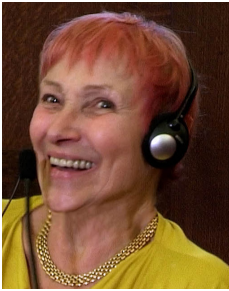


Les Entretiens Européens' view of the planned new reactors and Penly project



A contribution of Claude Fischer Herzog

Director of Les Entretiens Européens

Following the proposal to build 6 new EPR 2 reactors in France, including the first pair at Penly, the National Commission for Public Debate organized the consultation of civil society actors and citizens. It is in this context that Claude Fischer Herzog wrote a contribution on behalf of ASCPE, Les Entretiens Européens, which can be found below.

The Director of European Interviews, who has been calling for an energy solidarity pact between European states since 2012 and has proposed enhanced cooperation between nuclear states, or even permanent structured cooperation as in Defense in 2019 during the 18th edition of European Interviews - welcomes the alliance between eleven European countries (France, Bulgaria, Croatia, Czech Republic, Hungary, Finland, Netherlands, Poland, Romania, Slovakia, Slovenia) to «strengthen European cooperation» in nuclear energy and develop «new projects». An excellent initiative to clarify the conditions to be met for the development of the nuclear industry, and to conduct an in-depth dialogue on the necessary reform of the electricity market. (See the joint declaration signed on February 28 on the sidelines of a meeting of European energy ministers in Stockholm).

The nuclear renaissance, a necessity, and the joint responsibility of France and Europe

The French President has committed to a “renaissance” for nuclear power in France. France’s Nuclear Policy Council has proposed starting work on extending the lifespan of reactors, and laid out a roadmap for the construction of new reactors, two major steps before the decision, which we welcome. Public debate must not delay the decision, but support it by encouraging the public’s acceptance of this key choice for the future of France and Europe. Because choosing nuclear power commits the country as a whole: the State, EDF (its senior management and its employees) and the entire nuclear industry, plus companies in other manufacturing and service sectors, regional authorities, and the French population in general.

From this point of view, the CNDP has a particular responsibility to drop a “for or against” stance, to clarify the terms of the debate and the situation we are in, and consequently help public support and engagement for a successful relaunch of France’s nuclear programme, without which energy transition and sustainable growth will remain empty words. It is a democratic issue because this is an area of public interest.

This stakeholder viewpoint is intended to contribute by asking questions about the objectives of the legislation covering the EPR2 projects and the reforms to the electricity market that will enable France to finance the investment needed.

In response to economic and geopolitical upheaval, more and more countries in Europe are opting for an approach to energy security that includes nuclear power, which is furthermore seen as a possible response to the climate crisis. Moreover, given our new lifestyles and production methods, and the growth in use of electricity in many areas (buildings, transport, agriculture and the digital economy), it is an asset. How can we bring about its renaissance?

Too many poor decisions have plagued the industry, starting with the way the European Union has designed the electricity market and how it is regulated. Governed by competition alone, sending hugely volatile short-term price signals, the market has discouraged investment in nuclear, which really requires long-term

cooperation, visibility and stability. By unilaterally banking on renewable energy, which has priority on power transmission grids, the EU and Member States have penalised nuclear power and large generating companies such as EDF twice over, and caused the price of gas and electricity to soar. In fact, as the price of electricity is based on the cost of the last kWh called – the order being renewables, then nuclear, coal and gas – it skyrocketed when the demand for gas to fill the gaps in power sourced from renewables was facing a structural reduction in gas supplies, exacerbated by geopolitical tension with Russia.

Electricity is a public good, not just another commodity. And nuclear energy is an industry with growing returns which should fall within the remit of services of general

economic interest (SGEI) because, unlike intermittent power sources, it generates power continuously and makes affordable energy available to all. On the eve of starting work on new reactors, the French government will need to fight on two fronts, namely in France to change the law and select the appropriate financing methods, and in the European Union to secure market reforms.

