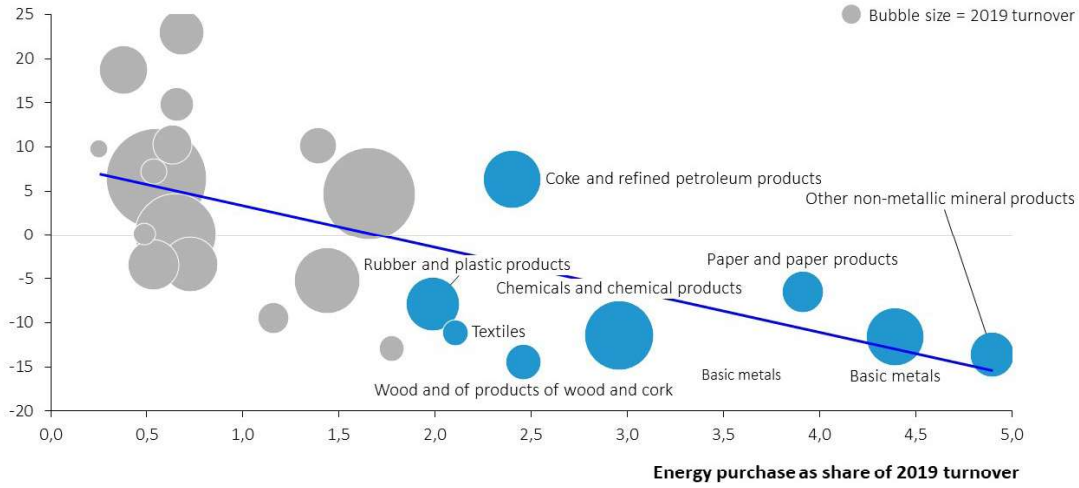
3. A joint decarbonisation and competitiveness plan

High energy costs in Europe are an obstacle to growth, while lack of generation and grid capacity could impede the spread of digital tech and transport electrification. Commission estimates suggest that high energy prices in recent years have taken a toll on potential growth in Europe[i]. Energy prices also continue to affect corporate investment sentiment much more than in other major economies. Around half of European companies see energy costs as a major impediment to investment – 30 percentage points higher than US companies[ii]. Energy-intensive industries (EIIs) have been hit hardest: production has fallen 10-15% since 2021 and the composition of European industry is changing, with increasing imports from countries with lower energy costs. Energy prices have also become more volatile, increasing the price of hedging and adding uncertainty to investment decisions. Without a significant increase in generation and grid capacity, Europe may also face limitations on making production more digital, as training and running AI models and maintaining data centres is highly energy-intensive. Data centres are currently responsible for 2.7% of the EU's electricity demand, but by 2030 their consumption is expected to rise by 28%.

FIGURE 1

Energy-intensive manufacturing challenges

% change in industrial production (Apr. 24 vs Apr. 21)



Source: Eurostat, OECD Trade value added (TiVA database) and ECB staff calculations.

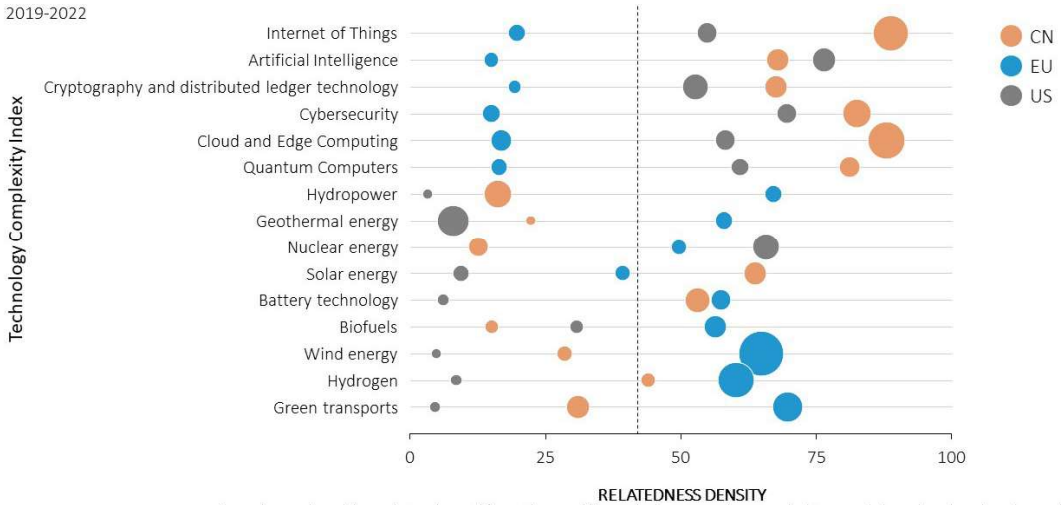
The EU's decarbonisation goals are also more ambitious than its competitors', creating additional short-term costs for European industry. The EU has put in place binding legislation to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The US, by contrast, has set a non-binding target of a 50-52% reduction below (higher) 2005 levels by 2030, while China only aims for its carbon emissions to peak by the end of the decade. These differences create massive near-term investment needs for EU companies that their competitors do not face. For the four largest EIIs (chemicals, basic metals, non-metallic minerals and paper), decarbonisation is projected to cost EUR 500 billion overall over the next 15 years, while for the "hardest-to-abate" parts of the transport sector (maritime and aviation) investment needs stand at around EUR 100 billion each year from 2031 to 2050. The EU is also the only major region worldwide to have introduced a significant CO_2 price. This cost factor is of limited importance so far as heavy industrial production has been largely covered by free allowances under the Emissions Trading Scheme (ETS). However, these allowances will be progressively phased out with the introduction of the Carbon Border Adjustment Mechanism (CBAM).

Decarbonisation offers an opportunity for Europe to lower energy prices and take the lead in clean technologies ("clean tech"), while also becoming more energy secure. The decarbonisation of Europe's energy system

implies the massive deployment of clean energy sources with low marginal generation costs, such as renewables and nuclear. Specific EU regions are endowed with high potential for cost-competitive renewable energy sources: for instance, solar in Southern Europe and wind in the North and Southeast. Renewable energy deployment in Europe is already rising, reaching around 22% of the EU's gross final energy consumption in 2023, compared with 14% in China and 9% in the US. At the same time, Europe has strong innovative potential to meet rising domestic and global demand for clean energy solutions. Although Europe is weak in digital innovation, it is a leader in clean tech innovation [see Figure 2]. This presents opportunities: according to the International Energy Agency (IEA), more than one-third of the required CO_2 emission reductions globally in 2050 rely on technologies currently at the demonstration or prototype phase[iii]. The electrification of the European energy system will also be an enabler of growth for the EU's sustainable transport sector. EU companies are "first-movers" in other sub-sectors of sustainable transport. For example, the EU holds 60% of global high-value patents and tops global rankings of the most innovative companies for low-carbon fuels, which are essential for the decarbonisation of aviation and maritime transport in the medium term and also, potentially, for heavy-duty vehicles.

