Hydrogen "For Export Only": How international rules impact hydrogen projects in Brazil

SãO PAULO, SP, BRAZIL, September 20, 2023 /EINPresswire.com/ -- The new PAC (Brazil's Growth Acceleration Program), announced on August 11, 2023, focuses on measures for the energy transition, expressly mentioning the incentive to adapt port infrastructure for the storage and disposal of low-carbon hydrogen production, which demonstrates the export potential of hydrogen. One of the main destination for hydrogen produced in Brazil from renewable energies will be the European continent.

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In this sense, it is important to know the rules that have been edited in the European Union aiming to regulate the quality of hydrogen to be exported from Brazil.

On June 20, 2023, the European Commission published the Commission Delegated Regulation (EU) 2023/1185 (issued in February 2023), which supplements Directive (EU) 2018/2001 by establishing the methodologies for calculating the savings in greenhouse gas emissions from the transport of liquid or gaseous renewable fuels of non-biological origin, including the rules for the generation of renewable energies used in fuel production.

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The new European rules are relevant as they define criteria for hydrogen-derived fuels to be classified as generated by renewable sources in a context in which various initiatives have been implemented by European countries to decarbonize their energy matrix and vehicle fleet.

Indeed, much has been said about hydrogen as the renewable fuel of the future. However, this hydrogen needs to be manufactured. In a nutshell, hydrogen is produced through electrolysis, a process that uses water (H2O) and separates hydrogen from oxygen. The hydrogen can be used to produce ammonia, for example, transported to another location and used as fuel for power generation or engines. Electrolysis, on the other hand, uses energy, which can be produced from various sources, both renewable and non-renewable.

Hydrogen is classified by colors depending on the energy source used to operate the electrolyzer. In the production of so-called "green" hydrogen, the electrolyzer uses renewable sources (such as solar, hydro, or wind). Verifying the source can be a simple task in dedicated projects (where the energy project is not connected to the grid, but directly and exclusively connected to the electrolyzer), but becomes complex in projects where the renewable source is connected to the grid, and guarantees the supply of energy to the electrolyzer through PPAs (Power Purchase Agreements). In this case, the fungible electrons are mixed with other electrons on the grid (renewable, fossil, nuclear sources) and it is impossible to determine the origin of each electron involved. Therefore, rules such as those proposed by the European Commission are being discussed to establish classification methodologies.

The methodology will apply not only to hydrogen generated within the European Union but also to producers outside the community who wish to export hydrogen or by-products such as ammonia.

In this sense, the rule is important for Brazilian projects that intend to produce hydrogen and by-products for export to European Union countries, as suggested in the context of the PAC, so that they can qualify their exports under the regulation's criteria for classification as renewable.
The Regulation defines three criteria for classifying fuel as renewable:

(i) Additionality: the fuel must come from new renewable sources and new projects that have been in commercial operation no more than 36 months before the start of production of the

fuel;
(ii) Geographic correlation: the fuel must have been produced in the same “bidding zone” as the power generation site. The bidding zone is defined as the largest geographical area in which participants are able to sell energy without allocating capacity; and
(iii) Temporal correlation: there will be criteria for the simultaneous production of renewable energy and fuel.

The additionality criterion aims to prevent energy from existing renewable energy projects from being diverted to hydrogen projects, causing the system's energy supply to be met by more fossil fuels. In other words, the additionality criterion seeks to increase the total volume of renewable energy in the matrix.

The geographic and temporal correlations are designed to avoid overloading the system – if the loads are implemented over long distances, there would be a need for greater use of transportation systems. If the projects are generating energy at times other than when the electrolyzer consumes energy, the load resulting from the renewable projects could overload the system. It is worth mentioning that one of the possible causes of the recent power outage in Brazil, on August 15, 2023, was precisely the overload of renewable sources in the system.

There are transition rules: for additionality, the rule will apply from January 2028. For the temporal correlation rule, correlation will be computed on a monthly basis until January 2032 and, after that, it will be computed on an hourly basis.

If the system as a whole is 90% renewable energy, it is exempt from all the criteria. This is the case, for example, in Uruguay and Costa Rica. Brazil, despite having most of its matrix renewable, does not consistently reach this percentage. Furthermore, when the natural gas power plants planned for the coming years come into operation, the percentage will likely be reduced.

The rules of the Directive, as amended, can be supplemented by stricter rules from member countries.
Bringing the discussion of criteria for classifying renewable energies to Brazil, it must be said that there are currently no legislative initiatives in the country aimed at this classification.

Regarding green hydrogen, in particular, there are two bills under discussion in the Brazilian National Congress, seeking to regulate the concept of green hydrogen, as well as the characteristics of its production (for example, which regulatory agency will be responsible for regulating and supervising production). From a state perspective, there are also legislative initiatives, especially in states located in the Northeast of Brazil, aimed at promoting the hydrogen production chain at a local level.

In any case, the fact is that Brazil is perfectly located for the development of solar and wind generation, and has the potential to become a major exporter of hydrogen and by-products to

the European market. That is why it is so important to keep a close eye on the rules on hydrogen classification (this one and the next ones that will be issued in its wake) so that projects can enjoy the specific treatment given to fuels from renewable sources.

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