

SUPEERA

Policy Brief



UPDATING THE 2020 NEW INDUSTRIAL STRATEGY

CHALLENGES AND
OPPORTUNITIES AHEAD



Setting the scene

The European Green Deal celebrates its first year in 2021, testifying the renovated push from the European institutions to focus policymaking on the threats posed by climate change. To reach climate neutrality by 2050, the EU will need to incorporate several initiatives in energy and climate to develop a stable and coherent framework for concerted action. Within this framework, the recently published "Fit-for-55" package¹ represents a key milestone for the EU's ambitions and provides the roadmap to translate EU climate goals into concrete actions. The 13 proposals put forward within the package are strictly interconnected with each other and with the targets agreed in the European Climate Law, the centrepiece of the EU Green Deal.

The recently approved EU budget and the creation of Next Generation EU, a plan to boost the post-pandemic recovery of Europe, ensure substantial backing to many projects and initiatives supporting the reduction of emissions, while promoting its digital ecosystem and competitiveness. Green investments and collaboration on transnational projects are now crucial to ensure that the efforts of the Member States, industry, and research organisations will not fall short of the set objectives.

To complement the efforts made by policymakers, it is vital to ensure that R&I challenges are addressed in parallel, increasing the collaboration between research and industry to achieve the goals towards a climate-neutral energy system in the EU. The research community has a pivotal role in this process, supporting identified political priorities with empirical findings and developments. It can also advise policymakers on the way forward through fundamental research, particularly focused on low TRLs, to advance breakthrough technologies, materials, and systemic approaches.

In the context of the SUPEERA project, a series of policy briefs are currently being developed to identify concrete R&I challenges in EU policies relevant to the energy research community. The final goal is to support the achievement of the Clean Energy Transition (CET). The analysis of the policies identified has the two-fold objective of supporting recommendations towards the EERA membership and the SET-Plan ecosystem at large, also identifying potential areas for investment in energy R&I for EU policymakers. Specifically, this paper focuses on the Updated 2020 Industrial Strategy, as outlined in the [Communication](#) published on 5 May 2021 by the European Commission, which lays out a plan for how the EU's industrial ecosystem could lead the twin green and digital transitions.

¹ The "Fit for 55" Package is comprised of a set of 13 legislative proposals aiming to make the EU's climate, energy, land use, transport, and taxation policies fit for reducing greenhouse gas emissions by at least 55% by 2030. More info here: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550>



Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe’s recovery

The [European Commission's Communication “Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe’s recovery”](#) puts forward a set of policies aimed at boosting the EU’s recovery and enhancing its open strategic autonomy. At the same time, it helps to drive the transformation towards a more sustainable, digital, resilient, and globally competitive economy.

The Communication revolves around three strategic priorities that will guide the EU actions in the months and years ahead. The table below provides an overview of these priorities and the related areas for development defined by the European Commission. They are reported as identified R&I challenges as the present analysis focuses solely on the areas with the highest potential for further improvements through European R&I actions.

Key priorities	Identified R&I challenges
Strengthening Single Market resilience	<ol style="list-style-type: none"> 1) Introduce a Single Market Emergency Instrument with the aim of ensuring the availability and free movement of persons, goods, and services in the context of possible future crises. This instrument should guarantee more information sharing, coordination, and solidarity when Member States adopt crisis-related measures. 2) Build a mechanism through which Europe can address critical product shortages by speeding up product availability and reinforcing public procurement cooperation. This mechanism should be aligned with other relevant international practices aiming to address emergency situations, like pandemics or ensure and speed up the availability of essential products. 3) Improve transparency and coordination on intra-EU export restrictions and services restrictions. 4) Enhance market surveillance procedures. 5) Support and encourage market surveillance authorities to step up the digitalisation of product inspections and data collection and use state-of-the-art technologies to trace non-compliant and dangerous products. 6) Ensure the proper transposition and implementation of the Posting of Workers Enforcement Directive across Member States by developing a common form, in an electronic format, for the declaration of the posting of workers. 7) Strengthen the solvency and growth of SMEs by mobilising significant investments through the InvestEU programme, as well as by facilitating the exchange of best practices on measures and incentives to target support on viable companies.
Dealing with dependencies: Open strategic autonomy in practice	<ol style="list-style-type: none"> 1) Deepen conducted in-depth reviews of strategic areas (i.e., raw materials, batteries, active pharmaceutical ingredients, hydrogen, semiconductors and cloud and edge technologies) to provide further insights on the origin of EU’s strategic dependencies and their impact. 2) Launch a second stage of in-depth reviews of potential dependencies in key areas, including products, services or technologies key to the twin transitions such as renewables, energy storage, and cyber security. 3) Establish a periodic review process of strategic dependencies and monitor associated risks. 4) Diversify international supply chains and pursue international partnerships to increase preparedness. 5) Examine reverse dependencies and map areas where other countries depend on the EU to better inform the EU’s policy response. 6) Support the establishment and development of further industrial alliances in strategic areas where such alliances are identified as the best tool to accelerate activities that would not develop otherwise and where they help to attract private investors.



