



Questions and Answers – Communication on Europe's 2040 climate target and path to climate neutrality by 2050

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1. Why is the Commission presenting a recommendation for a 2040 climate target?

The EU and its Member States have committed in the [EU Climate Law](#) to make the EU the first climate neutral continent by 2050. The Climate Law establishes a first intermediate target to reduce net greenhouse gas emissions by at least 55% by 2030 and **requires the Commission to propose a next intermediate target for 2040**. The Climate Law also requires the Commission to publish a projected EU greenhouse gas (GHG) budget for the 2030-2050 period that doesn't put at risk the EU's commitments under the Paris Agreement. The proposal for a 2040 target should be made within 6 months of the first Global Stocktake of the Paris Agreement, which took place in [December 2023](#).

Today the Commission is publishing a [Communication](#) which starts the process of preparing the 2040 target and launches a broad political debate and a dialogue with stakeholders and citizens. The Commission has also published a detailed [impact assessment](#) on possible pathways to reach climate neutrality by 2050 which will inform this debate and the future legislative and policy choices. Based on the Impact Assessment and the advice of the European Scientific Advisory Board on Climate Change (ESABCC), the Commission **recommends a 90% reduction in net GHG emissions by 2040**. The legal proposal to table the 2040 climate target will be the responsibility of the next Commission, following the European elections and the debates and dialogue which will take place in the coming months.

Defining these targets in good time will **enable the EU to put in place the necessary policies and investments** to ensure that the transition to climate neutrality goes hand in hand with a strong and stable economy, competitive industry and future-proof jobs in Europe, with sustainable and affordable energy, food and materials. In short, an economy that is more resilient against future crises and price shocks and a strong, sustainable and prosperous society in Europe.

At the international level, the EU is required to submit a new **Nationally Determined Contribution (NDC) under the Paris Agreement by 2025**. The 2040 climate target, once agreed, will be the basis of this new international commitment. It should be set at the appropriate level to encourage other international partners to do their fair share and set the world on a trajectory that is compatible with the 1.5°C temperature change limit under the Paris Agreement, to avoid the worst effects and costs of climate change. The challenge is steep, with the world having experienced record high temperatures in 2023 which are already close to this threshold.

2. What are the conditions for Europe to be able to reduce emissions by 90% by 2040?

The Commission has made its recommendation based on a thorough impact assessment that looked in detail at the socio-economic and environmental implications of a range of emissions reduction pathways. The legislative proposal to put a 2040 target into law will come under the next Commission, drawing the conclusions of a broad policy debate initiated today by this Communication. This proposal will be subject to the usual interinstitutional negotiations with both EU co-legislators and would lead to an amendment of the European Climate Law.

Once a legally binding target for 2040 is adopted, preparations will begin for a post-2030 policy framework. The current policy framework and the work done in the current decade will shape Europe's path to 2040 and climate neutrality by 2050. The next European Commission will have the responsibility to make legislative proposals on this basis and to ensure a balanced and cost-effective contribution of all sectors to greenhouse gas emission reductions and carbon removals.

Achieving the recommended target for 2040 presented in this Communication with the necessary greenhouse gas emission reductions and carbon removals will **require a number of enabling conditions**, including the full implementation of the agreed 2030 framework, ensuring the competitiveness of the European industry, a greater focus on a just transition that leaves no one

behind, a level playing field with international partners, and a strategic dialogue on the post-2030 framework, including with industry and the agricultural sector.

By assessing several options for the pathway towards climate neutrality and 2040 targets, this Communication and its impact assessment spell out what it will take to achieve climate neutrality by 2050, and the type of transformations that will be required by 2040. It stresses the need to increase the level of ambition at Member State level under the [updated National Energy and Climate Plans](#).