FIGURE 2

The EU's position in complex (digital and green) technologies

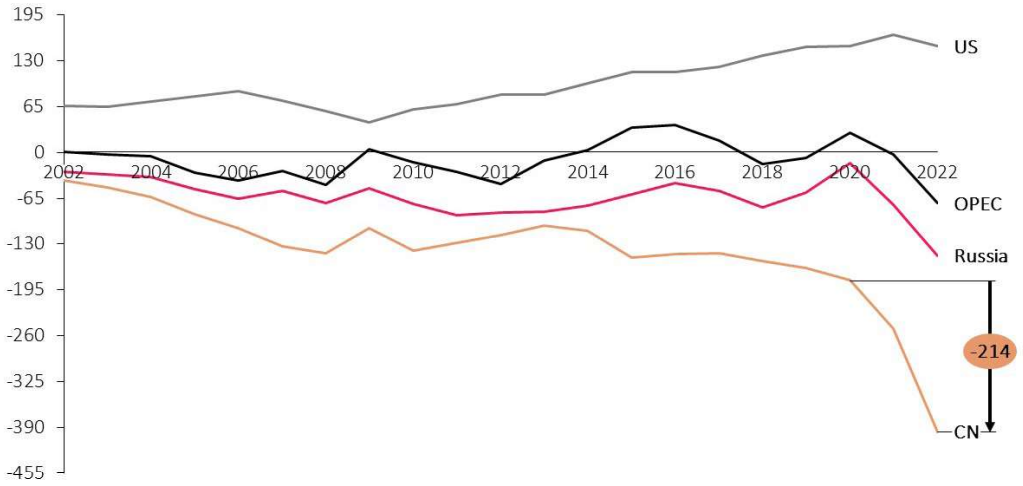


Notes: The results are based on an analysis of patent data to understand the complexity and potential for specialisation in different technology areas. On the y-axis, technologies are ranked according to how advanced or complex they are, with scores ranging between 0 (less complex) and 100 (more complex). The x-axis (showing the relatedness density) represents how easily a country can build comparative advantage in a particular technology, depending on how closely related it is to other technologies the country is already strong in. The size of the bubbles shows how much each country has already specialised in a technology, using a measure of "revealed comparative advantage"(RCA), which reflects their competitive strenght in that field.

Source: European Commission, DG RTD.

However, it is not guaranteed that EU demand for clean tech will be met by EU supply given increasing Chinese capacity and scale. The EU aims to achieve a minimum of 42.5% of its energy consumption from renewable sources by 2030, which will require it to nearly triple its installed capacity for solar PV and more than double its wind power capacity. In addition, the EU has effectively abolished the internal combustion engine from 2035, when all new passenger cars and light duty vehicles registered in Europe must have zero tailpipe emissions. Based on current policies, Chinese technology may represent the lowest-cost route to achieving some of these targets. Owing to a fast pace of innovation, low manufacturing costs and state subsidies four times higher than in other major economies[iv], the country is now dominating global exports of clean technologies. Significant overcapacity is expected: by 2030 at the latest, China's annual manufacturing capacity for solar photovoltaic (PV) is expected to be double the level of global demand, and for battery cells it is expected to at least cover the level of global demand. Production of EVs is expanding at a similar pace. The EU is already seeing a sharp deterioration in its trade balance with China, reflecting in particular imports of EVs, batteries and solar PV products [see Figure 3]. While rising bankruptcies in China suggest that the economy is entering a phase of industrial consolidation, overcapacities are likely to persist, especially given ongoing weaknesses in household consumption and high saving rates. Moreover, in response to perceived unfair competition, an increasing number of countries are raising tariff and non-tariff barriers against China, which will re-direct Chinese overcapacity towards the EU market. In May, the US announced significant hikes in tariffs against a range of products.

FIGURE 3
EU trade balance by partner country
EUR billion



Source: Eurostat, 2024.

Europe must confront some fundamental choices about how to pursue its decarbonisation path while preserving the competitive position of its industry. Black-and-white solutions are unlikely to be successful in the European context. Emulating the US approach of systematically shutting out Chinese technology would likely set back the energy transition and therefore impose higher costs on the EU economy. It would also be more costly for Europe to trigger reciprocal tariffs: more than a third of the EU's manufacturing GDP is absorbed outside the EU, compared with only around a fifth for the US[v]. However, a laissez-faire approach is also unlikely to succeed in Europe given the threat it could pose to employment, productivity and economic security. According to ECB simulations, if the Chinese EV industry were to follow a similar trajectory of subsidies to that applied in the solar PV industry, EU domestic production of EVs would decline by 70% and EU producers' global market share would fall by 30 percentage points[vi]. The automotive industry alone employs, directly and indirectly, almost 14 million Europeans. Given Europe's strong position in clean tech innovation, it could also lose the possibility to benefit from the future productivity gains this sector will bring. Without some foothold in EIIs, Europe's economic security could be undermined, for example via lower food security (lack of fertilisers and pesticides) and less autonomy for the defence sector. Most importantly, the "European Green Deal" was premised on the creation of new green jobs, so its political sustainability could be endangered if decarbonisation leads instead to de-industrialisation in Europe – including of industries that can support the green transition.

Europe will need to deploy a mixed strategy that combines different policy tools and approaches for different industries. Four different broad cases can be distinguished. First, there are some industries where Europe's cost disadvantage is too large to be a serious competitor. Even if the EU has lost ground owing to foreign subsidies, it makes economic sense to import necessary technology and allow foreign taxpayers to bear the costs, while diversifying suppliers to the extent possible to limit dependencies. The second broad case is industries where the EU is concerned about where production takes place – to protect jobs from unfair competition – but is agnostic about where the underlying technology originates from. In this case, an effective policy mix would be to encourage inward FDI while deploying trade measures to offset the cost advantage gained by foreign subsidies. With the combination of recent tariff increases and FDI announcements in some Member States, this approach is currently being de facto applied in the automotive sector. The third case is industries where the EU has a strategic interest in ensuring that European companies retain relevant know-how and manufacturing capacity, allowing production to be ramped up in the event of geopolitical tensions. Here the EU should aim to increase the long-term "bankability" of new investments in Europe, for instance by applying local-content requirements, and to ensure a minimum level of technological sovereignty. The latter can be achieved by requiring foreign companies that want to produce in Europe to enter into joint ventures with local companies. Security considerations may lead to changes over time in the classification of industries of strategic interest. The fourth case is "infant industries" where the EU has an innovative edge and sees high future growth potential. In this case, there is a well-established playbook of applying a full range of trade-distorting measures until the industry reaches sufficient scale and protections can be withdrawn.

