

# 7 key points about the EU Taxonomy's 100g emissions threshold

In March 2020 the EU Technical Expert Group on Sustainable Finance (TEG) published its recommendations for an EU Taxonomy for Sustainable Activities.

A key feature of the recommendations around electricity generation was a “substantial contribution” emissions threshold of 100g CO<sub>2</sub>e/kWh. This is the limit on the intensity of greenhouse gas (GHG) emissions produced from the generation of electricity, heat and power from hydropower, geothermal energy or gaseous and liquid fuels.

On 20 November 2020 the European Commission released its draft Delegated Act for the EU Taxonomy, which adopted the TEG recommendation for an electricity generation threshold.

This briefing details the science behind that 100g threshold.

**1** The European Union has adopted a net zero emissions target for 2050. This is in line with the recommendations of the 2018 report of the Intergovernmental Panel on Climate Change (IPCC).

This target has also been adopted by a number of other OECD governments, notably Japan, South Korea, Canada and the United Kingdom.

In November 2020 the European Union also adopted an interim target of 55% emission reduction over 1990 levels by 2030, again in line with recommendations of the IPCC.

**2** These targets mean that Europe has a limited carbon budget left between now and 2050. Production of CO<sub>2</sub> in Europe was 4,391 million tonnes in 2018<sup>1</sup>. This must be net zero by 2050.

1. <https://www.eea.europa.eu/publications/european-union-green-house-gas-inventory-2020>

**3** The calculation of the 100g threshold is based on the EU targets for future allowed emissions from the power sector, divided by the expected evolution of electricity demand<sup>2</sup>.

This calculation, rounded to the nearest 5g, results in a threshold value of 100 gCO<sub>2</sub>e/kWh for the power sector.

The threshold represents the average value of power generation emissions between 2020 and 2050 to enable the EU to meet the net-zero by 2050 goal.

**4** Any one plant can over its lifetime emit only so much carbon and still be in line with the Union’s collective Paris Agreement goals<sup>3</sup>.

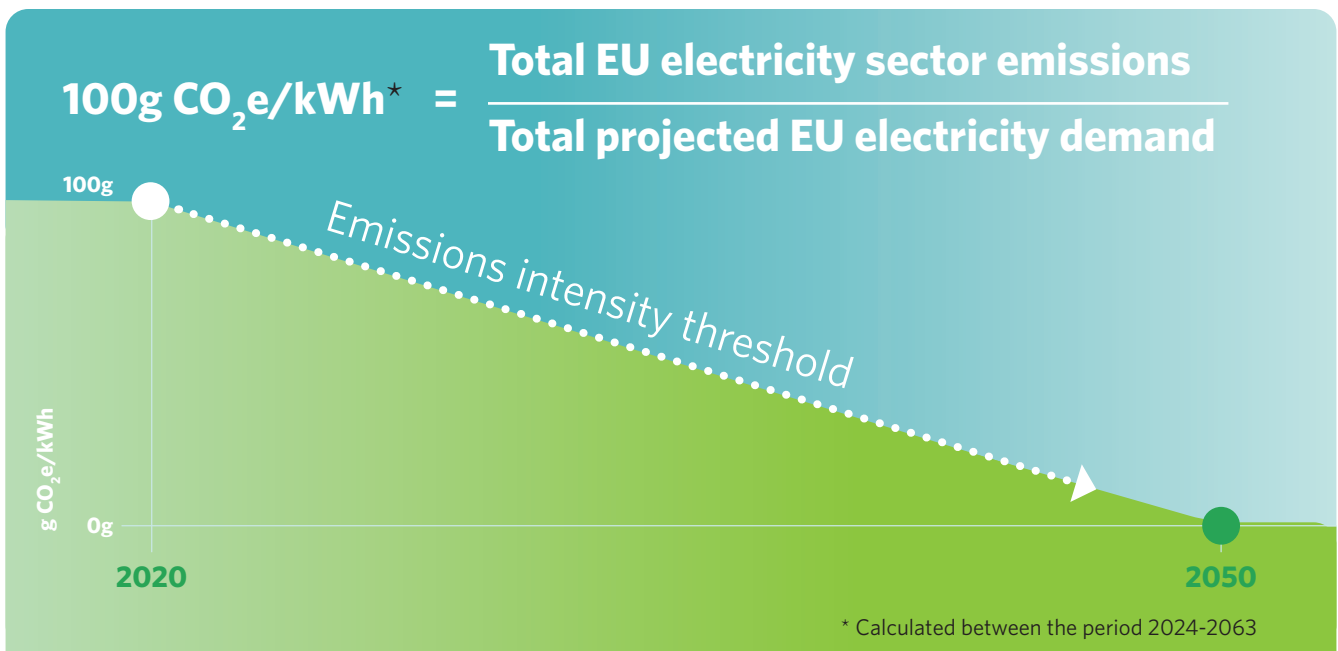
As we approach 2050, the less of an emissions budget we have left, the lower the total carbon that plant can emit. The TEG recommended this should reduce every five years, towards zero in 2050.