We need to **harness all zero and low carbon solutions to decarbonise the energy system by 2040** including renewables, nuclear and bio-energy, energy efficiency and storage, carbon capture utilisation and storage (CCU and CCS), carbon removals, geothermal, hydro-energy and all other current and future net-zero energy technologies. There has been a lot of progress on renewables, including flanking measures with recent action plans on wind and grids. This is set to rise whereas **the consumption of fossil fuels for energy by 2040 is expected to reduce by approximately 80% compared to 2021 and coal will be phased out.**

The energy sector, in particular the power sector, is driving the decarbonisation of the EU. This was made possible thanks to a predictable and ambitious policy framework established over the past years. The recommended 2040 climate target corresponds to a **close to full decarbonisation of electricity in the second half of the 2031-2040 decade**, with smarter grids, system integration, demand flexibility and storage solutions. The electrification of the building stock and the transport sector will be crucial to this end. Further focus in the energy sector will be put on ensuring a fast deployment of all renewable energy, as well as of zero and low carbon solutions, and further development of energy efficiency.

The **recommended 2040 target also entails an earlier deployment of carbon capture**, which will generate industrial carbon removals, complementing land-based removals sequestering carbon in biomass and soils, and natural carbon removals. Alongside the Communication, the Commission also presents a [dedicated Industrial Carbon Management Communication](#) with a vision for the future policy framework and investments to unlock this potential. The Commission is also launching an Industrial Alliance to facilitate stakeholder's cooperation at EU level to **accelerate the deployment of Small Modular Reactors (SMRs)**.

As regards other sectors, **industry** will also undergo a deep transformation to meet the recommended 2040 target. This will be achieved with clean energy demand through electrification, switching to non-fossil fuels, and implementing new technological processes and circular economy actions. The **transport** sector will decarbonise through a combination of technological solutions and carbon pricing, as well as an efficient and interconnected multimodal transport system, for both passengers and freight. Transport emissions are projected to decrease by close to 80% by 2040. Agriculture **can also play a vital role in the transition**. The sector is key to ensure food security in Europe and with effective policies that reward good practices and the appropriate support, it can also help drive emissions down and provide other vital services such as enhancing the capacity of soils and forests to store more carbon.

The 2040 pathway and these transformations at sectoral level will need to be **underpinned by an appropriate policy framework**. This should consist of an adequate set of incentives, pricing mechanisms and a supportive enabling environment to facilitate private and public investment. It should ensure the availability of a skilled workforce, develop a cleantech manufacturing base in the EU, and shape a socially fair transition. Increasing investment for decarbonisation will be of critical importance across all sectors of the economy, including power generation, industry, buildings and transport.

3. What are the economic benefits of setting a 2040 target and reducing emissions by 90%?

Setting a 2040 target in good time will provide the **essential information, predictability and confidence that citizens, businesses and public authorities need to make the right investment decisions and policy choices** today and prepare for the economy of tomorrow. These include decisions on public policy and finance with a significant number of large-scale investments foreseen to decarbonise the energy system and power generation, industry and transport, and heating and cooling systems for more energy efficient buildings.

Defining a 2040 target **will stop scarce resources from being used wastefully**, for example by sending clear signals that investment in carbon-intensive technologies is not compatible with the trajectory that the EU will take in the coming decades. Instead, **it will send clear signals to industry and businesses about future opportunities in clean tech sectors, including for manufacturing**, and to individuals about where future job opportunities will arise and what skills

will be required. Advanced planning will minimise the risks of locking in harmful investments and creating stranded assets.

As more countries advance with their clean transition, global demand for zero and low emission technologies and sustainable products and services will grow rapidly and competition for the development of these technologies will therefore be intense. In clean tech manufacturing alone, the market will triple to \$650 billion by 2030. The EU must take a leadership role in this race by playing to our core strengths while improving other factors that guide companies' decisions to invest and maintain a production presence in Europe. The EU's strengths lie, amongst others, in its stability, its predictable policies and long history of bringing high quality and innovative industrial solutions to markets. By acting now and setting up the right enabling framework and conditions for industry decarbonisation in line with the [Green Deal Industrial Plan](#), the EU will strengthen its leadership and competitiveness in a number of clean technologies, and build new ones in the future. Special attention will go to SMEs, which may need additional support to adapt their production processes to implement the Green Deal framework.