Executing this strategy will require a joint decarbonisation and competitiveness plan where all policies are aligned behind the EU's objectives. Priority areas to be addressed include, first, lowering energy costs for end users by transferring the benefits of the decarbonisation and accelerating the decarbonisation of the energy sector in a cost-efficient way, leveraging all available solutions. Second, capturing the industrial opportunities presented by the green transition, ranging from remaining at the forefront of clean tech innovation to manufacturing clean tech at scale to leveraging the opportunities from circularity. Third, levelling the playing field in sectors more exposed to unfair competition from abroad and/or facing more exacting decarbonisation targets than their international competitors – including applying tariffs and other trade measures where warranted.

The root cause of high energy prices

Structural causes are at the heart of the energy price gap and may be exacerbated by both old and new challenges [see the chapter on energy]. The price differential vis-à-vis the US is primarily driven by Europe's lack of natural resources, as well as by Europe's limited collective bargaining power despite being the world's largest buyer of natural gas. However, the gap is also caused by fundamental issues with the EU's energy market. Infrastructure investment is slow and suboptimal, both for renewables and grids. Market rules prevent industries and households from capturing the full benefits of clean energy in their bills. Financial and behavioural aspects of derivative markets have driven higher price volatility. Higher energy taxation than other parts of the world adds a tax wedge to prices. Moreover, while these structural issues have been exacerbated by the energy crisis of the past two years, future crises may bring them to the fore again. Tensions in gas markets are expected to ease thanks to new global supply capacity coming online, but the EU energy system will have to cope with electrification and new security of supply needs.

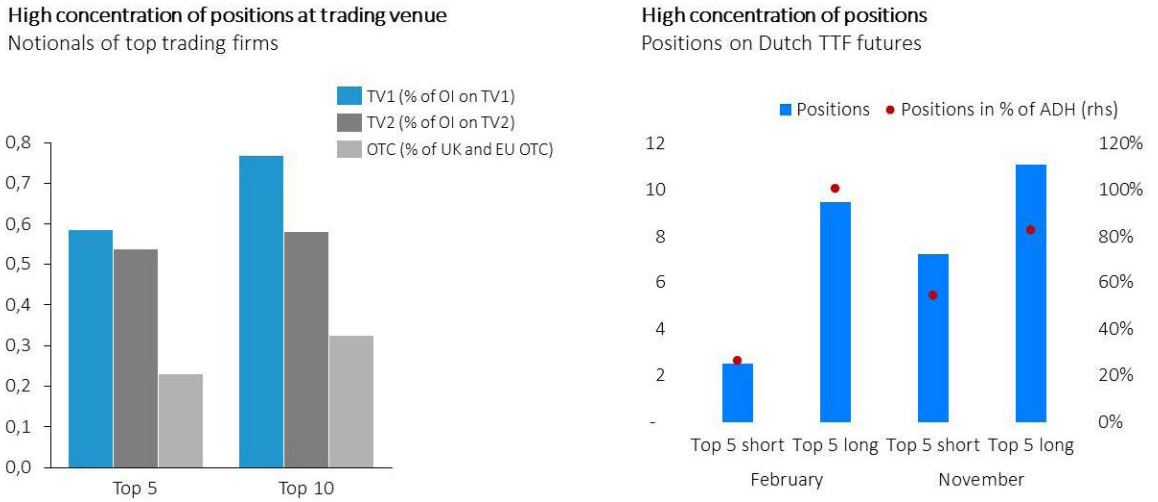
The EU is the largest global gas and LNG importer, yet its potential collective bargaining power is not being sufficiently leveraged and relies excessively on spot prices, threatening Europe with more volatile natural gas prices[01]. This lack of leverage is notable especially in the case of pipeline gas, where the possibility of rerouting gas flows is more limited as shown by the latest unsuccessful efforts by Russia. During the 2022 crisis, for example, intra-EU competition for natural gas between actors willing to pay high prices contributed to an excessive and unnecessary rise in prices. In response, the EU introduced a coordination mechanism to aggregate and match demand with competitive supply offers (AggregateEU), but there is no obligation for joint purchasing on the platform. At the same time, although natural gas prices have fallen considerably from their peaks during the energy crisis, the EU faces an increasingly volatile outlook. With the loss of access to Russian pipeline gas, 42% of EU gas imports arrived as LNG in 2023, up from 20% in 2021. LNG prices are typically higher than pipeline gas on spot markets owing to liquification and transportation costs. Moreover, with the reduction of pipeline supply from Russia, more gas is being bought on LNG spot markets both in the EU and globally leading to stronger competition. Even gas bought in long-term contracts is largely indexed to spot markets, which are increasingly influenced by supply disruptions and demand patterns in Asia.

Financial and behavioural aspects of gas derivative markets can exacerbate this volatility and amplify the impact of shocks. A few non-financial corporates undertake most trading activity in European gas markets. Recent evidence presented by the European Securities Markets Agency (ESMA) suggests that there is significant concentration both at position and trading venue level and that concentration increased in 2022 during largest spike in natural gas prices. The top 5 companies hold around 60% of positions in some trading venues and their short positions increased considerably by almost 200% between February and November 2022 [see Figure 4][vii]. Supervision of these companies' activities could be improved. While regulated financial entities (for example, investment banks, investment funds and clearing market participants) are covered by conduct and prudential rules, many of the companies that trade commodity derivatives can rely on exemptions. In particular, when a commodity company's main activities are not trading, they can be exempted from authorisation as a supervised investment company (so-called "ancillary" exemptions). The US has a stricter approach. Exemptions apply on some types of contracts, but commodity companies are not exempted from supervision, allowing for a more precise level of scrutiny. In addition, energy commodities are subject to position limits, including Henry Hub natural gas contracts.

01. AggregateEU is a first step in demand aggregation allowing the pooling of demand, the coordination of infrastructure use and negotiation with international partners, fostering more centralised EU joint purchasing to further leverage the EU's market power.

FIGURE 4

Market concentration in EU gas derivatives markets



Note: Market share of natural gas by venue in % of reported notionals, excluding central counterparties and clearing members. The figure shows that the top-5 and top-10 EU counterparties (in terms of gross notionals) accounted for more than 50% and 60% respectively of reported notionals by EU entities on each of the two EU gas regulated markets. Data as of November 2022. OI: Open Interest. TV: Trading Venue. OTC: Over-the-counter.

