


# 2026 Flagship Report: State of EU progress to climate neutrality

An indicator-based assessment across 13  
building blocks for a climate neutral future

July 2026





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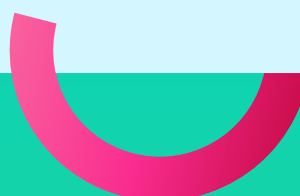
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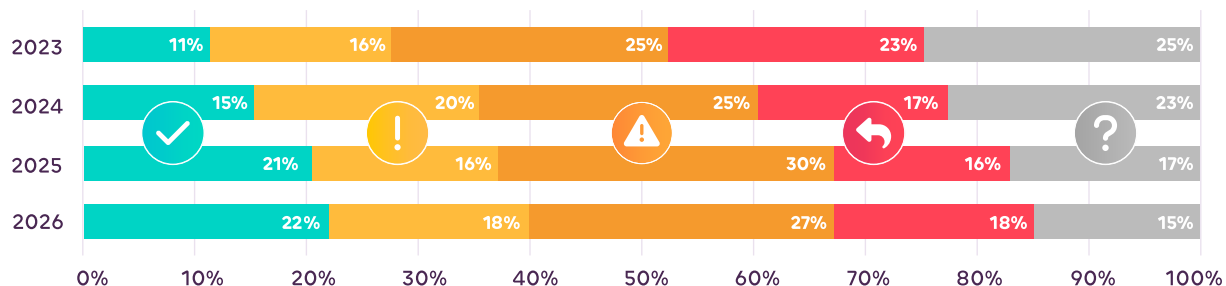
# Summary



## The transition is accelerating, but resilience depends on faster implementation

Europe's transition to climate neutrality is accelerating and the enabling conditions for a resilient, decarbonised economy are strengthening. More than half of all indicators ECNO tracks have improved their rate of advancement compared to last year and nearly a quarter are classified as being **on track** to meet climate neutrality, compared to just 11% in 2023. However, our 2026 assessment also finds that progress remains uneven and overall still **too slow** across most areas of the transition, leaving the EU exposed to strategic dependencies, economic vulnerabilities and worsening climate impacts. The report points to six key actions to strengthen resilience against these risks, based on ECNO findings.

Figure 1: Percentage distribution of indicator classifications in the four ECNO assessments



Note: Indicator counts vary by year.

Progress Classification: Progress for each indicator is classified as either: **on track**, **too slow**, **far too slow**, or headed in the **wrong direction**. **Insufficient data** indicates data availability limitations. For further information on ECNO’s approach: [climateobservatory.eu/approach](https://climateobservatory.eu/approach).

Source: ©ECNO

## Climate action is inherently tied to economic competitiveness and overall resilience

Accelerating the transition matters not only to keep climate change within safer limits, but also to strengthen Europe’s competitiveness and strategic autonomy. Recent energy crises have highlighted the economic and geopolitical risks of fossil fuel dependence, with the EU paying billions in additional fossil fuel import costs. At the same time, vulnerabilities have emerged across fertiliser supply chains, clean technology components and critical raw materials. Europe’s reliance on China for critical raw materials, battery supply chains and solar inverters creates risks, as China controls around 70% of global critical mineral refining and very large shares of most clean tech manufacturing capacities. In addition, high electricity prices – mainly driven by volatile gas markets – continue to undermine industrial competitiveness and slow the electrification needed to achieve climate neutrality across energy-related sectors.



## Highlights where the transition is heading the right way

In some areas, we see positive developments to support the move to a resilient, climate neutral future. These include the following ones worth noting:

### ○ **Transport and buildings are showing signs of acceleration.**

Zero-emission vehicle (ZEV) registrations reached a record high in 2025, with the trend increasing further in the first half of 2026, while the share of rail passenger transport has seen a moderate increase. Heat pump sales partly recovered in 2025 and demand for heating and cooling is falling faster than in last year's assessment. The share of energy subsidies for energy efficiency purposes doubled between 2021 and 2024.

### ○ **Citizens are increasingly shaping the transition, while regional poverty is declining.**

Cattle meat consumption continues to decline beyond official expectations, and for the first time this year, so does dairy consumption – despite few or no policy incentives in place. Poverty reduction across EU regions most vulnerable to the energy transition is now **on track** to reach the EU's overall target of reducing poverty by at least 15 million by 2030.

### ○ **The EU expanded its international climate finance contributions.** Public finance for international clean energy projects by the EIB and climate-related official development assistance both increased, strengthening our assessment on the EU's external climate action.

#### PROGRESS SIGNALS

- **16 indicators improved classification**
- **45 indicators accelerated within the same classification**

## Areas that require increased attention

At the same time, overall progress remains uneven and the outlook has stalled or worsened in several critical areas. **For the first time since ECNO's tracking began in 2023, none of the 13 building blocks of the transition are on track.** Several areas have seen a worsening outlook:

### ○ **Weak clean tech investment is undermining industrial resilience.**

After briefly reaching an **on track** classification last year, the EU's clean tech ecosystem is once again developing **too slowly**, with sustained declines in public energy and environmental R&D spending and clean tech scale-up investment.

### ○ **Finance is heading the wrong way, failing to support the transition.** Financial flows remain vastly misaligned with climate goals due to a lack of investment in critical areas for the transition, while fossil fuel subsidies remain high.

### ○ **Nature-based resilience continues to deteriorate.** The overall state of carbon dioxide removal has worsened and is again moving in the **wrong direction**, driven by slowing growth in EU forest area and declining carbon stocks.

#### WARNING SIGNALS

- **11 indicators worsened in classification**
- **25 indicators slowed within the same classification**

## The EU policy landscape to support the transition is still robust but increasingly uncertain

**The EU's policy landscape remains broadly supportive of climate neutrality, with a conducive policy mix in place for 85% of the overall objectives ECNO tracks and 70% for their underlying enablers.** However, several key policies have been weakened. The 2035 zero emissions target for new cars and vans has been watered down, weakening investment signals for car manufacturers, and corporate sustainability reporting requirements have been significantly rolled back. Policies that actively hinder progress are rare, but the agrifood sector is a notable exception, where Common Agricultural Policy subsidies continue to favour emissions-intensive livestock farming over more sustainable models.

Amidst this backdrop, safeguarding some of the EU's flagship policies, such as the EU ETS and using the current energy security challenges as a catalyst for faster climate action become essential. Strengthening resilience and accelerating the transition must increasingly be seen as complementary objectives.

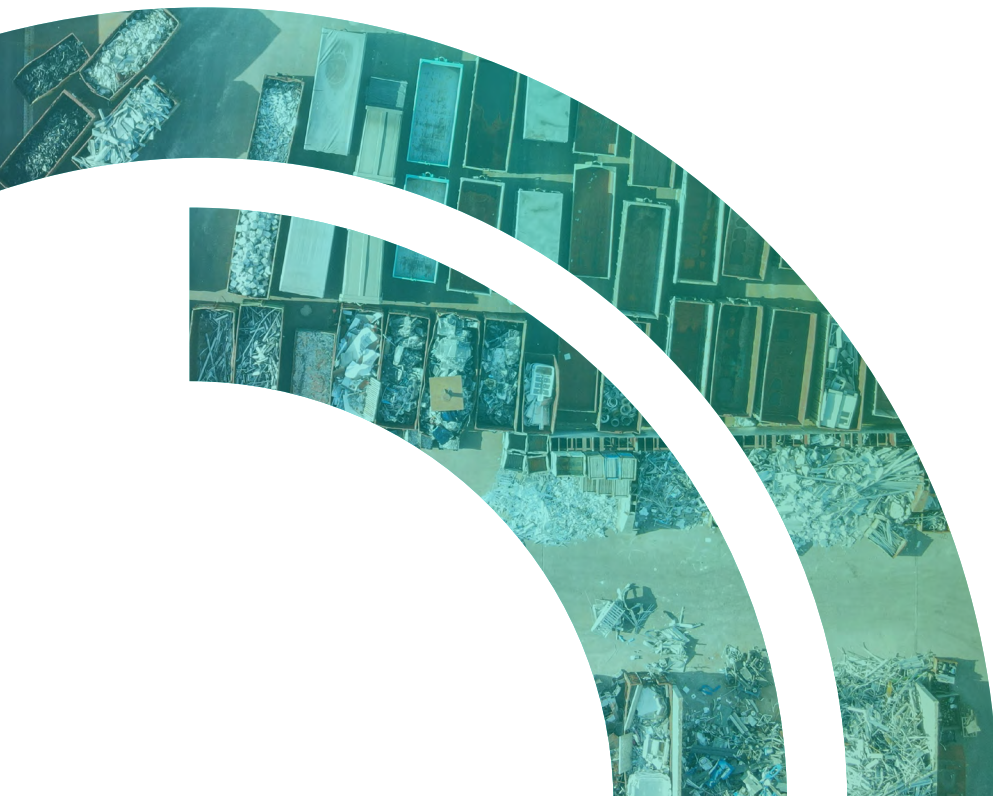
## Six key actions to strengthen resilience while delivering on climate neutrality

Building on this assessment, the report identifies six priority areas where action is most urgently needed to boost Europe's resilience on the path to climate neutrality.

- **Accelerate and integrate renewable electricity generation.** Variable renewables stood at just 30% of electricity generation in 2025, rising **far too slowly** to meet the 58% deployment needed by 2030. Wind buildout is lagging in particular. Grid investment, battery storage and smart meter rollout all remain insufficient. Faster permitting, more integrated grid planning and stronger incentives for non-fossil flexibility are needed to scale up renewables to the levels needed.
- **Electrify transport, buildings and industry.** Electrification rates have stagnated at just over 20% for a decade. Closing the electricity-to-gas price gap, including through energy taxation reform and stronger policy support for batteries, heat pumps and electric vehicles, is essential to make electrification commercially viable across sectors.
- **Shift fossil fuel subsidies towards a fair transition.** Fossil fuel subsidies remain high at nearly EUR 100 billion. Broad energy price relief should be replaced with targeted support for vulnerable households, combined with investment in building renovation, heat pumps and affordable public transport. The Social Climate Fund is a key opportunity that Member States must use effectively.

- **Support clean tech leadership and industry decarbonisation.** Europe risks falling behind in the global clean technology race. Large-scale clean tech investment halved from EUR 10 billion in 2021 to EUR 5 billion in 2025, while public R&D spending has plummeted. In heavy industry, there is a stark funding gap for CO<sub>2</sub> transport and storage: current public funding is around EUR 300 million against an estimated need of up to EUR 23 billion. A broader industrial strategy is needed that combines carbon pricing with stronger demand creation, de-risking instruments and measures to reduce supply chain dependencies on China.
- **Reuse and recover materials.** Europe is becoming more resource-efficient, but only 12% of materials are recycled back into the economy. This share needs to rise sharply as demand for critical raw materials tied to clean technology grows. The forthcoming Circular Economy Act should translate ambition into binding market creation, including stronger recycled content standards and circularity criteria in public procurement.
- **Reduce exposure in the food system.** European agriculture remains highly exposed to climate impacts, fertiliser price volatility and fossil fuel dependence. Structural change is needed to build long-term resilience, including reforming CAP subsidies to support more sustainable farming models, further reducing synthetic fertiliser use and expanding organic farming area, which needs to go up from around 11% currently to 25% in 2030.

As the EU develops its post-2030 climate and energy framework, the decisions taken in the coming months and years will determine whether the transition to climate neutrality strengthens Europe's resilience and competitiveness, or whether structural vulnerabilities are locked in for another decade.





# 1 Introduction


Europe's dependence on imported fossil fuels, critical raw materials and key technology components continues to come at a high cost. The energy crises that followed the (ongoing) wars in Ukraine and Iran have exposed the vulnerability of the EU's energy system to volatile fossil fuel prices and external supply shocks, placing a burden on households, industry, and public budgets. But the vulnerabilities go beyond this: European agriculture remains heavily exposed to imported fertilisers, as recent supply disruptions have made clear. And as the clean technology transition accelerates, new dependencies are emerging, including on China for battery components, solar inverters and other key manufacturing inputs, a risk the EU has begun to act on. These overlapping dependencies highlight a structural challenge:

**Europe's long-term economic resilience and competitiveness depend on reducing fossil fuel imports, diversifying key supply chains and accelerating the transition to a climate-neutral economy.**

It has now been five years since the EU enshrined climate neutrality by 2050 in law. Since then, important parts of the transition have begun to scale but the speed of transformation is still insufficient. In this context, the coming years represent a critical window of opportunity. As the Clean Industrial Deal is being rolled out and the EU prepares its post-2030 climate and energy policy framework, decisions taken now will shape how effectively the transition to climate neutrality can strengthen economic resilience, energy security and social fairness.

This report is the **fourth edition** of the European Climate Neutrality Observatory's (ECNO) **assessment of Europe's progress toward climate neutrality** across key sectors and cross-cutting building blocks of the transition. It identifies areas where progress is accelerating, stagnating, or moving in the wrong direction, and highlights where policy could support progress, where it falls short or risks reinforcing counterproductive trends. The full results of our analysis for each building block are available here: [climateobservatory.eu](https://climateobservatory.eu)

Building on this assessment, this report focuses on **six key action areas** in which faster progress would **strengthen Europe's resilience and competitiveness** while supporting climate neutrality. These focus on reducing fossil fuel dependence, accelerating electrification and renewable energy deployment, supporting industrial transformation and clean tech deployment, boosting circularity, reducing vulnerabilities in the food system and ensuring that the transition remains socially fair and grounded in broad societal support. Each of these is underpinned by analysis of relevant data trends in real-world enabling conditions.



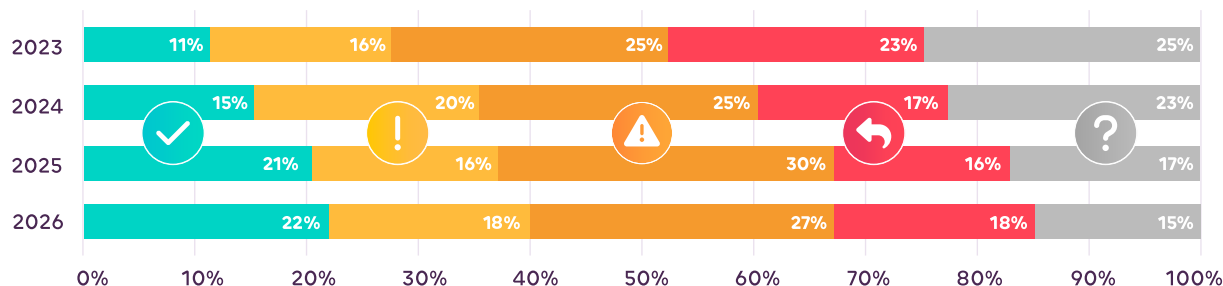
## 2 Progress towards climate neutrality continues, but not at the pace required

The transition is moving faster than it was previously: more than half of the 146 indicators ECNO tracks accelerated in their development compared with last year's assessment, while sixteen indicators improved their classification and eleven worsened. Nearly a quarter of indicators are now classified as being **on track**, compared with 11% in 2023.

