EU Hydrogen Regulations 2023

Green hydrogen is an energy carrier that will play a crucial role in decarbonizing the European Union and features prominently in the European Green Deal. The process of producing green hydrogen through electrolysis is however highly energy intensive. On 13 February 2023, the European Commission submitted two Delegated Acts to the European Parliament and Council for approval. These acts provide clear definitions and criteria for what constitutes renewable fuels of non-biological origin (RFNBOs) – which includes renewable hydrogen and its derivatives. These Acts will help channel EU funds towards renewable hydrogen and allows for its production and utilization to count towards the clean energy targets of respective member states. Essentially, these Acts seek to ensure RFNBOs are produced using renewable energy.

The first Act seeks to define under which conditions hydrogen or its derivatives, are considered RFNBO fuels and the second Act provides a methodology for calculating the greenhouse gas (GHG) emissions of a RFNBO. Below, we clarify a few of the most important principles set out in these Acts.

Firstly, electrolysers must be supplied with renewable electricity. To ensure this, multiple options are available:

- The installation is directly connected to a renewable energy generator.
- The power is purchased through a PPA (power purchase agreement) from a generator located within the same bidding zone, provided that such generators does not receive governmental financial support.
- Power is drawn from the grid when the renewable electricty constitutes 90% of the electricity mix in the respective bidding zone.
- The electrolyser is located in a bidding zone with an emissions intensity of below 18 gCO2eq/MJ (approx. 56 CO2e/kWh). This includes bidding zones where nuclear power is dominant.
- From 2028, renewable energy used in hydrogen production must be from generators commissioned no more than 3 years prior to the commissioning of the electrolyser.

Secondly, to ensure hydrogen production does not divert renewable energy from the network, only surplus renewable energy will be used. This is referred to as additionality:

- Additionality seeks to match renewable energy generation spatially (i.e. within a geographic bidding zone) and temporally (i.e. within a given period of time) with demand from electrolysis plants. This ensures that hydrogen production does not increase electricity prices as, increased demand from electrolysers will be matched with additional renewable supply produced at low marginal cost.
- Additionality will be phased-in – until 31 December 2029 the production of renewable energy and renewable hydrogen must be matched (only) on a monthly basis. From 2030, a more stringent hourly matching regime will be implemented.
- First movers – i.e. installations commissions before 2028 – are exempt from the additionality requirement until 2038.

Producers from third countries seeking to export renewable hydrogen to the EU will also be subject to the abovementioned requirements. This will be regulated through a certification scheme. Finally, the calculation of greenhouse gas (GHG) emissions of RFNBO must also consider the entire lifecycle of such production. This includes upstream emissions, emissions associated with taking electricity from the grid, from processing, and those associated with transporting these fuels to the end-consumer.

It is anticipated that the published acts will ensure that the hydrogen produced in the EU is supportive of decarbonization efforts whilst promoting electrification without placing excessive pressure on the electricity network.