Sources: Trade repositories (TRs), Bank of England, ESMA.

Note: Absolute value of net positions in EUR billion for the top five long and short non-financial corporate counterparties and positions in % of average daily trading volume, in % rhs. The high concentration of positions indicates that if several firms with similar directional positions were to reduce their exposures, they could amplify market moves.

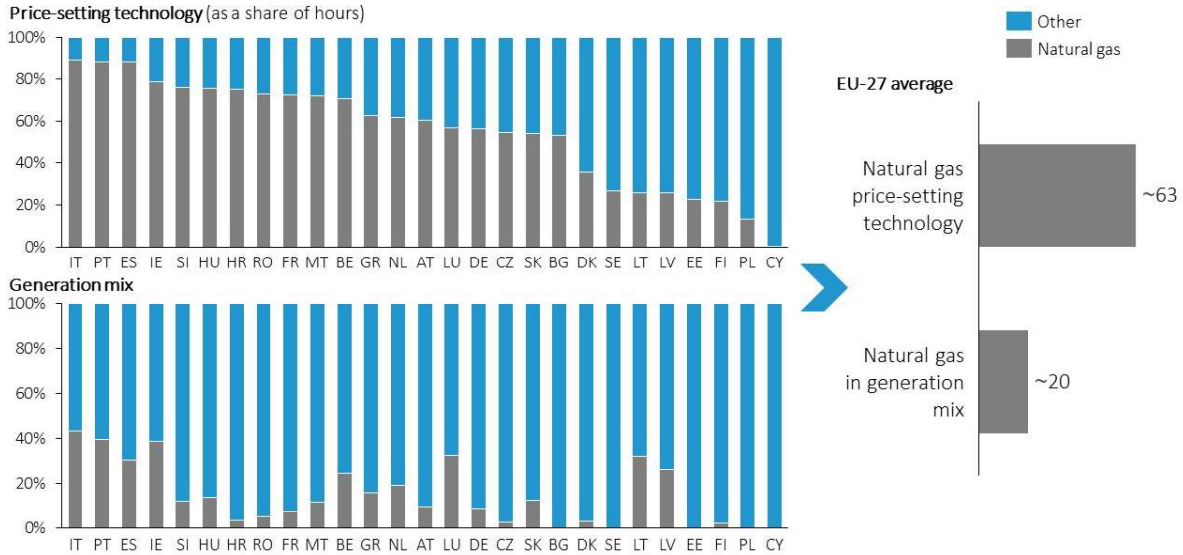
Sources: EMIR, ESMA.

Europe's market rules pass on this volatility to end users and may prevent the full benefits of decarbonising power generation from reaching them. Even as Europe reduces its dependence on natural gas and increases investment in clean energy generation, its market rules in the power sector do not fully decouple the price of renewable and nuclear energy from higher and more volatile fossil fuel prices, preventing end users from capturing the full benefits of clean energy in their bills [see Figure 5]. In 2022 at the peak of the energy crisis, natural gas was the price-setter 63% of the time, despite making up only 20% share of the EU's electricity mix. The use of long-term contract solutions – like Power Purchase Agreement (PPA) markets or Contracts for Difference (CfDs) – can help attenuate the link between the marginal price setter and the cost of energy for end users, but such solutions are underdeveloped in Europe, in turn limiting the benefits from accelerating the roll-out of renewables. In the absence of action, this decoupling problem will remain acute at least for the remainder of this decade. Even if renewable installation targets are met, it is not forecast to significantly reduce the share of hours during which fossil fuels set energy prices by 2030.

FIGURE 5

Price-setting technology per Member State and their generation mix

%, 2022

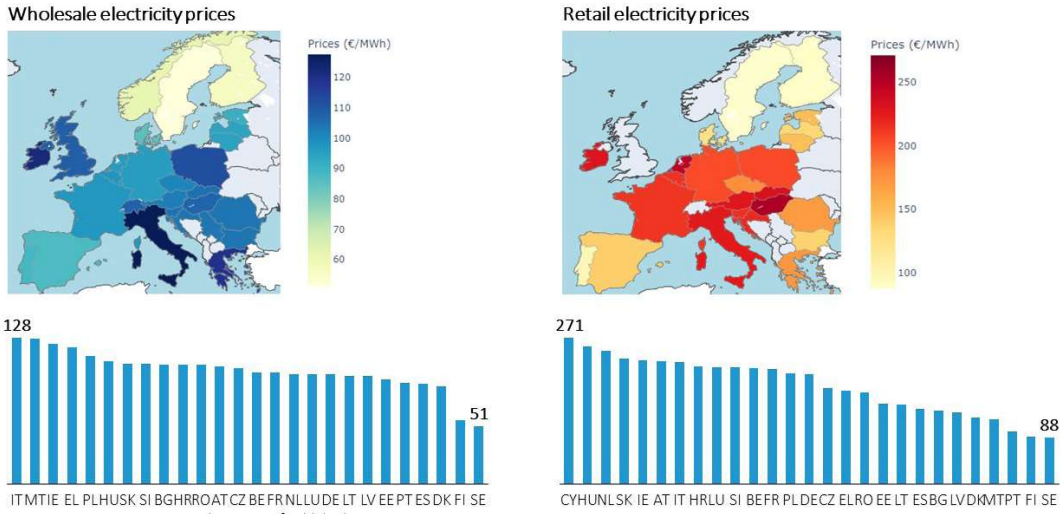


Source: European Commission (JRC), 2023

FIGURE 6

Electricity wholesale and retail prices across Member States for industry

EUR/MWh, 2023



Source: European Commission, 2024. Based on Eurostat, S&P Global, and ENTSO-E, 2024.

A lengthy and uncertain permitting process for new power supply and grids is a major obstacle to faster installation of new capacity. Investments in both power generation and grids require several years between feasibility studies and project completion. However, there is a large variation in permitting times between Member States. The entire permit granting process for onshore wind farms can take up to 9 years in some Member States, compared with under 3 years in the most efficient ones. Ground-mounted solar PV systems can take 3-4 years to approve in some countries but 1 year in others. The time devoted to analyses of environmental impacts represents a significant share of the difference between best and worst performers. The EU has developed initiatives to shorten permitting (such as the Article 122 emergency proposals), but there are still significant hurdles to implementation, in particular lack of administrative capacity and digitalisation. 69% of municipalities report a lack of skills related to environmental and climate assessments.

