

What is carbon neutrality and how can it be achieved by 2050?



What is carbon neutrality and how can it be achieved by 2050?

With the European Climate Law, the EU is committing to carbon neutrality by 2050. What does that mean in practice?

Climate change is already affecting the entire world, with extreme weather conditions such as drought, heat waves, heavy rain, floods and landslides becoming more frequent, including in Europe. Other consequences of the rapidly changing climate include rising sea levels, ocean acidification and loss of biodiversity.

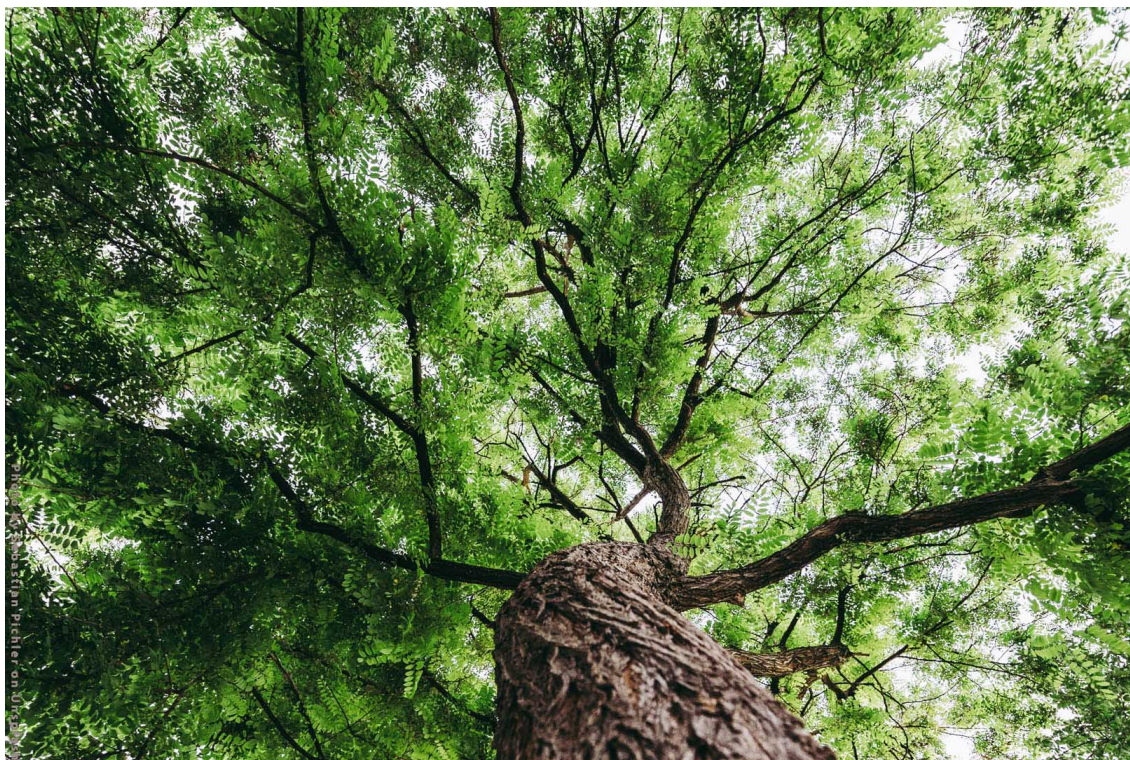
In order to limit global warming to 1.5 degrees Celsius – a threshold the Intergovernmental Panel for Climate Change (IPCC) suggests is safe – **carbon neutrality by mid-21st century** is

essential. This target is also laid down in the [Paris agreement](#) signed by 195 countries, including the EU.

In December 2019, the European Commission presented the [European Green Deal](#), its flagship plan that aims to make Europe climate neutral by 2050. This target will be reached through the European Climate Law that sets climate neutrality into binding EU legislation.

"In order to achieve the long-term temperature goal [...], Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, [...], and to undertake rapid reductions thereafter in accordance with the best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century[...]."

Article 4 of the Paris agreement



Forests help to absorb carbon from the atmosphere. Photo by Sebastian Pichler on Unsplash

What is carbon neutrality?

Carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere in **carbon sinks**. Removing carbon oxide from the atmosphere and then storing it is known as carbon sequestration. In order to achieve net zero emissions, all worldwide greenhouse gas (GHG) emissions will have to be counterbalanced by carbon sequestration.

Carbon sink is any system that absorbs more carbon than it emits. The main natural carbon sinks are soil, forests and oceans. According to estimates, natural sinks remove [between 9.5 and 11 gigatonne of CO₂ per year](#). Annual global CO₂ emissions reached [37.8 gigatonne in 2021](#).

Check out [how the EU wants to better use forests as carbon sinks](#)

To date, no artificial carbon sinks are able to remove carbon from the atmosphere on the necessary scale to fight global warming.

The carbon stored in natural sinks such as forests is released into the atmosphere through forest fires, changes in land use or logging. This is why it is essential to [reduce carbon](#)

[emissions](#) in order to reach climate neutrality.

Carbon offsetting

Another way to reduce emissions and to pursue carbon neutrality is to offset emissions made in one sector by reducing them somewhere else. This can be done through investment in [renewable energy](#), [energy efficiency](#) or other clean, low-carbon technologies. The EU's [emissions trading system \(ETS\)](#) is an example of a carbon offsetting system.

Another example of an initiative to reduce emissions is the EU's [carbon border adjustment mechanism](#), which would apply carbon prices on imported goods from less climate ambitious countries. This should help discourage companies moving production from the EU to somewhere with less stringent greenhouse gas emissions rules.



A climate-neutral Europe by 2050

https://multimedia.europarl.europa.eu/en/a-climate-neutral-europe-by-2050_N01-PUB-200921-CLIM_ev

EU goals

The European Union is committed to an ambitious climate policy. Under the Green Deal it aims to become the first continent to remove as many CO₂ emissions as it produces by 2050. This goal became legally binding when [the European Parliament and Council adopted the Climate Law in 2021](#). The EU's interim emission reduction target for 2030 was also updated from 40% to at least 55%.

The EU is currently revising old legislation and setting new laws that will help deliver the 2030 goal of a 55% cut in emissions. The package of legislation is known as Fit for 55 and includes among others rules on emissions trading, national emissions reduction targets, carbon removal in the land use sector and transport emissions.

Find out more about how the EU helps to reduce CO₂ emissions

- [National targets for 2030](#)

- [CO2 targets for cars](#)
- [CO2 emissions from cars: facts and figures \(infographic\)](#)
- [Cutting emissions from planes and ships: EU measures explained](#)
- [Infographic: timeline of climate change negotiations](#)

Find out more

[European Commission: Green Deal](#)

[Watch our Facebook Live interview with Pascal Canfin, chair of the environment committee](#)

[At a glance: adopting the climate law](#)