SolarPower Europe

Mainstreaming renewable energy in the transport sector - Renewable Fuels of Non-Biological Origin

Solar Power Europe's key recommendations for the design of the methodology to guarantee that electricity used to produce Renewable Fuels of Non-Biological Origin (RFNBOs) comes from renewable sources

- Develop a phased approach to temporal correlation, where temporal correlation should not be required to be below daily granularity in the short-term to allow for a fast upscaling of the market for renewable-based hydrogen
- Develop an approach to geographical correlation that allows for cross-border access of renewable electricity to access the huge volumes of renewable energy that are needed already by 2024. This cross-border approach is also aligned with safeguarding the EU Internal Energy Market
- Develop a phased approach to additionality, where additionality does not need to be proven in the short term to allow for a fast upscaling of the market for renewable-based hydrogen
- Develop a robust certification and tracking system harmonized across Europe that guarantees green hydrogen is produced from 100% renewable energy sources and that triggers investment in additional renewable electricity capacity
- Additionality should be discussed during the revision of the RED II when discussing adjustment for 2030 renewable energy targets

The European Union has a unique opportunity to take decisive steps towards climate neutrality by 2050. To mainstream the use of renewable energy in the transport sector and contribute to meet the EU climate neutrality goal, Member States shall guarantee that the share of renewable energy within the final energy consumption in the transport sector is at least 14% by 2030 (RED II, Article 25). To successfully achieve this goal, it is crucial to ensure that the electricity used to produce renewable liquid and gaseous transport fuels of non-biological origin (RFNBOs) was indeed produced from renewable energy sources. Renewable hydrogen from non-biological sources (solar, wind, hydro) is therefore a type of RFNBO and it is expected to play a strategic role in the decarbonisation of the transport sector as well as other sectors of the EU's economy.

The EU Hydrogen Strategy envisions the installation of 6 GW of renewable hydrogen electrolysers by 2024, which would lead to the installation of about 15-20 GW of new renewable energy capacity, in addition to the renewable electricity needed to meet the 2030 greenhouse gas emission target. Therefore, it is crucial to deploy renewables at scale fast if we are to meet EU's renewable electricity needs. The electricity used to produce RFNBOs cannot be based on the existent electricity from the grid – which for the foreseeable future includes electricity generated from fossil fuel sources – it is therefore crucial that it comes from new renewable energy assets, such as solar plants.

The RED II established the criteria for RFNBOs to qualify for the 14% target, but it left out the methodology to demonstrate them to a Delegated Act due in December 2021. Following the

requirements for 100% renewability defined in the RED II, SolarPower Europe provides the following recommendations for the design of the methodology to guarantee that electricity used to produce RFNBOs comes from renewable sources:

1. Develop a phased approach to temporal correlation, where temporal correlation should not be required to be below daily granularity in the short-term, to allow for an upscaling of the market for renewable-based hydrogen fast

RED II: Recital 90: there should be a "…temporal…correlation between the electricity production unit with which the producer has a bilateral renewables power purchase agreement and the fuel production"

We must design our energy system to be fit for the future, requiring careful consideration to appropriately define temporal and geographical correlation between the renewable electricity generated (and contracted via PPAs) and the hydrogen produced through electrolysis. Doing so now is essential as solar and wind power plants and electrolysers have a lifespan of at least 25 years and, any requirement that is valid in the present, will need to be valid under future market conditions.

Having too strict requirements for temporal correlation might hamper the deployment of renewable hydrogen in the short term. In Europe, the shortest time unit for electricity trading is 15 minutes. This is a very short time span. In this case, renewable-based hydrogen producers must either have a very diverse portfolio covering the day and night hours when the electrolyser is generating or shut down the hydrogen production for several hours to comply with the criteria. For the electrolysers to produce hydrogen in the most cost-effective way possible, they must run for as many hours as possible. Therefore, defining a short time correlation requirement may hamper the efficiency of the electrolyser and therefore lead to the production of renewable-based hydrogen at sub-optimal costs.

