective of the Critical Raw Materials Act is to ensure a secure and sustainable supply of critical raw materials (CRMs) essential for strategic sectors, particularly those underpinning net-zero technologies and digital industries.[26] It aims to enhance the EU's domestic capacity for extraction, processing, and recycling of CRMs.

European Skills Agenda (2020)

The **European Skills Agenda** is a strategic policy framework introduced by the European Commission in July 2020 to help individuals and businesses develop more and better skills, in line with the green and digital transitions. It aligns with the objectives of the European Green Deal, the Digital Strategy, and the Recovery Plan for Europe, and it supports the ambition of building a resilient, inclusive, and competitive Europe. The European Skills Agenda includes 12 flagship actions structured around four key objectives:

- Strengthening sustainable competitiveness
- Ensuring social fairness
- Building resilience to crises
- Promoting lifelong learning for all

Key features of the European Skills Agenda include a strong emphasis on upskilling, which refers to improving individuals' existing skills to meet evolving labour market demands, and reskilling, which involves training people in entirely new skills to enable career shifts or entry into emerging sectors. The Agenda also aims to enhance cooperation between public and private stakeholders, fostering partnerships that can better align education and training systems with industry needs. In addition, it focuses on mobilising both EU and national funding sources—such as the European Social Fund Plus (ESF+) and the Recovery and Resilience Facility—to support large-scale skills development initiatives across Member States.

Pact for Skills

The **Pact for Skills** is one of the flagship actions under the European Skills Agenda, launched by the European Commission in **November 2020** to foster a shared engagement in skills development across Europe. It aims to mobilise all relevant stakeholders—public authorities, companies, social partners, education and training providers, and employment services—to work together in **large-scale partnerships** for upskilling and reskilling the European workforce. The initiative is a response to the accelerating demands brought about by the twin green and digital transitions, as well as broader structural changes in the labour market. At its core, the Pact for Skills promotes a **voluntary engagement model**, grounded in a **Charter of Principles** that signatories commit to. These principles include promoting a culture of lifelong learning, building strong skills partnerships, monitoring labour market needs to better anticipate future skill requirements, and ensuring inclusiveness, equal opportunities, and gender equality in skills development.

Rather than operating as a funding mechanism itself, the Pact serves as a **platform for collaboration and coordination**, supporting the alignment of existing EU and national funding sources—such as the European

Social Fund Plus (ESF+), the Recovery and Resilience Facility (RRF), Erasmus+, and Horizon Europe—to finance joint skills strategies. It places particular emphasis on fostering skills ecosystems in 14 strategic sectors identified under the **EU Industrial Strategy**, including the automotive, renewable energy, aerospace, health, microelectronics, and tourism sectors.

Digital Decade programme (2021)

The Digital Decade Policy Programme is the EU's jointly agreed digital strategy, adopted by the European Commission, Parliament, and Council. It defines a shared vision and governance framework to guide Europe's **digital transformation by 2030** (Digital Decade - Policy programme). The programme addresses four core areas, each with measurable targets to steer digital progress:

1. Digital Skills & ICT Workforce

- **80% of adults (16–74)** should have basic digital skills.
- **20 million ICT specialists** should be employed in the EU, with gender balance.

2. Secure & Sustainable Digital Infrastructure

- Universal **gigabit connectivity**, with 5G coverage in all populated areas.
- EU production of **semiconductors to reach ≥ 20% global share** in value.
- Deployment of **10,000 climate-neutral edge nodes**, and the EU's first **quantum-accelerated computer** by 2025.

3. Digital Transformation of Businesses

- **75%** of businesses using Cloud, AI or Big Data.
- **> 90%** of SMEs achieving basic digital intensity (using at least four digital technologies).
- Doubling of the number of EU tech "unicorns" by scale-up financing and innovation support.

4. Digital Public Services

- **100% of key public services** accessible online.
- **100% of citizens** with secure digital ID and access to their electronic health records (e-Health).

While the digital ambitions of the EC cover a broad spectrum, it can easily be observed that many of those converge with the ambitions of the **New Industrial Strategy for Europe** and the **Green Deal Industrial Plan**.

The implementation of the Digital Decade programme is mainly taking place through the Digital Europe Programme (DIGITAL). The Digital Europe Programme (DIGITAL) is a European Union funding initiative running from 2021 to 2027 under the Multiannual Financial Framework, with an indicative budget of approximately €7.5–8.1 billion. It is designed to accelerate the deployment of advanced digital technologies across Europe and build strategic digital capacities in key areas. It especially supports industry, small and medium-sized enterprises (SMEs), and public administration in their digital transformation with a reinforced network of European Digital Innovation Hubs (EDIH).

