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Policy brief

On the European Commission's Delegated Act
establishing a Union methodology for the production
of renewable fuels of non-biological origin (RFNBOs)





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establishing a Union methodology for the production
of renewable fuels of non-biological origin (RFNBOs)**

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When is hydrogen renewable?

The EU has targets for the production and use of renewable hydrogen. But what exactly is renewable hydrogen? A disputed question. The European Commission has now decided what can be counted as renewable across EU countries.

On 13th February 2023, the European Commission published the final version of a Delegated Act setting out the rules that hydrogen producers must abide by to be able to label their product as renewable and count towards EU hydrogen and renewable targets.

This Delegated Act was issued based on article 27.3 of the Renewable Energy Directive currently in force (REDII). The text of REDII – adopted in 2018 – tasked the European Commission with developing a framework setting out detailed rules to ensure that the expected increase in demand for electricity from hydrogen and e-fuels production is met with new (i.e. additional) renewable energy generation capacity¹.

Why is additionality key? Hydrogen production not relying strictly on additional resources will pose serious risks of competition with other end-uses for precious renewable electricity generation. If the increased electricity demand from electrolyzers is not matched by additional renewable generation capacity, this will also increase demand for fossil-based generation – increasing emissions overall.

To work in practice, the principle of additionality requires that electricity used in hydrogen production is matched in time (temporal correlation) and space (geographical correlation) by a correspondent amount of electricity generated by additional renewables. A good way to ensure those correlations is to make sure that the electricity claimed by electrolyzers is matched hour-by-hour by additional renewable power in the same geographic area (“bidding zone”), to avoid electrolyzers drawing from fossil-based generation whenever their demand is not met with renewable supply in the same zone.

Renewable hydrogen production must rely on additional, renewable energy supply. According to the Delegated Act set out by the Commission, **hydrogen producers have different options** to ensure this:

- (1) Producing hydrogen with **electrolyzers that are directly connected** to a renewable energy source (i.e. not drawing power from the grid). To ensure additionality, co-located or directly connected renewable energy assets must not have come into operation earlier than 3 years before the linked electrolyzers (Article 3).

¹ Ex Article 27.3 Directive (EU) 2018/2001: “[...] electricity obtained from direct connection to an installation generating renewable electricity may be fully counted as renewable electricity where it is used for the production of renewable liquid and gaseous transport fuels of non-biological origin, provided that the installation:

(a) comes into operation after, or at the same time as, the installation producing the renewable liquid and gaseous transport fuels of non-biological origin; and

(b) is not connected to the grid or is connected to the grid but evidence can be provided that the electricity concerned has been supplied without taking electricity from the grid.

Electricity that has been taken from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated, [...]”

(2) **When using electricity from the grid**, hydrogen may be called renewable if renewable energy used to produce it is additional to existing renewables capacity and electricity production is temporally correlated with hydrogen production:

(2.a) Hydrogen produced by operators who have secured power purchase agreements (PPAs) with a renewable energy supplier. To ensure the additionality of the renewable energy used in their production, the contracted electricity must come from recently built, unsubsidised installations (Article 5) that are close enough geographically – i.e. in the same or in an interconnected bidding zone (Article 7). In addition, hours of renewable generation must overlap sufficiently with the hours of operation of hydrogen production (Article 6).

However, **there are three exceptions to the additionality requirement** (Article 4). Hydrogen may be labelled renewable also...

(2.b) ...when the average **share of renewables in the electricity mix of an area surpasses 90%**, hydrogen produced in that area may be labelled as renewable (Article 4.1). The idea here is that if an area already has an extremely high proportion of renewable electricity, the area need not continue adding renewable capacity with hydrogen roll-out.

(2.c) ...if it is produced by electrolysers running on **otherwise-curtailed renewable electricity** during periods of excess renewables generation. (Article 4.3). The idea here is that this renewable capacity would have been lost otherwise.

(2.d) ...when the **carbon-intensity of grid electricity is lower than 18 gCO₂eq/MJ** and the hydrogen producer concludes a power purchase agreement (PPA) with a renewable energy provider (Article 4.2). This weakens the additionality requirement for no good reason, as grids with low carbon emissions do not necessarily coincide with genuinely high shares of renewables.

To support the early scale-up of renewable hydrogen production technology, the Delegated Act foresees **further exceptions to the principles of additionality and temporal correlation**:

- **Renewable hydrogen production capacities that come into operation before 2028** will benefit from eased conditions during a phase-in period. They will be allowed to rely on existing and publicly-funded renewable energy assets until 2038 (Article 8) – as opposed to newly built and unsubsidised. The reason is that the availability of unsubsidised renewable power generation is likely to remain limited in the near future.
- **Until 2030**, hydrogen producers are only required to match hydrogen production and additional renewable energy supply on a monthly rather than an hourly basis (Article 8, first paragraph). This reduces the need for hydrogen producers to adapt their production to varying renewable output.
- **Whenever electricity prices are lower than 20 EUR per MWh** on the day-ahead market (of a specific bidding zone in a specific hour), temporal correlation will automatically be considered as complied with. The same applies when prices are lower than 0.36 times the price per ton of carbon dioxide emissions in the European emissions trading scheme.

