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Reframing Sustainability:
Bridging Environmental,
Energy and Economic Challenges

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Environmental Sustainability and Industrial Policy: Key Items on the European Agenda

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Overview (1)

- The current challenge for the EU: manage three objectives - green transition, regaining competitiveness, energy security – and one constraint – social consensus
- The trade-offs between the three objectives and between them and the social constraint
- The global geo-economic context and Europe's competitive positioning: would an industrially weak Europe be beneficial for the green transition?
- The Green Deal strategy's evolution: from the initial environmental unilateralism of Taxonomy to the awareness of industrial policy issues … but the current European approach is still not sufficient

Overview (2)

We need a flapping of wings!

- competitive regulation and industrial policy
- green transition and economic structure beyond ideology: for a truly effective decarbonisation policy
- single market and energy security: the need for a common design of energy infrastructure and diversification of supply
- for an effective EU industrial policy: enhance Union capacity to coordinate national policies and implement its own priorities through its own instruments
- a Fiscal Central Capacity to strengthen the EU budget, develop the internal market, become a leading player in a multilateral system (response to US protectionism)

The challenge

The three objectives:

- climate change mitigation and decarbonisation - long on the European policy agenda, it has undergone a sharp acceleration in terms of targets as part of the Green Deal
- regaining competitiveness of the European economy - an issue that has become increasingly pressing for the impact of the early stages of the green transition on industrial structure and in view of the gains in competitiveness made in some key sectors by the Union's major global competitors, such as the United States and China
- energy security – which has become a pressing objective in the wake of Russia's invasion of Ukraine, with the urgent need to quickly and drastically reduce dependence of EU countries from Russian gas and oil supplies

The social constraint:

- support by European citizens – it has weakened in recent years due to the impact that the implementation of the Green Deal has had on certain segments of European industry and the redistributive effects of price increases resulting from the Ukraine crisis

The trade-offs

There are significant trade-offs in the short and medium term (De Vincenti-Macchiati-Ranci 2025). Some examples:

- the costs associated with the adoption by industry of clean and lower carbon technologies, with investments in upgrading energy networks, and with reducing emissions in the transport sectors (sustainability-competitiveness trade-off)
- the displacement of European companies by foreign competitors in the event of an acceleration of emission reduction targets for certain sectors (sustainability-competitiveness trade-off)
- the social impact of these losses in competitiveness of the European production system (sustainability-social consensus trade-off)
- the increase in emissions due to the reactivation of oil or coal-fired power stations to ensure electricity supply despite the reduction in gas imports from Russia (security-sustainability trade-off)
- the increase in gas prices due to the rapid activation of international supply sources alternative to Russia (security-competitiveness trade-off and – due to redistributive effects - security-social consensus trade-off)

Significant political and institutional risks may arise from inadequate management of these trade-offs

EU and the geo-economic context: the three main economies (1)

GDP 2024 in current dollars (and in PPP):

US = 29.200 bln

EU = 19.400 bln (28.100)

EU+UK = 23.100 bln (32.300)

China = 18.770 bln (38.200)

GDP per capita 2024 in current dollars (and in PPP):

US = 86.000

EU = 43.000 (62.000)

EU+UK = 44.000 (62.000)

China = 13.000 (26.000)

Source: OCPI calculations based on World Bank data; see OCPI 2025

EU and the geo-economic context: the three main economies (2)

Manufacturing production 2024 (percentage shares):

US = 17.3

EU = 16,2

EU+UK = 17,9

China = 27,7

Relative positioning in some industries (source: OCPI 2025):

automotive > China – EU – US

railway industry > EU – China – US

aircraft manufacturing > EU – US – China (very limited)

