

10 recommendations for EU competitiveness and Strategic Autonomy:

The central role of
low-carbon energy
research & innovation



Foreword

THE EUROPEAN UNION IN THE WORLD

In recent years, the world has undergone an unprecedented transformation that has seen the sudden collapse of globalisation as we knew it – along with the principles of a multilateral system based on free trade – and a shift towards a fragmented, multipolar world. This transformation has been characterised by the resurgence of confrontational nation states, as evidenced by the rise of trade barriers, the re-establishment of political blocs and the multiplication of regional tensions and open wars across the globe. “Power Politics” have suddenly replaced the rule-based world order we used to know.

The European Union, which was largely built on the promise of a generalised liberal free trade order, finds itself particularly ill-equipped to maintain its geopolitical stature in this new world configuration.

The lasting economic after-effects of the 2008 financial crisis combined with those of the COVID-19 pandemic, and the energy crisis triggered by the Russian invasion of Ukraine are among the main reasons for Europe’s current high indebtedness and lagging economic competitiveness.

The “pivot to Asia”, suggesting an increasing focus of US economic policy on Asia, a rather abstract

concept when it was outlined by President Obama in the early 2010s, has led to a gradual weakening of the United States’ transatlantic ties with Europe, and is now revealing its full significance in the present context. At a time when Europe increasingly has doubts about the reliability of the US military protection it has enjoyed since WWII, the US should also increasingly be regarded as a global economic competitor to the European Union.

ACKNOWLEDGING THE EU’S PRESSING CHALLENGES

Today, the EU is grappling with challenges to restore its international competitiveness, for which various factors need to be addressed, including structural issues such as high primary energy prices, supply dependencies on critical minerals and components, shortage of skilled labour, demographic decline, struggles to fully embrace digitalisation across sectors, insufficient benefit from incomplete market integration, and the need to radically scale up investments.

Furthermore, in response to the current tectonic reshaping of the world order, the EU is shifting its geopolitical stance from being “open to the world” to one of “strategic autonomy”, with profound systemic implications for the direction of the Union’s policies.

This shift has a significant impact on international commerce and economic relations, requiring a re-assessment of the EU's approach to trade, industrial, and research and innovation (R&I) policies and strategies, amid geopolitical tensions and global economic uncertainty.

Announced as her flagship political undertaking when European Commission President Ursula von der Leyen first took office in 2019, the European Green Deal has since remained the prevailing EU policy and legislative framework from an energy and climate perspective. Adapted over the years to respond to various crises, including COVID-19 and Russia's invasion of Ukraine, it has nevertheless continued to demonstrate resilience, evolving more recently towards stronger alignment with industrial priorities coupled with accelerated implementation.

At the dawn of President von der Leyen's second term, the emergence of new and pressing challenges for the EU – combined with a recently elected European Parliament confirming a significant rise of generally highly conservative populist and far-right voices across Europe – is likely to shape green policies based on their ability to maintain the EU's economic security, i.e. stimulating the bloc's economic growth and restoring its economic competitiveness.

Under the Commission's new mandate, the EU Green Deal – and more generally, President von der Leyen's green agenda – is expected to increasingly focus on industrial development and economic competitiveness.

LOW-CARBON RESEARCH AND INNOVATION, AT THE CORE OF EU COMPETITIVENESS

R&I has traditionally been acknowledged as a key driver of the Clean Energy Transition, a comprehensive transformation of the energy system into a fair, environmentally sustainable and climate-neutral society by 2050. However, when it comes to boosting competitiveness, R&I is seldom considered a determining factor. This is even more surprising in view of the fact that, for example, [the ex-ante impact assessment of the](#)

[Horizon Europe Framework Programme](#) indicates that each euro invested in R&I can potentially generate a return of up to 11 euros for EU society over 25 years, demonstrating its substantial economic benefits.

Moreover, the energy transition will gradually shift energy security from the ability to secure affordable fossil fuels to the ability to competitively secure the low-carbon energy technologies required to harvest renewable energy. The ability to secure technological and industrial leadership in key low-carbon energy technologies therefore determines both the EU's energy security and its industrial competitiveness, hence its economic security and strategic autonomy.

In addition to enabling the decarbonisation of the EU economy, R&I in low-carbon energy technologies is therefore a key driver in restoring the EU's economic competitiveness, thereby safeguarding its strategic autonomy.

In the face of fierce – and sometimes confrontational – global competition, the need for Europe to bridge its competitiveness gap has never been more urgent. In the words of Mario Draghi, former Italian Prime Minister and President of the European Central Bank, *"this challenge is no less than existential for the European Union"*.



A CALL TO RADICALLY UPSCALE THE EU R&I POWERHOUSE

The recommendations outlined in this document stem from a broad assessment of the EU's competitiveness challenges. They aim to break the status quo and bring about a significant change in how the EU's R&I can enhance its industrial competitiveness in terms of low-carbon energy technologies while safeguarding its economic security.