Investments in clean energy will also help to reduce the use of imported fossil fuels, making us more economically and politically resilient, and insulating the EU from fossil fuel price shocks and security of supply challenges. Achieving the recommended target in 2040 and climate neutrality by 2050 would enable the EU to cut the cost of fossil fuel imports by around €2.8 trillion over the period 2031-2050, compared to what the EU imported on average in 2011-2020.

The climate crisis threatens nature, water resources, agriculture, food production and other essential services that rely on healthy ecosystems. It exacerbates risks to Europe's unique biological diversity and threatens the capacity of the agriculture and forestry sectors to ensure food security and feedstocks for a sustainable and circular bioeconomy. By cutting greenhouse gas emissions and increasing carbon removals, the EU can stave off the worst impacts of the climate crisis on the environment and biodiversity, which are both essential for climate change mitigation and resilience, and make ecosystems healthier.

Keeping **the world on track to respect the 1.5°C temperature change limit under the Paris Agreement is necessary to preserve a climate that is hospitable to prosperous and thriving societies, not only in the EU but also globally.** The cumulative additional GDP cost of a higher global warming pathway is estimated at about €2.4 trillion for 2031-2050, compared to the costs under a pathway compatible with the 1.5°C objective under the Paris Agreement. **Inaction would lead to larger and growing costs for our economy.** The costs and human impact of the climate crisis are already evident and they are intensifying, affecting all facets of life, society and the economy. Estimating the costs of future extreme weather events is extremely difficult and subject to major uncertainties, but a conservative estimate is that EU GDP could be about 7% lower by the end of the century in the absence of strong mitigation efforts.

4. What would a 90% emissions reduction target mean for European citizens?

The transition to climate-neutrality is about securing the prosperity and well-being of EU citizens now and in the longer term, whilst ensuring a fair transition that addresses the impacts of the necessary changes on the most vulnerable. **Fairness, solidarity and social policies are at the core of the transition and EU citizens are at the heart of the [European Green Deal](#).** The climate transition goes hand in hand with a competitive economy and quality jobs in fast growing net zero activities, from the production of European clean tech to the renovation of buildings and supply of healthy and sustainable food and carbon farming.

Europeans' lives and livelihoods are already disrupted more and more by floods, heatwaves, forest fires, storms or droughts and other climate-related events and changes. Reducing emissions is a way to prevent and protect against these threats.

Air pollution affects the lives of millions of people in urban and rural areas in the EU. Cutting the use of fossil fuels in line with the recommended 2040 target would reduce these premature deaths from 466,000 in 2015 to 196,000 each year by 2040. It would improve the respiratory health of the majority of the EU population and make urban areas healthier places to live. In addition to important air quality benefits from moving away from the combustion of fossil fuels, the circular economy will become increasingly important in tackling climate change and creating new economic opportunities, reducing resource and energy use.

The transition will also bring new opportunities for business and job creation and for workers at all skill levels, in particular in fast-growing net-zero activities. It will require investing in people through re-skilling and upskilling of the workforce, support for labour market transitions and targeted income support measures. An effective social dialogue involving stakeholders and citizens will be key

alongside these measures.

EU citizens are also important agents of change for the decades to come, as investors and as consumers. In the residential sector decarbonised heating and cooling systems will improve the energy efficiency of buildings. As a result, living conditions will be improved, both in terms of comfort and health, but also energy spending will be reduced. Public policy and funds should support decarbonisation investments by lower-income and vulnerable households to ensure fair and affordable access to quality housing.

