

# Scientific advice for amending the European Climate Law

## Setting climate goals to strengthen EU strategic priorities

### Summary and recommendations

This advice forms part of the Advisory Board's mandate to assess the coherence of EU climate targets with the European Climate Law and the EU's international commitments under the Paris Agreement. It aims to support the EU in aligning its long-term climate ambition with strategic opportunities to boost resilience, competitiveness and sustainability. Building on this foundation, the current report reaffirms the Advisory Board's 2023 recommendation, consolidates its 2024 and 2025 advice on policy opportunities to support EU climate targets, and introduces a new, dedicated recommendation on climate adaptation.

#### **Amidst accelerating global warming, the EU prepares to set its 2040 climate target**

Climate change remains an existential threat, with global temperatures already 1.3–1.4 °C above pre-industrial levels. In 2024, the hottest year ever recorded worldwide and in Europe, the continent endured record-breaking heat stress and an unprecedented number of frost-free days. As the fastest warming continent, Europe is already facing mounting human and economic losses from extreme heat, catastrophic floods and disruptions to critical infrastructure. These escalating impacts are driven by rising concentrations of greenhouse gases in the atmosphere, underscoring the urgent need for rapid and sustained global emission reductions, combined with a substantial scale-up of carbon dioxide removals.

As part of the global response to climate change, the European Union has committed to achieving net-zero greenhouse gas emissions by 2050 and net-negative emissions thereafter, as enshrined in the European Climate Law. To reach climate neutrality, the law sets a binding intermediary target of a 55 % net reduction in greenhouse gas emissions by 2030. To meet this target, the EU has adopted a comprehensive package of legislation. This target is within reach, as illustrated by recent emission trends, including a 9 % decline in EU emissions in 2023 – the largest annual reduction ever recorded in Europe. Sustained progress will require continued implementation across all Member States, ensuring that adopted policies are fully delivered on the ground.

The European Climate Law requires that the EU set a further intermediary target for 2040, to ensure progress towards the 2050 climate neutrality. In 2023, the Advisory Board recommended a domestic net greenhouse gas emission reduction target of 90–95 % below 1990 levels by 2040. This recommendation is based on modelled emission pathways consistent with the EU's climate neutrality commitment and the Paris Agreement temperature goal. In 2024, the European Commission recommended a 2040 target of a 90 % net emission reduction, consistent with the Advisory Board's scientific advice and supported by its own impact assessment. A formal legislative proposal to enshrine the 2040 target in the European Climate Law is expected in 2025 and will guide the preparation of the EU's next contribution under the Paris Agreement.

#### **Climate action must remain a priority to address multiple EU challenges**

Alongside the worsening climate crisis, the EU faces a growing set of interlinked challenges. Russia's war of aggression in Ukraine has disrupted fossil fuel supply chains and underscored Europe's vulnerabilities. Geopolitical tensions, inflation and rising public debt are increasing economic strain, while global

competition on clean technologies intensifies. Yet, many of the needed responses are already in motion. Recent progress shows that, with the right policies, some of the necessary transformations across society and the economy are not only possible but underway. A faster deployment of renewable energy, modernisation of electricity grids and electrification of energy end-users, supported by reductions in the use of energy and materials, have already contributed to reducing the EU's dependency on fossil fuels, enhancing strategic autonomy and supporting price stability, while delivering on climate goals. Beyond the energy system, climate action supports healthier environments, more resilient infrastructure, sustainable agriculture and improved quality of life across Europe.

Three landmark policy reports published in 2024 by three European leaders – Enrico Letta, Mario Draghi and Sauli Niinistö – identify key strategic challenges for the EU's future and underscore, in line with scientific evidence, that climate action should be central to the EU's long-term strategy. They highlight the need to strengthen the EU single market for clean technologies, increase investment in the green transition to restore competitiveness, and treat climate resilience as a pillar of European security. Echoing these strategic priorities, recent European Commission initiatives reflect a more integrated approach to climate policy. The Clean Industrial Deal links decarbonisation to industrial competitiveness and leadership, while the European Preparedness Union Strategy places climate adaptation at the core of the EU's approach to risk management, resilience and security. To be effective, these strategies need to be anchored in a predictable and science-based policy framework, especially regarding the EU's climate ambition.

