

France's and Europe's Electricity Supply Security is at Risk

Electricity produced with no CO₂ emissions is increasingly emerging as the most efficient and economical energy vector able to massively decarbonize industry, housing, transport etc... Choosing wind power and photovoltaics almost exclusively to produce this decarbonized electricity, however, threatens the electricity supply security of European countries in the coming years and decades.

There are two causes to this:

* The physical degradation of network equilibrium:

Wind and photovoltaics are intermittent sources of electricity that produce according to the weather and not according to the demand. Their variations, added to those of demand, must be compensated to maintain the balance between electricity production and demand on the networks. This can induce very costly energy storage / destocking when the share of intermittent electricity becomes substantial. It is necessary, then, to call on dispatchable electricity production facilities to ensure the balance. Yet, existing dispatchable means are being decommissioned at an increasing rate in Europe. Their decommissioning corresponds to either the laudable climate-related concern to reduce CO₂ emissions, or to the will to reduce or even completely eliminate nuclear power, thus depriving us of what is nevertheless a low-carbon energy source. With the proliferation of intermittent sources and the shutdown of dispatchable facilities, there is an increasing risk of insufficient electricity supply during winter demand peaks, when wind and solar power production are lacking because of the weather conditions.

In the longer term, the technological revolution imposed by the predominance of wind and photovoltaic sources would require that the network be driven by intelligent electronic systems. We must be aware that this revolution would introduce new vulnerabilities, particularly in terms of cyber-security, an additional risk for the continent's security of supply.

* The fractured European governance of the European electricity system:

This governance is split between transmission system operators (responsible for balance at all times) and political decision-makers. The former have competence but no decisional power. The latter have the decisional power but seem to ignore the physical constraints of the field. And the European Commission and several European countries seem to be obsessed by a magical thought: "all power from wind and photovoltaic" will put an end to global warming. These sources of energy are therefore heavily subsidized while the European Commission subjects all other means of production to the competitive market theory only. This, in fact, prevents any profitable investment in the most efficient carbon-free means of production, the dispatchable ones: hydraulic and nuclear power. It's a headlong rush with no pilot and with no long-term view!!!

In this European context, strongly marked by ideology as it is, France saw fit to include in its latest PPE (Multiannual Energy Programming) the decommissioning of twelve 900 MW reactors by 2035¹. This is a triple fault: for the climate, for security and for the economy. Beyond the risks of transitory power outages, which are in themselves very onerous (for the population and the economy), continuity of supply is, more fundamentally, an issue of sufficient energy supply to circumvent pernicious economic decline. Yet, an electrical system based massively on wind and photovoltaic power requires the presence of overcapacity and storage / destocking means, whose costs rapidly

1 This scheduling by the PPE appears contrary to the words of the President of the Republic during his interview on Brut: "We produce electricity that is among the most decarbonized in the world, thanks to what? Thanks to nuclear power".

become prohibitive as demand increases. Such a system is therefore unable to ensure, at a sustainable cost, a massive replacement of fossil fuels by CO₂-free electricity, a requisite for the decarbonization of the economy.

The conclusion is obvious: in the current and future climate context, because hydropower is not really expandable, keeping a significant nuclear power production capacity² is the only way to ensure the security of the electricity supply at a controlled cost. Indeed, nuclear power does not emit CO₂ and it is perfectly dispatchable. This is also the only way to avoid deficient energy supply that would be devastating for the country's standard of living and would certainly be unacceptable to the vast majority of French citizens.

2 Again in his interview on Brut, the President of the Republic assured: "I need nuclear power. If I shut down nuclear power tomorrow, what do I do? Nuclear power is a non-intermittent decarbonized energy. I can't replace it overnight with renewable energy. Those who say so, it's not true "