A phased approach focused on accelerating deployment of renewable-based hydrogen may be needed.

• **In a first phase** (e.g. until 2024), the temporal correlation should not be too strict, and not below daily granularity, to achieve an upscaling of the market for renewable-based hydrogen fast.

• **In a second and medium/longer-term phase**, temporal correlation could introduce more diverse timeframes depending on the needs of companies, such as hourly. As renewable energy provides an ever-increasing portion of power on the grid, energy procurement methods would need updating. Current methods allow organizations to match their total energy consumption with renewable energy that was produced at any time within a 12-month period. This means that organizations following today's criteria for being 100% renewable still rely on fossil fuel electricity from the grid many times a day throughout the year. At present, some companies have recognized the need to go one step further and move to hour-by-hour tracking of renewable energy consumption. The benefits of this include improving consumer confidence and incentivizing the delivery of renewable energy when and where it is most needed, for example through energy storage technologies such as batteries or hydrogen.

The Delegated Act must also incorporate the role of storage appropriately. Storage would allow to match the renewable energy supply with the production of renewable-based hydrogen. When the renewable energy output is stored, the comparison for temporal correlation must be between the actual electricity consumption of the electrolyser and the actual electricity injection into the grid from the storage facility.

2. Develop an approach to geographical correlation that allows for cross-border access to renewable electricity to access the huge volumes of renewable energy needed, and which is aligned with safeguarding the EU Internal Energy Market.

RED II: Recital 90: there should be a "geographical correlation between the electricity production unit with which the producer has a bilateral renewables PPA and the fuel production"

Having too strict requirements for geographical correlation might hamper the deployment of renewable hydrogen in the short term. Limiting the geographical correlation to the same country or bidding zone, would exclude electricity imports from a different country or a different bidding zone. Among the various detrimental consequences for the development and upscaling of the renewable hydrogen market, include:

- This approach is incompatible with the EU Internal Energy Market and too short-terminist since bidding zones may change in 1-2 years depending on the evolution of grid congestion.

- Having cross border access to renewable electricity is a necessary pre-requisite to deliver on the volumes of renewable energy needed for demand on the short-term. In regions where energy consumers cannot benefit from enough regionally produced renewable energy, electricity imports will be required to supply energy-intensive industry when transitioning to renewable energy consumption.

In the world of corporate purchasing of renewables, virtual PPAs are an effective way of procuring renewables in a cost-effective manner. This allows for the addition of renewable capacity on the grid, while allowing corporate customers to take advantage of

cheaper land and better irradiation conditions, which will make the energy procurement more competitive for end-users. We believe such a concept should be used more widely in the EU, and that it could be very useful in the context of green hydrogen procurement, provided it comes with an effective system of GOs.

Virtual PPAs are growing in familiarity and legitimacy in Europe due to attractive project economics, since they offer the added advantage of contracting a project with the most beneficial economics regardless of geography, when:

- Corporate renewable PPAs are not available in the market where the load is located due to the regulatory framework or there are not enough renewable energy generators.
- Corporate renewable PPAs are available in the market where the load is located, but are cost prohibitive or otherwise constrained; or
- The corporate buyer can achieve a better outcome (such as lower cost, lower risk, or higher environmental impact) by procuring renewable electricity in a different market.

The increasing interest in virtual PPAs was also recognized by the European Commission in a publication in 2019 on the competitiveness of corporate sourcing of renewable energy and named "important element[s] for expanding the contribution of corporate renewable energy PPAs to Europe's energy transition…allow[ing] renewable energy to be purchased from where it is cheapest and delivered to centers of consumption."

Also, for the Delegated Act to be in line with the objectives of the EU Financing Mechanism to both deploy more renewable energy and enhance regional cooperation – the enabling framework provided by Article 33(2) of the Governance Regulation – then cross-border activity – in the form of electricity imports and exports – should be encouraged and not disincentivized.