Recovery Plan for Europe– NextGeneration EU (2020)

In response to the **COVID-19 pandemic**, the European Union launched the **Recovery Plan for Europe** in **May 2020**, centered around a temporary instrument called **NextGenerationEU**. The plan aims to support Member States in recovering from the crisis, **modernizing economies**, and reinforcing the EU's **resilience for future shocks**. The plan is most commonly known under **NextGenerationEU (or NextGenEU)**, the temporary instrument designed to boost the recovery by financing investments and reforms between 2021 and 2026.

The central component of NextGeneration EU is the **Recovery and Resilience Facility (RRF)**, which funds (through loans and grants) national recovery plans that outline reforms and investments aligned with EU priorities. Member States are especially expected to implement ambitious reforms and investments that make their economies and societies more sustainable, resilient and prepared for the green and digital transitions, in line with the EU's priorities.

The **Recovery Plan for Europe** marked a significant step in EU integration by enabling **common debt issuance**, directing investments toward the **green and digital transitions**, and requiring structural reforms. It laid the financial foundation for the EU's post-COVID transformation.

Sector-based approaches

Industrial transformation is not a one-size-fits-all process. Each industrial sector operates under different regulatory, technological, and economic frameworks. For example:

- The **automotive sector** must decarbonise transport while managing complex supply chains and high R&D intensity.
- The **textile sector** faces urgent sustainability and circularity challenges, due to fast fashion and global production models.
- **Tourism**, hit hard by COVID-19 and climate pressures, must reinvent its business models toward resilience and low-impact mobility.

Strategic approaches at the sectoral level are not just complementary but foundational to the EU's industrial transformation. They translate broad ambitions into actionable, industry-specific roadmaps. By accounting for sectoral diversity, these strategies enhance policy effectiveness, foster innovation, support workforce development, and reinforce the EU's long-term resilience and strategic autonomy. Examples of such sectoral initiatives in the EU are:

SECTOR	EU INITIATIVE
Automotive / Mobility	*2030 Roadmap on Zero-Emission Mobility* and the *EU Battery Alliance*
Textiles	*Transition Pathway for the Textiles Ecosystem*
Agri-Food	*Farm to Fork Strategy* and *Bioeconomy Strategy*
Tourism	*Transition Pathway for Tourism* (2022)
Chemicals	*Transition Pathway for the Chemical Industry*

Construction	*Renovation Wave Strategy* (embedded in the Green Deal)
Defense	*European Defence Industrial Strategy (2024)*

Source: *European Commission Transition Pathways*

While those European initiatives set overall strategic guidelines for industrial transformation at sectoral level, specific policies are required on national and regional level to ensure the translation of those guidelines in real operational transformative efforts.

Regional and national sector-based strategic approaches for the industrial transformation in Interreg Europe projects

Among the 14 industrial ecosystems highlighted in the EU Industrial Strategy, several are being tackled in the context of ongoing Interreg Europe projects. While many projects are still in their early phase, several have already published highly relevant good practices, as displayed hereafter. They cover the following industrial sectors:

- Textiles
- Agri-Food
- Tourism

The first of those practices addresses the textile sector and comes from Catalonia, Spain: the **Circular Fashion Agreement** in Catalonia, launched in May 2022. The textile sector is one of the major resource consumers in the world, with a huge environmental and climatic impact. An estimated less than 1% of the textile waste is recycled. Catalonia has been historically characterized as having a powerful textile industry. Currently, it stands out within Europe for its long tradition of factories using recycled textile materials in their production. A group of stakeholders driving the entire textile value chain have been working alongside the Government of Catalonia and other organizations to define the basis of the Agreement. It is a voluntary agreement among institutions and companies from the different links of the Catalan textile value chain, which is going to facilitate the incorporation of circularity measures, the promotion of collaborative projects, and the improvement of sectoral competitiveness.

GOOD PRACTICE 1: Circular Fashion Agreement in Catalonia - First year of action (Spain)

AccelerateGDT

The Circular Fashion Agreement was launched in May 2022 with 57 signatories. After its first year of action, the signatures increased to 103 entities from the different parts of the textile value chain. The stakeholders involved are producers, retailers, technological companies and centres, public administrations, universities, waste management companies and entities from the third sector.

To reach the objectives of the Agreement, 8 working groups were set regarding prevention, separate collection, green public procurement, circular products, reuse, recycling, public awareness and dissemination. And different concrete actions have taken place. For instance:

- 080 Reborn: Second-hand clothing fashion show from 080 Barcelona Fashion.