	<ol style="list-style-type: none"> 7) Support Member States' efforts to pool public resources via Important Projects of Common European Interest (IPCEIs) in areas where the market alone cannot deliver breakthrough innovation. 8) Adopt a standardisation strategy. 9) Adopt a legal instrument to address the potentially distortive effects of foreign subsidies in the Single Market. 10) In general, capitalise on Europe's first-mover advantage and its renewable energy resource potential to ensure industrial leadership in key low-carbon technologies of today and in the future.
Accelerating the twin transitions	<ol style="list-style-type: none"> 1) Support Member States to join forces in multi-country projects to build digital and green capacities. 2) Support the co-creation of green and digital transition pathways for relevant ecosystems, starting with energy-intensive industries and tourism. 3) Conduct an extensive review of the EU competition rules to make sure they are fit to support the green and digital transition to the benefit of all Europeans. 4) Revise the environmental and energy State aid rules to enable Member States to support businesses to decarbonise their production processes and adopt greener technologies. 5) Revise State aid rules on IPCEIs in order to further enhance their openness and provide guidance on the criteria to pool funds from national budgets and EU programmes. 6) Support actions to promote renewable Power Purchase Agreements (PPA) in the proposal for a revised Renewable Energy Directive. 7) Establish a European approach to carbon contracts for difference in the proposal for a revised ETS Directive. 8) Develop Energy and Industry Geography Labs providing geospatial information for companies and energy infrastructure planners.

Establish research as a preferred partner for industrial development

The transition to carbon neutrality will be demanding for the industrial sector, not only given the scale of the challenge but also the level of investments necessary to drive production changes. EU industries face an additional layer of difficulty compared to peers in other regions of the world, as Europe **depends on raw materials** in many strategic sectors. The theme of strategic dependencies represents one of the most important challenges for the EU when it comes to industrial production, an issue that emerged during the COVID-19 pandemic with the disruption of global value chains and the effect on essential products and inputs.

In this context, **energy efficiency** surely constitutes one of the many important levers for change that needs to be swiftly implemented across the board for EU industries. Still a largely underutilised source of carbon abatement, it represents a key pillar of any effective energy policy aimed at ensuring Europe's energy security and decarbonisation of the economy while creating new jobs and stimulating economic growth. Energy efficiency can also improve the safety of the work environment and reduce maintenance, raw materials, and environmental compliance costs. Therefore, research in this field needs to be starkly stepped up to quickly capitalise on its benefits derived from mass scale.

With regards to value chains, **instability needs to be carefully addressed** in order to prevent future ruptures in processes, as has been the case for the recent semiconductors shortage that struck the EU automotive industry. In such cases, it is important to **enhance the EU's ability to increase domestic production** to avoid relying entirely on outside sources. This step will be crucial as the EU is highly dependent on imports critical for energy-intensive industries. To this end, research will be decisive not only to make industrial processes greener through a mix of **new**



production techniques and **carbon capture and storage (CCS) technologies**, but also to increase and expand the development and incorporation of circular economy processes.