semiconductors > US (market share more than 50%) – EU – China

use of industrial robots > China – US - EU

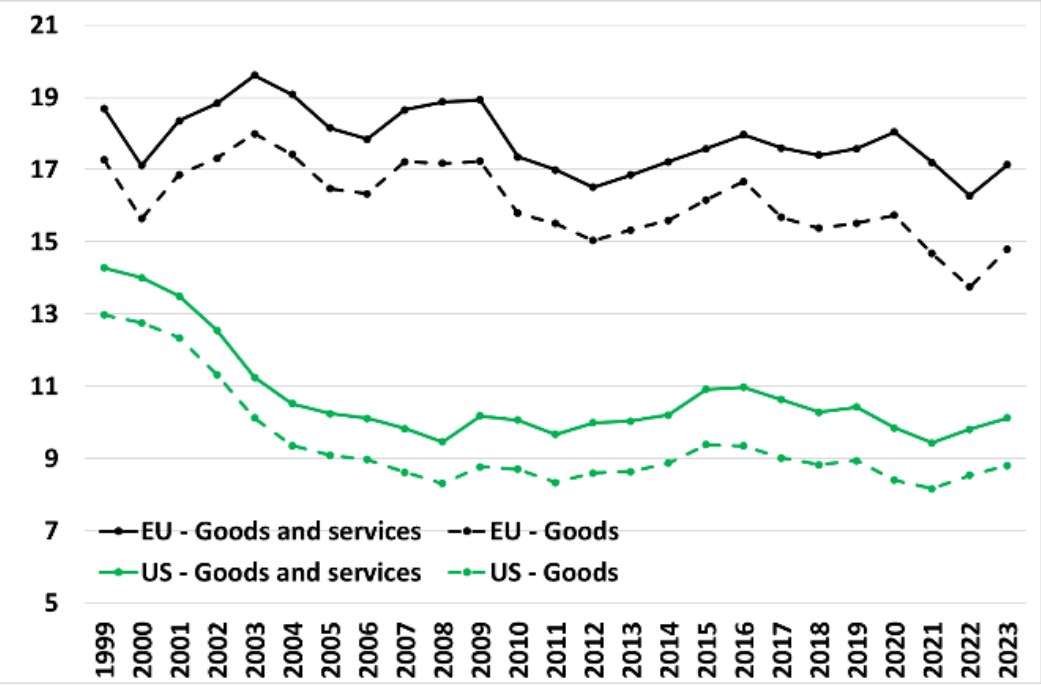
AI investments > US (sharp primacy) – EU – China

steel and metal industry > China (sharp primacy) – EU - US

EU and the geo-economic context (3)

EU and US export market shares

(percentage shares; current prices and exchange rates)

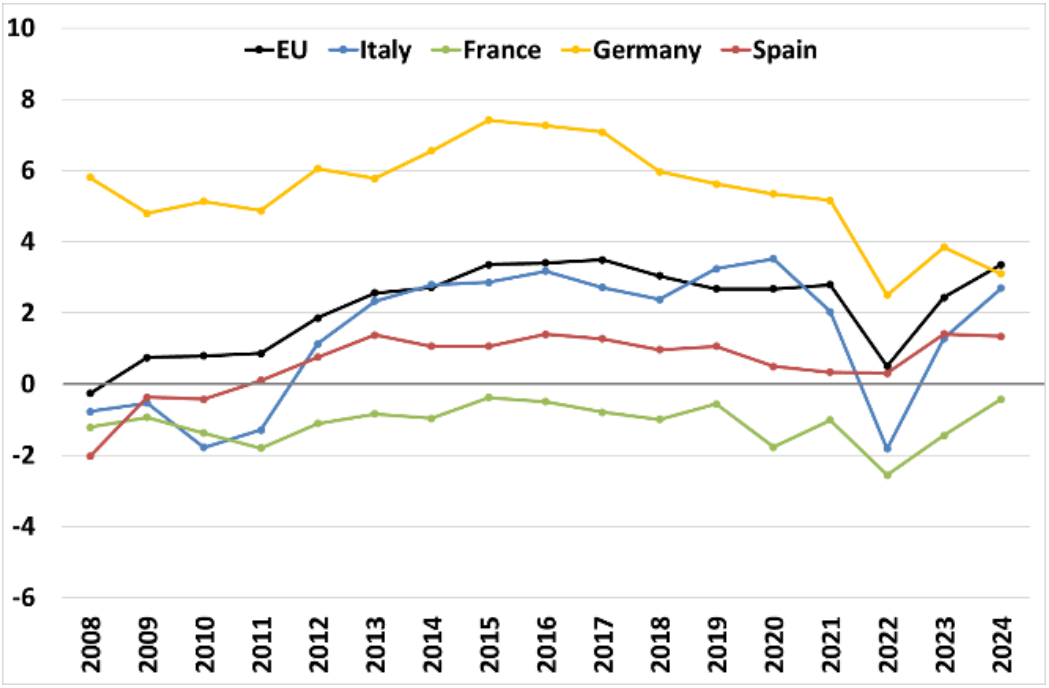


Source: BdI 2025 calculations on Eurostat and IMF WEO

EU and the geo-economic context (4)

