

## Energizing the Future: Sustainability Updates and News from Central Asia

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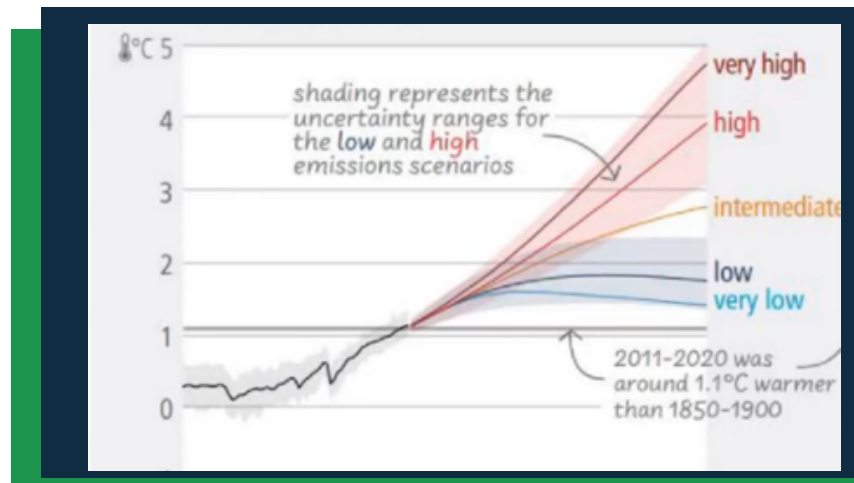
Dear members, as promised from this month we will only bring a theme to the attention of members, to be completed with 3 mini-spaces eventually to be developed and become subjects with autonomous spaces.

This month's theme is green hydrogen. It might seem a counter-topic, given the changing political climate in Europe, to date the only offtaker to have signed an agreement with Kazakhstan. And yet, in 2025, there are concrete signs that the balance is in sight, i.e. we are probably approaching the end of the phase of enthusiasm but little concreteness, the bath of reality but concrete projects.

The first sign, is the disappearance of the big-ticket tones that have been soiling Kazakhstan for two years: no longer giga projects, but mega projects. The only Giga left is that of Hyrasia One, which is still alive but has undergone a downscaling from 47Giga to 4 Giga. Still a huge project, but with this size the probability of realisation increases considerably. Germany is investing the most in this technology, in the knowledge that making it commercially competitive with hydrocarbons could turn out to be an unbridgeable competitive advantage in its favour.

And so, Germany has almost achieved its emission reduction targets in the construction sector (i.e. renewable energy production fed into the grid), but has resoundingly failed in the transport sector (electrification of transport has not actually started). And so, translating what we read in the newspaper, the race for electrification is effectively lost, if we are to interpret the builders' belly aches artfully filtered through the press to convince voters that diesel is beautiful. This is from Europe's point of view. This means that, having already failed resoundingly in the intention to continue with diesel-powered engines (see diesel gate), if we want the European industry to remain at the top in the automotive sector, and not only, we must invest in research and aim for the next step. Which is called hydrogen. To this day, there is nothing else.

The third point, a very interesting one, is in fact the demise of nuclear power, or rather the very fast meteor that sailed through our skies as the non-environmentalist but low-emission panacea that could be a viable counterbalance to renewables. A little more is heard of it, but by now we already know that it will not be the decisive card.



Macron is the first to tell us this. France, which is always held up as an example of good nuclear power, has planned to build 8 new reactors by 2040. And at the same time, to extend the useful life of another 8 from 40 to 50 years. This means in numbers, that we will go from 56 reactors in 2022 to 52 reactors in 2040...And then moving on to industrial reasoning, as of today there is not the capacity to build 300 reactors per year, not even for 30, and perhaps not even for 10. To date, there are 63 reactors under construction, and 154 in planning. Considering 15 years average construction time, we are talking about a maximum of 10 per year, while today we are at 4. Considering the timeframe imposed by climate change (see figure 1 and 2, the data from the Mauna Loa observatory in Hawaii confirm the warming models and the consequent rise of the seas), we still have about ten years to stop the thermometer's upward race... and so Nuclear no way, too late.

I promised to be better for Christmas, let's see some good news. The first is that the renewable energy produced in Europe is starting to give problems. And these problems are related to surplus. So we have situations where the energy produced is more than what is more than we need. The only way to get around this problem, and therefore to store this energy and not waste it or sell it off, is to store it via hydrogen. And let's crunch some numbers: battery storage? No thanks, for example to store 0.13TWh of energy with Tesla Megapacks requires 50 billion Euros. Do we use reservoirs with overnight repumping? We don't even get to 0.1TWh. Do we use the dual system with electric cars, storing 10KW per car? With 10 million cars we would arrive at 0.1TWh. Crumbs. Hydrogen? Using the storage available today, used to store gas, for Germany alone we arrive at 75 TWh electricity!!!

Dear members, here is the Christmas surprise: the second instalment, that is, what we do with hydrogen in addition to taking energy away from it, and how we move energy from where we produce it to where we need it, we will see in January, in the second instalment of this article, the year of hydrogen.

So moving on from the Happy Holidays greetings, I would like to announce that we have opened a discussion table with Kazakhstan's Green Hydrogen alliance, as Confindustria KZ, to build a synergetic path for Italian companies interested in hydrogen. I think that 2025 will see an increase in the visibility of the projects underway, with a view to concreteness therefore, and in the implementation of pilot projects, as required by the programmatic strategy document approved by the Kazakh government and now officially in force.

Obviously, we will also follow the other big protagonist of the coming years in Kazakhstan, and that is the prospect of more clearly flanking the generation of electricity from gas, which we can say was the protagonist of 2024.

- Greenland glaciers melting [total melting: + 7 m sea level rise]
- Antarctic glaciers melting [melting through 2100: approx. + 1 m; total melting: + 72 m]
- Atlantic Meridional Overturning Circulation slowing down [significantly lower temperatures in