Assessment

Considering the very high targets for EU hydrogen production outlined in the REPowerEU plan – i.e. 10 Mt of domestic renewable hydrogen production by 2030 – it is essential that hydrogen production

goes hand in hand with increased renewables production. However, this Delegated Act is problematic in various ways:

- (1) **Nuclear in the mix.** The exception related to low-carbon-intensive grids is highly problematic: The principle of additionality is weakened even if hydrogen producers need to conclude power purchase agreements with renewable energy producers. The effect this regulation will have is that hydrogen will be produced from existing renewables, increasing demand for fossil and nuclear energy elsewhere in the grid. Increased use of renewable hydrogen will simply lead to increased use of PPAs, with no additional renewables in the grid. This is greenwashing.
- (2) **Delayed additionality.** The requirement of additionality will essentially only enter into force in 2029, as market entrants before then will only have to respect additionality from 2038 onwards. This will mean that more hydrogen production in the coming years will mean less renewable capacity for other end-uses. This will also increase electricity prices for consumers and hinder the EU's transition towards a 100% renewables-based energy mix.
- (3) **Weak temporal correlation.** Hourly correlation will only be applied from 2030 onwards. Until then, hydrogen producers will only have to prove temporal correlation on a monthly basis – thereby being able to use electricity whenever their operations require, instead of when it is available and produced by renewables. Given short-term fluctuations of wind and solar generation, this does not ensure that electrolyzers run in hours with a high share of renewables.

This Delegated Act is meant to bring clarity on what makes hydrogen renewable. The European Commission plans to kickstart investments in hydrogen and e-fuels. These are required to decarbonise hard-to-abate sectors in industry and long-haul transport. However, this piece of legislation includes several derogations and loopholes for hydrogen production that could result in increased emissions, competition for investments with renewables and grids, and higher energy costs. **This will make it harder for the EU to achieve its stated energy policy objectives:** mitigating the effects of climate change, reducing Europe's reliance on imported fuels, increasing the roll-out of renewables, and protect consumers from high energy prices. EU consumers and businesses must be able to trust that renewable hydrogen actually comes from renewables, and not from nuclear or fossil fuels. **The exceptions and loopholes of this act undermine the credibility of the EU renewable hydrogen label.**

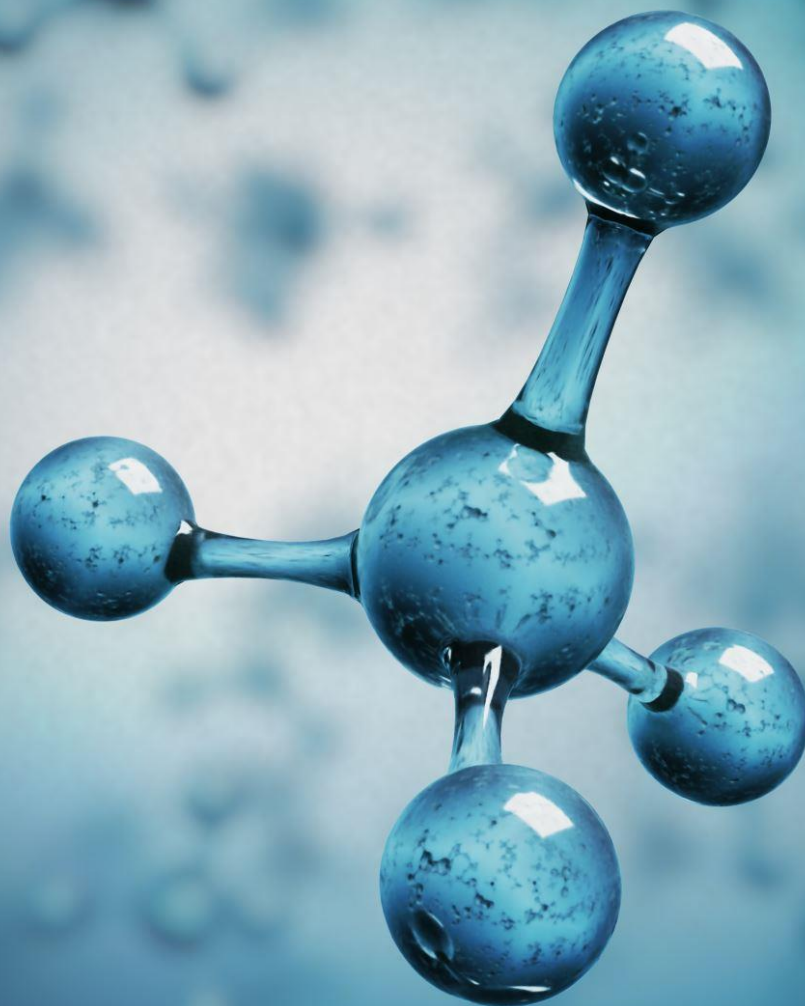
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