Finally, over time energy taxation has become an important source of budget revenues, contributing to higher retail prices. While taxation can be a policy tool to encourage decarbonisation, significant variation exists among Member States concerning taxes and price relief schemes. In contrast to the EU, the US does not levy any federal taxes on electricity or natural gas consumption. Moreover, as power generation falls under the scope of the EU's ETS, its carbon intensity is priced in electricity generation costs. This cost is high and volatile in the EU (amounting to EUR 20-25/MWh for gas-fired generation in EU), while in California the same cost stands at around EUR 10-15/MWh. Excluding the CO_2 costs paid by producers (which are estimated to lie in the range of 15-20% the commodity costs in 2022), generation cost is in the range of 45% for households and 65% of industrial retail prices. The residual costs were approximately equally shared between the network and taxes.

The threat to Europe's clean tech sector

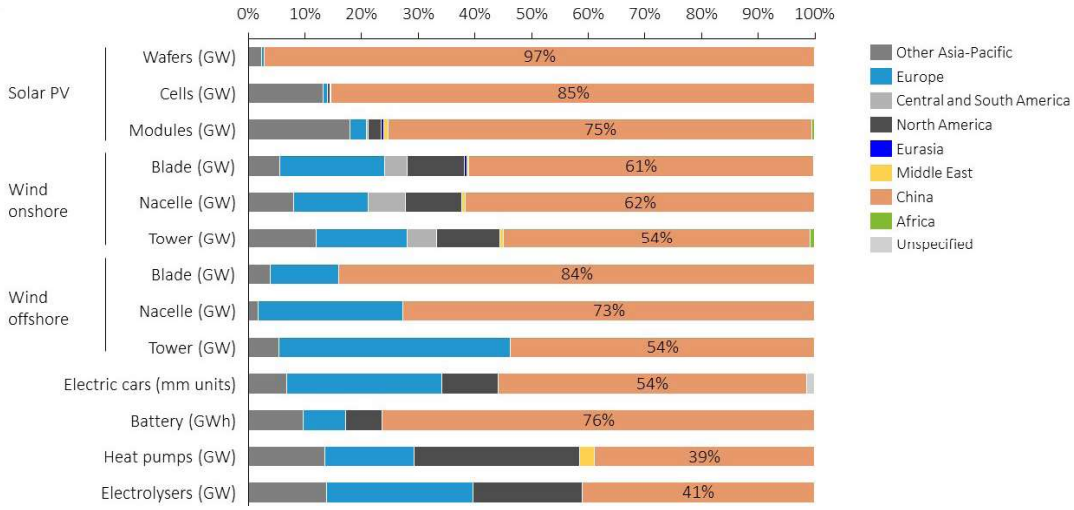
Although Europe is a world leader in clean tech innovation, it is squandering early-stage advantages owing to the weaknesses in its innovation ecosystem [see the chapter on clean technologies]. More than one-fifth of clean and sustainable technologies worldwide are developed in the EU and the pipeline is still strong: around half of EU clean tech innovations at a launch or early revenue stage, 22% at scale-up stage and 10% already mature[viii]. However, since 2020 patenting in low-carbon innovation has slowed down in Europe, while in recent years the sector has seen its early-stage advantages being challenged. For example, from 2015 to 2019 the EU represented 65% of global early-stage VC for hydrogen and fuel cells, but this share declined to 10% from 2020 to 2022. The clean tech sector is suffering from the same barriers to innovation, commercialisation and scaling up in Europe that afflict the digital sector: a total of 43% and 55% of medium and large companies, respectively, cite consistent regulation within the Single Market as the main way to foster commercialisation, while 43% of small companies identify lack of finance as an obstacle to growth[ix]. As in the digital sector, the lower capacity of EU clean tech companies to scale up leads to a gap between the EU and US in later-stage funding.

Europe's innovation potential is not translating into manufacturing superiority for clean tech, despite the size of its domestic market. The EU is the second largest market in terms of demand for solar PV, wind and EVs. In many of these sectors, the EU has enjoyed an industrial "first-mover" advantage and has established leadership, but it has not been able to maintain that lead consistently. In certain sectors, such as solar PV, the EU has already lost its manufacturing capacities, with production now dominated by China [see Figure 7]. In others, such as wind power generation equipment, Europe has a solid position but is facing increasing challenges. For example, although Europe retains primacy in wind turbine assembly – serving 85% of domestic demand and acting as a net exporter – it has lost significant market shares to China in last few years, declining from 58% in 2017 to 30% in 2022. In several sectors the EU retains its technological edge, such as electrolysers and carbon capture and storage. But many EU players still prefer to produce at scale in China owing to higher construction costs in Europe, permitting delays and more restricted access to critical raw materials. For example, electrolyser production requires at least 40 raw materials and the EU currently produces just 1-5% of these domestically. Overall, despite the EU's ambition to maintain and develop clean tech manufacturing capacity, there are multiple signs of an evolution in the opposite direction, with EU companies announcing production cuts, shutdowns and partial or full relocation.

FIGURE 7

Clean technology manufacturing capacity by region

%, 2021



Source: European Commission, 2024. Based on IEA, Bruegel.

The threat to Europe's position in clean tech owes mainly to a lack of an industrial strategy equivalent to other major regions. EU manufacturers are suffering primarily from a lack of stability of demand and from production cost gaps, reinforced by an unlevel playing field with other major economies providing significant subsidies and erecting trade barriers. The European Commission estimates that Chinese subsidies for clean tech manufacturing have long been twice as high as those in the EU as a share of GDP, while the country has protected its home market for solar PV, wind power-generation equipment and EV batteries. The US Inflation Reduction Act (IRA) is estimated to provide USD 40 billion to USD 250 billion in support for manufacturing of clean tech and is projected to help to bridge the US cost gap vis-à-vis producers in China. These policies have left the EU with a significant cost disadvantage: for example, solar PV manufacturing costs in China are around 35%-65% lower than in Europe and costs for manufacturing battery cells are 20%-35% lower[x]. The EU announced a comprehensive response in 2023 with the Net Zero Industry Act (NZIA). However, EU financial support remains fragmented among different programmes, characterised by higher complexity and lead times, and generally excludes operating costs where cost gaps are greatest. Overall, financing for manufacturing at the EU level is five to ten times less generous than under the IRA. Finally, while the NZIA specifies EU manufacturing targets, they are not backed by explicit minimum quotas for local products and components – quotas which other regions regularly apply – meaning EU demand is not predictably channelled towards EU clean tech output.