EU trade balance

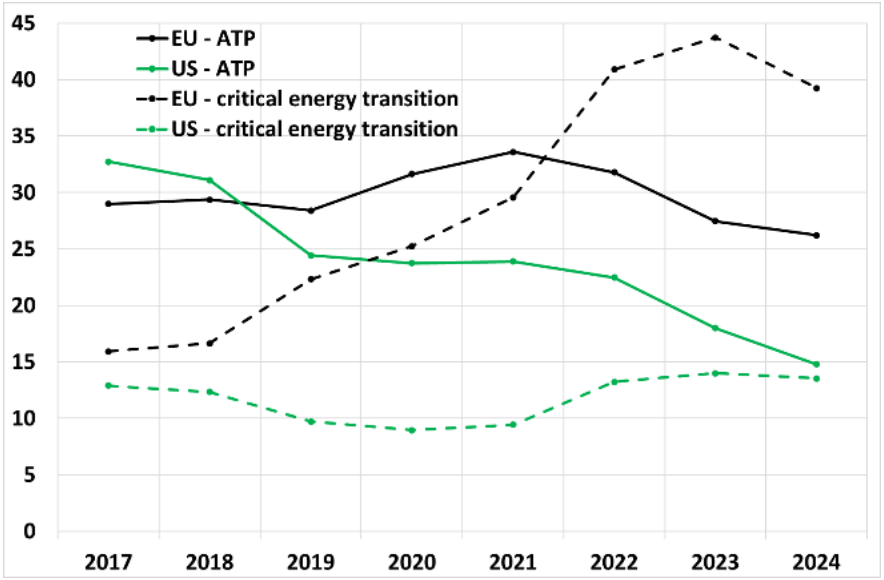
(percentage of GDP)



Source: ECB

EU and the geo-economic context (5)

Tech import: EU and US percentage shares from China



Atp = advanced technology products such as biotechnology, life science, opto-electronics, information and communication, flexible manufacturing, advanced materials, aerospace

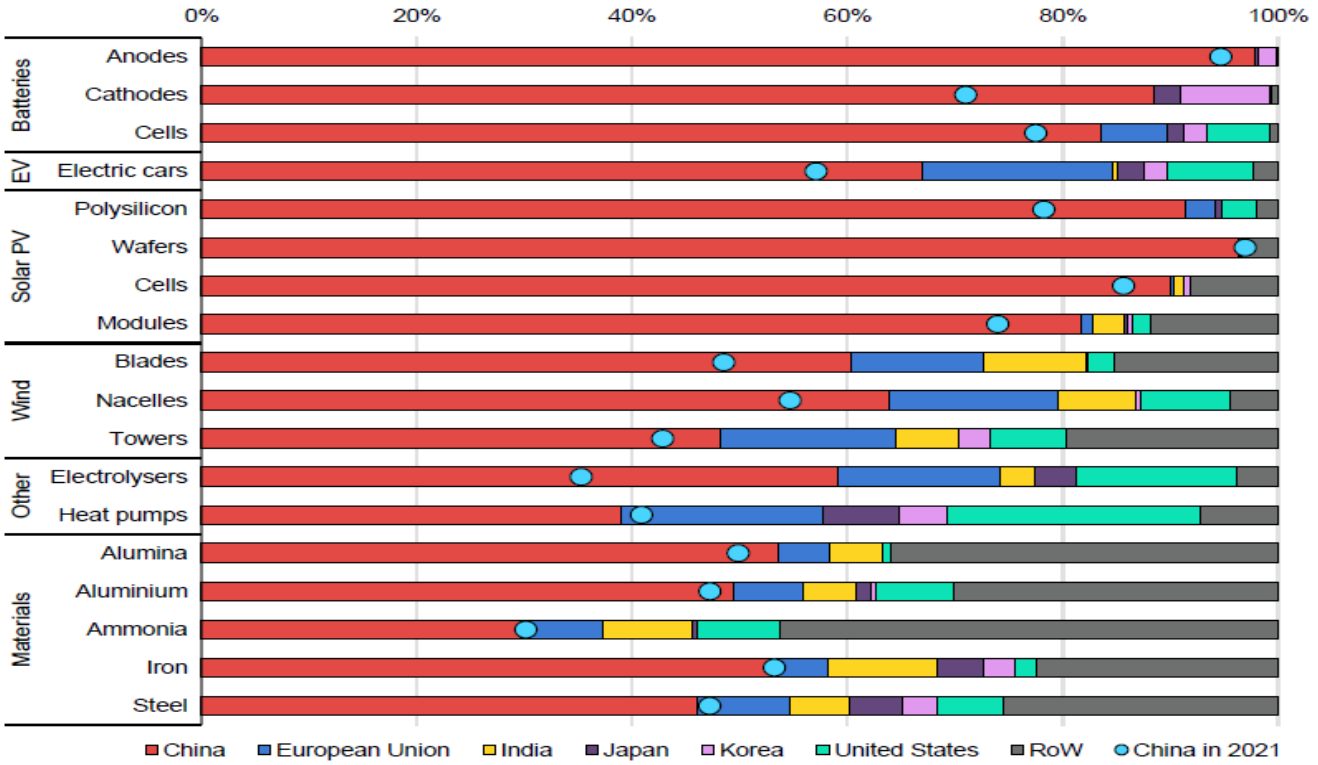
Critical energy transition = e.g., lithium batteries, electric vehicles, photovoltaic cells