Changing the law: stop wasting time and offer a coherent picture

The French Senate (upper house) has passed a bill designed to speed up procedures related to the construction of new nuclear facilities. The objective is to enable EDF to start work on the site for two ERP 2 reactors at Penly in June 2024, aiming to commence construction itself in 2027 for entry into service by 2035-37. These few dates are enough to make one's head spin, but nuclear energy is a long-term commitment, hence the need to stop wasting time and change the energy transition legislation. Removing the target of cutting nuclear's share of electricity generation to 50% by 2035, and revising the statutory order setting out France's multi-year energy plan (PPE) and stipulating the closure of 12 reactors, are both good proposals. However, they do not yet make a coherent energy policy.

The point is to return to sustainable growth, which entails re-industrialising France and the electrification of end-use consumption. The proposal to reduce France's energy use by 40% ignores these objectives. Overall final energy consumption totalled around 155 Mtoe (1,800 TWh) in 2019, including 473 TWh of electricity (538 TWh was actually generated). While restraint is necessary, it cannot mask the large increase in electricity consumption shown under all scenarios, which would reach 750 TWh, or even 900 TWh depending on the pace of growth.

The issue is therefore not one of consuming less, but generating power differently

The fact is that France's energy mix still consists of almost 65% fossil fuels and 25% electricity. Nuclear power accounts for 67% of electricity generated but just 17% of final energy consumption (renewables, including hydropower, account for 19.3%).

Fossil fuels must therefore be drastically reduced, and renewables and nuclear power, which do not produce CO₂, increased. Yet it would be absurd to want to replace a carbon-free, stable and dispatchable energy source with a different carbon-free energy source that is intermittent and unable to ensure grid stability. So if renewable energy sources are to be ramped up, thermal and hydro-electric options, which are not intermittent, should be preferred, because subordinating our electricity market to variations in the weather is costing a lot of money and is very inefficient: in the past 10 years, we have spent €150 billion on replacing 2.5% of low-carbon nuclear electricity. As for the proposal to build 50 offshore wind farms to produce 40 GW by 2050, in addition to 100 GW

of solar power and 37 GW of onshore wind power, it is not based on any coherent strategy; dispatchable base resources are needed to offset power fluctuations when renewable sources fall short.

Restore nuclear power to its rightful place, and get moving

The dispatchable capacity needed is nuclear power. A relative drop in generation would mean using more gas (or coal) to keep the grid running. France has the largest fleet in Europe with 56 reactors, a highly effective sector with 220,000 jobs and a flagship company in EDF. They have to be preserved and indeed expanded.

The president has proposed building six EPRs, or 14 by 2050. France's national audit office (Cour des Comptes) suggests that 30 are needed to maintain production levels. Most French people are in favour. We need to get moving without wasting time, to restore the confidence of stakeholders in the nuclear sector and in finance. This is why we support the decision to build a first pair of EPRs in Penly, something local councillors themselves want to see, underlining the positive impact in terms of jobs (7,500 workers on the site) and training. A major training plan in nuclear industry skills wisely accompanies the 6 EPR programme, which will create 30,000 direct and indirect jobs (10,000 of which will be permanent jobs after construction is complete).

The advantages far outweigh the risks and costs

Some wonder whether the industry is able to handle building the new fleet, and simultaneously roll out SMRs and renewables. EDF is confident that it is ready. EDF and the industry more broadly, whether their detractors like it or not, have built the first of several Generation III EPR reactors in France, which, as a result, will remain at the forefront of nuclear development in Europe and worldwide. The EPR is proving its worth in China, will soon be running at full capacity in Finland, and is under construction in the UK...

High capacity (1,670 MW) and extremely safe (no radioactive emissions into the environment in the event of a serious accident), the future French EPRs have been designed to last at least 60 years. Their footprint (on existing sites) will be 2.5 km², compared with 700 km² for a wind farm generating the same output, at a tenth of the "system cost".

Moreover, France has a considerable advantage in the fields of: i) spent fuel, recycling it into MOX to supply future reactors (the EPR2 and later those of Generation 4); and ii) nuclear waste, with the geological disposal of most highly radioactive waste, for which CIGEO has obtained recognition as a public utility.