The EU's improving outlook for its battery industry demonstrates that a focused policy effort can succeed, even if non-EU players may benefit most. Although the EU's market share in lithium-ion batteries globally stands at just 6.5%, battery manufacturing output reached around 65 GWh in 2023 in the EU, growing by around 20% over the previous year. For comparison, the US recorded 80 GWh of production and similar growth, while the figures in China were 670 GWh and 50%, respectively. Public support for battery development has been key to strengthening Europe's position. Public R&I spending on battery technology has risen by 18% per year on average over the past decade, and Europe ranks only behind Japan and South Korea as a location for patent applications for battery storage technologies. With planned investment in the EU more than tripling in 2023, the IEA projects that the EU could meet its domestic demand for batteries by 2030. This capacity growth will increase Europe's strategic resilience and benefit adjacent sectors such as automotives by shortening supply chains. However, many of these projects are at this stage still announcements, and actual development will depend on supporting policies from permitting to financing. In addition, roughly half of the announced investment is from non-EU companies and, in most cases, projects are not taking place in the form of joint ventures. As a result, the EU may be missing an opportunity to combine openness to inward FDI with the development of critical know-how among European manufacturers.

The challenges of asymmetric decarbonisation

"Hard-to-abate" industries are suffering not only from high energy prices, but also from lack of public support to reach decarbonisation targets and investment in sustainable fuels [see the chapters on energy-intensive industries, and transport]. Despite the massive investment needs facing Energy Intensive Industries (EIIs), and the challenging business case for investment in "hard-to-abate" sectors, there is limited public support for the transition in Europe. Only a residual share of current ETS resources is earmarked to EIIs, with priority given to residential efficiency, renewables development or, recently, lowering energy bills. While EIIs in other regions face neither the same decarbonisation targets nor require similar investments, they benefit from more generous state support. China, for example, provides over 90% of the global USD 70 billion subsidies in the aluminium sector, as well as large subsidies for steel. Decarbonisation is also a competitive disadvantage for the "hardest-to-abate" parts of the transport sector (aviation and maritime). Extra-EU flights and sea journeys are partly excluded from the ETS, meaning the prices of these journeys do not yet reflect their climate impact. Consequently, there is a risk of carbon leakage and business diversion from transport hubs in the EU to those in the EU's neighbourhood, unless effective solutions for ensuring a level playing field are found at the international level. At the same time, although low-carbon fuels will be critical for the decarbonisation of these industries, ramping up the marginal production capacity that exists today is challenging. In particular, the EU needs to start building a supply chain for alternative fuels, or the costs of meeting its targets will be significant.

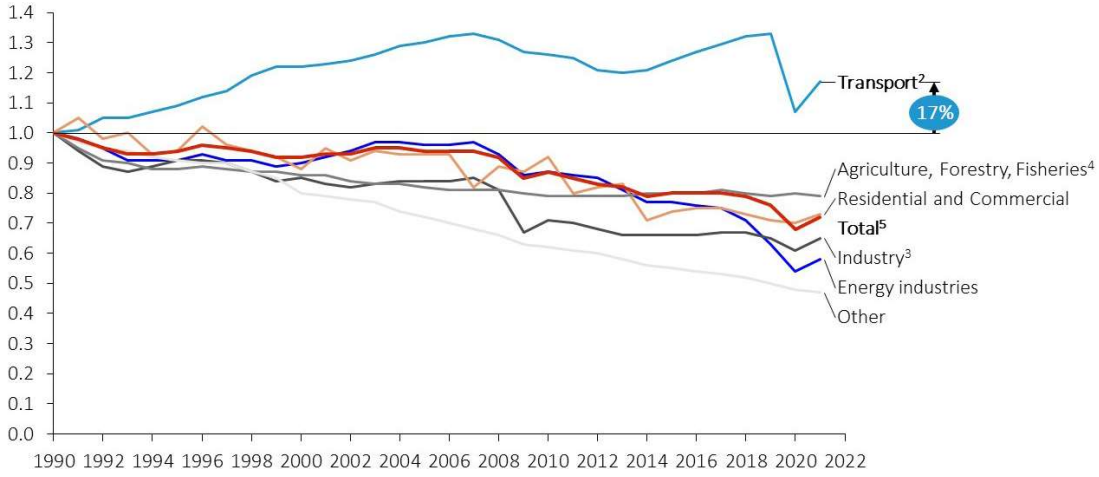
Overall, transport can play a critical role in the decarbonisation of the EU economy, but whether it proves to be an opportunity for Europe depends on planning. Transport accounts for one-quarter of all greenhouse gas emissions and unlike other sectors, CO_2 emissions from transport are still higher than in 1990 [see Figure 8]. However, lack of EU-level planning for transport competitiveness is hindering the ability of Europe to capitalise on the possibilities of multimodal transport to lower carbon emissions. Sustainable mobility requires an integrated approach towards energy networks, charging infrastructures, standardisation of manufacturing equipment, telecoms (including satellite and navigation technologies) and financing. Yet while transport is part of the Commission's 2040 Climate Target Plan, it is excluded from the mandatory National Energy and Climate Plans where Member States outline their strategies to execute decarbonisation. This lack of coordination results, for example, in a precise and binding regulatory framework for carmakers and corporate logistics, increasing the demand for EVs and charging infrastructure, without an analogous obligation for energy providers to supply stable and powerful grid access of sufficient capacity. The transition to sustainable mobility is further hindered by lack of interoperability of infrastructures and of technical requirements for the deployment of fleets and equipment, as well as limited uptake of digitalisation. Only 1% of cross-border maritime operations and 5% of rail transport operations in Europe are fully paperless[02].

02. Differences exist across single modes, with 40% of information exchange taking place electronically in aviation, 5% in rail and less than 1% in road and maritime. European Environment Agency, Transport and environment report 2022, Digitalization in the mobility system: challenges and opportunities, 2022.

FIGURE 8

Evolution of greenhouse gas emissions by sector in the EU

Greenhouse gas emission[1], Index 1990=1



Notes: 1 Excluding LULUCF emissions and international maritime, including international aviation and indirect CO2. 2 Excluding international maritime (international traffic departing from the EU), including international aviation. 3 Emissions from Manufacturing and Construction, Industrial Processes and Product Use. 4 Emissions from Fuel Combustion and other Emissions from Agriculture.