- Submission of projects to industrialize the value chain of the use of post-consumer textiles as secondary raw material in Catalonia within the framework of the circular economy funds from the Catalan Waste AgencyEcoloop UB, winner of the Catalonia Ecodesign Awards 2023 in the Product category. Work clothes that contain up to 65 % of recycled fibres.
- Collection Reduir Summer 23 of Miriam Ponsa. Clothes made of recycled and natural fabrics such as cotton, silk, and hemp and proposed production on demand.

Click here to find out more about this practice.

The Circular Fashion Agreement in Catalonia shows a solid commitment to a circular economy by involving key stakeholders from the textile value chain, such as producers, retailers, and waste management. The primary added value of this Agreement lies in coordinating the efforts to deal with textile industry challenges effectively, establishing common objectives, and creating standard instruments that transform the textile industry towards a circular model.

The next good practice comes from the agri-food sector and illustrates also the transformative power of stakeholder-led initiatives: **Food Vision 2030: Ireland's integrated systems approach for a sustainable agri-food sector** offers a compelling blueprint for a positive industrial transformation, not just for agri-food systems but for sector-based approaches in general.

GOOD PRACTICE 2: Food Vision 2030: Ireland's integrated systems approach for a sustainable agri-food sector (Ireland)

ORIGINN

Launched by the Department of Agriculture, Food and the Marine, the Food Vision 2030 Strategy represents a paradigm shift toward an integrated "food systems approach." Its ambition is to deliver a sustainable agri-food sector that is economically viable, environmentally sound, and socially inclusive. Yet what makes Food Vision 2030 particularly noteworthy is not only its comprehensive vision, but also its innovative governance and monitoring mechanisms, developed without associated public funding. At the heart of Food Vision 2030 is a commitment to transition Ireland's agri-food sector into a model of sustainable development. Its foundational idea is that food policy must be treated as a system—one that connects agriculture, climate, environment, nutrition, animal welfare, and economic competitiveness.

The Food Vision 2030 Strategy is structured around four interlinked Missions:

- A climate-smart, environmentally sustainable agri-food sector.
- Viable and resilient primary producers with enhanced well-being
- Food that Is safe, nutritious, and trusted.
- An innovative, competitive, and resilient sector.

Rather than prescribe sector-specific fixes, Food Vision 2030 positions itself as a policy compass, guiding decision-making at both national and regional levels. Its cross-cutting structure breaks down barriers between departments and state agencies.

Click here to find out more about this practice.

What sets Food Vision 2030 apart from many other strategic frameworks is its governance and implementation model. While it is a national strategy, it is not backed by a dedicated funding mechanism. Its legitimacy and momentum come from another source: inclusive, multi-stakeholder collaboration. From its inception, the Strategy was stakeholder-led. A cross-sectoral committee involving farmers' organisations, environmental NGOs, processors, academics, and civil society through public consultation and open policy debate played a central role in drafting the Strategy. The implementation structure is similarly inclusive. It comprises a number of thematic Working Groups, each focusing on a Mission area or cross-cutting theme. These groups are tasked with proposing, reviewing, and adapting measures as the Strategy evolves. They report directly to the Minister for Agriculture, Food and the Marine, who chairs a High-Level Implementation Committee, giving political weight to the process.

Transparency and accountability are ensured through a publicly accessible dashboard, which tracks progress against key performance indicators. The Food Vision 2030 Dashboard provides ongoing updates on implementation metrics, offering a rare level of public insight into strategy execution. In addition, annual progress reports include sectoral case studies, showcasing how initiatives - from e.g. AgNav, a farmer-centric sustainability support framework, to the National Genotyping Programme - are contributing to the overall vision. These stories serve not just as evidence, but as inspiration for others within and beyond the agri-food space. Food Vision 2030 stands out not just for what it proposes, but for how it operates. It demonstrates that meaningful, system-level transformation is possible even in the absence of new funding streams, provided that the governance model is inclusive, transparent, and grounded in shared ownership.

For policymakers navigating the industrial transitions of the 21st century—whether in energy, mobility, or health—the Strategy offers transferable lessons. Chief among them: embrace participatory design, build mechanisms for continuous monitoring and learning, and communicate progress openly. As regional and national policy makers across Europe and beyond search for ways to integrate climate, economic, and social goals, Food Vision 2030 provides a living example of how to do just that. It is more than an agri-food strategy; it is a systems-based playbook for sustainable governance.

The Interreg Europe ORIGINN project offers another example of a strong strategic initiative with an emphasis on the agri-food sector, the Catalan Bioeconomy Strategy 2030.

GOOD PRACTICE 3: Catalan Bioeconomy Strategy 2030 (Spain)

The Catalan Bioeconomy Strategy (EBC2030) was approved by the Catalan Government in 2021 with the objective to promote the sustainable development of the Catalan economy through the encouragement of the production of biological resources and local and renewable processes. The EBC2030 defines bioeconomy as a circular and sustainable economic model based on the use of renewable and local biological resources to produce goods and services in all economic sectors. It is based on the maintenance of functional and healthy ecosystems and a redefinition of the prevailing linear economy.

