

DEBATE

Marc-Antoine Eyl-Mazzega, Director of the Center for Energy & Climate of Ifri

I am now turning to the room. Has anybody got any questions? I see one question over there. We still have a few minutes left. Yes, please introduce yourself.

Randy Kotti, Head of the regional economic service for Provence-Alpes-Côte d'Azur in France

Hi. Thank you very much for the interesting conversation. My name is Randy Kotti. I run the economic service in the South of France. Hydrogen is a very important matter for us, especially in the first area. We have about two to three gigawatts of projects to contribute to the carbon transition of the industry. The question of the cost is really at the heart of the matter, like you said, but like you said, we are broke. Also, in terms of regulatory framework, we do not want to hamper the competitiveness of our industries. How do we go about pushing the demand in the fiscal space that we have? At the same time, I would like to have your view on how far down we can go on the cost curve of hydrogen production. Thank you very much.

Marc-Antoine Eyl-Mazzega

Thank you. That is maybe for Stéphane Michel, and then the others can add to that. Meanwhile, let us gather a second question. Does anybody have a second question? Then I have one, if I may, and I might address it to you, Dr. Al-Hosany. Do you plan to have a carbon market in your region, and how advanced are you in this thinking? Because it might be, or it certainly is, one of the drivers of these sustainable investments and of this progressive transition. That will be my last question. Please, perhaps we will start with Stéphane.

Stéphane Michel, President Gas, Renewables & Power (GRP) and Executive Committee Member of TotalEnergies

Yes, I am going to sound perhaps a bit pessimistic and less passionate than my right colleague. You have two uses of hydrogen. One is for its chemical property, used in fertilizers, in the steel industry, in refining. Here, when you look at hydrogen, it is either blue hydrogen, so actually CCS, because at the end of the day, it is gas with CCS, or really something brand new, which is green hydrogen produced with electricity. If I look at what we are able to do today, the cost of that green hydrogen is probably three to four times of what we call grey hydrogen, which is the one produced today without capture.

Can society afford that? Four times is a lot, but yes, it is likely, because at the end of the day it is just a small component of the full value chain. In the world today, the only customers that can afford to buy green hydrogen are European refiners, because of the regulation. Why so?

Because you have got obligations of incorporation, which are not that high, which means that all people, all consumers in Europe, are paying a bit for the green hydrogen when they go to the petrol station. That is why it works. The key question is whether we can move from that to a situation where you use hydrogen as a power vector, replacing electricity, gas and oil? When you do that, then you are not talking about three times. You are talking about 10 times, and there is no economy that can resist being built on something which is 10 times the price of what you use today. That does not work, and that is the very reason why you do not find customers today. It is as simple as that. The only countries which are trying to do that are not based on green. They are based on blue. That is Japan and Korea, to blend that in coal-fired plants, because they do not want to write off their assets. By the way, that is kind of strange because they could actually build and buy LNG and turn to a CCGT, and we will do the same thing. However, that is beyond the debate.

The key question is the one you mentioned: do we see a future in significantly abating the cost of green hydrogen? The big problem is that today green hydrogen is power. The big question is where and how can you cut power costs significantly? You have got plenty of countries in the world where you can do that, starting with the Middle East, Chile and Morocco. Some of them have been mentioned. We actually invest in them, partly, with a package that we finance. However, there is clearly a limit to what you can do. Then the problem is that you have got your hydrogen in a country where you can relocate everything you want, but not all the industry of the world will go to Chile or Oman. There is a limit to that. Therefore, you need to transform it, transport it and backtrack it. That chain is a quite mature chain today, because it is an industry we know, producing ammonia, backtracking ammonia, transporting ammonia, and that is a chain where your ability to cut costs is not that high. Therefore, I would be very surprised if you can actually cut the cost of hydrogen by more than two or three.

That is a very big difference with what we know on wind and solar, where the cost curve was just absolutely impressive. That is done, so the power part of the hydrogen is gone. It is done, and the rest is pretty much a mature industry. That is the way we look at it. That does not prevent us from investing our share, because we are probably one of the largest investors in hydrogen and one of the largest offtaker. However, let us be clear. Hydrogen is an interesting tool. It is not the solution to the transition. To that extent, it will marginally change the geopolitics of power and energy.

Marc-Antoine Eyl-Mazzega

Mikaa, 15 seconds, and then Frank, and then we finish with you on the important question.

Mikaa Blugeon-Mered, Independent researcher specialized in the geopolitics and international markets of hydrogen

We are running out of time, so you have to take my word for it, but do not worry. I have got this book coming, so you can verify what I am saying. Basically, what Stéphane has just described is definitely the situation of hydrogen two or three years ago. One of the ways to cut down the cost is green-shoring. One of the ways to cut down the cost is to massify, and to massify you need to invest in the equipment, not just on the offer. The third point, which is absolutely key here – very, very important, I want to stress that – is that when it comes to hydrogen, as Frank said, it's not a nice-to-have thing. You cannot have a net-zero economy,

let alone a regenerative economy, without hydrogen. Therefore, if you do not invest in it now, if you do not help bring the cost curve down, if you do not invest in natural hydrogen in Oman, for example, which is basically half the cost of green hydrogen at the moment, you will never get there. We will never get there.

Frank Wouters, Chairman of MENA Hydrogen Alliance

Yes, three things. One is that 2024 is going to be the hottest year on record after 2023, which was the hottest year on record. There was a Harvard paper earlier in the year that estimated the social cost of carbon as more than USD 1,000 per ton. Therefore, it is not that we cannot afford it, but we are putting the money in the wrong places because we are paying for the mess that we are creating by CO₂ emissions. That is number one. Two, if you look at our proposal for a strategic reserve, and I am completely with Mikaa, it is not a nice-to-have. We cannot build a clean energy system without a whole bunch of hydrogen. We can actually ramp up the hydrogen reserves by ramping down the fossil fuel reserves because you do not need both. You can do a swap megawatt hour for megawatt hour, and you take that and put it on the market, and at least there is a little bit of money. It will not be enough, but it is a start.

Marc-Antoine Eyl-Mazzega

Okay, thank you very much. Therefore, the last word, and then we close. Please, Dr. Al Hosany, good news from the region?

Dr. Nawal Al Hosany, Permanent Representative of the UAE to the International Renewable Energy Agency (IRENA)

Yes. Coming back to that point, you definitely cannot look into a net-zero strategy without looking into carbon markets, and the UAE is definitely looking into it in a very systematic and pragmatic way. We have already created our carbon registrar system. We now have a high-level, federal-level committee looking into carbon pricing, and then we are progressing into the carbon market in a very systematic way.

Marc-Antoine Eyl-Mazzega

Wow, so we look forward to that. Well done.

Dr. Nawal Al Hosany

Stay tuned.

Marc-Antoine Eyl-Mazzega

A warm round of applause for all of you. Thank you very much. Great discussion, and so to be continued because that is just the beginning, yes. Thank you very much.