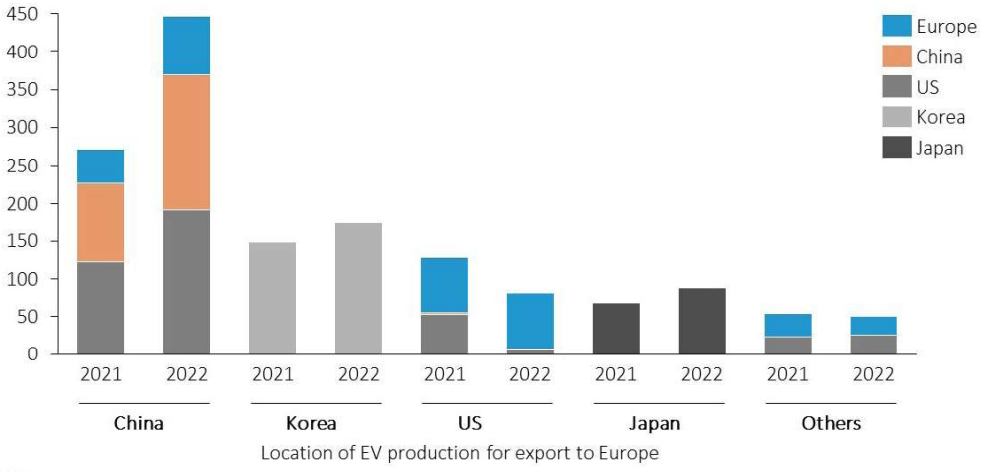
Source: European Commission, 2023

The automotive sector is a key example of lack of EU planning, applying a climate policy without an industrial policy [see the chapter on automotive]. The technology neutrality principle has not always been applied in the automotive sector. The ambitious target of zero tailpipe emissions by 2035 will lead to a de facto phasing out of new registrations of vehicles with internal combustion engines and the rapid market penetration of EVs. Yet, the EU has not followed up these ambitions with a synchronised push to convert the supply chain. For example, the Commission only launched the European Battery Alliance to build a battery value chain in Europe in 2017, while Europe as a whole is far behind on installing charging infrastructure. China, by contrast, has been focusing on the full EV supply chain since 2012 and, as a result, it has moved faster and at a larger scale and is now one generation ahead in EV technology in virtually all domains, while also producing at lower cost. European companies are already losing market share and this trend may accelerate as shipping bottlenecks are overcome [see Figure 9]. Chinese carmakers' market share for EVs in Europe rose from 5% in 2015 to almost 15% in 2023, while the share of European carmakers in the European EV market fell from 80% to 60%.

FIGURE 9

Electric car imports to Europe by country of production and manufacturer headquarters

Thousand vehicles, 2021-2022



Source: IEA, 2023

A joint plan for decarbonisation and competitiveness

The first key goal for the energy sector is to lower the cost of energy for end users by transferring the benefits of the decarbonisation [see the chapter on energy]. Natural gas will remain part of the energy mix in Europe over the medium term – scenarios suggest that EU gas demand will fall by 8%-25% by 2030 – and so this goal requires reducing the volatility of natural gas prices. The report recommends reinforcing joint procurement – at least for LNG – to leverage Europe's market power and establishing long-term partnerships with reliable and diversified trade partners as part of a genuine EU gas strategy. Europe also needs to reduce its exposure to spot market by encouraging a progressive move away from spot-linked sourcing and to reduce volatility in EU gas markets by limiting the possibility of speculative behaviour. Following the US example, regulators should be able to apply financial position limits as well as dynamic caps in circumstances when EU energy spot or derivatives prices diverge markedly from global energy prices. The EU should also put in place a common trading rulebook applying to both spot and derivatives markets and ensure integrated supervision of energy and energy derivatives markets. Finally, the EU should review the "ancillary activities exemption" to ensure that all trading entities are subject to the same supervision and requirements.

At the same time, transferring the benefits of decarbonisation requires policies to better decouple the price of natural gas from clean energy. The EU should decouple the remuneration of renewable energy and nuclear from fossil-fuel generation by building on the tools introduced under the new Electricity Market Design – such as PPAs and two-way CfDs – and progressively extending PPAs and CFDs to all renewable and nuclear assets in a harmonised way. The marginal pricing system should be used to ensure efficient balance in the energy system. To increase the uptake of PPAs into the industrial sector, the report recommends developing market platforms to contract resources and pool demand between generators and offtakers. This initiative can be combined with schemes to provide guarantees to mitigate the financial counterparty risks engendered by using such platforms, thereby enlarging market access to SMEs. For example, the EIB and National Promotional Banks could provide counter guarantees and specific financial products for small consumers or suppliers that lack a proper credit rating. In parallel, a fundamental component of lowering energy costs for end users is reducing energy taxation, which can be achieved by adopting a common maximum level of surcharges across the EU (including taxes, levies and network charges). Legislative reform in this area is subject to unanimity, but cooperation among a subset of Member States or guidance on energy taxation can be considered.

The second key goal is to accelerate decarbonisation in a cost-efficient way, leveraging all available solutions through a technology-neutral approach. This approach should include renewables, nuclear, hydrogen, bioenergy and carbon capture, utilisation and storage, and should be backed by massive mobilisation of both public and private finance (based on the proposals laid out in the chapter on investment. However, increasing the supply of finance for clean energy deployment will not yield the desired results without increasing the pace of permitting for installation. Different options are available to reduce permitting delays for new energy projects. Systematically implementing existing legislation can make a major difference: for example, several Member States have experienced double-digit increases in the volume of permits issued for onshore wind since the entry into force of the Article 122 Emergency Regulation. The report recommends extending acceleration measures and emergency regulation to heat networks, heat generators, and hydrogen and carbon capture and storage infrastructure. Greater focus is also needed on digitalising national permitting processes across the EU and addressing permitting authorities' lack of resources. For instance, administrative fees for procedures could be increased to ensure authorities have adequate capabilities to deliver prompt approvals. Another potential avenue would be for the EU to make renewable acceleration areas and strategic environmental assessments the rule for renewables expansion, replacing individual assessments per project. Targeted updates to relevant EU Environmental legislation could be used to provide limited (in time and perimeter) exemptions in EU environmental directives until climate neutrality is achieved. This revised legislation should appoint last-resort national authorities to ensure the permitting of projects in the event that there is no answer from local authorities after a predetermined time (e.g. 45 days).

A central element in accelerating decarbonisation will be unlocking the potential of clean energy through a collective EU focus on grids. If there is one horizontal area in the energy sector whose importance cannot be

overstated, it is the EU's energy grids. Delivering a step-change in grid deployment will require a new approach to planning at the EU and Member State levels, including the ability to effectively reach decisions and accelerate permitting, to mobilise adequate public and private financing and to innovate grid assets and processes. From a European perspective, rapidly increasing the installation of interconnectors should be the focus. The report recommends, first, to establish a "28th regime" – i.e. a special legal framework outside of the 27 different national legal frameworks – for interconnectors deemed to be Important Projects of Common European Interest (IPCEIs). This regime should shorten the length of national procedures and integrate them into a single process, avoiding the possibility of projects being blocked by individual national interests. Some very large renewable energy projects, such as large offshore wind in the North Sea, could also apply via this procedure, bypassing permitting delays at the local level. Second, the next Multiannual Financial Framework should reinforce the EU instrument dedicated to financing interconnectors (the Connecting Europe Facility). Third, a permanent European coordinator should be created in charge of assisting in obtaining the necessary permits. This coordinator would be responsible for monitoring progress in the permit granting process and facilitating regional cooperation to ensure political backing for cross-border infrastructure from all relevant Member States.