### **Pursuing a 90–95 % domestic target for 2040 remains feasible and credible towards climate neutrality**

As EU lawmakers prepare to debate the proposed 2040 target, the Advisory Board has reviewed its 2023 recommendation in light of evolving priorities and the latest scientific evidence. It concludes that achieving a 2040 emission reduction of 90–95 % domestically remains both feasible and would keep the EU on a credible path to climate neutrality by 2050. Aiming for a lower target would not only jeopardise the EU's progress towards this goal, but also undermine its sustainability, long-term competitiveness and energy security in a time of geopolitical uncertainty.

Reaching the recommended 2040 target requires deep emission reductions across the economy. At the same time, the EU should accelerate the development and deployment of carbon dioxide removals, which will be critical to counterbalancing residual emissions and achieving net-zero and net-negative emissions. To support this, the Advisory Board recommends setting separate 2040 targets for gross emission reductions, permanent carbon dioxide removals and temporary carbon dioxide removals.

Recent trends provide reassurance about the feasibility of a 90–95 % domestic target. Sustained emission reductions and strong progress in renewable deployment, with wind and solar roll-out in line with scenarios consistent with a 90–95 % reduction, demonstrate what is possible with the right support. While progress in other sectors has been more uneven, including a slowdown in the uptake of electric vehicles and heat pumps in some Member States, these are largely the result of short-term market uncertainty and policy adjustments. The EU's climate policy framework remains robust, but maintaining momentum will require renewed political commitment, stable investment signals and coordinated action across sectors. With these in place, the EU can stay firmly on track towards a 90–95 % reduction by 2040.

The 90–95 % emission reduction target recommended by the Advisory Board is expressed in domestic terms, as it is intended to place the EU on a feasible, credible and cost-efficient trajectory towards achieving climate neutrality by 2050, and to increase the fairness of the EU's contribution to global

mitigation. While not fully aligned with what would constitute a fair share of global mitigation efforts, this level of ambition helps to bridge the gap between the EU's feasible pathway and its broader responsibility under the Paris Agreement. Achieving this target through domestic action will also reinforce the EU's long-term competitiveness by accelerating clean technology innovation, reducing fossil fuel dependency and driving investment in future-oriented sectors.

Using international carbon credits to meet this target, even partially, could undermine domestic value creation by diverting resources from the necessary transformation of the EU's economy, including investments in infrastructure, skills and innovation. International credits might appear cost-effective from a global perspective, but they entail significant risks to carbon markets and environmental integrity, including concerns about additionality, emissions being displaced to other regions (leakage) as well as robust monitoring, reporting and verification. For these reasons, the Advisory Board does not recommend using international carbon credits to replace domestic emission reductions when meeting the 2040 target.

At the same time, the EU also has a responsibility to support global climate action beyond its borders. A fair and equitable contribution to global mitigation entails complementing strong domestic action with robust international support, provided it delivers genuine additional mitigation benefits and upholds environmental integrity. This can include mechanisms to support climate action abroad without substituting for domestic efforts or relying on the acquisition of carbon credits, in line with the EU's responsibilities under the Paris Agreement. The potential contribution of high-quality international credits from carbon dioxide removal towards the EU's achievement of net-negative emissions, after reaching climate neutrality domestically, should be further explored.

### **Cutting emissions and adapting to climate impacts must go hand in hand**

While ambitious domestic mitigation efforts are essential for the EU to respect its global climate commitments, the parallel urgency of enhancing resilience to climate-related risks must be acknowledged. Adaptation protects against present and future climate impacts, safeguarding infrastructure, economies and livelihoods. However, without adaptation metrics and goals, progress remains difficult to track, and risks remain unmitigated. It is therefore imperative to establish clear, measurable objectives not only for emission reductions but also for adaptation, to ensure that policies are both effective and accountable. Strengthening the EU's legal framework and governance for adaptation will be essential to improve coordination, ensure accountability and deliver on the commitments under the Paris Agreement.

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Based on the review of its 2023 scientific advice on an EU 2040 target, in light of evolving context and the latest scientific evidence, the Advisory Board makes the following recommendations.

**Recommendation 1. To fulfil its commitments under the Paris Agreement and the European Climate Law, the EU should adopt a net domestic greenhouse gas emission reduction target for 2040 in the range of 90–95 % relative to 1990 levels.**

- A 90–95% emissions reduction on EU territory for 2040 would keep the EU on a feasible and credible trajectory towards achieving climate neutrality by 2050, while enhancing the fairness of its contribution to global mitigation, in line with the commitments under the Paris Agreement

and the European Climate Law. This level of ambition is underpinned by robust pathways that consider technological feasibility, environmental risks, and cost-efficiency. While not fully reflecting what would constitute a fair share of global mitigation efforts, it helps to bridge the gap between what is feasible within the EU and what is equitable in the context of the Paris Agreement.