This is an important signal. It shows that structural change is visible across parts of the economy and that the EU policy framework is broadly more supportive of the transition than in earlier assessments. However, the results also show that for the first time since ECNO began tracking the transition in 2023, none of the 13 building blocks is progressing at the required pace overall.

Our findings align with what we can see in terms of headline emissions: the **38% drop in net GHG emissions** in 2024 compared with 1990 shows that the EU has made significant progress. However, further efforts are needed to reach the 2030 emissions reduction target of at least 55%.

Figure 2: Percentage distribution of indicator classifications in the four ECNO assessments



Note: Indicator counts vary by year.

Progress Classification: Progress for each indicator is classified as either: **on track**, **too slow**, **far too slow**, or headed in the **wrong direction**. **Insufficient data** indicates data availability limitations. For further information on ECNO's approach: [climateobservatory.eu/approach](https://climateobservatory.eu/approach).

Source: ©ECNO

These developments and our findings need to be read against the exceptional context of recent years: the aftermath of the COVID-19 pandemic, the energy crisis following Russia's war against Ukraine, inflationary pressures and high interest rates. These developments have also increased political attention to resilience, security, affordability and competitiveness. The Iran war and the ensuing fuel shock have only made this context starker – although their impacts are still too recent to be fully reflected in ECNO's data.

## Progress is visible but remains uneven

At building block level, **the results point not to uniform stagnation, but to an uneven transition**. Positive developments are visible in several areas, even where they are not yet strong enough to change the overall classification of a building block.

Compared to last year's assessment, **External Action** improved its classification from **far too slow** to **too slow** thanks to increases in the EU's climate-related official development finance and finance for international clean energy projects by the European Investment Bank. **Buildings, Mobility, Agrifood** and **Just and Fair Transition** saw positive indicator-level developments, including, among others, recovering heat pump sales, record ZEV registrations, declining dairy consumption and improved trends in regional poverty in areas most vulnerable to the transition – although these gains were not yet broad or fast enough to improve their overall building-block classifications.

These developments matter because they show that parts of the transition are responding to policy, market signals and citizen choices. The overall picture is therefore not one of stalled progress, but one that remains too uneven and **too slow** to put the EU on a secure path to climate neutrality.

Table 1: Changes in EU progress in 13 building blocks of a climate-neutral future

BUILDING BLOCK	2023	2024	2025	2026
Electricity	!	!	!	!
Mobility	!	!	!	!
Industry	!	!	!	!
Buildings	!	!	!	!
Agrifood	!	!	!	!
Carbon Dioxide Removal	↶	↶	!	↶
Lifestyles	!	!	!	!
Clean Technologies	!	!	✓	!
Finance	↶	↶	↶	↶
Just and Fair Transition	!	!	!	!
Governance	✓	✓	!	!
Adaptation	!	!	!	!
External Action	!	!	!	!

Note: ECNO tracks real-world developments across 13 building blocks of a climate neutral future since 2023 on a yearly basis. Although the methodology was developed further, one can still compare classifications over the years.

Source: ©ECNO

## Reversals show that earlier gains are not yet locked in

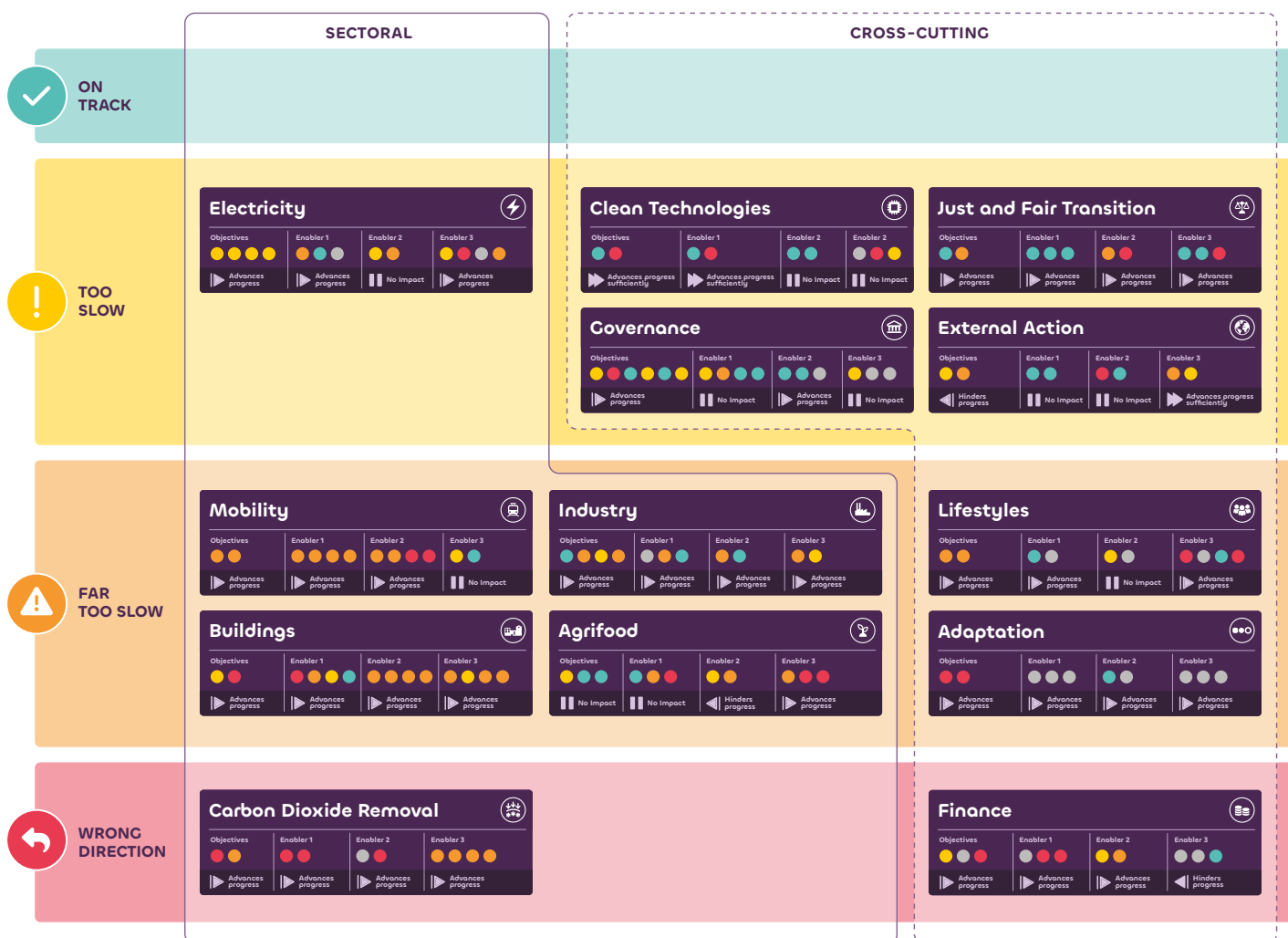
The assessment also shows that momentum remains fragile. **Finance** continues to move in the **wrong direction**, although the decline in fossil fuel subsidies after the 2022 crisis peak shows that part of the emergency support is being withdrawn – at least in 2025. **This confirms Finance as a persistent weakness across ECNO’s assessments**, with financial flows still not aligned with the investment needs of the transition.

Two building blocks show concerning reversals in their overall classification. **Carbon Dioxide Removal** has shifted back into heading in the **wrong direction** due to declining

growth rates for forest area and carbon stocks, while technical removals continue to develop from a very low base. **Clean Technologies** has gone back to being **too slow** after being **on track** last year following a decline in large-scale clean tech investment with, for example, many planned battery gigafactories cancelled or delayed. In addition, public environmental and energy R&D funding has fallen to its lowest level since 2015, and EU policies to support bringing innovation to market, and increasing clean technology uptake have only a limited impact. These reversals are particularly notable because both building blocks had improved in the 2025 assessment compared with 2023 and 2024, underlining that previous progress was not yet sufficiently established.

Overall, **Electricity, Mobility, Industry, Buildings, Agrifood, Lifestyles, Just Transition, Governance,** and **Adaptation** retained their previous classifications, with progress still **too slow** or **far too slow**.

Figure 3: State of EU progress across 13 building blocks of a climate neutral future






Note: ECNO tracks real-world developments across 13 building blocks of a climate neutral future analysing indicators and expected policy impact. Circles show the progress classification of each indicator using the same color-coding as for the building block overall; playback icons represent how strongly and in what direction the policy mix is expected to drive change.

Source: ©ECNO

Table 2: Headline results across 13 building blocks

SECTORAL BUILDING BLOCKS	
<b>Electricity</b>	<p>Emissions reductions are too slow, with growing gas emissions offsetting part of the coal reductions. Solar remained on track, but wind slowed further. Progress on grids and batteries remained too slow; smart meters were far too slow. Implementation of the EMD, RED III, and the Affordable Energy Action Plan support faster progress, pending Member State implementation.</p>
<b>Mobility</b>	<p>Record zero-emission vehicle (ZEV) registrations in 2025 and expanding recharging infrastructure signal growing momentum, though overall fossil fuel dependency remains high. The 2025 Automotive Package aims to expand demand-side support for ZEVs but also weakens CO<sub>2</sub> standards, creating investment uncertainty and undermining industrial competitiveness.</p>
<b>Industry</b>	<p>Progress remains far too slow, despite marginal emissions reductions partly linked to economic slowdown. Energy efficiency worsened, while circularity improved and the electricity-to-gas price ratio reached on-track status. Early signs of electrification emerged in 2025. The CID offers potential to close key policy gaps, with the upcoming ETS and CBAM review in July 2026 as critical milestones.</p>
<b>Buildings</b>	<p>Progress in the buildings sector remains far too slow, with renovations and electrification lagging. Heat pump sales are down but recovered slightly in 2025, and average floor space per person is rising. Impacts of policy revisions, including the EPBD and ETS 2, have yet to materialise.</p>
<b>Agrifood</b>	<p>Diet shifts show positive signs, while food waste reduction and sustainable farming practices are still insufficient. Policies remain weak and fragmented, with the Sustainable Food Systems Law abandoned and CAP reform proposals showing weakened climate ambition. CAP subsidies continue to favour emissions-intensive, industrial farming models, limiting systemic change.</p>
<b>Carbon Dioxide Removal</b>	<p>Now moving in the wrong direction again due to declining growth rates for forest area and carbon stocks. Gaps remain and data is outdated for soils. New policies such as the Nature Restoration Law, the CRCF, and the Soil Monitoring Law aim to address gaps and enhance CDR uptake. Incentives for deploying technical removals sustainably are insufficient.</p>
CROSS-CUTTING BUILDING BLOCKS	
<b>Lifestyles</b>	<p>Shifts in diets and material use are outpaced by high carbon footprints and rising car ownership. While material consumption has slightly improved, self-reported climate-conscious behaviours are declining. The EU lacks a cohesive demand-side strategy, with recent policy dynamics prioritising supply-side approaches and industrial competitiveness over behavioural change.</p>
<b>Clean Technologies</b>	<p>Now moving too slowly again, with public R&amp;I spending at its lowest since 2015 and large-scale clean tech investment in clear decline. The EU innovation ecosystem shows concerning signals, and although though early-stage start-up investment remains on track, these investments are also recently in decline. Initiatives under the NZIA and CID are likely to strengthen the EU clean tech sector.</p>
<b>Finance</b>	<p>Financial flows remain misaligned with climate goals, as investment gaps persist and fossil fuel subsidies, while declining, remain well above 2021 levels. The CSRD and CSDDD have been significantly weakened under the Omnibus I package. While the ETS and ETD aim to redirect capital, a coherent climate finance strategy is lacking.</p>
<b>Just and Fair Transition</b>	<p>Progress remains too slow, but with some positive changes compared to last year. While energy affordability has not improved, energy efficiency subsidies have risen substantially, and job creation trends remain encouraging. Growing concerns over MFF negotiations, and a fragmented policy framework risk sidelining just transition objectives.</p>

 <p><b>Governance</b></p>	<p>Progress is too slow due to delays, weak implementation, and low ambition in national plans and reports. Stable public support and private sector commitments offer hope, but meaningful stakeholder and public participation is limited in some countries. An emerging parallel competitiveness framework and weak integration with climate governance risks siloed transition policy.</p>
 <p><b>Adaptation</b></p>	<p>Major data gaps persist. While all Member States have national adaptation strategies and there is a broader EU push toward climate resilience, improvements in countries' resilience are limited overall, while economic losses from climate events continue to rise. Effective implementation and financing remain key challenges.</p>
 <p><b>External Action</b></p>	<p>Positives include rising contributions to international public climate finance and the EIB's increased clean energy investments and fossil fuel divestment. Public funds still support fossil fuel infrastructure abroad. The use of up to 5%-points of international credits towards the 2040 domestic target raises concerns and may discourage stronger NDCs in partner countries.</p>

Notes: EMD: Electricity Market Design; RED: Renewable Energy Directive; ZEV: Zero-Emission Vehicles; CID: Clean Industrial Deal; ETS: Emissions Trading System; CBAM: Carbon Border Adjustment Mechanism; EPBD: Energy Performance of Buildings Directive; ETS 2: Emissions Trading System for Buildings and Road Transport; CAP: Common Agricultural Policy; CRCF: Carbon Removal Certification Framework; CDR: Carbon Dioxide Removal; NZIA: Net Zero Industry Act; CSRD: Corporate Sustainability Reporting Directive; CSDDD: Corporate Sustainability Due Diligence Directive; ETD: Energy Taxation Directive; MFF: Multiannual Financial Framework; EIB: European Investment Bank; NDC: Nationally Determined Contributions.

Source: ©ECNO

Please refer to Annex and our website [www.climateobservatory.eu](http://www.climateobservatory.eu) for more detail on the EU progress in the thirteen building blocks of a climate neutral future.



## Policy is broadly supportive, but lagging enablers risk future emission reductions

ECNO's policy-package assessment adds an important layer to the indicator results. A conducive policy mix is in place for 85% of tracked objectives and 70% of their underlying enablers, indicating that EU policy is generally pointing in the right direction. The main challenge is increasingly one of implementation, scale and consistency and an assessment at enabler level shows where this is most acute.