In parallel, the EU should develop the governance needed for a genuine Energy Union so that decisions and market functions of cross-border relevance are taken centrally. A stronger, more robust institutional framework would entail strengthening monitoring, investigation and decision-making powers at the EU level with the possibility of providing full regulatory oversight over all decisions and processes that have direct cross-border impact. A genuine Energy Union should ensure that central market functions of relevance for an integrated market are performed centrally and subject to proper regulatory oversight.

While "hard-to-abate" industries will benefit from lower energy prices, the EU should take a pragmatic approach to decarbonisation to mitigate potential trade-offs [see the chapters on energy-intensive industries, and transport]. For the EU to lead the decarbonisation of EIIs, a stronger focus is needed by both the EU and national governments to provide sufficient financial resources. The report recommends earmaking a larger share of ETS revenues to EIIs, with resources targeted towards innovating assets and processes and enhancing the skills needed for decarbonisation, for example by supporting the uptake of green hydrogen or carbon capture and storage solutions. ETS revenues should also be used to support the decarbonisation of the transport sector, helping reach the EU's milestones for shifting more activity to sustainable modes of transport. Decarbonisation funding across the EU should be based on common, competitive and simple instruments, such as Carbon CfDs or competitive auctions by the European Hydrogen Bank. A basket of options should be in place to financially support transport decarbonisation. These could include CfDs to de-risk investment in low carbon fuels, blending EU grants with support by EIB and National Promotional Banks, and Regulatory Asset Based models for investment in (high speed) railway infrastructure. At the same time, a global level playing field for EIIs and transport operators should be ensured during the transition. While CBAM is an important instrument for European companies to stay competitive against their international peers that face lower or no carbon prices, its success is still uncertain. The EU should closely monitor and improve the CBAM design during the transition phase and consider postponing the phase out of free ETS free allowances for EIIs if implementation is ineffective.

To capitalise on the decarbonisation push, Europe should refocus its support for clean tech manufacturing, focusing on technologies where it either has a lead or where there is a strategic case for developing domestic capacity [see the chapter on clean technologies]. The next Multiannual Financial Framework (MFF) should streamline the number of funds devoted to the manufacturing of clean tech, concentrating on technologies where the EU has an advantage and strong potential for growth – such as the opportunity presented by batteries. Support under the EU budget should offer companies a single point of entry with a uniform application procedure and awarding conditions, and should feature support for both capital expenditure and operational expenditure. To attract more private sector funding to clean tech, and especially towards innovative companies, dedicated financing schemes should be developed employing the same financing strategies discussed in chapter 2. At the national level, to ensure predictable demand for the EU clean tech industry and to offset trade distorting policies abroad, the report recommends introducing an explicit minimum quota for the local production of selected products and components in public procurement and in CfD auctions and other forms of local production offtake. This quota should be combined with criteria established at EU level for orienting local production to the most innovative and sustainable solutions. The approach could be supported by the creation of joint ventures or cooperation agreements

for knowledge transfer and sharing between EU and non-EU companies. For "infant industries", it is recommended that Member States plan upcoming auctions and public procurement procedures to act as a "launch customer" for new technologies.

Trade policy will be fundamental to combine decarbonisation with competitiveness, securing supply chains, growing new markets and offsetting state-sponsored competition. As supply chains for some clean technologies are highly concentrated, the EU has win-win opportunities to strategically partner with other regions in targeted steps of clean technology supply chains. Like-minded neighbouring regions with access to low-cost renewable energy sources and raw materials could help Europe accomplish its energy and climate goals in an affordable manner while widening the diversification of supplies. At the same time, the EU should leverage its strong position in clean tech and pursue opportunities to invest in other countries to widen the deployment market for technologies the region is developing, such as near zero-emissions processes for materials production. To enable these goals, the report recommends for the EU to establish industrial partnerships with third countries in the form of offtake agreements across the supply chain or co-investment in manufacturing projects. The EU's Global Gateway could be leveraged for the necessary investment. However, in situations where otherwise productive EU companies are being threatened by state-sponsored competition, the EU should be prepared to apply trade measures in line with principles described above [see the Box in chapter 1 – the starting point].

As part of its decarbonisation strategy, the EU should develop an industrial action plan for the automotive sector [see the chapter on automotive]. In the short term, the main objective for the sector should be to avoid a radical delocalisation of production away from the EU or the rapid takeover of EU plants and companies by state-subsidised foreign producers, while continuing decarbonisation. The countervailing tariffs recently adopted by the Commission against Chinese automotive companies making battery EVs will help level the playing field in this regard while accommodating genuine productivity gains in China. Looking forward, the report recommends for the EU to develop an industrial roadmap that accounts for the horizontal convergence (i.e. electrification, digitalisation and circularity) and the vertical convergence (i.e. critical raw materials, batteries, transport and charging infrastructure) of value chains in the automotive ecosystem. As part of this action plan, the EU should evaluate support for IPCEIs in the automotive sector. Scale, standardisation and collaboration will be crucial for EU manufacturers to become competitive in areas such as small and affordable European EVs, software-defined vehicle and autonomous driving solutions, and the circularity value chain. A coherent digital policy, encompassing the data ecosystem, should support these developments. In building such a roadmap, the EU should follow a technology-neutral approach in defining the path to CO_2 and pollutant reductions and should take stock of market and technological developments.

The wider EU strategy towards cross-border and modal integration and sustainable transport needs to plan for competitiveness and not only for cohesion [see the chapter on transport]. Transport should be based on a new unified approach to planning at the EU and national levels, focused on harmonisation and interoperability as well as cohesion. This approach should be matched by deeper coordination with adjacent network industries (energy and telecoms) and new incentives in the EU budget for Member States to remove barriers to EU integration and ensure interoperability and competition in all transport segments, when these goals goes beyond the application of EU law. The EU should also continue to reinforce its leading position in innovative transport by launching industrial innovation projects for decarbonisation challenges, such as an industrial demonstrator (as part of a new Competitiveness Joint Undertaking, replacing current public-private partnerships) or an IPCEI for the zero-emission flight of the future.

ENDNOTES

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