



Which Energies for the Near and Medium Term?

The energy issue will be predominant during this century for all of humanity. Indeed, humanity will have to face an unprecedented revolution which will differ greatly from those of the past. A short historical view sheds some light on the subject: after living for millennia with very little, solely renewable, energy, humanity has gone through several successive energy revolutions for a little over two centuries with the use of coal, and then of oil, and then of gas, all fossil fuels, and finally of electricity which can be produced from these fossil fuels and other primary energy sources, whether renewable or nuclear. The cumulative use of these sources has enabled a very high energy demand in developed countries.

But a major event has called this energy Eldorado into question: the awareness of global warming, which is forcing humanity to embark on a new revolution, that of massively reducing the use of fossil fuels because of their CO₂ emissions, in order to limit the global warming. Low carbon electricity (i.e., electricity generated with practically no CO₂ emissions) will be the essential vector. It can be produced from two categories of non-emitting sources: renewable and nuclear. Biomass energy can participate but its contribution will be limited to the use of a fraction of the annual growth so as not to reduce the growth of the carbon sinks provided by forests.

So far, humanity has piled up energies as they became available without ever phasing out any one of them. Doing without coal, oil and gas by 2050, while they are still widely used in the world, is thus an inordinate challenge. Will it be possible to meet this challenge with renewable energies alone, as European Commission and certain countries are suggesting, given that the only renewables that still have significant growth potential "on paper" are wind and solar energies? Yet, they suffer from a major drawback: they are not permanently available, nor are they available on demand. Under these conditions, can we afford to neglect nuclear power, the other non-CO₂ emitting energy source which, on the contrary, produces electricity capable of meeting consumer demand at all times?

Moreover, electricity generated by "100% renewable energies" would involve a major technological revolution in the electrical system's operation. Today, no one is able to guarantee the technical viability, the security of supply, the economic sustainability and societal acceptability of such transformations implying considerable surface areas for the very large number of wind turbines and vast ground-based photovoltaic farms, along with the ensuing power line extensions.

In view of these elements, it appears without ambiguity that the "all renewable" option would be for France, a country that has mastered nuclear power for more than half a century, a pure folly. The only realistic mix is one that retains a predominant and as large as possible contribution of nuclear power allowing France to avoid: a technological revolution that carries new major risks for the

security of the country's electricity supply; an unbearable profusion of wind turbines; the additional costs of compensating for the variability and intermittence of wind and sun in order to have affordable electricity whose prices do not depend on the vagaries of the wind and the sun. The latter is crucial as electricity is a basic necessity that will be increasingly important until it becomes ultra-dominant in 2050 with the phasing out of fossil energies.

The full study by Georges SAPY, which details the rationale behind this approach, is available in French on the Sauvons Le Climat website or via the link: [Quelles énergies pour demain? - note complete](#)