**A first group of enablers combines an ineffective policy mix with indicators that are still **too slow** or **far too slow**, and is in urgent need of policy improvements:**

- Making livestock production more sustainable in Agrifood
- Increasing clean technology uptake in Clean Technologies
- Shifting private finance towards climate-friendly financing in Finance
- Promoting meaningful stakeholder and public participation in Governance.

In **Agrifood**, CAP subsidies remain misaligned with decarbonisation and continue to incentivise livestock intensification, while the EU's livestock strategy prioritises competitiveness over the structural shifts needed to cut emissions at scale. In **Clean Technologies**, scale-up finance has declined for four consecutive years and battery manufacturing has grown more volatile, with the Net-Zero Industry Act still in the early stages of implementation. In **Finance**, transition plan requirements remain weak or voluntary, sustainability reporting obligations have been narrowed under the Omnibus Package, and no EU-level mechanism assesses whether banks' financing strategies align with climate neutrality. In **Governance**, there is still no permanent framework for continuous public participation, only largely one-off national climate assemblies.

**A second group of enablers shows poor indicator performance – **far too slow** or moving in the **wrong direction** – but the policy mix is expected to drive a turnaround**, even if not yet at the required scale:

- Increasing non-fossil flexibility in Electricity
- Zero-emission vehicle deployment in Mobility
- Building renovations in Buildings
- Carbon storage in soils in Carbon Dioxide Removal

In **Electricity**, the latest revision of the Electricity Market Design is expected to improve non-fossil flexibility, but its impact depends on Member State implementation and further regulatory clarification. In **Mobility**, EU vehicle CO<sub>2</sub> standards and the revised Alternative Fuels Infrastructure Regulation (AFIR) are expected to support zero-emission vehicle uptake and charging infrastructure, but changes in the European Commission's 2025 Automotive Package create undesired market uncertainty. In **Buildings**, the revised Energy Efficiency Directive and Energy Performance of Buildings Directive, alongside EIB

investments, are set to accelerate renovation and energy efficiency, but progress depends on national-level delivery. In **Carbon Dioxide Removal**, the Nature Restoration Law, the Soil Monitoring Law and CAP measures provide a supportive framework, but conflicting incentives within the CAP constrain progress.

**A third, smaller group of enablers combines positive trends with genuinely supportive policy:**

- Creating job opportunities in Just and Fair Transition
- Ensuring a consistent, all-of-government approach in Governance
- Setting up robust adaptation governance in Adaptation
- Embedding climate considerations in foreign policy in External Action

It is worth noting that while **Adaptation** governance shows positive developments, overall data availability remains an issue. In **External Action**, the proposed next MFF could strengthen climate integration, including through a 75% increase for the Global Europe Instrument, but this remains subject to approval and has yet to appear in data trends.

Reassuringly, no enabler across the 13 building blocks combines a worsening trend with a policy mix that is contributing to a decline.

This means the assessment does not simply point to a need for more policy. It points to the need for policy packages that are better implemented and strong enough to turn positive trends into durable progress.

## From assessment to action

Taken together, ECNO's 2026 assessment shows a transition that is advancing, but not yet securely enough. Progress is visible across many indicators, and the EU policy framework is broadly supportive in many areas. At the same time, no building block is currently progressing at the required pace, **Finance** continues to move in the **wrong direction**, and recent reversals in **Clean Technologies** and **Carbon Dioxide Removal** show that earlier gains are not yet sufficiently established.

The next section builds on these findings by focusing on **six key actions identified based on these results**. They are selected because relevant indicators show slow, fragile or insufficient progress; because the policy-package assessment points to gaps in implementation, consistency or scale; and because faster progress in these areas would support Europe's resilience and competitiveness while advancing further towards climate neutrality.

# 3 Key actions to strengthen resilience

The first half of 2026 again highlighted Europe's exposure to external shocks – including armed conflict, tariff uncertainty and supply-chain restrictions – and the risks these pose for prosperity. Central vulnerabilities are its dependence on importing fossil fuels as well as other essential materials and products. In addition, the evidence of economic damage from climate change impacts in Europe is growing. EU institutions have been emphasising the need to reduce vulnerabilities and increase EU resilience and preparedness as an integral element to a sound economic strategy for the Union.

## Key facts on Europe's vulnerabilities and socio-economic context indicators

- The EU imported almost EUR 400 billion in fossil fuels in 2025, similar to 2024 (CREA, 2026).
- New dependencies emerge as China controls around 70% of global critical mineral refining and between 70% to 90% of several key clean tech manufacturing capacities (IEA, 2025b; Rivera et al., 2026).
- Manufacturing gross value added saw a steady increase until declining since 2022 (Eurostat, 2026f).
- Employment reached a record high of 76% in 2025 (Eurostat, 2026d).
- Consumer confidence remains well below its long-term average (EC, 2026b).
- Climate-related extremes caused more than EUR 208 billion in EU economic losses between 2021 and 2024, with less than one fifth of losses having been insured (EEA, 2025).

This section uses that resilience lens to focus the policy implications of ECNO's assessment of the state of progress towards climate neutrality. The six actions below were selected from a reading across the 2026 results for the 13 building blocks, drawing on indicator classifications, and the assessment of policy packages at objective and enabler level. They highlight where **current evidence points to important delivery challenges** and where **faster progress would help reduce Europe's exposure** to fossil fuel dependence, supply chain risks, affordability pressures and climate impacts.

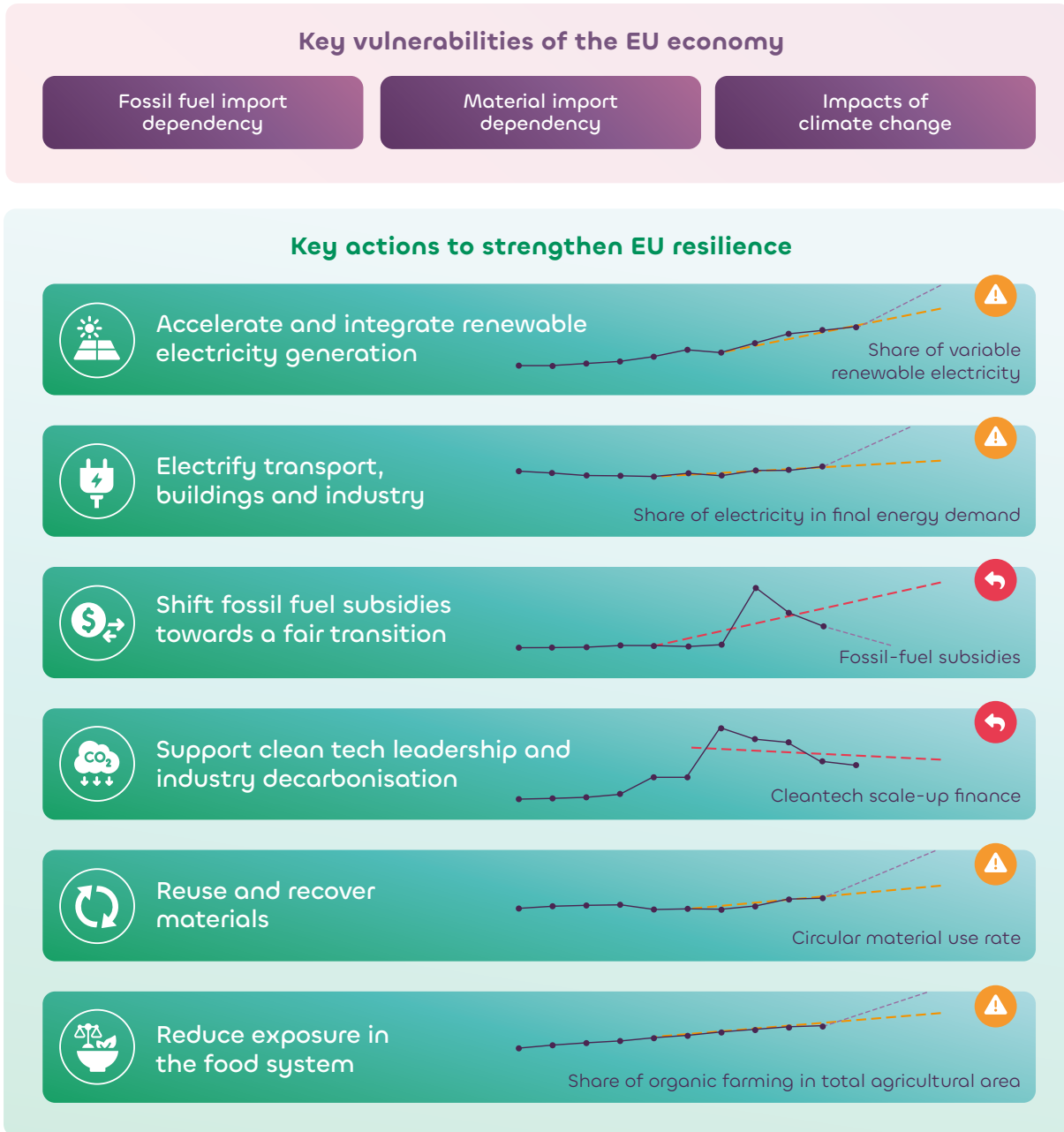
The six actions are **1)** clean electricity and system flexibility; **2)** electrification across transport, buildings and industry; **3)** better targeted public support; **4)** clean technology and industrial transformation; **5)** circular material use; and **6)** food system resilience (see [Figure 4](#)).

The six actions also have cross-cutting significance. Renewable electricity and system flexibility underpin electrification across the economy. Electrification reduces fossil fuel dependence in transport, buildings and industry. Redirecting fossil fuel subsidies can improve affordability while lowering exposure to future price shocks. Clean technology and industrial transformation are central to competitiveness and supply-chain resilience. Circular material use reduces dependence on imported primary materials. Food-system resilience lowers exposure to fertiliser price volatility, fossil fuel inputs and climate impacts.

**Adaptation to the growing impacts of climate change is also central to increasing Europe's resilience**, both for society and the economy. It is not treated as a separate action area in this chapter because adaptation cuts across the transition rather than sitting alongside the six areas as a comparable delivery lever. Climate risks affect electricity systems, buildings, industry, transport, land use, food systems and infrastructure investment, and adaptation therefore needs to be integrated into planning and implementation across all six action areas at EU and national and local level. For this reason, each of the six actions should be implemented with climate-resilience criteria built in, including stress-testing infrastructure, investment and supply-chain decisions against future climate risks.

There is also a methodological reason for treating adaptation differently. Robust action-level data remain limited – using the ECNO methodology –, making it difficult to assess how adaptation-related enabling conditions are developing, where gaps remain and which investments are most urgent with the same level of evidence used for the other action areas. This persistent lack of data is an important finding in itself. Strengthening the data basis for tracking adaptation progress should therefore be part of a broader effort to embed climate resilience into investment, planning and delivery across the transition. Europe cannot afford a blind spot when it comes to knowing how prepared it is to meet the challenges of a changing climate.

Figure 4: Six key enablers for a clean and resilient EU economy



Source: ©ECNO

## 3.1 Accelerate and integrate renewable electricity generation

Renewable electricity generated in the EU reduces fossil fuel import dependence directly by replacing coal and gas-fired electricity generation and indirectly by enabling the electrification of industry, buildings and transport, where renewable electricity can substitute petroleum products and natural gas ([see Section 3.2](#)). This keeps more value creation within the EU and supports the social and economic case for the transition.

The EU is already reaping the benefits of its efforts to expand renewable energy: **between the 2022 energy crisis resulting from the war in Ukraine and the current one linked to the Iran war, the EU reduced its fossil fuel imports by 13%**. While it is still paying a high price, the **total bill for imported fossil fuels was 24% lower in the first two months of the current crisis** than it was in the aftermath of Russia's invasion of Ukraine ([ECNO CIT Bulletin 01/2026](#)). In addition to this, our data also shows [employment trends in renewable energy supply chains](#) are **on track** and delivering more than 100,000 new jobs each year.

For a secure and affordable electricity system, electricity grids, storage, and other non-fossil flexibilities are needed to connect renewable generation, transport electricity to where it is used or stored, and match electricity supply and demand. The Ten-Year Network Development Plan (TYNDP) for example shows that 1 EUR invested into electricity grids translates into 2 EUR saved system energy costs in 2040 (ENTSO-E, 2024). Without sufficient grids and flexibility, the EU risks more bottlenecks and curtailment, slowing both renewable deployment and the electrification of buildings, mobility, and industry.

**The share of variable renewables was 30% in 2025 which is far off the required 58% in 2030.**

### Key ECNO indicators:

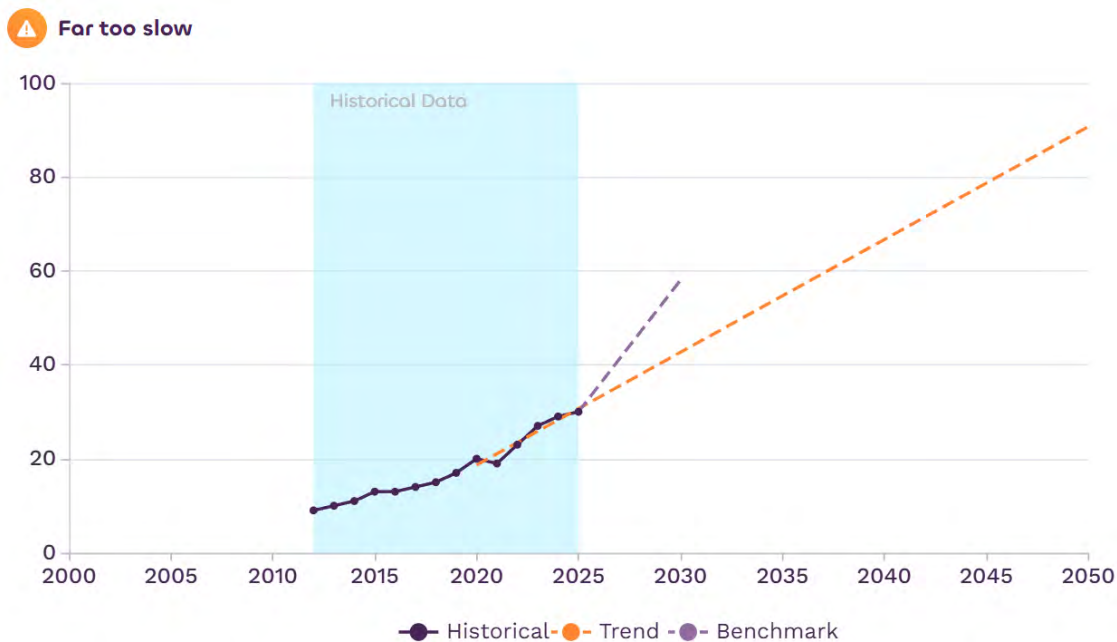
- [Share of variable renewables](#)
- [Renewable capacities](#)
- [Grid investment](#)
- [Smart meters](#)
- [Non-fossil participation in capacity markets](#)
- [Battery storage](#)



## Renewables growth faces grid and storage bottlenecks

The share of variable renewable electricity – wind and solar power, which are at the core for the wider shift to clean energy – stood at **30% in 2025** rising **far too slowly** between 2020 and 2025 to get on track toward 58% by 2030. The acceleration would also help overall renewable energy which stood at 25% in 2024 and needs faster growth to meet the 42.5% target in 2030 (ECNO, 2026a). While newly installed solar and wind capacities combined were nearly on track – with close to 70 GW added in 2024 – this growth was heavily skewed toward solar adding 57.5 GW. Wind power buildout remained insufficient: only 12.4 GW were added in 2024, roughly 2 GW less than in 2023. This **underperformance was driven primarily by persistent permitting delays, grid connection bottlenecks, and rising project costs** (Ember, 2025b). Since wind has a considerably higher capacity factor than solar, meaning it produces more electricity for the same amount of installed capacity, the shortfall in wind additions translates into disproportionately lower electricity generation from renewables overall. Combined with curtailment caused by grid and flexibility limitations, this helps explain why the share of variable renewable electricity is rising more slowly than installed capacity figures alone would suggest.