Raw materials are a central issue, particularly for sectors that heavily rely on external dependency; batteries, hydrogen, and semiconductors are only a few to be mentioned. In all these sectors, increasing circularity will have a beneficial effect on the usage of raw materials. Research efforts should be directed at **studying new ways to repurpose materials, recovering important components**, and **finding new ways to use second-hand resources**. Models should also be developed to **predict emissions linked to recycling** and calculate the exact environmental gains obtained through circular processes.

Among the other sectors touched by the Communication, steel receives a primary focus. Here, major R&D efforts will be required to meet the targets for 2050, mainly regarding circularity and production processes. While steel is already a very circular material, with up to 84 Mt reused every year, new techniques are needed to increase the share of secondary steel, ranging from **enhanced circular design** in the production phase to **better scrap sorting processes**. In the production phase, new technologies are being developed and scaled up for market diffusion, including **hydrogen direct reduction** and **CCUS steelmaking processes**. In addition, as part of the twin green and digital transition, **blockchain technologies that can facilitate emissions tracking** should also be improved and deployed at a market scale.

The Communication also targets multi-country projects in the fields of hydrogen, 5G corridors, common data infrastructure and services, sustainable transport, blockchain or European Digital Innovation Hubs. The recent publication of the **“Fit for 55” legislative package** further indicates which areas will need to accelerate the transition to low carbon processes. **Transport** will be a major field for action in the coming years, with plans to ban fossil fuel cars by 2035. The objective is among the most criticised, given the current state of infrastructure for e-mobility across the EU. Here, significant investments will be needed to equip transportation systems and roads with the necessary charging points and other instruments to ensure that end-users are provided with the conditions and incentives to buy zero-emission cars. R&D developments can speed up the transition, not only on the side of **improved batteries** in terms of efficiency and charging speed, but also towards new methods like **wireless charging** through magnetic fields, large-scale use of **fuel cells**, advanced **exhaust scrubbers**, and the large scale deployment of **Vehicle to Grid (V2G) technology**. The role of digital developments will also be fundamental, with a **digital grid and algorithms** monitoring the battery capacity and playing a role in the system's stability.

Transport is not only confined to road transport but also aviation and maritime shipping. New regulations will underpin the sectors to the **EU Emission Trading System**, creating the need for improved propel systems for airplanes and ships. In this case, the major breakthroughs in technology will come from **hydrogen-based engines** and an increase in the use of **alternative fuels**, mainly represented by **biofuels**. In this category, the EU will not consider crop-based biofuels as sustainable aviation fuels (SAFs) given their “limited environmental benefits”². Research and industrial efforts shall instead focus on developing **advanced biofuels** obtained through the reuse of EU-based **agricultural and forestry waste** to reduce dependence on foreign raw materials.

² <https://www.euractiv.com/section/biofuels/news/eu-green-jet-fuel-proposal-shuns-crop-based-biofuels-focuses-on-next-generation/>



As per maritime shipping, new developments in the field of alternative fuels are needed. **Methanol** is currently being used and developed. In addition, **ammonia-based fuels and engines** may be key to increase the sustainability of the sector, given the low level of ammonia's carbon emissions and its good performance in energy density compared to other alternative fuels. Besides, shifting transport from aviation to rail or replacing cement and steel with alternative building materials, such as sustainable wood, should be complementary strategies to increasing jet fuel efficiency or decarbonising steel and cement industrial processes.

Digitalisation will also pose challenges with the increase in the need for data centres and data volume on the cloud. Data centres require a high amount of electricity to work, most of which is still derived from fossil fuel sources. Electricity, still, is used to power the servers and efficiently implement **cooling systems** for the machines, which otherwise risk over-heating and increasing fire hazards. **Connecting data centres to renewable energy** will be more crucial than ever if Europe plans to deploy the twin green and digital transition in full synergy. In this respect, a significant R&D effort will be needed to make computing and internet resources more environmentally friendly.