Source: BdI 2025; on this topic, see also CSC 2025

EU and the geo-economic context (6)

Manufacturing capacity of critical goods for energy transition

(2023)



Source: International Energy Agency (2024)

EU and the geo-economic context (7)

To sum up:

- the EU economy is one of the world's three largest economies in terms of GDP, manufacturing output, export capacity and the size of its internal market
- Europe stands out in traditional manufacturing sectors, to which can be added infrastructure networks and service provision in the energy, TLC and transport sectors
- but
  - (i) the EU is lagging behind in some of the most innovative sectors - such as semiconductors and AI, where the US have a clear leadership
  - (ii) depends heavily on China for imports of goods (and raw materials) that are critical for the green transition and often incorporate advanced technologies

So, in the (probably near) future, there is a real risk of erosion of Europe's traditional industrial and productive strength

EU and the geo-economic context (8)

Would an industrially weak Europe be beneficial for the green transition?

- the EU is the area of the world that has adopted the most advanced standards in terms of the environment, health and social protection - a shift of production activities outside Europe would delay the reduction of global CO_2 and pollutant emissions and, more generally, weaken the pursuit of the Sustainable Development Goals
- the EU has so far played a leading role in international conferences on climate change and sustainable development – an economically weakened EU would not be able to play a similar role in the future
- the reversal of environmental policies currently in place in the US makes this EU's role even more essential

Finally, an economically weakened EU would see its social model enter into crisis, with risks for democratic stability: a democratic crisis in EU is the last thing the SDG need

The Green Deal strategy's evolution (1)

The early stages (1):

- the Communication of December 2019 - policy document at the start of the first von der Leyen Commission's term of office - presented the Green Deal as “a new growth strategy that aims to transform the EU […] An opportunity to put Europe firmly on a new path of sustainable and inclusive growth”
- as a key element of the strategy, the Regulation on the Taxonomy of Sustainable Investments was adopted in June 2020 (Regulation 2020/852): it aims to provide a framework of criteria to support the allocation of private and public resources towards environmentally sustainable investments
- article 3 of the Regulation specifies that an economic activity qualifies as environmentally sustainable where (a) it “contributes substantially to one or more of the environmental objectives set out in article 9” – climate change mitigation and adaptation, protection of water, transition to a circular economy, pollution prevention, protection of biodiversity - and (b) “does not significant harm any” of them (DNSH principle)

The Green Deal strategy's evolution (2)

The early stages (2):

- subsequent acts (Delegated Regulation 2021/2139, Regulation 2021/241 and Communication 2021/1054) have adopted a particular interpretation of the DNSH principle: "the assessment of the negative environmental impact of each measure should be carried out […] by taking into account the environmental effect of the measure *in absolute terms* (my italics). This approach consists of considering the environmental impact of the measure, compared to a situation with no negative environmental impact," and therefore it "is not assessed in comparison to the impact of another existing or envisaged activity that the measure in question may be replacing"
- this *environmentally unilateral interpretation* implied that, in the first versions of the Taxonomy, natural gas transport and distribution infrastructure, nuclear and gas-fired power plants, waste-to-energy plants, investments in replacing oil and coal with gas in industry and transport, and the replacement of old vehicles or aircrafts or ships with new more efficient types were found to be non-compliant with the DNSH