Bioeconomy also allows addressing sustainability challenges such as climate change, rural depopulation, or biodiversity loss. EBC2030 establishes a planning framework with a shared vision linked to the territory and aligned with European and national policies.

Click here to find out more about this practice.

> The EBC2030 can serve as an inspiration for other regions designing bioeconomy strategies. It is an excellent example of an integrated, multi-fund (European, regional) and multi-level (European, national, regional) policy alignment, taking a systemic and collaborative approach to promote transformative change.

And finally, we come to Sustainable Travel Finland a good practice illustrating the transformation of the tourism sector highlighted by the Interreg Europe project TOURBO.

GOOD PRACTICE 4: Sustainable Travel Finland (Finland)　　TOURBO

The Sustainable Travel Finland programme in Finland provides a comprehensive toolkit and structured pathway for sustainable tourism development. Through its 7-step development path and adherence to international standards, Sustainable Travel Finland guides businesses towards sustainability and ensures ongoing commitment through regular review processes. The programme is in line with Finland's tourism strategy motto for 2022-2028 "Achieving more together - sustainable growth and renewal in Finnish tourism'.

By setting strategic priorities to both the digital transformation and supporting sustainable development, industrial transformation is clearly a major driver for the Finnish tourism industry's development. The destinations and companies that undergo the entire programme and meet the criteria, are awarded with the Sustainable Travel Finland label.

A key achievement of the practice relies in its wide acceptance by the tourism industry in Finland as the national framework and standard for sustainable tourism. According to the lates figures (retrieved online in April 2025), there are currently over 500 labelled companies (and over 1.000 participating in the programme) as well as 12 labelled destinations (over 60 participating in the programme). And the programme's statistics show a positive development in several dimensions: 99% of the companies involved in the Sustainable Travel Finland programme actively participant in actions to mitigate climate change, 90% work to reduce water consumption, the share of renewable energy in total energy consumption is 69%, over 60% make sustainable choices in catering, etc.

Click here to find out more about this practice.

An outstanding feature of Sustainable Travel Finland are the close monitoring of the companies involved in the programme and the overall progress within the industry. At company level, a clear set of indicators to be reported by businesses (see figure) have been agreed upon. The results can serve for benchmarking purposes but also for monitoring the collective progress in the tourism industry. The progress on the programme level is documented on the Sustainable Travel Finland digital hub in a dashboard and publicly accessible. In addition to giving a strategic framework to the Finnish tourism industry for its transformation toward higher sustainability, the

very hands-on approach of the programme must be highlighted. Every participating business or location benefits from practical advice and access to tools such as e.g. a carbon footprint calculator, which help them moving forward.

A major learning value of this practice lies in the programme's clever approach, consolidating various sustainability schemes into a single framework and streamlining the sustainability journey for tourism businesses while promoting the potential competitiveness edge for sustainable tourism businesses and destinations.

Clusters, networks and further collaboration platforms

Industrial transformation in Europe cannot be achieved solely through high-level strategies and sectoral roadmaps. It requires active mobilisation and coordination of actors at regional and local levels. Clusters, collaborative platforms, and regional innovation ecosystems are key territorial enablers that help align industrial ambitions with practical implementation on the ground.

Whether in the form of sector-specific clusters, digital innovation hubs, competence centres, or inter-cluster alliances, these collaborative frameworks are essential for fostering co-innovation, developing resilient value chains, and supporting the upskilling and reskilling of the workforce. They also offer concrete mechanisms for translating the EU's industrial transition pathways into regional strategies and pilot projects, enabling experimentation and adaptive policymaking. This chapter explores further how clusters and other collaboration platforms are supporting industrial transformation across Europe.

A closer look at the role of clusters and cluster policies

Clusters are widely recognized to be strategic assets in driving industrial transformation across Europe. As outlined by the European Expert Group on Clusters from 2021 (European Commission), clusters can significantly support the **green and digital transitions**, and strengthen Europe's **resilience**—the three pillars of the EU's new industrial policy.

According to the conclusions of the Expert Gorup, clusters typically act as **agents of change** by connecting businesses (especially SMEs), research institutions, public bodies, and civil society to co-design and implement new policies, for instance environmental and circular economy strategies. Clusters also foster **technological uptake, especially digital technologies** by linking SMEs with Digital Innovation Hubs and building capacity for smart manufacturing. By facilitating digital education, public-private partnerships, and the integration of physical and digital systems, clusters act as multipliers of digital innovation across sectors. The COVID-19 crisis underscored clusters' ability to respond quickly to supply chain disruptions, acting as intelligence hubs for businesses to identify alternative markets, suppliers, and solutions. They also support **reskilling and upskilling**, foster social and ecological innovation, and contribute to the EU's strategic autonomy by helping SMEs enter and adapt within global value chains.

