

EXPLAINER ON THE DELEGATED ACTS ON RFNBS AND GHG EMISSIONS REDUCTIONS

On 20 May 2022, the Commission published two Delegated Acts that are connected to the Renewable Energy Directive (2018/2001), or REDII. These two documents determine the rules under which renewable and low-carbon hydrogen can be produced.

Renewable hydrogen is produced by electrolyzers that split water (H₂O) into hydrogen (H₂) and oxygen (O₂). To do so, large amounts of electricity¹ and water² are needed. For renewable hydrogen, that electricity needs to come from renewable sources. The underlying principle is that this renewable electricity (RES) is excess electricity, or that at the very least, that it does not [cannibalise](#) existing renewable electricity meant to decarbonise the grid, as has long [been argued by Bellona](#).

As always, the devil is in the details, and [with the two delegated acts, the Commission paves the way for bypassing the need to establish a clear link between production of renewable hydrogen, and production of excess or additional renewable electricity](#).

Renewable hydrogen plays a large role in the EU's climate ambitions, and particularly so with the REPowerEU package, meant to wean the EU off Russian gas and keep consumer prices down. Unfortunately, with these two Delegated Acts, the European Commission is deemed to fail on all three counts for these ambitions.

WHAT ARE THESE DELEGATED ACTS AND WHY ARE THEY PROBLEMATIC?

These two delegated acts are linked to the Renewable Energy Directive (2018/2001). In article 28.5 of that Directive, the Commission indicates that by 31 December 2021, the rules on how renewable fuels of non-biological origin can be produced and accounted for should be detailed. First announced for 14 July 2021, the Commission finally published both texts on 20 May 2022³.

Unfortunately, these acts are problematic for the following reasons:

- They allow producers of electrolytic hydrogen operational before 2027 to benefit from life-long exemptions from basic assurances that the hydrogen produced is effectively renewable.
- They allow producers to double count the renewable electricity used, thereby greenwashing their product.
- Their legal soundness is disputable, thus creating an uncertain investment basis for producers.

These three points will be explored further in the analysis below.

The two delegated acts also do not adequately answer the three ambitions the Commission has set out for itself:

1. **They do not address climate change:** these documents will likely increase the demand for electricity disproportionately and for inefficient uses. That electricity won't all be able to come from renewable sources and will therefore likely push fossil fuel use up.
2. **They do not protect citizens from increasing prices and energy poverty:** increased electricity use in an already stressed market will further push demand for fossil fuels which is the most expensive type of electricity generation. This is a bill the consumers will pay. Moreover, they will also be paying for new renewables used exclusively for hydrogen production instead of prioritising grid decarbonisation, also adding to their already increasing bills.
3. **They do not wean the EU off Russian gas:** without prioritising electrification and ensuring that electrolyzers producing renewable hydrogen use additional renewable electricity generation, the need for fossil fuels will only increase and weaning off Russian gas will be made all the more difficult.

1 SP Global. 2022. Available at: <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/051922-ec-hikes-renewable-hydrogen-demand-targets-in-repowerEU-package#:~:text=Hydrogen%20production%20targets&text=S%26P%20Global%20said%20in%20an,additions%20set%20to%20rapidly%20increase>

2 Energy Post. 2021. Available at: <https://energypost.eu/hydrogen-production-in-2050-how-much-water-will-74ej-need/>

3 Both of the Delegated Acts can be consulted here: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives_en

WHY ARE THERE TWO SEPARATE DELEGATED ACTS?

Both delegated acts are supposed to serve different purposes and address the following aspects:

1st DA (Delegated act on Production of Renewable Transport Fuels (share of renewable electricity))

- The key purpose of this delegated act is to provide a robust methodology for calculating the carbon intensity of the electricity used to produce renewable fuels of non-biological origin
- This electricity use is divided into three scenarios:
 - Electrolysers running directly on RES
 - Those who have a Power Purchasing Agreement (PPA)
 - Those that run on a grid with a RES penetration of at least 90%

2nd DA (Delegated act on the method for assessing GHG emission savings for certain fuels)

- This delegated act should provide the method for assessing emission reductions from recycled carbon fuels and renewable fuels of non-biological origin
- It defines which greenhouse gas (GHG) emissions reductions can be counted
- However, it also provides options for electrolysers to run on the grid without additionality

The second delegated act essentially strips the first of any meaning by adding several loopholes that allow producers to double count RES and avoid having to install additional RES capacity.