- Achieving this target is within reach, as shown by the recent acceleration of EU emission reductions, the growing availability of clean technologies, and the adoption of supportive fit for 55 policies. These should be fully implemented and reinforced in the post-2030 framework.
- By increasing policy certainty, a 90–95 % domestic reduction target offers strategic benefits for the EU and the transformation of its economy, such as boosting clean technology innovation and reducing dependence on fossil fuel imports.
- Speed matters. Early domestic action is critical to achieving the 2040 target, minimising cumulative emissions, avoiding abrupt reductions later, and accelerating innovation and cost reductions.
- Post-2030 policies should build on robust socioeconomic impact assessments and be designed to minimise negative effects. This includes cost-effective measures such as emissions trading, targeted innovation support and investment in power infrastructure. A just transition should be supported through redistributive measures and structural funding, including from redirected fossil fuel subsidies and emissions trading revenues.

**Recommendation 2. To ensure that both temporary and permanent removals contribute effectively to climate goals without deterring emission reductions, the EU should set three separate 2040 targets for gross emission reductions, permanent carbon dioxide removals and temporary carbon dioxide removals.**

- Domestic carbon dioxide removals can contribute to the EU's 2040 target by counterbalancing residual emissions from activities that currently have no or limited mitigation alternatives.
- Public institutions need to manage removals, invest in them and support viable business models for their rapid, sustainable scale-up. This is essential to counterbalance residual emissions and enable net-negative emissions after 2050.
- Separate targets for gross emissions, permanent removals and temporary removals will help prevent mitigation deterrence – that is, delays in either emission reduction or removal efforts – and avoid the diversion of investments from emission reductions. The targets should also reflect the distinct features of permanent and temporary removals. These targets should be set in the European Climate law or subsequent legislation and form part of a broader EU carbon dioxide removal framework that ensures high-quality removals, supports the restoration of the land sink, fosters innovation and enables infrastructure development. The framework should also include effective pricing tools, such as the gradual integration of permanent removals into the EU ETS and the introduction of extended emitter responsibility.

**Recommendation 3. To comply with the Paris Agreement and contribute to limiting global warming to 1.5 °C, the EU should strengthen support, cooperation and partnerships that advance climate action beyond its borders.**

- International cooperation and climate diplomacy strengthen fairness, support greenhouse gas emission reductions across all sectors, help manage carbon leakage and align efforts on net-negative emissions and adaptation strategies.
- Even a 95 % domestic reduction by 2040 still leaves a gap between the EU's contribution and its fair share of global mitigation efforts. In parallel, the EU is committed under its treaties and the Paris Agreement to supporting climate action in developing economies. Expanding international support can therefore help reduce the fairness gap while advancing global progress towards the Paris Agreement goal.
- EU external action should include alliances on carbon pricing, strategic investments in clean technologies, technology cooperation and increased climate finance. This could be pursued through mechanisms under Article 6 of the Paris Agreement, including international credits, provided these are not counted towards the EU 2040 or 2035 domestic emission reduction targets.
- The potential contribution of high-quality international credits from carbon dioxide removal towards the EU's achievement of net-negative emissions, after reaching climate neutrality domestically, should be further explored.

**Recommendation 4. To prepare for intensifying climate hazards, the EU should strengthen its climate adaptation framework by clarifying its vision for climate resilience and preparedness, and supporting it with effective governance and a solid legal foundation.**

- Climate risks are intensifying, threatening ecosystems, infrastructure, public health and the EU's financial system. Effective adaptation, including transformational measures that involve fundamental shifts in land use, infrastructure and governance, can reduce these risks and deliver broad social and economic benefits.
- Under the Paris Agreement's global goal on adaptation, measurable global targets are expected to be set at the 30<sup>th</sup> session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP30) in 2025. The EU legal framework should be revised to reflect and implement the outcomes of this process.
- The current EU adaptation framework lacks a clear vision, measurable objectives and a strong legal basis. Efforts at both the EU and national levels remain fragmented and lag behind the pace and scale of climate impacts.
- The European Climate Law – or subsequent legislation should establish measurable EU-level adaptation targets and indicators aligned with the Paris Agreement, support monitoring, evaluation and learning, and strengthen governance to improve coordination across EU institutions and Member States.