**Figure 5: Share of variable renewable electricity [%]**

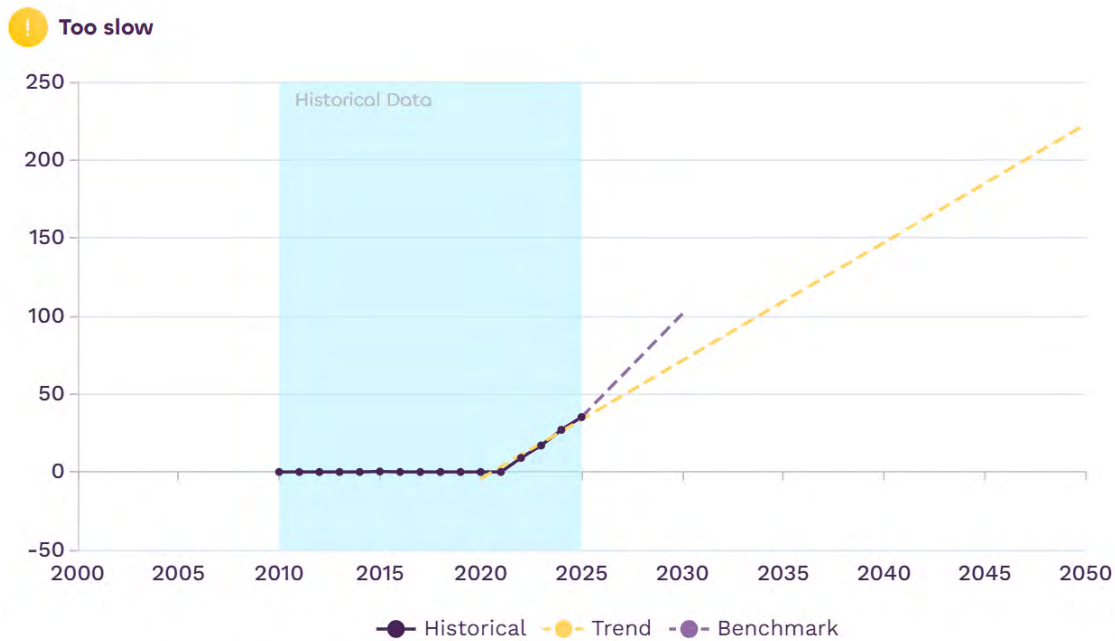


Note: The past absolute change was 2.4 %-points per year which has to increase to 5.6%-points to reach the EU's benchmark (EC, 2024).

Source: ECNO based on Ember, 2025a; EC, 2024.

Grid investment has steadily increased between 2020 and 2025 but progress remains **too slow**: for the distribution grid alone, a 12% to 25% yearly increase is needed (EIB, 2026). In addition, smart meter roll-out is still lagging, blocking end-consumer demand-side flexibility. At the supply side, battery storage capacity is increasing, but also remains below what the European Commission expects to be required by 2030 (EC, 2024). This aligns with capacity-market data showing that demand response and battery storage over the monitored period (2020 to 2024) are growing in absolute terms, while fossil capacity, especially gas, increased much faster. A more positive development is visible since 2023, with renewable and battery capacities growing more strongly than fossil capacities. Still, many capacity mechanisms still favour gas plants which are better placed to meet adequacy requirements, while batteries are not yet rewarded at the scale needed to shift flexibility provision decisively away from fossil fuels (ACER, 2024a, 2024b).

**Figure 6: Battery storage capacity [GW]**



Note: The past absolute change was 7.6 GW per year which has to increase to 13.2 GW per year to reach a benchmark outlined by WEO (IEA, 2025c).

Source: ECNO based on IEA, 2026a, 2025c; EC, 2024.

## EU policies provide a strong framework and new tools for Member States, but national implementation is lagging

EU policies support progress on advancing renewables but there is room for improvement when it comes to grids and storage. RED III, the Electricity Market Design reform (EMD) and the NZIA provide an important framework for renewables, clean technology deployment, and the option for Member States to create ‘non-fossil flexibility support schemes’. For example, Article 16 of the RED requires Member States to process permits for new renewable energy projects within 2 years and repowered ones within 1 year. In addition, Member States are now required to conduct flexibility assessments – for which ACER just published an EU methodology and will issue EU-wide recommendations – and set indicative non-fossil flexibility objectives (ACER, 2025a). However, the three policies still require substantial implementation at Member State level. While RED III and EMD can build on existing national institutions, implementation is lagging: several RED III deadlines had already passed, and by late July 2025, the Commission had opened infringement procedures against almost all Member States for non-transposition – with Sweden subsequently referred to the Court of Justice in October 2025 (EC, 2025b; Pathan, 2025).

For grids, the EU framework remains fragmented across EU, national regulatory and Member State competences, with financing and planning decisions largely in the hands of Member States. Recent EU guidance and legislative proposals on faster procedures for grids and storage, as well as tariff design that incentivises efficient grid use and end-user flexibility, are therefore important but not yet enough.

The planned 2026 White Paper on electricity market integration will be important for advancing EU market integration, improving the integration of renewables and flexibility, and reducing system costs. At the same time, grid connection remains a key bottleneck and needs further attention. Member States need to urgently align grid planning with renewable deployment, accelerate permitting, and invest in transmission and distribution. In parallel, they should use the EMD reform to set credible non-fossil flexibility targets and adjust capacity mechanisms to reward storage and demand response. It remains to be seen whether the new Clean Industrial Deal State Aid Framework (CISAF) adopted in 2025 will speed up approval of flexibility-related support schemes or encourage greater convergence in national capacity and flexibility mechanisms (Bruegel, 2026). In addition, Member States should complete smart meter deployment alongside introducing dynamic tariffs and removing barriers for small actors and aggregators – only the combination unlocks meaningful demand-side flexibility (ACER, 2025b).



## 3.2 Electrify transport, buildings and industry

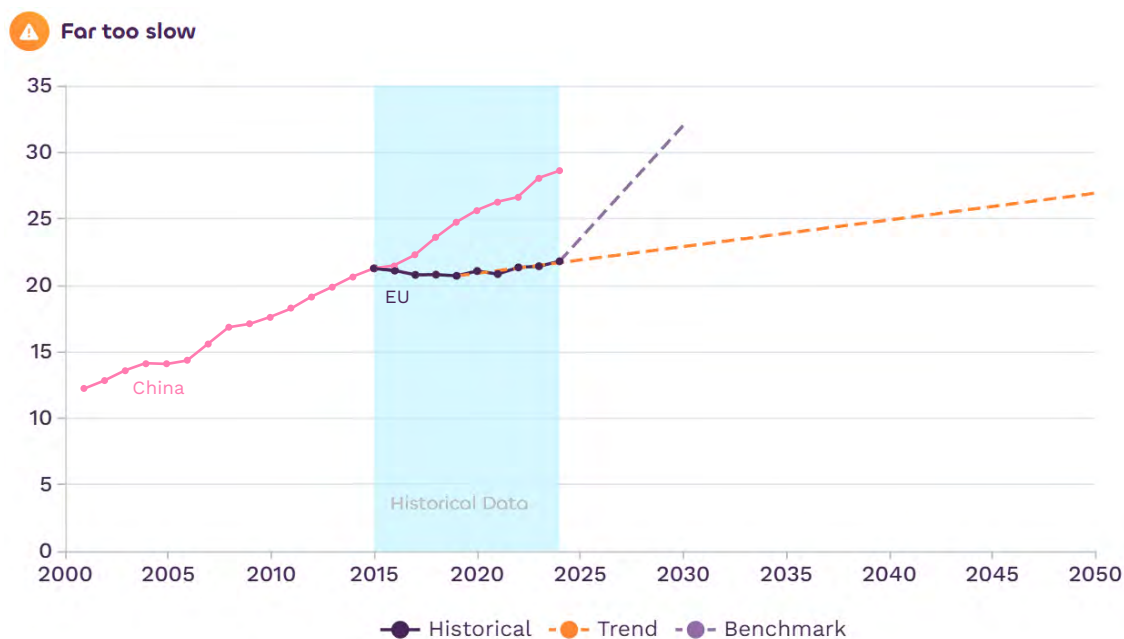
Electrifying the economy is a key enabler to phase out fossil fuels from the EU's energy system and achieve affordable, secure energy supply in the long run, as recognised under the European Commission's Affordable Energy Action Plan and AccelerateEU. Yet the share of electricity in final energy demand in the EU has stagnated at around 21% for the past decade, with some signs of it picking up in 2024, when it reached nearly 22%. This relative stagnation is a structural weakness at the heart of the transition: in the meantime, China's share rose from 21% in 2015 to 28% in 2024 (IEA, 2025a). The Clean Industrial Deal targets 32% by 2030 – an objective that is likely to increase with the forthcoming Electrification Action Plan. To meet climate neutrality by 2050, that share needs to go up to around 50% by 2040 and over 60% by 2050 (EC, 2024). Closing this gap requires simultaneous action on supply, meaning more renewable electricity and grid capacity (see Section 3.1), and on demand across the three sectors where electrification is most critical: transport, buildings and industry.

**Electrification would need to rise from ~21% currently to around 50% by 2040 to align with climate neutrality by 2050.**

### Key ECNO indicators:

- [Share of electricity in final energy demand](#)
- [Share of electricity in transport final energy consumption](#)
- [Share of electricity in buildings final energy consumption](#)
- [Share of electricity in industry final energy consumption](#)
- [Share of ZEV](#)
- [Stock of heat pumps](#)
- [Electricity to gas price ratio for industrial consumers](#)

**Figure 7: Share of electricity in final energy demand (%)**



Note: The past absolute change was 0.2%-points per year which has to increase to 1.7 %-points to reach the EU's benchmark.

Source: ECNO based on EC, 2025d; Eurostat, 2026b.

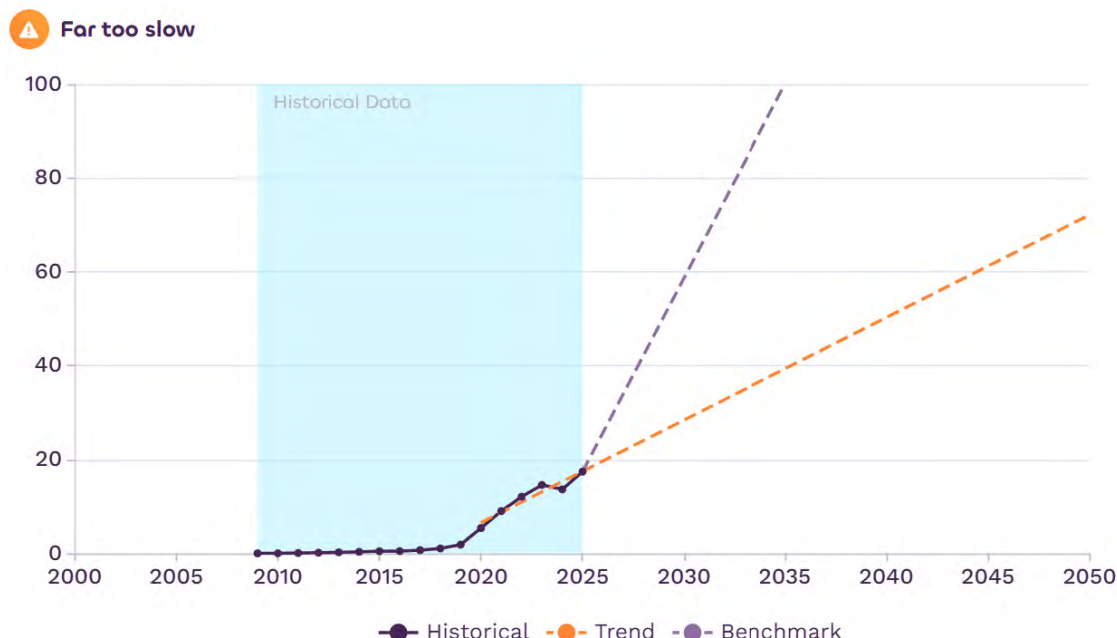
## Electrification is still stagnating but there are signs of growing momentum

The data across transport, buildings and industry shows there is potential for increased electrification, but it is constrained by insufficient price and policy signals.

**Transport:** the share of electricity in final energy consumption – at 1.7% in 2024 – has not meaningfully increased since 1990, and to align with climate neutrality it needs to grow approximately ten times faster per year. This requires a significant increase in the uptake of electric vehicles along with a modal shift from road to rail transport.

The most visible recent progress is in passenger cars: zero-emission vehicle (ZEV) registrations reached a record high in 2025 at over 17% of total sales. This trend intensified in the first months of 2026, driven partly by elevated fuel costs following the Iran war, with ZEVs accounting for over 20% of new passenger vehicle sales in Q1 2026 (EC, 2026d). But the scale of the challenge ahead remains significant, and despite some positive developments recently, the pace of deployment remains **far too slow**. By 2050, ZEVs need to make up nearly 95% of the passenger car stock and nearly 80% of the heavy-duty vehicle stock. Reaching those levels requires the annual increase in ZEV registrations to be nine times faster for passenger vehicles and 49 times faster for heavy-duty vehicles than the recent average.

**Figure 8: Share of ZEVs in new passenger car registrations (%)**



Note: The past absolute change was 2.2 %-points per year which has to increase to 8.3 %-points to reach the EU’s benchmark.

Source: ECNO based on EC, 2026d.