In summary, clusters are uniquely positioned to **connect policy with practice**, enabling SMEs to adapt and lead industrial transformation. Their capacity to orchestrate innovation, facilitate skills development, and respond rapidly to shocks makes them essential levers for implementing the EU's green, digital, and resilience objectives. In addition to the policy improvements and good practices presented hereafter, our policy brief on Clusters: Driving the Green and Digital Twin transitions features policy recommendations using the experience of Interreg Europe projects to inspire policymakers to better design and deliver cluster policies.

The Interreg project Accelerate GDT (full name: Realign Cluster Policies to Accelerate the Twin Green and Digital Transitions) deals specifically with accelerating the twin green and digital transitions, one the pillars of industrial transformation policies, by aligning supports into regional and national cluster policies. It is therefore hardly a

surprise that the project partners have already been able to reach two policy improvements which are presented here after.

Policy improvement 1: Hungarian Cluster Strategy (Hungary)

The Accelerate GDT project played a pivotal role in shaping and operationalising a major policy improvement in Hungary: the adoption and implementation of the Hungarian Cluster Strategy. This policy milestone was formalised on 8 November 2023, providing a comprehensive national framework to guide cluster development in line with green and digital (twin) transition objectives. From its early stages, the strategy benefitted directly from the project's insights, tools, and peer learning opportunities.

A key outcome was the creation of a new national cluster evaluation system, introduced in 2024. This system marked a turning point by embedding sustainability and digitalisation criteria at the heart of performance assessments. Indicators such as the share of cluster members using digital solutions and the percentage of members engaged in circular or green economy activities now serve as core metrics. In addition, elements like ESG reporting and access to green financing instruments were integrated into the evaluation framework, reinforcing Hungary's policy commitment to sustainable industrial development.

The Accelerate GDT project contributed to these developments through a multi-dimensional knowledge exchange process. A series of seminars, peer reviews, and workshops facilitated mutual learning among stakeholders, particularly in how to embed sustainability in cluster governance. **Hungarian policymakers and cluster managers gained direct exposure to international good practices, learning from how other European regions had embedded transition priorities in their cluster policies and evaluation models.** This peer learning process not only provided technical inspiration but also offered pragmatic solutions tailored to Hungary's context. By encouraging the adoption of green and digital approaches across Hungary's diverse cluster landscape, Accelerate GDT contributed to a more balanced and forward-looking industrial development strategy.

Policy improvement 2: Metropolitan City of Turin (Italy)

The Accelerate GDT project played a catalytic role in enhancing regional policy in the Metropolitan City of Turin (MCT) by supporting the alignment of cluster policy with the objectives of the green and digital transitions. The main focus was on refining the **Metropolitan Strategic Plan (MSP)**, the core planning framework guiding the socio-economic and environmental development of the metropolitan area. Prior to the intervention, the MSP included general provisions to strengthen innovation and competitiveness among SMEs through clustering, but it lacked a dedicated emphasis on fostering the green and digital transitions in this context. Thanks to the lessons learnt within the Accelerate GDT project, the MCT administration revised its strategic approach. These efforts culminated in a concrete policy advancement with the adoption of the **new MSP 2024–2026**.

One of the key updates was the reformulation of a strategic objective, now titled Strategy 1.2, which aims to stimulate innovation and competitiveness in micro, small, and medium-sized enterprises. A notable innovation

within this revised strategy is the inclusion of Action 1.2.4, which promotes collaborative business networks and clusters that support digitalisation, technological diversification, innovation, and circularity in value chains.

This improvement was directly inspired by good practices showcased within the project, such as:

- **DIH4CAT** (Spain): a coordinated digital innovation hub model for SME transformation.
- **Circular Fashion Agreement** (Spain): an example of sector-specific circular economy collaboration displayed in the policy brief.
- **ESG Cluster Hub** (Ukraine): integrating sustainability and governance principles into SME competitiveness (see below).

The improvement of the Hungarian Cluster Strategy and its evaluation system as well as the improvement of the Metropolitan Strategic Plan of Turin exemplify how EU interregional cooperation projects can transform strategic policy frameworks through structured dialogue, peer learning, and concrete operational tools. The Accelerate GDT project provided not just inspiration but also practical instruments and methodologies to accelerate the twin transition at the heart of cluster policy.