The decarbonisation of road transport, shifting to zero-emission vehicles and improving mobility will also have a direct impact on air quality, and consequently the health of all Europeans. The transition to climate neutrality involves promoting sustainable and affordable mobility, through adequate urban and city planning, which will be important to enable more public transport and active mobility like walking and cycling for short distance trips. Guaranteeing access to affordable and accessible net-zero energy and mobility solutions for all and better connected rural and remote EU regions will be an essential part of the transition.

Farmers, foresters and fishermen will have new business opportunities to deliver carbon removals, biomass and bio-based materials for example for industry, construction, chemicals, energy and transport. The enhanced use of biomass residues and waste, advanced biofuels, bioenergy with carbon capture and storage (BECCS) technologies, and biobased products should be accompanied by clear rules on sustainability.

5. What are the investments needed to achieve the 2040 target?

The transition to climate neutrality calls for a comprehensive investment agenda in the coming decades to ensure broad improvements in quality of life and secure Europe's future economic competitiveness. The EU will need to mobilise the right mix of private and public sector investment to make our economy both sustainable and competitive and ensure the Union remains an attractive destination for investment for research, innovation, deployment of new technologies, circular solutions and infrastructure. In particular, it will need to invest in the production of clean energy and in the decarbonisation of industrial processes, heating and cooling in buildings and all modes of transport. In addition, major investments will be needed to improve the energy efficiency of the EU economy, in particular buildings.

All options examined in the impact assessment require a similar level of investment over 2031-2050 to reach climate neutrality. They also all entail the redirection of resources that would otherwise, in the absence of action, also need to be invested in more carbon intensive technologies in order to provide for the economy's energy needs.

An additional 1.5% of GDP compared to the 2011-2020 decade should be invested annually in the transition – moving resources away from less sustainable uses like fossil fuel subsidies. A strong mobilisation of the private sector will be pre-requisite to make this possible. The private sector will deliver most of these investments if the policy framework incentivises low carbon investment and discourages carbon intensive investment, provided there is a strong business case for these investments.

The Commission impact assessment in support of the Communication estimates that the average annual investment in the energy system, excluding transport, will need to increase to about €660 billion per annum in 2031-2050. This represents an increase compared to the low levels of energy system investment in 2011-2020, rising from 1.7% of GDP in 2011-2020 to 3.2% in 2031-2050. In the transport sector, annual investment is expected to increase to about €870 billion, but to remain broadly constant as a share of GDP, at around 4.2%.

Decarbonising the EU's energy system requires an intensification in efforts to replace fossil fuels with renewable and low-carbon sources of energy, achieving significant energy savings and the deployment of innovative processes in industry. Existing capital assets (for example, fossil-based power plants, heating and cooling systems or industrial processes) will be replaced with renewable, low-carbon or electricity-based assets, whose capital intensities are larger than fossil-based assets.

On the demand side, the decarbonisation of industrial processes and improvements in energy efficiency will require significant investments, particularly in energy-intensive industries. The shift towards electricity as the principal energy carrier and the production of more sustainable alternative fuels to power the transport sector will also require significant investments over the coming decades.

Investments will lead to new business opportunities but will also require the right conditions to be in place to attract the necessary funding at a large scale. The EU budget will therefore need to be fully mobilised in this process, and revenues from carbon pricing should provide an important source of

funds for climate action. The conditions to facilitate this level of investment must be put in place, with effective coordination and making the best use of public financial resources to attract private investment and avoid investment decisions that are not compatible with the transition. To mobilise private investment, the EU needs significant policy and financial incentives, to continue to develop its sustainable finance framework, deepen the EU Capital Markets Union, reinforce its capacity to facilitate projects and build the case for new business models in key transition sectors.

Public sector support and direct investment should be strategically deployed, also by frontloading and maximising existing resources with large-scale pooling of funding, making it accessible in the fastest and simplest way possible and facilitating synergies between different instruments. The [Innovation Fund](#) of the EU Emissions Trading System will provide a strategic tool to support and scale up innovative technologies and become a key instrument to deploy the Green Deal Industrial Plan.

For More Information

[Press release](#) on the Climate 2040 targets Plan

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