The Green Deal strategy's evolution (3)

The consequences are paradoxical, for instance:

- the replacement of coal-fired power plants with gas-fired or nuclear power plants is penalised
- the technologies that use gas to replace oil and coal in the so called hard-to-abate sectors (steel and metal production, maritime and air transport, etc.) and that therefore would accelerate the abatement of CO_2 emissions, as well as other pollutants, are penalized
- the introduction and diffusion of "cleaner" technologies in a number of other sectors may be slowed down: the most striking example, in this regard, is that of incinerators
- the replacement of old vehicles or aircrafts or ships with new more energy-efficient types is penalised

The mistake at the root of the paradoxes (De Vincenti 2022 and 2023):

- the assessment in absolute, rather than comparative, terms “removes” the trade-offs and does not take into account the time, investment and costs required to develop increasingly cleaner technologies and disseminate them
- the result is to hinder and delay, rather than accelerate, the green transition

The Green Deal strategy's evolution (4)

A few timid steps forward:

- Communication 2022/231 (REPowerEU) - following Russia's invasion of Ukraine - aims to strengthen energy transport infrastructure to ensure the immediate security of oil and gas supplies, as well as accelerating energy efficiency and the growth of renewable energies; the interpretation of the DNSH principle in absolute terms is not being questioned but anyway circumvented by providing for “a targeted exemption from the obligation to apply the principle”
- Delegated Regulation 2022/1214 reintroduces energy production via nuclear and gas-fired power stations into the taxonomy, albeit adopting very stringent parameters (particularly for gas-fired power plants)
- the subsequent delegated acts adopted by the Commission on 13 June 2023 also do not address the issue of reviewing the DNSH principle, but merely supplement the taxonomy by providing for additional types of eligible investments, particularly in the airport and aviation sector (it is nevertheless positive that the replacement of less efficient aircraft with low-emission aircraft and the use of SAF are considered compliant)

The Green Deal strategy's evolution (5)

The re-emergence of industrial policy (1):

- the determinants: Ukrainian crisis, technological lag behind the US in digital technology, dependence on China for raw materials critical to the green transition itself, US IRA's and China's subsidies for clean technologies
- a number of EU documents follow one another starting from the beginning of 2023:

  (i) in February 2023, the Commission launched the Green Deal Industrial Plan (Communication 2023/62) in response to US and Chinese policies – a set of guidelines (but no additional EU resources) on improving the regulatory framework, state aid rules, EU funding through the RRF Plans and InvestEU, enhancing people skills, promoting international cooperation

  (ii) in March 2023, the so-called Net Zero Industry Act (Communication 2023/161) further elaborates these guidelines with regard to strengthening "the manufacturing capacity of net-zero technologies in the Union"

The Green Deal strategy's evolution (6)

The re-emergence of industrial policy (2):

(iii) in February 2024 Regulation 2024/795 establishes the Strategic Technologies for Europe Platform (STEP) “to support critical and emerging strategic technologies and their respective value chains” - given that “financial support for the implementation of the STEP shall be provided from existing Union programmes”, the Regulation introduces “a Sovereignty Seal to any project contributing to any of the STEP objectives”, to be used as a “quality label”, and a “Sovereignty Portal providing information about funding opportunities for projects linked to the STEP objectives”

(iv) in April 2024 the Critical Raw Materials Act (Regulation 2024/1252) aims to establish “a framework to ensure the Union’s access to a secure, resilient and sustainable supply of critical raw materials […] by identifying and supporting strategic projects that contribute to lowering dependencies and diversifying imports” - a European Critical Raw Materials Board will provide advice on improvement of the regulatory framework for the projects and on the coordination of funding with regard to the involvement of private financing, EIB resources, Member States programmes, relevant Union funding programmes

The Green Deal strategy's evolution (7)

The re-emergence of industrial policy (3):

(v) the Communication of January 2025 - policy document at the start of the second von der Leyen Commission's term of office – presents a “Competitiveness Compass” which “sets out an approach” to address the three urgent issues raised by the Draghi Report: “closing the innovation gap; a joint roadmap for decarbonisation and competitiveness; reducing excessive dependencies and increasing security”. In particular, the Commission intends to propose a new Competitiveness Coordination Tool – supported by a new Competitiveness Fund under the MFF 2028-34 - to act together with Member States on common competitiveness priorities