3. Develop a phased approach for additionality, where additionality does not need to be proven at the beginning, to allow for an upscaling of the market for renewable-based hydrogen fast.

RED II: Recital 90: "…there should be an element of additionality, … the fuel producer is adding to the renewable deployment or to the financing of renewable energy."

To be on track for the EU to become climate neutral by 2050, it is crucial to deploy new renewable energy assets as the production of renewable-based hydrogen increases. Thus, it is key to ensure that the electricity used to produce renewable-based hydrogen is coming from additional renewables being added to the system, and not just existing renewables being diverted to new end-users. However, requirements on additionality need to adapt to incentivize the renewable energy volumes needed in the short-term. Thus, it must strike the right balance between incentivizing strongly the installation of new renewable assets and enabling the early upscaling of the market.

Hence, we support a phased approach focused on accelerating deployment of renewable-based hydrogen.

• **In a first phase**, PPAs can be concluded by electrolysers with existing solar and wind power plants where additionality does not need to be proven. This will allow to achieve an upscaling of the market for renewable-based hydrogen fast (e.g. until 2024). This period will also ensure that market parties can look to match hydrogen projects with new solar and wind power plants.

• **In a second and medium-term phase**, additionality would apply to newly deployed solar and wind power plants. That is a scenario in which, had the hydrogen facility not existed, that amount of renewable electricity would never have been generated or would have been wasted. Where the electrolyser is directly connected to a solar and wind power plant that comes into operation after, or at the same time as the electrolyser, the hydrogen production would qualify as renewable without any other specification.

• **In a third and longer-term phase**, additional generation capacity for renewable hydrogen will be no longer necessary since renewables would be the dominant source in the electricity mix.

We also want to highlight that we find unsuitable that additionality is being discussed in the framework of this Delegated Act on RFNBOs for the transport sector only, since it is of relevance to all sectors of the economy. Additionality should be discussed during the revision of the RED II when discussing adjustment for 2030 renewable energy targets.

4. Develop a robust system for certification and tracking of renewable-based hydrogen that is harmonized across Europe and that triggers investment in additional renewable electricity capacity.

Guarantees of Origin (GOs) are meant to trace green electricity in the power system and thus are critical to demonstrate the use of renewable electricity. A well-functioning framework for GOs (RED II, Article 19) is important to the development of renewable PPAs to power electrolysers for hydrogen production.

Member States should issue GOs for all renewable electricity, reinforcing transparency, and empowering renewable energy producers to market their electricity. The rules to guarantee the traceability and to ensure

issuance of GOs to all renewable electricity producers should follow a consistent approach across all countries.

The European GOs system must adapt to new requirements from energy consumers, who are increasingly seeking more detailed information on the origin of their energy. The framework should increase the level of transparency and information contained in GOs to support those consumers seeking to report on additional attributes, e.g. including whether the electricity was in receipt of a subsidy so that consumers can attest to the additionality of their energy purchase.

A growing number of companies recognise the need to go one step further and move to hour-by-hour tracking of renewable energy consumption. Therefore, in line with the recommendations provided above on temporal correlation, in a medium/longer-term phase the temporal correlation and granularity of the information displayed on the GOs pertaining to the time of generation may need to be aligned with the approach adopted by these first-mover companies of hour-by-hour tracking.

Moreover, a robust certification system across Europe should guarantee that green hydrogen is produced from 100% renewable energy sources and has no carbon footprint. The Commission should propose a European certification system covering all renewable fuels based on full life cycle greenhouse gas emissions, building on existing provisions in the RED II. We recommend this new life cycle analysis (LCA) methodology, expected to be in place by June 2021, to be as detailed as possible, to use the latest scientific data, and to be applicable in an uniform way across European countries in order to increase its acceptance by companies.