EERA proposals largely refer to the EU's widely supported concept of "sustainable competitiveness", which calls for a holistic view of competitiveness, suggesting that long-term economic success depends on adequately integrating environmental and social considerations.

Although no formal definition exists, "sustainable competitiveness" is broadly referred to in this document as *achieving economic competitiveness while simultaneously ensuring environmental sustainability and social progress*.

While underlining the need to radically increase the EU's R&I funding – both public and private – the recommendations also analyse the opportunities for defragmenting the EU's R&I landscape, by revisiting R&I policy and funding frameworks, with a view to enabling more coherent research programmes and better alignment of R&I efforts at EU and national levels.

The recommendations also challenge the prevailing strategy of "technology neutrality" by underlining the urgent need for a more differentiated and strategic approach, focusing efforts on selected technologies and value chains (or parts of value chains) where global leadership can be achieved, while adopting a range of differentiated risk mitigation strategies where the competitiveness gap appears unlikely to be closed. The need to further stimulate blue-sky research as a driver of breakthrough innovation is also highlighted.

Finally, given the radically changing geo-economic and competitive landscape, it is essential to adopt an approach to international collaboration that is "as open as possible and as closed as necessary", and to support the EU's economic and industrial strategy through a continuum of well-aligned and mutually reinforcing policies encompassing the policy fields of R&I, industry and trade.

Broadly aligned with the recommendations from Enrico Letta's report, "[Much more than a market](#)", and Mario Draghi's report, "[The future of European competitiveness](#)", these proposals – and the forthcoming study – constitute a renewed call to overhaul and radically scale up the European R&I powerhouse in order to preserve Europe's strategic autonomy and re-establish its leadership in promoting a fair, sustainable and prosperous society.

A definition of sustainable competitiveness

Although the concept of **sustainable competitiveness** does not have a unique definition, it can be broadly referred to as *achieving economic competitiveness while simultaneously ensuring environmental sustainability and social progress*. Sustainable competitiveness can therefore be defined as simultaneously achieving the following three objectives:



Economic competitiveness:

the ability to produce quality goods and services at competitive prices while creating jobs and fostering growth.



Environmental sustainability:

minimising the environmental footprint of the processes described above by reducing emissions, waste and resource depletion. This often involves adopting circular economy principles, investing in green technologies and promoting resource efficiency and sufficiency.



Social responsibility:

ensuring quality jobs, fair working conditions, decent wages, social inclusion and equitable distribution of benefits. This often includes considerations related to respect for human rights throughout the supply chain.

The EU's support for the concept of "sustainable competitiveness" calls for a holistic view of competitiveness, suggesting that long-term economic success depends on adequately integrating environmental and social considerations.

Policy Recommendations

1. EU COMPETING IN THE WORLD



RECOMMENDATION 1

Promote **sustainable competitiveness**, as a key driver to a prosperous Europe, supported by a comprehensive policy framework focusing on the ability to **compete globally**.

- “Sustainable competitiveness” refers to a **holistic view of competitiveness**, recognising that long-term economic success requires adequate integration of environmental and social aspects.
- The concept of sustainable competitiveness should be promoted by establishing **clear and measurable assessment criteria** and linking them to **the achievement of the United Nations Sustainable Development Goals**.
- Beyond the economic and social criteria that more often form part of the debate about competitiveness, environmental sustainability should take full account of the latest assessments on global resource limitations, and therefore calls for particular attention to minimising resource use through a combination of resource efficiency and sufficiency measures.



RECOMMENDATION 2

Promote **low-carbon energy research and innovation (R&I)** as a key driver of **EU sustainable competitiveness**.

- **Promote low-carbon energy R&I** as a key driver for bridging the EU innovation gap, building industrial leadership and restoring EU industrial competitiveness in the growing global market of low-carbon energy technologies.
- **Boost R&I investments due to their value-multiplying effect on the economy.** For example, the [ex-ante impact assessment of the Horizon Europe Framework Programme](#) indicates that each euro invested in R&I can potentially generate a return of up to 11 euros for EU society over 25 years, demonstrating its substantial economic benefits.



RECOMMENDATION 3

Ensure a **level playing field** as a lever to promote EU sustainable competitiveness globally.

- Uphold **sustainable competitiveness as the foundation** for competing globally, while also serving as a means to address geopolitical tensions and navigate economic interconnections.
- **Ensure a level playing field** through relevant trade instruments, such as the EU's CBAM (Carbon Border Adjustment Mechanism), which protects EU industry against unfair competition from imported products and services with lower sustainability standards.
- **Promote sustainable competitiveness procurement policies:** enhance public procurement as a tool to drive innovation and stimulate the development of new technologies, product and services complying with established EU sustainable competitiveness criteria.
- **Selectively consider trade measures on a case-by-case basis**, ensuring they do not excessively shield EU industries from more competitive imported products and services, as this could undermine their long-term ability to compete globally.