(vi) in February 2025 the “Clean Industrial Deal” (Communication 2025/85) begins to develop Compass’s guide-lines in order to support: (a) the energy-intensive industries in dealing with decarbonisation, high energy costs and unfair global competition; (b) the clean-tech sector, “which is at the earth of future competitiveness”. Specific sectoral plans have to be adopted (so far already adopted for energy, automotive, steel)

The Green Deal strategy's evolution (8)

The proposed MFF for 2028-34 (Comm. 2025/571):

- resources available to the MFF: €1,614 billion at 2025 prices (+20% in real terms compared to 2021-27, but essentially the same as a percentage of EU GDP, i.e. 1.14%); adding the 149 billion for payments related to the NGEU debt, the budget totals 1,763 billion
- significant increase in funding for EU industrial policies, reaching €470 billion - European Competitiveness Fund (€398 billion) and Connecting Europe Facility (approximately €72 billion) - with a restructuring (still to be clarified) of the various funds involved (Horizon Europe, InvestEU, etc.)
- consolidation into a single Cohesion and Agriculture Fund of resources previously allocated separately, as well as a reduction of more than 20% in real terms (in any case, the two policies remain distinct: 405 and 261 bln)
- extension to the Cohesion and Agriculture Fund of the experience gained with the NRRPs: vertical coordination in which each Member State discusses with the Commission its own plan (agreed with the regions) and implements it under a close monitoring based on performance indicators and not merely on expenditure

An overall assessment

Main shortcomings in the current EU approach:

- the environmental unilateralism of the first phase of the Green Deal is set aside but it is not overcome, with the result of hindering proper management of trade-offs between green transition, economic competitiveness, energy security, and the decarbonisation process itself (e.g. the main “hard to abate” industries are still excluded from Italian Transition 5.0 incentives)
- for too long EU documents have sought to base industrial policy solely on guidelines and rules, avoiding the issue of making adequate resources available
- the greater flexibility granted to Member States in the field of state aid benefits countries with larger budgetary margins, with the result that the internal market is fragmented and the economies of scale necessary for innovative investments are not achieved (Torrini 2025 and BdI 2025)
- the Commission's proposal for the budget 2028-34 significantly increases the resources for EU industrial policy but, by foregoing the issuance of new European debt, it must take resources away from other policies: this penalises an important policy such as cohesion, without however achieving a sufficient endowment for industrial policy (the Draghi Report mentions 7-800 billion of public and private investments per year! See also ECB 2024)

We need a flapping of wings (1)

A theoretical parenthesis: the “anchor” and the “helm”

- two key economic policy issues (De Vincenti 2024): (i) nurturing and supporting a climate of operators’ confidence; (ii) providing a compass to address problems of resource allocation that the market cannot manage on its own
  - (ia) from a macroeconomic point of view, an anchor for expectations, supporting the “state of confidence” through an “economic policy regime” that stabilises the economy around higher levels of GDP
  - (ib) from a microeconomic point of view, an anchor for behaviours, building the market rules as the necessary safety net for operators to make their decisions in a climate of confidence (the opposite of Trump)
  - (ii) but there are other issues for economic policy requiring explicit allocative choices by public authorities and the implementation of the tools necessary to achieve them
- (ib) and (ii) are two complementary, essential souls of public intervention, not contradictory to each other (e.g. single market and business growth)
- industrial policy, i.e. interventions that refer to the production system, is part of the second soul: free from any dirigiste presumption, a helm capable of interacting with the waves and currents that run through the market

We need a flapping of wings (2)

For a truly effective decarbonisation policy (1):

- we have to deal with several complex choices in the short and medium term, bearing in mind that, in order to limit global warming, it is not only important the target of zero net emissions by 2050, but also the amount of greenhouse gases accumulated in the atmosphere by that date
- from this point of view, it is essential to carry out a comparative (not absolute) assessment of the contribution to emissions reduction of the various technologies available today or in the near future: for instance, in the “hard to abate” industrial and transport sectors, short- to medium-term emissions reductions can be achieved by replacing oil and coal with natural gas and in perspective possibly biogas, biofuels and e-fuels
- it is not so much a question of technological neutrality as of assessing the various technologies available in terms of their economic viability in the transition period and their relative contribution to the CO_2 reduction target
- this is an approach that helps to better manage the sustainability-competitiveness trade-off, supporting a decarbonisation process that facilitates a coherent evolution of the European production structure