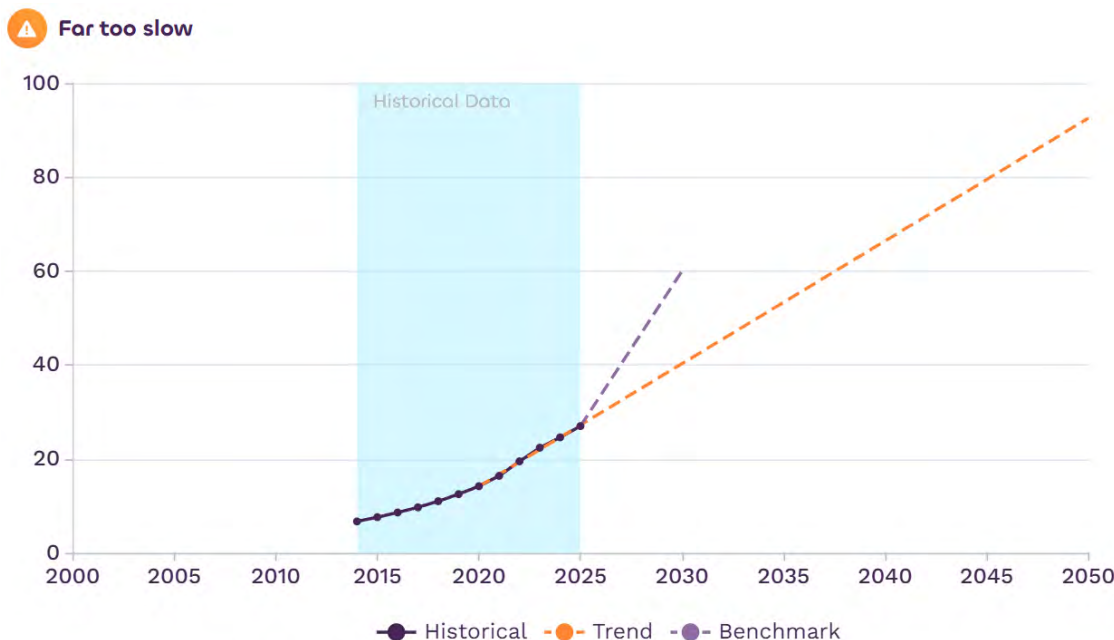
In parallel, the share of rail transport needs to increase. Road transport still accounts for 78% of total passenger transport, while rail only makes up 7%. By 2050, the TEN-T aims to connect over 400 cities and all major airports with passenger trains travelling at least 160km/h. Yet in the meantime, the share of freight transport on rail is headed in the **wrong direction**, while the share of passenger transport on rail has somewhat improved since last year but is still **far too slow**.

**Buildings:** The share of electricity in buildings has seen modest increases in the past few years – from 32% in 2021 to over 35% in 2024. Yet the trend needs to pick up pace significantly to support the 50% economy-wide share of electricity in final energy demand needed by 2040 (EC, 2024).

Heat pumps are a key technology for increasing electrification in the buildings sector. By 2030, the deployment of heat pumps would need to reach 60 million units in the EU, up from 27 million in 2025.

Although sales of heat pumps grew strongly in Europe between 2018 and 2022, this trend reversed in 2023 and 2024 before recovering only slightly in 2025, and is therefore **too slow**. Similarly to ZEV sales, the war in Iran and the resulting fuel crisis has led to a boost in the sale of heat pumps, with sales up by 17% in Q1 2026 compared to the same period in 2025 in 11 European countries (EHPA, 2026b).

**Figure 9: Stock of heat pumps (million units)**



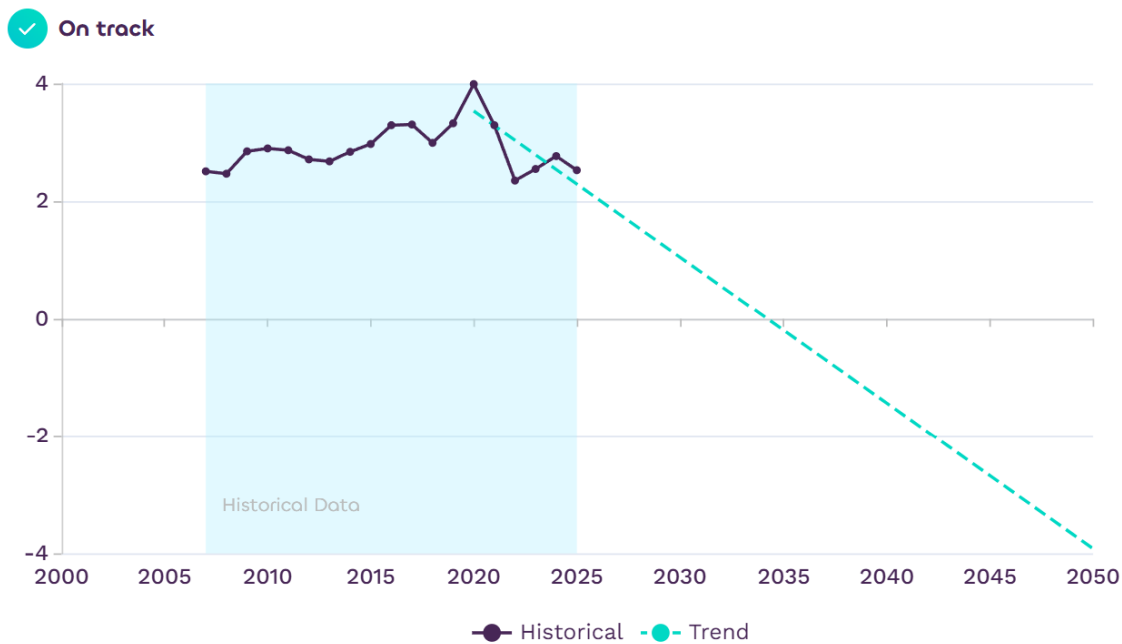
Note: The past absolute change was adding 2.6 million units per year which has to increase to 6.6 million to reach the EU’s benchmark.

Source: ECNO based on EHPA, 2026a.

**Industry:** The share of electricity in industrial energy and feedstock use has been broadly stagnant in recent years, at around 25%. On a more positive note, the electricity-to-gas price ratio for industrial consumers, a direct measure of whether switching to electricity makes commercial sense, has improved and is now **on track**. Electricity now costs around 2.3 times as much as gas for industrial consumers – still significantly more, but lower than at any point in the past ten years, except for 2022 when gas prices skyrocketed after the war in Ukraine.

But electricity for energy-intensive industrial users in the EU still costs roughly twice what it does in the United States and 50% more than in China (IEA, 2026b), and this gap continues to undermine competitiveness and the commercial viability of low-carbon production routes in energy-intensive sectors such as steel, chemicals and aluminium, whether through direct electrification or hydrogen produced using renewable electricity. Continued progress on the electricity-to-gas price ratio, driven by falling renewable energy costs, will be essential to unlock broader industrial electrification.

**Figure 10: Electricity-to-gas price ratio for industrial consumers**



Note: The past relative change was a reduction of 8.3%, which is heading in the right direction.

Source: ECNO based on Eurostat, 2026e, 2026c.

## Closing the electricity-gas price gap is a central policy challenge, alongside targeted sector strategies

There is a common challenge across all three sectors: electricity remains significantly more expensive than the fossil fuels it needs to replace, weakening the commercial case for electrification in transport, buildings and industry. The current high fuel price environment driven by the Iran war is beginning to shift this picture in some areas, as seen in record zero-emission vehicle sales and robust heat pump demand in early 2026, but this cannot substitute for the structural policy changes needed to make electrification commercially viable across the economy over the long term. The European Commission's Electrification Action Plan is expected to provide a clear direction of travel for increased electrification.

Energy taxes currently applied to electricity are around three times higher than those on gas for industrial consumers. Revisiting energy taxation to better reflect the environmental performance of different energy carriers, taxing fossil fuels more heavily and reducing the burden on electricity, is therefore a priority across sectors.

Alongside energy taxation reform, the EU ETS remains a crucial mechanism for improving the business case for electrification by increasing the cost of fossil fuel use. As the Commission prepares to review the ETS in 2026, preserving regulatory and investment certainty will be essential. Beyond carbon pricing and taxation reform, targeted mechanisms such as long-term power purchase agreements can also help to improve the competitiveness of electrification.

For **transport**, the EU's fleet-wide CO<sub>2</sub> performance standards remain the primary supply-side driver of ZEV uptake, and the current fuel price environment is providing clear demand-side momentum that policy can reinforce. The 2025 Automotive Package weakened the 100% emissions reduction target for cars and vans by 2035, creating investment uncertainty for manufacturers. The EU should ensure that remaining standards are maintained. To boost ZEV demand further, the EU should coordinate more effective and consistent purchase incentives across Member States, expand corporate fleet electrification requirements to heavy-duty vehicles, and address the uneven rollout of charging infrastructure, particularly in central and eastern Europe. For rail, where trends are heading in the **wrong direction** for freight and **far too slow** for passengers, significant increases in investment in rural infrastructure are needed to facilitate the modal shift for both passenger and freight transport.

For **buildings**, the deployment of heat pumps requires a strategy and action plan at EU and national level, alongside favourable financing conditions, particularly under lower electricity prices (Clean Heat Europe, 2024). Strategic guidance could come from updating the 2016 EU Heating and Cooling Strategy and bring it into line with the 2030 objectives, followed by concrete measures to implement it. The postponement of ETS2 to 2028 delays an important carbon price signal that would gradually improve the competitiveness of heat pumps relative to fossil heating systems, increasing the importance of complementary measures in the near term. As such, and given the parallel delay of the Electrification Action Plan, the policy framework for buildings has yet to fully deliver.

For **industry**, the forthcoming CBAM review in July 2026 is a critical milestone alongside that of the EU ETS. Any flexibility introduced into the ETS, such as adjustments to free allocation or price stabilisation mechanisms, should be linked to clear conditionalities ensuring that relief translates into verifiable low-carbon investment rather than deferral of decarbonisation. Continued progress on the electricity-to-gas price ratio, driven by falling renewable energy costs, will also be essential to unlock broader industrial electrification (EHPA, 2026b).



## 3.3 Shifting fossil fuel subsidies towards a fair transition

Citizens are at the centre of the transition to a decarbonised and more resilient economy, but their role depends on whether clean options are available, affordable and practical in daily life. What people eat, how they travel, how they heat their homes, and what they buy shapes demand across every sector of the economy – but these patterns are strongly influenced by income, infrastructure, prices and the choices made available to them. Reducing fossil fuel dependence and strengthening Europe’s economic resilience therefore cannot rest on supply-side transformation alone. Demand-side change, when supported by the right enabling conditions, lowers energy bills, strengthens food security, and builds broader societal ownership of the transition. Public support is one key lever for enabling participation in the transition and making clean alternatives affordable where they are not yet accessible to all.

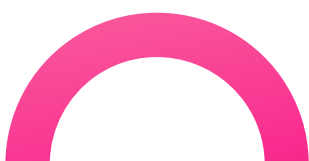
However, historically, public support has often taken the form of fossil fuel subsidies used for different reasons: to support specific branches by direct subsidies (e.g., Poland’s aid to existing coal mines), or tax rebates (e.g. on diesel fuels supporting particularly freight transport and agriculture); to support social welfare and shield households and firms from energy price spikes (e.g. Germany’s fixed energy supplement per household to offset high energy costs, or Greece’s heating oil subsidies for low-income families); or to increase energy security (e.g. the Iberian Mechanism capped gas prices for electricity subsidising the difference to market prices, enabling utilities to switch from Russian gas to non-Russian LNG) (EC, 2025c; IEA, 2023).

The objectives behind fossil fuel support remain legitimate – protecting vulnerable households, supporting essential services and safeguarding energy security – but fossil fuel subsidies are often a poorly targeted way to achieve them. They may benefit many users regardless of need, preserve incentives to consume fossil fuels, and do little to build lasting protection against future price shocks. Targeted transfers, reduced public transport costs, support for clean vehicles where alternatives are limited, building renovation, heat pumps and demand-side flexibility can address affordability and security concerns more directly.

**The EU still spent EUR 97 billion on supporting fossil fuels in 2024.**

**Key ECNO indicators:**

- [Fossil fuel subsidies](#)
- [Share of support for households](#)
- [Subsidies to renewables](#)
- [Share of support for energy efficiency purposes](#)
- [Public support for the transition to climate neutrality](#)
- [Electricity purchasable with household income](#)
- [Average of four relevant sub-dicators on the material deprivation rate](#)
- [Cattle meat consumption](#)
- [Dairy consumption](#)

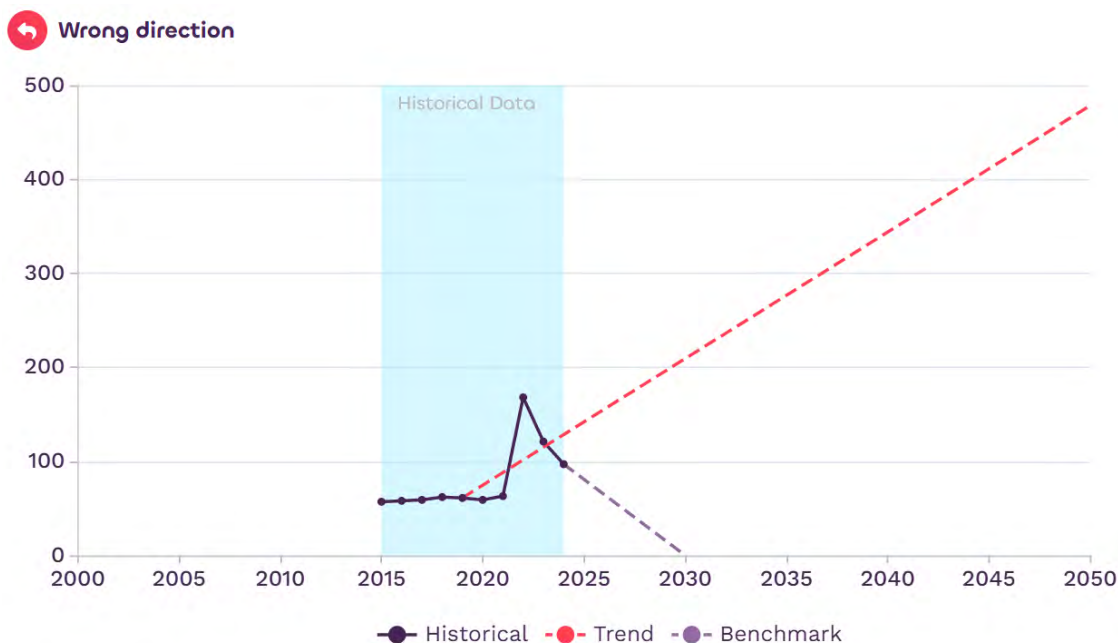


## Public money is shifting, but affordability gaps remain

Public support for the transition remains strong. Over 80% of EU citizens back the goal of climate neutrality, although only 23% think their national government is doing enough to tackle climate change (Eurobarometer, 2025). In some areas, citizens are already ahead of policy. This is the case for sustainable food consumption. The consumption of cattle meat and dairy consumption has declined at a pace that is **on track** to meet EU benchmarks, driven largely by shifting preferences rather than targeted policy incentives. Sales of plant-based food alternatives have also grown substantially although the Common Agricultural Policy (CAP) subsidies still overwhelmingly support emissions-intensive animal agriculture, and most Member States have not taken up the option to reduce VAT on fruits and vegetables from the 2022 VAT directive amendment (EUCO, 2022).