THE FIRST DA – RES HYDROGEN (USE OF RENEWABLE ELECTRICITY)

The first Delegated Act is also sometimes referred to as the “additionality DA”, giving the impression that it safeguards that principle despite this not being the case, as argued below.

What is additionality and why does it matter?

[Additionality](#) is the principle that any renewable hydrogen production should not cannibalise existing RES. The current renewable electricity capacity is not sufficient to answer demand and has for a large part been paid for with subsidies. In other words, the existing RES capacity should primarily be used to decarbonise the grid and [electrify as much as possible](#).

The 1st DA is meant to establish an obligation to build additional RES capacity to produce renewable hydrogen but, in article 8, establishes a grandfathering clause that nullifies that requirement for the lifetime of any electrolyser in production before 2027.

What options can be picked to produce renewable hydrogen in the 1st DA, post 2027?

The first DA details the following options for producing renewable hydrogen:

1. A direct connection to a source of renewable electricity (RES) that is built specifically for the purpose of producing renewable hydrogen (point (8))
2. An electrolyser connected to the grid that has a power purchasing agreement (PPA) with a renewable electricity source and that runs in the same or a neighboring bidding zone
 - a. either on hours that the renewable electricity is actually being generated (point 9 and Article 4, point 2),
 - b. or when electricity is cheaper than 20€ per MWh
 - c. or 0.36 times the price of an allowance
3. An electrolyser connected to a grid whose RES penetration is at least 90% (Article 4, point 1).
4. An electrolyser using curtailed electricity during a period of imbalance (Article 4, point 4).

What happens to electrolysers starting operations before 2027, under the grandfathering clause?

Grandfathering is mentioned in Article 8 of the delegated act on the production of RFNBOs: it provides a clause for which any installation that comes online before the end of the transitional period (between now and 2027) **will not have to fulfil the additionality requirements during its entire operational lifetime.**

In practice, this means that an electrolyser built before 2027 (and there will be many as quite a few are already on the starting blocks) can sign a Power Purchase Agreement for as long as they want with renewable electricity generation that was initially deployed to support the power sector transition. Electrolysers have a life expectancy of around 30 years, therefore the lock-in effect of such a provision will have consequences beyond 2030.

Why is this DA problematic?

Additionality is not safeguarded as all the installations built before 2027 will not have to support any new deployment of renewables at any point of their operating life.

With a normal transitional period, these electrolysers would need to provide additionality at a later stage. This would enable them to ramp up production in the early stages and comply with additionality at a later stage. However, with the grandfathering clause in place, those pre-2027 electrolysers will never have to comply with additionality.

THE SECOND DA – ON GRID PRODUCTION

What options can be picked to produce green or low/zero-carbon hydrogen?

The second DA and its Annex provides the following options for electrolysers to run on the grid without the additionality constraints mentioned in the first DA:

1. Running on the grid based on the average carbon intensity of electricity consumed in the Member State in the two-year period prior to the production, provided the hydrogen produced is 70% less carbon intensive than the FF comparator (with an improvement factor based on the assumption that renewable share will increase, as mentioned in point (12) in the DA)
 - Where: points (11) and (12) in the DA, referring to Article 27 (3) of REDII (2018)
 - Example: in Sweden, the renewable penetration was 66% in 2020, topped up with 30% of nuclear generation. This is low enough to meet the 70% emissions threshold⁴. This means that an electrolyser running 100% of the time on the Sweden grid would be producing 66% of the time renewable hydrogen without any need for PPAs.
2. Where the previous option does not yield fully renewable hydrogen, running on the grid with GHG emissions values attributed according to the Annex part C of the DA
 - Where: point (6), Annex

Renewable or 'zero carbon' hydrogen can be produced on the grid without any temporal correlation for a number of hours equivalent to those in which renewables or nuclear production set the price (marginal price).

 - Where: point (6), Annex
 - Example: as Bellona understands this, if in a Member State, renewables are setting the price for 3000 hours one year, the next year, renewable hydrogen can be produced on the grid for 3000 hours
3. GHG emissions value of the marginal unit generating electricity can be used at the time & place of production
 - Where: point (7), Annex

These options can be cherry-picked according to what yields the best result, at any hour, effectively resulting in double counting.