In addition to those policy improvements, the Accelerate GDT project published several good practices related to the digital and green transition of clusters. Among those practices, there is the ESG Cluster Hub from Ukraine which represents an interesting tool to address at the level of clusters the burning issue for companies to collect and process data for their Environmental, Social and Governance ESG reporting.

GOOD PRACTICE 5: ESG Cluster Hub (Ukraine)   AccelerateGDT

The ESG Cluster Hub addresses a critical gap in the ESG data ecosystem: the lack of availability, integrity, and reliability of data for ESG risk assessment and asset management. The ESG Cluster Hub simplifies how clusters and SMEs manage their ESG and carbon footprint data through the launch of the ESG Data Space. A key component of this ESG Cluster Hub is ESG.Electrodo, a blockchain-powered platform to digitize, streamline, and ensure the integrity of ESG data processing, verification, and reporting across industrial value chains. The platform enables SMEs and clusters to set and monitor ESG impact targets, facilitating transparent and accountable sustainable development. By improving ESG data management, the ESG Cluster Hub attracts responsible investors, facilitates access to green finance, and prepares SMEs for regulatory compliance, thus boosting their market value and resilience.

Click here to find out more about this practice.

The ESG Cluster Hub from Ukraine presents an innovative solution to the challenge of inadequate Environmental, Social and Governance (ESG) data, empowering SMEs, and clusters to meet investor and regulatory requirements by streamlining ESG and carbon footprint management. Furthermore, the ESG Cluster Hub exemplifies the effective use of data and technology for sustainable development, offering a scalable model for international ESG

More useful input on the topic can be found in the learnings from the onsite peer review on Strengthening Hungarian Micro, Small and Medium-sized Enterprises in ESG Related Aspects organized by the Policy Learning Platform for the Hungarian Economic Development Agency in July 2024. Several peers across Europe discussed how to set up and implement different ESG related financial instruments and support measures for SMEs, as well as how to provide consulting to SMEs and other companies directly on how to implement ESG related measures.

Other networks and collaboration platforms

As suggested in the introduction to this chapter, there are many different in Europe collaborative initiatives or frameworks that contribute, in one way or another, to a successful industrial transformation in Europe. However, only a few of those initiatives have been set up with the specific purpose of bringing industrial transformation forward. Several Interreg Europe projects have highlighted such practices. Here are two of them:

The first one relates to the automotive sector in Germany. The MoLeWa (Mobilität – Leipzig im Wandel / Mobility – Leipzig in transition) initiative, launched on the 1st of July 2022, is one of 27 regional transformation networks funded by the German Federal Ministry for Economic Affairs and Climate Action. It drives systemic change through multi-stakeholder collaboration and strategic infrastructure development to ensure regional sustainability. MoLeWa supports more specifically the transition of automotive and related industries by addressing challenges such as electrification, digitalisation, workforce development, and environmental compliance.

GOOD PRACTICE 6: MoLeWa: Leipzig Automotive Transformation Network – Driving Innovation & Sustainability

EMBRACER

The automotive industry is a key economic sector in the Leipzig region, employing around 20,000 people. Led by a consortium including stakeholders from politics, economy, education, unions, the automotive industry and mobility transformation, the initiative fosters dialogue and innovation through workshops, forums, and collaborative projects. A key focus is intermodal mobility, transforming not only the industry but also how people move. Events and discussions link actors, share knowledge, analyse commuter patterns, and explore sustainable alternatives and additions to car use. The MoLeWa project shows positive momentum by identifying regional areas for improvement and recommending actions. For example, it revealed the need for better workforce planning and digital investment and immediately proposed solutions, fostering stronger collaboration between business and research to support Leipzig's sustainable transformation. MoLeWa offers a scalable model for industrial transformation and sustainable mobility, rooted in strong regional cooperation. It emphasises inclusive, evidence-based planning, involving stakeholders in shaping strategies, identifying needs, and designing solutions for workforce upskilling, CO_2 neutrality, circular economy, and digitalisation.

Click here to find out more about this practice.

MoLeWa is an interesting model of collaborative network, aiming to guide the automotive sector through sustainable transition. Comprised of a diverse membership of industry, unions, education and public authorities, it brings together multiple perspectives and value chain roles to enable knowledge exchange and collaboration. This can not only enable direct collaboration between members but also enable development of a common vision and inform regional policy and strategy. The practice aligns with EU objectives on carbon neutrality, digitalisation, and sustainable mobility, and other regions can learn from this practice about how to structure cross-sectoral co-operation, enable stakeholder engagement, and co-development regional transformation strategies.

The second practice is the North Sweden Cleantech regional collaboration platform for Green Transition, developed on the initiative of Region Västerbotten, which decided in the Regional Plan that cleantech would constitute a new priority area and then provided support for a feasibility study for the development of the platform.