Fossil fuel subsidies fell to EUR 97 billion in 2024 after an all-time high of 168 billion during the energy price crisis. At the same time, the share of energy subsidies allocated to households also declined from their crisis peak as many short-term relief measures came to an end. Renewable energy subsidies recovered to EUR 76 billion in 2024 after an exceptional drop in 2023, while energy efficiency subsidies rose significantly to EUR 50 billion in 2024, almost doubling compared to 2021 and increasing their share in total energy subsidies. This suggests that the EU's phasing out of fossil fuel subsidies does not mean withdrawing support, but redirecting it (again) towards renewable energy and energy efficiency.

**Figure 11: Fossil-fuel subsidies (bnEUR 2024)**



The past absolute change was an additional EUR 13.5 billion per year, which has to decrease to a reduction of EUR 16.2 billion per year.

Source: ECNO based on EC, 2026c.

Yet, the amount of electricity that can be bought for disposable income has continued to decline, meaning that EU households have faced rising burden to pay their electricity bills while rising oil and gas prices have further strained household energy affordability. At the same time, there is no real progress in reducing material deprivation, as a rather stable share of people report to suffer from an inability to keep their home adequately warm, afford a quality meal every second day, go on one-week annual holiday, and have arrears (mortgage or rent, utility bills or hire purchase).

## EU policies can guide more targeted use of public support to improve affordability and fossil fuel phase-out

The EU still lacks a comprehensive demand-side strategy, which makes the sustainable choice the easy and affordable default. Recent European Commission initiatives acknowledge the importance of affordability of energy (EC, 2026a) and the 8th Environmental Action Programme calls on Member States to phase out fossil fuel subsidies as soon as possible but Member States planning is still insufficient to non-existent (ECNO, 2026a). In this context, the European Semester guides Member States in including the social dimension of the transition (EC, 2021) and in 2025 provided strong recommendations to Member States on the concrete steps to take to phase out fossil-fuel subsidies (EC, 2025a).

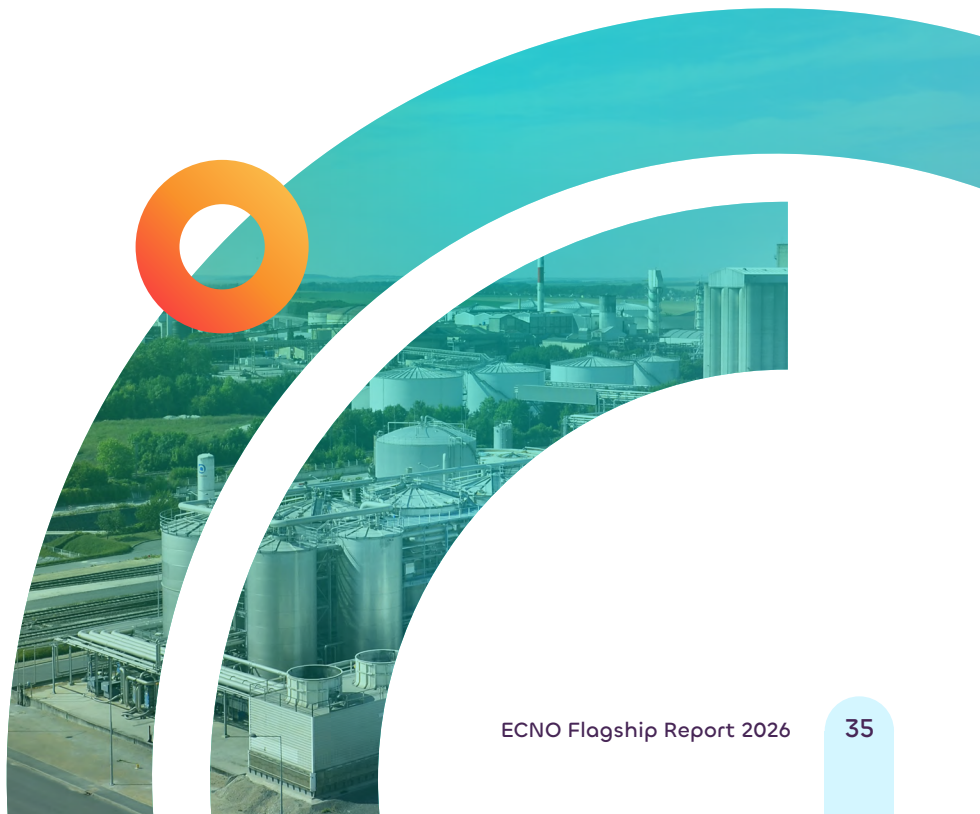
The ongoing revision of the Energy Taxation Directive could strengthen price signals by ending preferential tax treatment for fossil fuels and taxing energy products more consistently according to their environmental performance, but progress remains difficult because adoption requires unanimity in the Council. Particularly important, once acute price spikes ease, governments should avoid keeping petrol, diesel or gas artificially cheap through broad tax cuts or rebates, because this weakens incentives for households and firms that can afford to switch to clean alternatives.

EU cohesion policy, the Just Transition Fund, the Technical Support Instrument, and the Recovery and Resilience Fund are some of the most important policies to support a just and fair transition. The Renewable Energy Directive III provides a framework for more cost-effective, market-based support for renewable energy deployment. In addition, the implementation of the Social Climate Fund is expected to be a gamechanger in terms of tangible support for vulnerable populations. However, most of the Social Climate Plans, needed for countries to access the Fund, have still not been submitted to the Commission.

These developments show that **EU policy is in support of a shift away from fossil fuel subsidies and effectively supporting the affordability of clean alternatives, but not at the pace or scale needed to consistently make clean alternatives affordable and accessible for all**. Crucially, demand-side measures need to be integrated into a coherent EU framework – one that treats sustainable lifestyles and citizen action as key levers for decarbonisation and resilience. More deliberative modes of policymaking would help to ensure that the current level of public support for climate neutrality stays stable – the need to improve citizen engagement in agenda-setting and transition policymaking is becoming increasingly important with current trends of fewer citizens’ climate assemblies and evidence of weak participation and consultations in national energy and climate planning.

A just and fair transition requires a stronger and better targeted policy framework. Broad energy price relief needs to be replaced by support that reaches vulnerable households and users with limited short-term alternatives, and reduces their structural exposure to fossil fuel prices. The Social Climate Fund presents a key opportunity for Member States to address energy and transport poverty, but the right policy mix will be decisive and should combine short-term protection with long-term investments in energy efficiency, building renovation, fuel switching and accessible public transport. Such an approach would preserve the legitimate social objective of energy support, while redirecting public money away from fossil fuel consumption and towards clean alternatives that lower bills and vulnerability over time.

In addition, CAP subsidies should be progressively redirected from emissions-intensive livestock production toward plant-based and agroecological farming, and the planned revision of the EU Public Procurement Directives in 2026 represents an opportunity to strengthen sustainability criteria in public food procurement, including support for low-waste, plant-based meals.



## 3.4 Support clean tech leadership and industry decarbonisation

Clean technologies and low-carbon industrial processes are central pillars of Europe's transition to climate neutrality and key determinants of its long-term economic resilience. For heavy industry, particularly sectors such as chemicals, primary steel production and cement, electrification alone is insufficient. These sectors also depend on low-carbon hydrogen, sustainable fuels, and carbon capture and storage, as well as the infrastructure needed to deliver them. At the same time, as the clean technology transition accelerates, new dependencies are emerging: Europe remains heavily reliant on China for critical raw materials, battery components, solar inverters and other key manufacturing inputs, exposing the clean tech sector to supply chain risks similar to those that made fossil fuel dependence so costly.

**Private clean tech scale-up finance has halved since its peak, falling from EUR 10 billion in 2021 to just EUR 5 billion in 2025.**

### Key ECNO indicators:

- [Clean tech scale-up finance](#)
- [Public environmental and energy R&D support](#)
- [Renewable and low carbon hydrogen production capacity](#)
- [Battery manufacturing capacities](#)

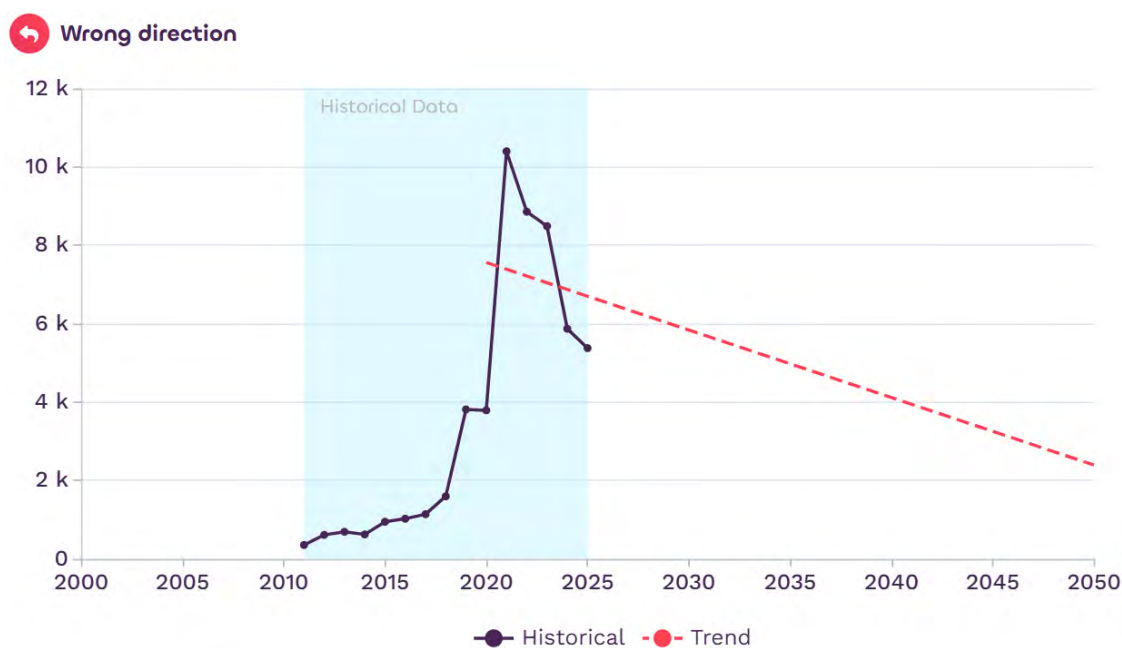
### The clean tech sector is losing momentum, and heavy industry transformation is stalling

Recent evidence points to a weakening of momentum in Europe's clean technology sector. The overall growth of the clean technology industrial base and innovation ecosystem is now **too slow**, after being on track for a brief period last year, with concerning signals for the future of the sector in Europe.



Public environmental and energy R&D spending is at its lowest level in the past decade, at a time when Europe needs sustained innovation to maintain clean technology leadership. Battery manufacturing, the sector with the highest investment needs, increased sixfold from 47 GWh to 285 GWh per year between 2020-2025. Yet a recent slowdown points to an uncertain future for the sector. In parallel, private clean tech scale-up finance has worsened from a plateau to a decline, going from a high of EUR 10 billion in 2021 to just EUR 5 billion in 2025, with the indicator now clearly heading in the **wrong direction**.

**Figure 12: Clean tech scale-up finance (mEUR 2025)**



Note: The past relative change was a reduction of 2.4%, which is heading in the wrong direction.

Source: ECNO based on Clean Tech for Europe private database (shared with I4CE).

Taken together, these developments suggest that while Europe retains a strong research and industrial foundation, it is struggling to convert innovation into sustained large-scale investment and deployment at the speed required for climate neutrality and industrial competitiveness.

Heavy industry faces parallel challenges. More than 30 near-zero-emission steel projects have been announced in the EU, but most have not progressed beyond the planning stage. Renewable and low-carbon hydrogen production capacity is growing **far too slowly**, and CO<sub>2</sub> storage infrastructure remains heavily concentrated around the North Sea, limiting accessibility for much of European industry (CATF, 2026). Current public funding for CO<sub>2</sub> transport and storage, around EUR 300 million, is critically insufficient relative to estimated investment needs of up to EUR 23 billion.

## The EU ETS provides an essential foundation, but a broader strategy is needed to support a competitive and resilient industrial transformation

The Industrial Accelerator Act, the Industrial Decarbonisation Bank, and related Clean Industrial Deal initiatives strengthen the policy framework, but their impact will depend on final design, funding and implementation. The upcoming ETS and CBAM review in July 2026 is a critical milestone. To safeguard the long-term credibility and investment signal of the ETS potential flexibilities within the system – such as adjustments to free allocation or price stabilisation mechanisms – should be linked to clear conditionalities. This would ensure that greater flexibility does not undermine long-term decarbonisation incentives and indeed translates into low-carbon investments (Pahle, 2026).

Yet carbon pricing alone cannot unlock the investment needed in low-carbon steel, cement and chemicals. A broader industrial transition strategy is therefore required, combining financing and de-risking instruments – including support accessible to smaller companies – with credible long-term demand signals for low-carbon materials. Public procurement, carbon contracts for difference, and private offtake agreements will all play a critical role in creating viable lead markets for low-carbon industrial products (ECNO, 2026b).

The EU should also mainstream across all strategic clean tech sectors policy options currently being explored in the automotive and battery sectors, such as facilitating joint ventures and technology licensing to boost competitiveness and reduce supply chain exposure.

Finally, the EU should complement domestic industrial transformation with strategic international cooperation, including imports of green iron and other low-carbon intermediates where these contribute to a resilient and cost-effective transition (Agora Industry, 2025).



## 3.5 Reuse and recover materials

Circularity and resource productivity are key resilience and competitiveness levers. Reusing and recovering materials and products within the EU reduce its dependence on primary raw materials and vulnerable supply chains. For industry, more circularity can reduce input costs, lower exposure to volatile global material markets, and support cleaner production. For clean technologies, circularity is especially important because scaling batteries, wind, solar, and grids will increase demand for critical materials imported from outside the EU – either as primary raw materials or through interim and end-products.