We need a flapping of wings (3)

For a truly effective decarbonisation policy (2):

- we have to deal with several complex choices even in the long term, bearing in mind that after 2050 the technologies used to reduce emissions in the medium run could lead to prospective stranded costs, in the sense of investments in infrastructure and plants not fully depreciated at that date
- if we do not want these costs to hinder the implementation of a net-zero economy after 2050, we need to carry out a cost-benefit analysis assessing whether, from a collective point of view, bearing these kind of *stranded* costs is an economically and socially acceptable burden in order to achieve the maximum possible reduction of the stock of CO_2 accumulated by 2050
- of course, the presence of stranded costs at the end of the transition period could be significantly reduced if the infrastructure or plant could be converted to transport or use energy sources other than fossil fuels

Analogous choices – to be made according to a comparative rather than absolute logic – also concern several other environmental issues

Summing up: the green transition needs everything except a unilateral and simplistic approach

We need a flapping of wings (4)

Single market and energy security:

- only through the full unification of the energy market – by completing internal interconnection infrastructure and refining trading rules – can the security of all Member States be promoted and mutual supplies be ensured
- just as only a European system of interconnections with third countries and coordinated energy entry points into the Union can allow for a diversification of sources that protects against possible abuses of dominant positions – in terms of political pressure or price increases – by individual supplier countries
- of course, here too there are prospective trade-offs with regard to the objectives of the green transition: security depends on infrastructure within the Union and interconnections with other countries, which may pose significant problems in terms of future stranded costs, particularly for gas
- the cost-benefit analysis therefore concerns not only the comparative assessment between cost and benefit in terms of accelerating the process of reducing emissions, but also between cost and benefit in terms of security of energy supplies

We need a flapping of wings (5)

For a more effective EU industrial policy (1):

- a premise - industrial policy must be thought of as a strategic game between government and companies and its tools must be built in such a way as to ensure a positive-sum game (Rodrik 2007, Aghion et al 2011, Onida 2016, De Vincenti 2024):
  - (i) public-private partnerships to give a strong boost to infrastructure investments that are crucial for systemic productivity growth
  - (ii) tax and financial incentives designed to enhance – not dull - companies' capacity for innovation (Torrini 2025, Coco-Ferrara 2025): automatic incentives (e.g. tax credits conditional on some general predefined allocation target: positive examples Italian Industry 4.0 incentives and Tax Credit for Investment in the South, a negative – due to an excessive bureaucratic burden - Transition 5.0); discretionary incentives but managed by a public entity operating on the basis of technical and business criteria (e.g. guarantees offered by InvestEU)
  - (iii) public stakes in the capital of certain strategic companies, while respecting their entrepreneurial autonomy, because only when policy guidelines are translated by the company's management into real market choices do they become truly effective (Bassanini 2019)

We need a flapping of wings (6)

For a more effective EU industrial policy (2):

- the above considerations naturally apply to both national and European industrial policies
- it is now clear that there is an urgent need to strengthen the EU's capacity to coordinate national policies and implement its own priorities through its own instruments (Amato et al 2023): the traditional ones - InvestEU, Horizon Europe, Investment Projects of Common European Interest, to be oriented more towards supporting the technological leap that is needed – and the new ones – direct EU investments in the so called European Public Goods, such as financing R&D and technology transfer investments, supporting EIB and National Promotional Banks (CDP, CDC, KFW, ICO, BGK), supporting PPP for completing energy and transport networks, implementing the CBAM - Carbon border adjustment mechanism (a system of duties proportional to the amount of greenhouse gases emitted for the production of products that would be subject to the ETS if produced in EU), etc.

We need a flapping of wings (7)

For a more effective EU industrial policy (3):

- in order to strengthen the EU's coordination capacity, it is essential to start building a genuine Central Fiscal Capacity (CFC) for the Union that will enable new European debt (similar to NGEU) to be raised to finance this extraordinary investment effort (Buti-Messori 2022 and 2024)
- this is also the path to follow for a policy of expanding the internal market, which would significantly offset for the European firms the contraction of the American market due to US tariffs, and make Europe an attractive area for domestic and foreign investment
- and finally, this is the path to taking a leading role in building agreements with other economic areas and, specifically, with the Global South, in order to recreate a multilateral network of trade relations that excludes from its scope the bilateral conflicts imposed by Trump

But will the EU and its Member States be able to devise and adopt such ambitious strategies?

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