GOOD PRACTICE 7: North Sweden Cleantech regional collaboration platform for Green Transition (Sweden)

CEI BOOST

North Sweden Cleantech is a collaboration platform aiming to strengthen SMEs in green technology, clean energy and sustainable solutions in northern Sweden, by providing innovation and business support to start-ups and SMEs creating products and services that promote a sustainable transition. The platform results from a public regional development long term initiative gathering a critical mass of companies that develop climate- and environmentally friendly solutions in collaboration between regions in northern Sweden.

The platform consists of a broad partnership that includes incubators, science parks, energy companies, cities and regions in 3 counties and has developed during more than 10 years a business network of 110 companies. The network is currently growing. The initiative is implemented by publicly owned incubators, science parks and other organizations in 5 cities providing a joint offer to companies.

Click here to find out more about this practice.

The North Sweden Cleantech platform is a strong example of a regional development initiative that fosters green technology innovation and SME growth in a sparsely populated area. By bringing together public actors, incubators, and science parks across neighbouring regions, it has created a critical mass of companies developing climate-friendly solutions. Its adaptability to policy, technology, and market changes, alongside its support for test beds and industrial symbiosis, enhances its long-term impact.

Policy recommendations

When it comes to reaching sustainability goals, policies and regulations are often triggering the change. While many companies are aware of the necessity of an industrial transformation, partly due to the pressure of global competition, overall efforts are often still happening rather slowly. Mostly, it is only the pressure of existing or announced regulations that triggers significant transformation efforts across economic sectors. This goes especially for small companies in traditional sectors, which might not always be well integrated in global value chains. The risks of them falling behind or not to be able to respond to new demands is high.

Here is a set of targeted policy recommendations for national and regional authorities to accelerate industrial transformation through multiple stakeholder sector-based strategies, cluster policies and robust collaborative platforms.

Cross-cutting Recommendations

The following recommendations are not specific to classic sector-based approaches, nor are they strictly connected to cluster policies. They are considered to be valid for policies addressing industrial transformation in general:

- **Use funding programmes strategically:** Embed both digitalisation and green conditions into the rules for grants, guarantees and equity instruments at regional and national level. Establish dedicated funds or guarantee schemes tailored to sector and cluster needs, blending public and private capital to de-risk investments in e.g. low-carbon technologies and advanced digital infrastructure. Link access to preferential finance with the achievement of milestone-based targets. Build on existing instruments such as EU Cohesion funding, the Recovery and Resilience Facility and Invest EU by embedding clear eligibility criteria for e.g. climate mitigation, resource efficiency and advanced digitalisation.

- **Foster regional innovation ecosystems:** Support place-based collaborative platforms such as MoLeWa and North Sweden Cleantech that mobilise local actors around systemic industrial transformation. Encourage interregional cooperation and knowledge exchange by participating in Interreg Europe activities. **Effective transformation strategies are place-based—rooted in local assets and designed to rebalance territorial development.**

- **Establish shared data platforms for transparency and accountability:** Create secure ESG data paces where industries and clusters regularly publish verified metrics on carbon emissions, circularity and digital maturity. Ensure these platforms comply with EU Data Governance Act standards and support benchmarking, policy evaluation and public recognition of best-in-class performers.

- **Monitoring and benchmarking**: Sectoral performance indicators and transition pathways support evidence-based policymaking and accountability. Use benchmarking and public recognition to incentivize transformation. Accompany this with a publicly accessible online dashboard that tracks performance on key metrics.

Recommendations for sector-based approaches

The following recommendations concern more specifically sector-based strategic approaches as they are described in this policy brief:

- **Co-create transition pathways with sector stakeholders**: Design and implement sectoral transition pathways that set clear qualitative and quantitative targets for carbon reduction, digital intensity, circularity and job creation. Build on the EU's Transition Pathways model for ecosystems such as automotive, textiles, agri-food and chemicals. Embed these pathways into regional development plans and review progress annually.

- **Establish participatory governance bodies**: Create multi-stakeholder councils at national or regional level for each strategic sector. Include industry associations, labour representatives, research centres and civil society. Grant these bodies mandate to propose measures, monitor indicators and possibly also unlock funding via mainstream programmes. **Industrial transformation succeeds best when actors align at multiple levels and across sectors, combining policy leadership with bottom-up innovation.**

- **Promote sustainability norms (measurement) and labels – make sustainable the norm:** Beyond regulations, it is important that stakeholders agree on norms with clear progress indicators. Ideally, sustainability should become the norm at industry level. Having clear indicators enables benchmarking and pushes businesses to stronger efforts generating competitive advantages. Encourage all sectoral strategies to adopt standardised sustainability and circularity indicators (e.g. recycling rate, resource productivity, waste to landfill) and promote sustainability labels.