**5** A given power generator is considered to be making a substantial contribution to these policy targets if its emissions are below the 100g average of annual emission.

For a given investment or activity to be compatible with this trajectory, its average emissions over its physical lifetime, or 40 years (whichever is shorter), must be lower than the threshold. *See points 6 and 7 over page.*

2. The formula is based on two key data sets, both specific to the EU: (1) Historical power sector GHG emissions and electricity demand data, sourced from Eurostat and (2) forecast electricity demand (net generation) found in the “EU 2016 PRIMES Reference Scenario”. Details at <http://data.europa.eu/euodp/en/data/dataset/energy-modelling>

3. Power plants can have typical lifetimes of between 15 and over 100 years, depending on technology, operating mode and maintenance profile. Forty years is the maximum period over which the large majority of power plants can reasonably be expected to operate and emit GHGs without some form of repowering.



**6** Certain technologies clearly operate below the threshold, for example wind, solar and ocean/tidal power.

Other technologies such as geothermal, hydropower and bioenergy have a wider range of emissions intensities (emissions/kWh generated) and will therefore need to show that their emissions fall below the 100g CO<sub>2</sub>e/kWh threshold.

Some technologies utilizing natural gas combustion may be able to meet this threshold IF they are able to fully incorporate carbon capture and storage into the plant, but there is a strong burden of proof for those assets seeking to make this claim.

Although the 100 gCO<sub>2</sub>e/kWh threshold is derived from power sector assumptions, it will apply equally to both electricity and heating/cooling generation.

**7** The 100g threshold ensures the EU will meet its Paris Agreement commitments. European average emissions from the power sector are currently around 270g. To reach net zero by 2050, they will have to follow a rapidly declining pathway from current levels.

Any power plant operating below the 100g threshold is consistent with this pathway, and is making a substantial contribution to the EU meeting its Paris commitments.

Any plant operating above 270g increases average EU emissions from current levels and risks harming the Paris Agreement.

Energy assets that cannot meet this operating threshold face retirement earlier than their expected operating life, creating a risk of asset stranding.

## The Takeaway

A power plant operating below 100g CO<sub>2</sub>e/kWh over its lifetime is making a substantial contribution to reaching Paris Agreement targets.

Any power plant that emits more than 270g CO<sub>2</sub>e/kWh is making this more difficult.

## Implications of the 100g threshold

- Unabated natural gas-fired power generation is not expected to meet the required threshold. Gas-fired power with carbon capture and sequestration may qualify.
- Blended gas-fired power: co-combustion of multiple gases for the production of electricity, heat/cool and co-generation is also subject to the emissions intensity threshold. This includes combustion of RED II gases.
- Hydropower: the embedded emissions associated with the construction of hydropower facilities and the alteration of landscapes constitutes a significant portion of lifecycle analysis emissions. Such emissions can be compensated for by a complementary emissions reduction activity as mentioned above.
- Although the EU Taxonomy focuses on non-solid fossil fuel and renewable power, the DNSH to mitigation criteria are technology agnostic.

*This briefing has been prepared as background to the EU Technical Expert Group's sustainable taxonomy recommendations on electricity generation thresholds. It has been prepared by John Sinner of the European Investment Bank and Lionel Mok, Annika Sandback, Jason Godfrey and Sean Kidney from the Climate Bonds Initiative. February 2021. [www.climatebonds.net](http://www.climatebonds.net)*

