ENGLISH EDITION

Argentina: What is green hydrogen and why is it proposed as a new energy paradigm?

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The Australian company Fortescue announced last November an investment of 8.400 million dollars to produce green hydrogen in Argentina. It is a clean energy source because it does not produce carbon dioxide (CO2), unlike that from fossil

fuels. It has been defined by businessman Biil Gates as «the best innovation in recent years to combat the greenhouse effect».

This energy is obtained from the electrolysis of water, that is, by means of electrolyser technology, the hydrogen molecules present in the water molecule (H2O) are separated. Meanwhile, oxygen can be released into the air, since it does not pollute, or stored for other industrial processes, reports *RT*.

But for this hydrogen to be certified as 'green', it is required that the electricity used in the process come from renewable sources, for example, from wind or solar heat. It will be precisely in the Patagonian province of Río Negro where Fortescue will develop the production of green hydrogen, taking advantage of the strong winds that characterize the southern region of the South American country.

The fuel of the future in Argentina

The Argentine government is excited by the project, not only because of the environmental benefits but also because it will allow the creation of more than 15,000 direct jobs and between 40,000 and 50,000 indirect jobs, according to the estimates of the Casa Rosada (Governmental Palace). After holding a meeting with the head of Fortescue, Andrew Forrest, the CEO of the firm, Julie Shuttleworth, and the company's representative for the Latin America Region, former Argentine rugby player Agustín Pichot, President Alberto Fernández pointed out that "green hydrogen is one of the fuels of the future and it fills us up full of pride that Argentina is one of the countries that is at the forefront of the energy transition».

With a million-dollar investment, Fortescue plans to install three wind farms with a total capacity of 2,000 MW, to supply energy to the plant in the province of Río Negro and produce 2.2 million tons of green hydrogen per year, which could convert this province in a world hub for exporting green hydrogen by 2030.

However, it will not be easy to carry out a plan of this magnitude in the context of the economic instability that the country is experiencing. The Australian company seeks to have some tax benefits and a free zone specially designed for it, something that would be contemplated in a general promotion law for green hydrogen designed for this purpose, as anticipated by the Secretary for Strategic Affairs, Gustavo Béliz.

Goals and challenges for a new type of energy

Argentine scientist Fabiana Gennari is head of the Department of Materials Physicochemistry of the Bariloche Atomic Center, principal investigator of the National Atomic Energy Commission (CNEA) and of the National Council of Scientific and Technical Research of Argentina (CONICET). For more than ten years, she has been working on the study of hydrogen as a sustainable energy alternative, an idea that is gaining more strength every day in the world, although to carry it forward a series of challenges will have to be overcome. “What is being sought is to try to make use of renewable energies, which are clean and available in various regions of the planet. But they have several problems», warns the specialist in dialogue with *RT*.

“In Argentina we have solar resources in the north, wind resources in the south, but they are not continuous energy, but they have fluctuations. That is, when night comes there is no sun, while the wind can vary its intensity throughout the day. So, when there is no constant flow or direct use of these energies, the options that exist are to transfer them or inject them into a power line, but this has to maintain a dynamic system, without oscillations. That’s where hydrogen and the idea of a storage system for large amounts of clean energy came from».

As Gennari explained, they are seeking to change the energy matrix to reduce emissions, but not for home use, but for the main activities that emit carbon

dioxide worldwide: industry and transport, mainly in the most developed countries.

“Hydrogen is transformed into a substance that allows you to bring renewable energy to all sectors. It is not a fuel, it is not in nature as a reservoir, as with oil or natural gas. It is a vector and I have to produce it using energy. When is hydrogen green? When I use renewable energy in its production, I do it with processes that do not emit anything else. The typical example of this is the electrolysis of water», she said.

Electrolysis allows us to save that renewable energy, in this case the wind, inside that hydrogen substance, which can be burned as it is done with a fossil fuel in a combustion engine. The product that results when hydrogen is burned, in addition to the energy that is sought, is water, and the water is clean, it does not pollute.

«Now – says Gennari – the question is how we can transport that energy. There are different technologies that are currently being studied, such as alkaline electrolysis, but they still have some problems. The company that will make the investment has not yet said what type of electrolysis it will use. That is the first challenge».

Some doubts also arose regarding the water that will be used for the process. In this sense, those responsible for the company indicated that they will use sea water, which would have to go through a desalination process.

Although there are several complexities to carry out this key undertaking for the planet, in Argentina there is previous experience in the production, storage and transport of hydrogen by different methods, in addition to trained scientists and establishments suitable for its development. «In some of these processes we have associated resources because there are petrochemical plants, which could be adapted for these new energies with a lower investment», said Gennari.

Argentina's great opportunity

The most developed countries are the ones that will need green hydrogen the most, because they are the ones that emit the most gasses and have committed themselves to reducing this environmental impact in the shortest possible time. This is where the great opportunity for Argentina appears because it could export it, but it will also be necessary to see the conditions and the legal framework that is applied so that the country benefits, without making too many concessions along the way.

Possibly, the hydrogen produced in the country is compressed, packaged and transported in ships, but there are still no certainties about these procedures.

Beyond the doubts, Fabiana Gennari believes that the project is feasible, although it will take at least ten years until the first ships with green hydrogen leave Argentina. Gennari points out the importance of maintaining the political will expressed by the Alberto Fernández government over time for this project, under this administration or the one in charge in the future, regardless of its political flag.

«The problem of global warming is serious and if we do not do something we will have consequences that are already being observed but that will be magnified, such as the melting of glaciers, droughts where there were not before or high temperatures. There must be a change because we are ruining the planet and that is irreversible», she concluded.

Fuente: El Ciudadano