In short:

Systemic sustainable transformation requires a long-term, integrated vision, backed by governance structures and measurable indicators.

Recommendations for clusters and collaborative platforms

While the recommendations above are valid for clusters and collaborative platforms, some specific recommendations can be formulated on the basis of the learnings from the Interreg Europe community:

- **Embed sustainability and digitalisation in cluster evaluation**: Mandate that cluster support programmes assess members on both green and digital indicators such as for instance CO_2 reduction per unit output and share of production processes automated or AI-enabled. Use these metrics to prioritise clusters for additional funding and public recognition.

- **Foster inter-cluster collaboration and knowledge exchange**: Launch programmes that bring together clusters from different sectors and regions to co-develop innovative solutions for cross-cutting challenges like critical raw materials sourcing and circular value chains as well as societal challenges.

- **Build cluster-anchored skills platforms**: Establish partnerships with vocational and higher-education institutions to set up initiatives, such as e.g. cluster-branded training academies, that contribute to up-skill the local workforce in emerging digital and green technologies taking example on the MoLeWa practice in the Leipzig region.

Sources and further information

Our experts provide a tailored set of resources, contacts, or in-depth analyses to help you find the answers you are looking for. Explore our services that can help you solve your regional policy challenges.

Interreg Europe Policy Learning Platform information

Event learnings

- Webinar recording: Policies for business transformation: key learnings
- Webinar recording: Supporting SMEs in adopting and implementing ESG: key learnings
- Webinar recording: Advancing Hydrogen Valleys: key learnings
- Webinar recording: Twin transition for SMEs: Key learnings
- Webinar recording: Cultural and Creative Industries: Towards a green and digital Europe
- Webinar recording: How to turn the theory of industry 5.0 into practice
- Workshop report: Leading industrial transition: key learnings

Stories and articles

- Sustainable by default: Finland makes sustainability the norm
- Ireland's pathway to sustainable food systems
- Business opportunities from the 'green economy' shift
- The Blue Economy for European regions
- Digital ecosystems and digital transformation

Policy briefs

- Circular transition in SMEs
- Digital innovation hubs and demonstrators
- Fostering the digital transformation of SMEs
- Clusters: Driving the green and digital twin transition

Peer reviews and matchmaking

- Digital transformation in Trnava Region
- Strengthening Hungarian Micro, Small and Medium-sized Enterprises in ESG Related Aspects
- European Value Chains for the green transition
- Creating a blue economy roadmap
- The Platform helps Tartu set up a Green Deal accelerator
- Implementing a digital transformation strategy

Other sources
- The New Industrial Strategy for Europe (2020, updated 2021)
- The Green Deal Industrial Plan (2023)
- The European Skills Agenda (2020)
- The Digital Decade programme (2021)
- The Recovery Plan for Europe (2020)

Interreg Europe Programme

Interreg Europe is an interregional cooperation programme co-financed by the European Union. With a budget of 379 million euros for 2021-2027, Interreg Europe helps local, regional and national governments across Europe to develop and deliver better policies through interregional cooperation projects and its Policy Learning Platform services. The programme promotes good practice sharing and policy learning among European regions in 36 countries – the 27 Member States, as well as Norway, Switzerland and the 7 EU candidate countries. Interreg Europe contributes to the EU cohesion policy together with the other European Territorial Cooperation programmes known as Interreg.

Interreg Europe Policy Learning Platform

The Policy Learning Platform is the second action of the Interreg Europe programme. It aims to boost EU-wide policy learning and builds on good practices related to regional development policies.

The Platform is a space where the European policy-making community can tap into the know-how of regional policy experts and peers. It offers information on a variety of topics via thematic publications, online and onsite events, and direct communication with a team of experts.

Interreg Europe Policy Learning Platform expert services

Our team of experts provide a set of services that can help you with regional policy challenges. Get in contact with our experts to discuss the possibilities:

Via the policy helpdesk, policymakers may submit their questions to receive a set of resources ranging from inspiring good practices from across Europe, policy briefs, webinar recordings, information about upcoming events, available European support and contacts of relevant people, as well as matchmaking recommendations and peer review opportunities.

A matchmaking session is a thematic discussion hosted and moderated by the Policy Learning Platform, designed around the policy needs and questions put forward by the requesting public authority or agency. It brings together peers from other European regions to present their experience and successes, to provide inspiration for overcoming regional challenges.

Peer reviews are the deepest and most intensive of the on-demand services, bringing together peers from a number of regions for a two-day work session, to examine the specific territorial and thematic context of the requesting region, discuss with stakeholders, and devise recommendations.

Discover more: www.interregeurope.eu/policylearning

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