Outside technological aspects, the Commission plans to **reinforce international partnerships** to develop alternative value chains. In these partnerships, research should play a pivotal role in the talks with external countries. It will be crucial to connect research centres and alliances from Europe with international peers, creating the conditions for broad collaboration on energy and climate topics. The EU is, for example, a world leader in renewable energy technology, but it can still benefit from external expertise while driving the adoption of sustainable solutions in low- and middle-income countries. Fostering international partnerships and cooperation should go hand in hand with pursuing an open strategic autonomy in a context of global competition for industrial and technological leadership. On this, it will be essential for Europe to capitalise on its first-mover advantage to maintain and expand its industrial lead in key low-carbon technologies.

Finally, the Communication mentions that for an inclusive transition, **a well-functioning social dialogue** will be key. Strong partnerships between the EU, Member States, social partners, industrial actors, and other relevant stakeholders across and within industrial ecosystems will be critical in this respect. An important leverage to couple industrial transformation with socio-economic change will be **public spending through procurement**, which amounts to 14% of EU GDP each year. This will help to strengthen companies' competitiveness through the use of strategic criteria, notably for green, social, and innovative procurement while ensuring transparency and competition. In this regard, **research on technology consistently coupled with a sound socio-economic analysis** can become a formidable tool for the Clean Energy Transition to effectively deliver on a technical level while ensuring socio-economic awareness and acceptance.



Conclusions

The proposals contained in the EU Updated 2020 Industrial Strategy are critical for the success of the European Green Deal in the years to come. Indeed, they lay the foundations to effectively deliver on the twin green and digital challenges. In this context, it is now more important than ever to streamline the role that R&I can play in accelerating a **holistically thought Clean Energy Transition** in the industrial sector.

This perspective entails counting on **research as a preferred partner for industrial development** both on technological and socio-economic levels, for the change to be effective and viable across the board. R&I on energy efficiency, greening of industrial processes, and circularity are part of the equation, especially considering the potential that digitalisation can play in those processes. Likewise, research is also required to ensure that the transition is carried out in a socially and economically sustainable way. The shift towards new industries and market models will inevitably generate opportunities for economic growth and job creation in some sectors, while accelerating the collapse in others. In this regard, the Carbon Border Adjustment Mechanism³ is a sample of the policies needed to avoid the relocation of critical industrial sectors in regions of lower labour or environmental standards.

Leveraging best practices for greater effectiveness of existing innovation ecosystems will also be critical for the new industrial strategy to succeed. Higher investments in R&I should be combined with more efficient innovation ecosystems, accelerating the conversion of intellectual capital into marketable products and services, and promoting their market uptake. In line with the EC Communication, "A new ERA for Research and Innovation"⁴, **a change of collaboration culture needs to occur in Europe to allow stronger cooperation between research and industry.** "European Centres of Excellence" should be seen in this respect as blueprints for highly effective innovation ecosystems. Besides this, and in order to ensure a robust industrial leadership, the management of an **innovation funnel across the whole TRL range is required.** Also, policies should support start-up creation, the rapid roll-out of intrapreneurship, and the uptake of frugal innovation.

Finally, zeroing emissions by 2050 in a context of increasing global emissions⁵ mandates a **strong acceleration and intensification of international collaboration.** To support this, policies should foster international cooperation while recognising that the race to net-zero will trigger fierce competition for industrial and technology leadership. It will be essential for Europe to capitalise on its first-mover advantage to maintain and expand its industrial leadership in key low-carbon technologies of today and the future. Yet, as the EU accounts for less than 9% of global emissions, international cooperation and partnerships are essential to address climate change globally. In this sense, an active climate multilateralism in line with the UN Sustainable Development Goals is crucial to foster global understanding and action towards climate neutrality.

³ <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-Carbon-Border-Adjustment-Mechanism>

⁴ Communication from the European Commission: "A new ERA for Research and Innovation": <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:628:FIN>

⁵ Energy related emissions dropped by 6% in 2020 following Covid pandemic, but are rebounding in 2021; IEA, Global Energy review, emissions in 2020 – Understanding the impact of Covid-19 on global emissions, March 2021





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