Meeting plant productivity challenges and resetting the price of nuclear electricity

Extending reactor lifespans is a sensible proposal, not just in terms of meeting demand but also to give EDF and the industry time to build the new fleet of EPRs.

But two challenges must be addressed: the productivity of the fleet, which never operates at full capacity; and recalculation of the price of nuclear electricity.

EDF has had to deal not only with unexpected corrosion problems on some pipework in a dozen plants (which it has repaired), but also the obligations of refuelling, regular maintenance and ten-yearly inspections, in addition to the fluctuations in electricity generation imposed by intermittent renewables. The fall in output and the great volatility in wholesale market prices have destabilised the economic equilibrium of EDF, also suffering from the intervention of the French government as both regulator and shareholder, which has aggravated the structural deficit (debts running into tens of billions of euros are mentioned) and weakened its investment capacity. Meanwhile the six EPR2 plants are estimated to cost €51.7 billion (excluding any financing costs).

To introduce competition to the electricity supply market, where EDF used to hold a near-monopoly on power generation in France, the government negotiated regulated access to EDF-generated nuclear power (known as ARENH) in 2011. But the price has never been reviewed, and EDF has been selling a portion of its output (100TWh) below cost (at a price of €42) for a number of years now. With the crisis, the government created a “price cap” and fixed EDF’s regulated tariffs at €46, while forcing the company to sell an additional 20 TWh of cheaper electricity to its competitors, depriving it of €8 billion in income.

Should this mechanism be abolished, or perhaps reformed? Should EDF’s status be changed, or is it the market rules that need changing? Debate is underway in France and Europe.

Renationalise EDF and give it the resources to control how it is managed, ensure it is financed, and secure the electricity market reforms

- **By renationalising EDF**, the French government intends to restore the country’s sovereignty over the choices that fundamentally affect its future. This will be funded through taxation, via the budget. But the question of corporate governance remains unanswered. If it is to perform its role effectively, it will have to allow all stakeholders, including local authorities, the possibility of ownership and positions on the board.

- A number of options are under discussion for **financing future power plants**: 1. Use the public’s savings, placed in Livret A savings accounts, these funds being managed by the CDC (Caisse des Dépôts et Consignations, the French institution entrusted with managing public funds). 2. Issue bonds on the market,

to be underwritten by corporate investors or even private individuals. In exchange, savers and investors will be assured of a consolidated public service. 3. Offer financial packages to institutional and private investors including guarantees and a level of returns. The benefit to consumers will be access to affordable electricity with long-term price stability. The regulated asset base (RAB) model would enable EDF to immediately start preparatory and construction work, the costs of which are extremely high (operating costs being relatively low compared with the revenue generated). In addition, thanks to the taxonomy, secured after a struggle, private investors will be able to include their investments in their balance sheet with European “sustainable finance” labels.

- **As regards the electricity market**, it is a matter of reforming both its organisation and regulation to ensure tariffs are affordable and consistent with long-term investment choices. The French government is proposing to disconnect the price of electricity from the price of gas, and at the same time build a long-term contracts market with “contracts for difference” (CFD). This reform breaks the sacrosanct rule of competition and it will have to secure support from the countries affected, not just France, to square up to Germany and the European Commission which swear by renewables. The nuclear states could enter into a pact of energy solidarity and build a permanent structured cooperation.

CONCLUSION

Another battle is well worth waging: that of implementing the Lisbon Treaty, which established the joint responsibility of Member States and the EU to ensure that SGEI (services of general economic interest) are performed, in the case at hand, for nuclear electricity. EDF could thus continue to meet its public service obligation domestically, and perform its solidarity role on the European market, while continuing to pursue its business objectives in Europe and worldwide, as there is no doubt that nuclear revival in France will change the country’s position in the resurgent global market.

Paris, 12 February 2023

ASCPE is a research and training company. Formed in 2002, it organises *Les Entretiens Européens* for the EU’s Energy Union and social acceptance of nuclear power in France and Europe more generally. It coordinates dialogue between society stakeholders in various European countries and with the European Commission, produces reports comparing Europe and the wider world, and issues recommendations for domestic and EU institutions for a coherent energy transition.



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