**Only 12% of materials were recycled in 2024, meaning the circular material use rate would need to almost double over the next six years.**

**Key ECNO indicators:**

- [Circular material use rate](#)
- [Resource productivity](#)
- [Material footprint](#)

### Material use is getting more efficient, but not circular

Europe has become more efficient in how it uses resources, but it is not yet closing material loops fast enough. The EU is generating more economic value per kilogram of material consumed, meaning growth is gradually decoupling from raw material use, and this efficiency trend is **on track**. However, two other dimensions tell a more sobering story. The share of materials that are recycled and fed back into the economy as secondary raw materials – the circular material use rate – is still too low at only 12% in 2024. And looking at the total amount of raw materials each European relies on has not fallen sufficiently – still roughly 13.7 tonnes. Together, this means that Europe is not yet keeping enough materials in use through reuse, repair, recycling, and secondary raw material markets, a gap that will become more acute as demand for critical materials tied to clean technology scale-up continues to grow.

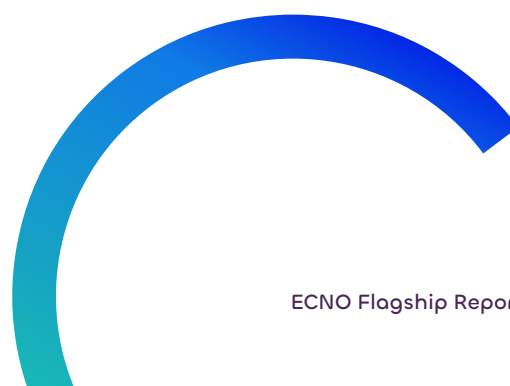
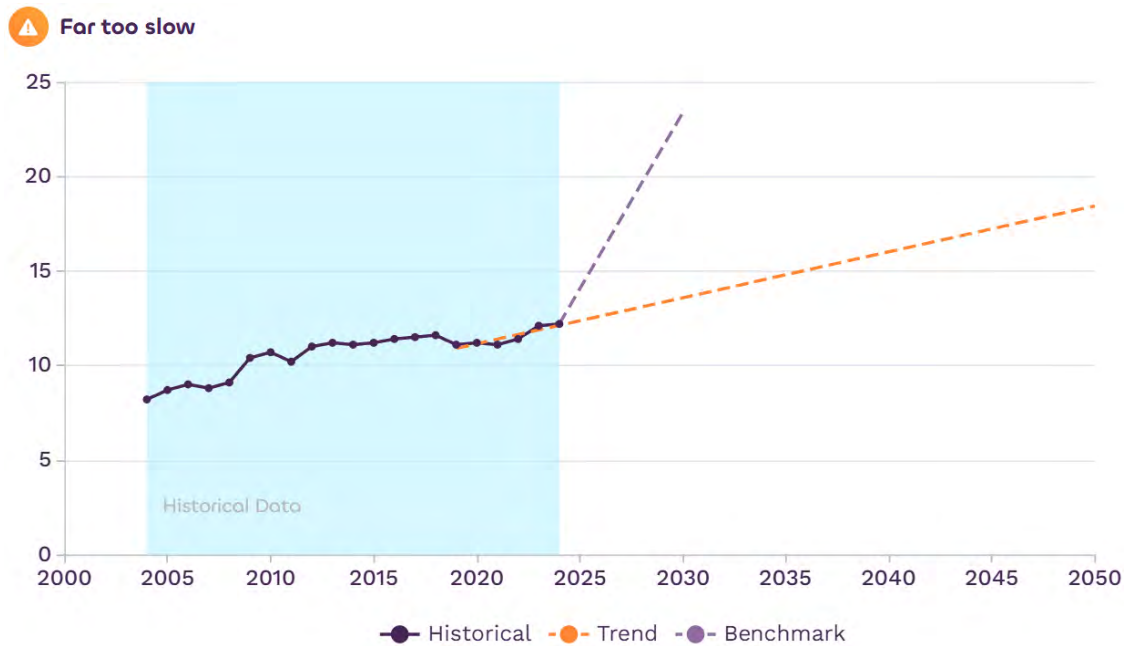


Figure 13: Circular material use rate (%)



Note: The past absolute change was 0.2%-points per year which has to increase to 1.9%-points to meet the EU's benchmark.

Source: ECNO based on Eurostat, 2026a.

## EU policies support circularity but still need to close material loops

Current EU policy provides an important basis for improving circularity, especially through the Circular Economy Action Plan, the Ecodesign for Sustainable Products Regulation, the Empowering Consumers for the Green Transition Directive, the Packaging and Packaging Waste Regulation, and the Right to Repair Directive. They help improve product durability, reparability, recyclability, consumer information, packaging reduction, and the reuse of scarce materials. However, the current policy mix is still not strong enough to close material loops at the pace required.

The Circular Economy Act will be a key opportunity to move from broad ambition to stronger market creation. It should support the free movement of circular products, strengthen the supply of high-quality recycled materials, and create demand-side measures to increase the use of circular products and recycled materials across the economy. Relevant policy levers include stronger circularity criteria in public procurement and for public support policies; recycled-content and product standards; repair, reuse, and durability requirements; better waste-management and recycling infrastructure; and stronger incentives for using secondary materials. For citizens, circular policies should also make repair, reuse, and purchase of second-hand products easier and more affordable. This requires effective implementation of existing policies, alongside clearer product information and better repair and reuse infrastructure.

## 3.6 Reduce exposure in the food system

Improving resilience and reducing vulnerabilities in the EU food system is becoming an increasingly important challenge. Europe is the world's fastest warming continent, and more frequent droughts, heatwaves, and other extreme weather events are already impacting agriculture across the EU. At the same time, the recent energy crisis has exposed how vulnerable European agriculture remains to external shocks, particularly through its dependence on natural gas and other inputs (i.e. ammonia, urea) for fertiliser production. These have been impacted by significant price and supply volatility in recent years and became even more pronounced after the blockage of the Strait of Hormuz. This has translated into higher fertiliser costs, increasing pressure on farmers and food producers across the EU. In response, some farmers have reduced their fertiliser use, while others have shifted towards less nitrogen-intensive crops (Dekeyser and Medinilla, 2026; Munster, 2026). While these changes can reduce input costs, it could also result in reduced yields and contribute to higher consumer prices. The EU's Fertiliser Action Plan, presented in May 2026, aims to address some of these vulnerabilities, with its main pillars being reducing import dependencies, boosting domestic production, promoting low-carbon alternatives, and improving fertiliser use efficiency. While the plan recognises organic and agroecological farming as nutrient-efficient practices that require greater support, it emphasises supply security and competitiveness over addressing the sector's structural fossil fuel dependence (EEB, 2026).

**The share of organic farming was at only 11% in 2024 which is far from the envisioned 25% in 2030.**

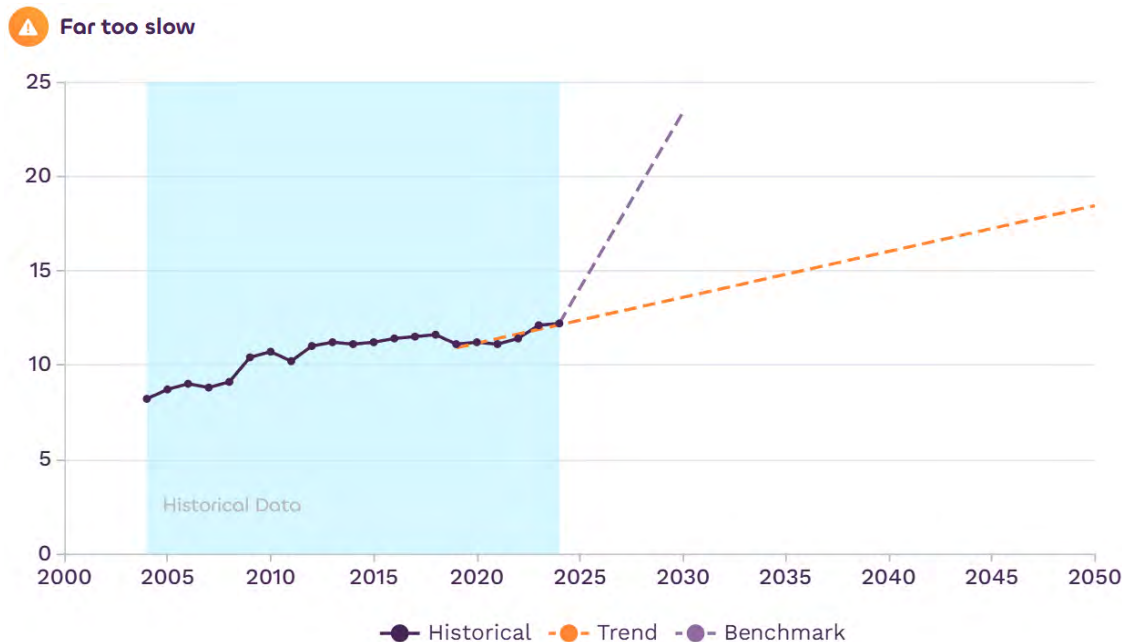
### Key ECNO indicators:

- [Nitrogen fertiliser use](#)
- [Share of organic farming in total agricultural area](#)

### Progress remains insufficient as fertiliser dependence persists

Current trends suggest that progress towards reducing these vulnerabilities and strengthening the long-term resilience of the sector remain insufficient. While available data indicates that absolute nitrogen fertiliser consumption in the EU has declined in recent years, considerable uncertainty remains around the quality of the data. In general, momentum behind the Farm to Fork (F2F) agenda has considerably weakened, with the Fertiliser Action Plan also not reaffirming the F2F nutrient loss and fertiliser reduction targets. In parallel, progress on increasing organic farming area has been **far too slow** to align with the EU's target of reaching 25% organic farmland by 2030. Expanding organic farming can help reduce farmer's dependence on synthetic nitrogen fertilisers, strengthen soil health and improve resilience to climatic and market shocks. Many farmers, however, still face considerable financial and technical barriers in transitioning, and existing support mechanisms remain insufficient and fragmented. Thus, the EU food system remains highly exposed to fertiliser price volatility, fossil fuel dependency, broader geopolitical disruptions, and the growing impacts of climate change.

Figure 14: Share of organic farming in total agricultural area (%)




Note: The past absolute change was 0.5%-points per year which has to increase to 2.3%-points to reach the EU's benchmark.

Source: ECNO based on FiBL, 2026.

## A weakening policy framework risks locking in food system vulnerabilities

The abandonment of the Sustainable Food Systems Law leaves a major gap in efforts to build a cohesive policy framework and align agricultural policy with the EU's climate, biodiversity, and resilience objectives. The current policy outlook for the EU, including proposals around the newest iteration of the CAP (2028–2034), points towards continued flexibility for Member States along with weakened environmental and climate objectives. The Integrated Nutrient Management Action Plan (INMAP) has been delayed, while recent exemptions for RENURE (recovered nitrogen from manure) risk undermining the Nitrates Directive, and there is increasing pressure to reopen core environmental safeguards under the Omnibus Process (EEB, 2026). The CBAM for fertilisers, which took effect at the beginning of this year, has compounded concerns on cost pressures for farmers, with some Member States calling for exemptions or relief measures. Although the Organic Farming Action Plan continues to support investment and uptake, its current impact remains insufficient to drive the transformation at the pace and scale required to meet the EU's 2030 targets and further climate neutrality target.

Overall, reducing the EU food system's exposure to external shocks will require structural changes to both agricultural production and consumption. These would also provide wider benefits, including lowered dependency on synthetic and imported inputs, stronger domestic competitiveness, more diversified and resilient farming systems, and demand-side shifts consistent with the EU's climate objectives.



## 4 Progress across the 13 building blocks of a climate neutral future

This chapter provides more detail behind the information provided in section 2 and the dashboard ([see Figure 3](#)). It summarises developments across the thirteen building blocks, focusing on changes in indicator trends, policy assessments and key enabling conditions. More detail on each of the building blocks can be found on our [website](#).

## Positive movement – External Action has picked up speed

Compared to last year’s assessment, progress has accelerated most notably in **External Action**. While progress remains **too slow** overall, Official Development Assistance (ODA) allocated to climate action is now **on track**, after an 11% increase in 2024 compared to 2023. Additionally, the European Investment Bank’s (EIB) public finance for clean energy projects outside the EU is now **on track** after doubling in 2024 compared to the previous year. However, policy incentives remain contradictory: while the EU’s Free Trade Agreements commit to the goals of the Paris Agreement and the “Do No Significant Harm” principle under the proposed new Multiannual Financial Framework (2028–2024), the EU simultaneously continues to commit to gas and oil imports through its EU-U.S. energy trade agreement.

In **Buildings**, the reduction of energy demand for heating and cooling sped-up and develops now **too slowly** – thereby demand of non-residential buildings is now **on track**, whereas household demand reductions remain **far too slow**. Heat pump sales have increased again in 2025 after a slump in 2023 and 2024, but growth remains **too slow**. There has been also some improvement in the electricity-to-gas price ratio although it still would take until 2038 for equal pricing to reach. The policy framework for **Buildings** is generally supportive of the transition but not sufficiently, with the ETS2 postponed to 2028 and both the EU Heating and Cooling Strategy and the Electrification Action Plan delayed.

**Mobility** has seen improvements with the share of passenger transport volume on road and on rail having made a U-turn while the share of ZEVs in new passenger car registrations even reached a record high in 2025 – a trend that has continued into the first half of 2026 (EC, 2026d). The volume of passenger transport by road has declined, while rail transport has increased; however, progress in both cases remain **far too slow**. While **Agrifood** continues to progress **far too slowly**, dietary shifts manifest in decreasing livestock numbers and dairy consumption, with the latter now **on track**. However, past trends indicate that real-world developments have not advanced quickly enough, and for some enablers, the policy mix is either insufficient or even counterproductive ([see Box 2](#)).

In **Just and Fair Transition**, progress remains **too slow** overall, but several positive developments have emerged compared to last year’s assessment. Notably, the share of energy efficiency subsidies more than doubled between 2021 and 2024 and is now **on track**. All three indicators related to job creation remain **on track**, the regional poverty rate is declining again and is now **on track**, while material deprivation is improving **far too slowly**. The building block’s policy mix across is expected to support further progress, although the EU’s just and fair transition framework remains fragmented and incoherent and the social dimension risks to be underrepresented in the ongoing MFF negotiations and other potential EU-level funding commitments.