RECOMMENDATION 4

Uphold the **“as open as possible, as closed as necessary”** approach in trade policies by favouring partnerships with like-minded countries and managing critical interdependencies with others.

- Recognising the importance of international collaboration in accelerating the global energy transition, maintain and promote **open trade relationships with trusted partners** whenever possible, while **managing interdependencies** with other countries.
- Implement **risk mitigation strategies** where critical import dependencies cannot be properly balanced, by diversifying supply sources and avoiding overreliance on single suppliers.



RECOMMENDATION 5

Establish an EU sustainable competitiveness **policy framework integrating R&I, industrial and trade policies** to best support the EU's industrial strategy.

- As part of the EU's industrial strategy, develop an **EU clean technology roadmap** considering medium- and long-term objectives.
- Design and implement an **integrated policy approach** to foster research, innovation and industrial ecosystems supporting the EU clean technology roadmap.
- Embed **resilience** at the core of EU policy-making, notably by implementing the *Protect, Promote and Partner* strategy, in recognition of an increasingly uncertain and fast-moving geopolitical and geo-economic context.

2. RESEARCH & INNOVATION AT THE CORE OF SUSTAINABLE COMPETITIVENESS



RECOMMENDATION 6

Embrace the EU's Fifth Freedom, embedding education, research and innovation at the core of the EU Single Market.

- With reference to Enrico Letta's call for the "EU's Fifth Freedom", embed **education, research and innovation at the core of the Single Market**, recognising knowledge creation and knowledge dissemination as key drivers of economic growth and societal progress.
- Promote **open science**, including sharing of research data, infrastructure, knowledge, best practices and educational resources while supporting researcher mobility across the Union to stimulate greater EU collaboration and accelerate innovation.
- Develop an **EU-wide approach to education that promotes synergies** with the EU's industrial strategy. This approach should **address the current and future skills gap** across the value chain, particularly in light of the impact of disruptive technologies (such as AI) and the demographic decline within the Union.



RECOMMENDATION 7

Boost research and innovation impact by **radically scaling up R&I funding** and **de-fragmenting** the EU R&I landscape.

- **Radically increase the share of the EU budget devoted to funding low-carbon energy R&I programmes, recognising their key role in fostering** EU sustainable competitiveness.
- Achieve or exceed the EU target of 3% GDP invested in R&I while enhancing **alignment and predictability of EU and national public funding**, thereby fostering **higher levels of private investment**.
- Increase European R&I efficiency by substantially improving **coherence and complementarity of national and EU research agendas**, avoiding duplication and creating critical mass.
- Boost the impact of low-carbon energy R&I on EU sustainable competitiveness by **revisiting, streamlining and simplifying** existing EU funding frameworks, programmes and instruments.



RECOMMENDATION 8

Rebalance public R&I funding across the **Technology Readiness Level (TRL) range**.

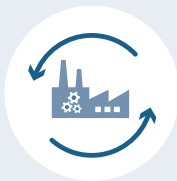
- Acknowledging the stronger focus on higher TRL research and innovation in recent years, **rebalance public R&I funding across the entire TRL range** to nurture an innovation funnel supportive of EU medium- and long-term industrial and economic competitiveness.
- Foster **breakthrough innovation** by encouraging scientists to pursue novel ideas without immediate commercial constraints and maintaining adequate public funding for high-risk projects with the potential to deliver breakthrough technological advances.



RECOMMENDATION 9

Reconsider the EU's R&I funding strategy to selectively **focus efforts on critical value chains and technologies** where the EU can achieve global leadership and adopt **diversified de-risking approaches** where overcoming the competitiveness gap is unlikely.

- Recognising the importance of securing global industrial leadership in key value chains and technologies, **focus funding efforts on fewer selected areas** where the EU can create or consolidate competitive advantage and global leadership.
- Establish an independent **EU Energy Strategy Agency** tasked with the development of EU energy transition scenarios and energy security planning, based on a twofold approach: the identification of critical value chains and technologies where the EU could build global industrial leadership; for those where the competitiveness gap is unlikely to be bridged, the implementation of risk mitigation strategies.



RECOMMENDATION 10

Boost the contribution of low-carbon energy R&I to EU sustainable competitiveness by shortening the innovation cycle and accelerating technology transfer to industry.

- **Facilitate the transition from research to market** by creating **EU Centres of Excellence (EUCoEs)** on critical low-carbon energy value chains, products and services. These EUCoEs should become **integrated innovation ecosystems** by fostering closer collaboration between research institutions, industry, government agencies and societal stakeholders. They would act as *European Technology Valleys* implementing joint R&I and industrial roadmaps, from research to development, market uptake and scale-up.
- **Leverage the contribution of SMEs** by simplifying tendering procedures and streamlining administrative processes.
- **Address the “death valley” funding gap** by developing a sizeable EU venture capital market to provide early-stage funding, lowering barriers to entry and developing a streamlined process for regulatory approval.
- Develop a **pan-European research infrastructure network**, including cutting-edge computational power for research and development on AI and other data-intensive technologies.

