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

With the European Climate Law, the EU will commit to carbon neutrality by 2050. What would 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.
Paris agreement aims

- Reach global peaking of greenhouse gas emissions as soon as possible
- Undertake rapid reductions

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 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 Gt of CO2 per year. Annual global CO2 emissions reached 38.0 Gt in 2019.

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.

**EU goals**

The European Union is committed to an ambitious climate policy. Under the Green Deal it aims to become the first continent that removes as many CO2 emissions as it produces by 2050. This goal will become legally binding if the European Parliament and Council adopt the new Climate Law. The EU’s interim emission reduction target for 2030 would also be updated from the current 40% reduction to a more ambitious one.

On 7 October 2020, the European Parliament backed climate neutrality by 2050 and a 60% emission reduction target by 2030 compared to 1990 levels - more ambitious than Commission’s proposal of 55%. MEPs are calling for the Commission to set an additional interim target for 2040 to ensure progress towards the final goal.

In addition, members called for all EU countries individually to become climate neutral and insisted that after 2050, more CO2 should be removed from atmosphere than is emitted. Also, all direct or indirect subsidies to fossil fuels should be phased out by 2025 at the latest.

MEPs also want to set up an EU Climate Change Council (ECCC) as an independent scientific body to assess whether policy is consistent and to monitor progress.

Next, the Parliament will start negotiations with the Council. Currently five EU countries have set the target of climate neutrality in law: Sweden aims to reach net-zero emissions by 2045 and Denmark, France, Germany and Hungary by 2050.

**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)
- Infographic: timeline of climate change negotiations
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European Commission: Green Deal