## Stagnation across Electricity, Industry, Finance and Lifestyles

Compared to last year, a number of building blocks have not significantly changed their trajectory and have therefore retained the same classification. In **Electricity**, the decarbonisation of the power supply and the phase-out of fossil fuels continue to proceed **too slowly**. Emissions are declining, but insufficiently – partly due to a renewed increase in gas-fired power generation in 2025. Non-fossil flexibility also progresses **far too slowly**, with battery storage, electrification, and smart meter roll-out all lagging. While total installed solar and wind capacity grows **on track**, wind power additions alone stagnated in 2024. Grid buildout, digitalisation, and enhancement also remain **too slow**, though data gaps make a full assessment difficult.

In **Industry**, the overall classification remains unchanged, with progress toward net zero GHG emissions continuing **far too slowly**. Emissions fell in 2023, but insufficiently. Energy efficiency of industrial processes has slightly deteriorated, with final energy consumption rising marginally in 2024 even as manufacturing output declined which is a sign of worsening energy intensity. Industrial electrification remains broadly stagnant, though early 2025 signals suggest a modest recovery. On a positive note, circularity accelerated. Although data on the availability of zero-carbon energy remain incomplete, newly available figures suggest that renewable and low-carbon hydrogen production capacity grew by 27% between 2022 and 2024. However, this growth remains **far too slow** to meet the EU's benchmark.

**Finance** continues to move in the **wrong direction**, as the climate investment gap persists at EUR 344 billion in 2023, fossil fuel subsidies remain above pre-crisis levels despite a 20% decline in 2024, and the Omnibus Package has further weakened corporate sustainability reporting, delaying the reorientation of banking flows toward the transition. Furthermore, the EU has not managed to create enabling conditions for more sustainable **Lifestyles**, with self-reported climate-conscious behaviours declining and the per-person material footprint of EU citizens falling **far too slowly**.

In **Governance**, progress remains **too slow** as national climate plans and progress reports continue to suffer from delays, low ambition, and lack of detail. National long-term strategies have seen few updates since the initial round of submissions in 2019 and 2020, despite major policy developments in the interim and an EU provision that encourages updates every five years 'where necessary'. While the share of EU GHG emissions covered by national climate laws continues to rise, the growth rate has slowed since 2020, indicating that the expansion of national frameworks is insufficient. At the same time, all but two EU countries have set a target for reaching climate neutrality – most of them legally binding – and public support for the transition remains stable.

Finally, **Adaptation** also has not changed its classification, and progress remains **far too slow**. High economic losses from climate extremes continue to rise by an average of EUR 6.7 billion per year, while significant data gaps in key adaptation indicators persist. The only change from last year is a slight downward trend in the EU's average score on the ND-GAIN adaptation index between 2018 and 2023.

## Reversals in Clean Technologies and CDR

The outlook has worsened for several building blocks since last year. **Carbon Dioxide Removal** has shifted back into the **wrong direction**, driven primarily by revised data showing declining growth in EU forests in terms of area and carbon stocks, which is the EU's key natural carbon sink. This is mainly due to harvesting, climate-change-related disturbances and maturing forest stands. Moreover, the decline is also a result of insufficient incentives for sequestration, restoration and forest protection. Technical removals continue to develop positively, supported by public funding that has more than doubled since 2020 to EUR 126 million in 2025, but remain far too limited in scale to meaningfully reverse climate change impacts.

The **Clean Technologies** industrial base and innovation ecosystem has slowed in comparison to last year. Data shows that public funds for environmental and energy R&D have fallen to its lowest level since 2015, shifting from being **on track** in last year's report to now moving in the **wrong direction**. Similarly, scale-up finance has also shifted from being **on track** to also moving in the **wrong direction**, with four years of decline since the peak in 2021. Battery manufacturing, a key green industry, continues to expand but is showing signs of slowdown.


























### Box 1: Mixed signals in the data: positive trends persist but reversals are mounting

Overall, the transition continues to progress, but in an uneven and insufficient manner. While positive trends persist across many objectives and enabling structures, momentum has weakened compared to last year.

Of 146 indicators, 98 show a positive trend, yet most remain classified as either **far too slow** (40) or **too slow** (26), with only 32 progressing **on track**. At the same time, 26 indicators are moving in the **wrong direction**, three more than last year, 26 indicators lack sufficient data, with 4 classified based on expert judgement and 22 remaining unclassified; the latter are referred to here as **insufficient data**.

Compared to last year's assessment, sixteen indicators improved their classification, which is around 50% fewer than in the previous assessment. By contrast, 11 indicators have worsened in their classification, an increase of four compared to last year. Among all indicators, the picture is slightly more positive: while 45 accelerated in their rate of progress, 25 slowed down. Three indicators now come with at least three datapoints for the trend calculation.

Table 3: Almost as many indicators worsened as improved

	INDICATOR	PROGRESS
Electricity	Greenhouse gas (GHG) emissions of electricity generation [Mt CO <sub>2</sub> e/year]	
	Battery storage capacity [GW]	
Mobility	Share of passenger transport volume on road [%]	
	Share of passenger transport volume on rail [%]	
Industry	GHG emissions from industry [Mt CO <sub>2</sub> e]	
	Renewable and low carbon hydrogen production capacity [Mt]	
	Electricity-to-gas price ratio for industrial consumers [-]	
	Final energy consumed in industry [Mtoe]	
Buildings	Demand for heating and cooling [kWh/m <sup>2</sup> ]	
	Demand for heating of non-residential buildings [kWh/m <sup>2</sup> ]	
	Heat pump sales [million units]	
	Electricity-to-gas price ratio for residential users [-]	
Agrifood	Dairy consumption [kg/capita]	
	Livestock numbers [million head]	
CDR	Growth in forest area [ha/year]	
	Growth of carbon stock in forest land [Mt C/year]	
	Net GHG emissions from croplands, grasslands and wetlands [Mt CO <sub>2</sub> e]	
Life-styles	Self-reported climate-conscious behaviour [% of surveyed population]	
Clean Technologies	Public funds for environmental and energy R&D [mEUR 2025]	
	Clean tech scale-up finance [mEUR 2025]	
	Battery manufacturing capacity [GWh/year]	
Just Transition	Regional poverty rate [%]	
	Average of four relevant sub-indicators on the material deprivation rate [%]	
	JTF progress implementation [mEUR]	
	Share of support for energy efficiency purposes [% of energy subsidies]	

	INDICATOR	PROGRESS
Governance	Adoption of climate framework laws at national level [% of EU GHG emissions covered]	
	Public confidence in the transition to climate neutrality [% of population]	
Adaptation	ND-GAIN country index [score out of 100]	
External Action	Public finance for international clean energy projects (by the EIB) [mEUR]	
	ODA allocated to climate action [% of total bilateral ODA]	

Note: Large circles show the progress classification of this year and small circles the one from last year's progress assessment. Arrows indicate positive or negative changes in classification. Arrows indicate positive or negative changes in classification.

Source: ©ECNO

### Box 2: Recent policy-making at EU level set the stage for the transition

In the last legislative period (2019–2024), the European Commission launched a comprehensive range of policy initiatives under the European Green Deal, with the majority adopted in 2022 and 2023. The current Von der Leyen Commission has since shifted focus toward implementation and competitiveness, most notably through the Clean Industrial Deal while at the same time rolling back or weakening some key regulatory instruments, including sustainability reporting obligations and supply chain due diligence requirements, under the Omnibus Package. A supportive policy mix is in place for 85% of the objectives and for 70% of the enablers although not all of the policies are effective enough to accelerate the change sufficiently (see Table 4).

Compared to 2025, the policy package in **Clean Tech** has worsened for two enablers: Policies intended to support bringing innovation to market using private resources are unlikely to have an impact on progress, given recent investment downturns, concerns that Innovation Fund disbursements are not occurring quickly enough to support sector growth, and continued limitations in support for some higher-risk innovative projects. The policy package for increasing clean technology uptake is also unlikely to impact progress, given the early stage of implementation of key instruments such as the NZIA and the CRMA, as well as uncertainty over whether the current investment framework will be sufficient to support large-scale clean tech deployment.

On a positive note, the policy mix aimed at embedding climate considerations in foreign policies within **External Action** has improved and is now likely to advance progress, provided policies are implemented ambitiously, reflecting renewed EU commitments to climate and energy diplomacy and proposed increases in climate- and environment-related spending under the next MFF.

Table 4: Policies advance the transition – though ambition is falling short

Objective	Enabler
<p>The policy package is likely to slow down or reinforce counterproductive trends. <span style="float: right;">◀    ▶ ▶▶</span></p>	
<ul style="list-style-type: none"> <li>• Driving ambitious global climate action (External Action)</li> </ul>	<ul style="list-style-type: none"> <li>• Making livestock production more sustainable (Agrifood)</li> <li>• Shifting private finance towards climate-friendly financing (Finance)</li> </ul>
<p>The policy package is likely to have no impact on progress. <span style="float: right;">◀    ▶ ▶▶</span></p>	
<ul style="list-style-type: none"> <li>• Minimising agri-food emissions and shifting diets (Agrifood)</li> </ul>	<ul style="list-style-type: none"> <li>• Building out, digitalising, and enhancing the grid (Electricity)</li> <li>• Managing motorised transport (Mobility)</li> <li>• Reducing fertiliser use and cropland-related emissions (Agrifood)</li> <li>• Enhancing economic incentives (Lifestyles)</li> <li>• Bringing innovation to market using private resources (Clean Tech)</li> <li>• Increasing clean technology uptake (Clean Tech)</li> <li>• Providing a clear vision and accountability (Governance)</li> <li>• Promoting meaningful stakeholder and public participation (Governance)</li> <li>• Aligning all international public and private finance with the Paris Agreement (External Action)</li> <li>• Utilising all foreign policy channels to advance the global transition (External Action)</li> </ul>
<p>The policy package is likely to advance progress but not at the required scale. <span style="float: right;">◀    ▶ ▶▶</span></p>	
<ul style="list-style-type: none"> <li>• All 10 remaining objectives</li> </ul>	<ul style="list-style-type: none"> <li>• All 25 remaining enablers</li> </ul>
<p>The policy package is likely to support a sufficient progress. <span style="float: right;">◀    ▶ ▶▶</span></p>	
<ul style="list-style-type: none"> <li>• Developing manufacturing capacity and innovation leadership (Clean Tech)</li> </ul>	<ul style="list-style-type: none"> <li>• Fostering research excellence (Clean Tech)</li> <li>• Embedding climate considerations in foreign policy (External Action)</li> </ul>

Note: Ongoing discussions at EU level on changing legislation are not yet reflected in the rating unless already put down in writing. This means that upcoming actions may shift policy progress into a higher (e.g., the initiatives announced under the Clean Industrial Deal) or lower classification (e.g., if the new car fleet targets for CO<sub>2</sub> emissions are lowered or postponed).

Source: ©ECNO

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## Abbreviations

<b>ACER</b>	European Union Agency for the Cooperation of Energy Regulators
<b>AFIR</b>	Alternative Fuels Infrastructure Regulation
<b>bnEUR</b>	Billion euros
<b>CAP</b>	Common Agricultural Policy
<b>CATF</b>	Clean Air Task Force
<b>CBAM</b>	Carbon Border Adjustment Mechanism
<b>CCS</b>	Carbon Capture and Storage
<b>CDR</b>	Carbon Dioxide Removal
<b>CID</b>	Clean Industrial Deal
<b>CISAF</b>	Clean Industrial Deal State Aid Framework
<b>CIT</b>	Clean Industrial Transition
<b>CREA</b>	Centre for Research on Energy and Clean Air
<b>CRCF</b>	Carbon Removal Certification Framework
<b>CRMA</b>	Critical Raw Materials Act
<b>CSDDD</b>	Corporate Sustainability Due Diligence Directive
<b>CSRD</b>	Corporate Sustainability Reporting Directive
<b>DG</b>	Directorate-General
<b>EC</b>	European Commission
<b>ECDPM</b>	European Centre for Development Policy Management
<b>ECF</b>	European Climate Foundation
<b>ECNO</b>	European Climate Neutrality Observatory
<b>EEA</b>	European Environment Agency
<b>EEB</b>	European Environmental Bureau
<b>EHPA</b>	European Heat Pump Association
<b>EIB</b>	European Investment Bank
<b>EMD</b>	Electricity Market Design (Reform)
<b>ENTSO-E</b>	European Network of Transmission System Operators for Electricity
<b>EPBD</b>	Energy Performance of Buildings Directive
<b>ETD</b>	Energy Taxation Directive
<b>ETS</b>	(EU) Emissions Trading System
<b>ETS 2</b>	Emissions Trading System for Buildings and Road Transport
<b>EUCO</b>	European Council
<b>Eurobarometer</b>	European Commission's EU-wide public opinion survey
<b>Eurostat</b>	Statistical Office of the European Union
<b>F2F</b>	Farm to Fork (Strategy)
<b>FiBL</b>	Research Institute of Organic Agriculture

<b>GHG</b>	Greenhouse Gas
<b>GW</b>	Gigawatt
<b>GWh (CWh/year)</b>	Gigawatt-hour (per year)
<b>ha/yr</b>	Hectares per year
<b>IEA</b>	International Energy Agency
<b>INMAP</b>	Integrated Nutrient Management Action Plan
<b>JTF</b>	Just Transition Fund
<b>kt N</b>	Kilotonnes of nitrogen
<b>kWh</b>	Kilowatt-hour
<b>kWh/m<sup>2</sup></b>	Kilowatt-hours per square metre
<b>LNG</b>	Liquefied Natural Gas
<b>mEUR</b>	Million euros
<b>MFF</b>	Multiannual Financial Framework
<b>Mt</b>	Megatonnes
<b>MtC</b>	Megatonnes of carbon
<b>MtCO<sub>2</sub>/MtCO<sub>2</sub>e</b>	Megatonnes of CO <sub>2</sub> (equivalent)
<b>Mtoe</b>	Megatonnes of oil equivalent
<b>NACE</b>	Statistical classification of economic activities in the European Community
<b>ND-GAIN</b>	Notre Dame Global Adaptation Initiative
<b>NDC</b>	Nationally Determined Contributions
<b>NZIA</b>	Net-Zero Industry Act
<b>ODA</b>	Official Development Assistance
<b>PPS/kg</b>	Purchasing Power Standard per kilogramme
<b>R&amp;D</b>	Research and Development
<b>R&amp;I</b>	Research and Innovation
<b>RED/RED III</b>	Renewable Energy Directive (III)
<b>RENURE</b>	Recovered Nitrogen from Manure
<b>SWD</b>	(Commission) Staff Working Document
<b>TEN-T</b>	Trans-European Transport Network
<b>TYNDP</b>	Ten-Year Network Development Plan
<b>VAT</b>	Value Added Tax
<b>WEO</b>	World Energy Outlook
<b>ZEV</b>	Zero-Emission Vehicle(s)
<b>%-points</b>	Percentage points



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