⁴ The fossil fuel comparator is 94 gCO₂eq/MJ and the carbon intensity of the Swedish grid is 6 gCO₂eq/MJ. Assuming an efficiency of the electrolyser of 70%, the hydrogen produced on the Swedish grid will be at 8.57 gCO₂eq/MJ

EXAMPLE OF HOW DOUBLE COUNTING CAN OCCUR

A hydrogen producer establishes a PPA with a wind farm in Sweden. Thanks to this it can produce fully renewable hydrogen for 3000 hours a year. For the remainder of the year (5760 hours) the electrolyser will be run on the electricity from the grid, which has a 66% penetration of renewables and 30% of nuclear. This means that for another 3802 hours the hydrogen produced will be considered renewable and for 1728 it will be considered zero carbon. This yields a total of 6802 hours on which the hydrogen produced will be considered renewable (77% of the time).

However, the wind farm producing electricity for the PPA also participates in bringing the renewable penetration at 66%. Moreover, the hours the electrolyser runs on the grid rather than on the 3000 hours of wind power is when there is little to no wind power generation: there is no correlation needed between wind power generation and renewable hydrogen production for the 3802 hours it can account for as renewable. Therefore, the renewable electricity from that wind farm is accounted for twice.

Why is this DA problematic?

- **Double counting renewable electricity:** Not only does the second DA provide a way out of additionality, but it also enables double counting (e.g., counting both PPA solar and the yearly average RES penetration)
- **Accounting flexibility enabling grid connection:** it creates an incentive for electrolysers to run the longest possible amount of hours and be as inflexible as can be; producers can cherry pick every hour which accounting method yields them the most renewable or low-carbon hydrogen, which incentivises never turning production off. This is now possible, despite hydrogen being initially foreseen as a way to capture excess renewable electricity production.
- **Unfair competition between member states:** Member states that do foresee additional renewable electricity generation to be dedicated to hydrogen production will be disadvantaged compared to member states where electrolysers will be running with a direct connection to the electricity grid with mixed energy sources.

LEGAL ISSUES

Can these DAs be legally contested?

Yes. The DAs are legally problematic on the following counts:

- The weakening of the additionality principle disregards and conflicts with essential elements of the Renewable Energy Directive (2018/2001), or REDII. This suggests that the Commission exceeded its delegated powers and is manifestly misapplying the law.
- By encouraging a massive increase in electricity demand and displacement of renewables, and by creating GHG accounting methodologies which will clearly benefit certain Member States over others, the delegated acts fail to uphold the Energy Efficiency First and the Energy Solidarity Principles, which are binding on the Commission under Article 194 TFEU.
- The Commission has not met its obligation under the European Climate Law to assess the delegated acts against the EU's climate targets. If such an assessment were made, it would likely demonstrate that the delegated acts neither help enable the collective achievement of climate neutrality nor prioritise 'swift and predictable reductions', as required by that law.

What does this legal aspect mean?

This means that **investments by producers will be uncertain for the time being**. With the European Commission overstressing its mandate on these DAs, bending to the will of hydrogen producers, it has essentially rendered the grounds on which investments will be made less solid.

A strong, strict, and stable legal framework is what is necessary for industry to make the right investments.



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Bellona Europa is an independent, non-profit organisation that meets environmental and climate challenges head-on. We are result-oriented and have a comprehensive and cross-sectoral approach to assess the economics, climate impacts and technical feasibility of necessary climate solutions. To do this, we work with civil society, academia, governments and polluting industries.

GLOSSARY

DA – Delegated Act

RES – Renewable Energy Source(s), in this case referring to solar and wind power

PPA – Power Purchase Agreement, direct contracts between producers and electricity suppliers

Grandfathering - exempt (someone or something) from a new law or regulation

REDII – Renewable Energy Directive (2018), currently in force

TFEU - Treaty on the Functioning of the European Union

ANNEX

Fossil fuel comparator: 94 gCO₂eq/MJ

For hydrogen to be considered renewable and/or low-carbon, the hydrogen needs to reduce the emissions by 70% compared to the fossil fuel comparator. This means that it needs to be below 28.20 gCO₂eq/MJ

Country	carbon intensity of the grid according to Annex of DA on GHG emission reductions	carbon intensity of hydrogen produced on grid (assuming 70% efficiency of the electrolyser)
AT	46	65.71
BE	68	97.14
BG	141	201.43
HR	47	67.14
CY	218	311.43
CZ	148	211.43
DK	54	77.14
EE	223	318.57
FI	37	52.86
FR	20	28.57
DE	124	177.14
EL	171	244.29
HU	85	121.43
IE	108	154.29
IT	103	147.14
LV	52	74.29
LT	22	31.43
LU	22	31.43
MT	126	180.00
NL	132	188.57
PL	221	315.71
PT	91	130.00
RO	105	150.00
SK	54	77.14
SI	77	110.00
ES	85	121.43
SE	6	8.57