

## **Nuclear Energy in France; Status and Perspectives**

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The Fukushima nuclear accident, following the natural disaster of March 11 2011, in the north-east of Japan, has been a source of concern for many countries operating nuclear power plants, in particular for France which rely on this source for 80% of its electricity production.

The French Authorities, the nuclear community and many people have expressed their solidarity to Japan population severely hit by the roughness of nature and their wish to bring as important as needed support to help Japan to restore the situation, in particular at Fukushima-Daiichi NPP and in its vicinity.

France is the second nuclear power producer in the world with 58 PWRs in operation and one EPR in construction. Due to the large part of nuclear in the electricity mix, the country has one of the cheapest electricity cost and a very low level of CO<sub>2</sub> emissions compared to most of the OECD countries.

Very soon after the Fukushima accident, the French Government ordered a safety review of all nuclear facilities taking into account the circumstances of the Japanese event as well as any similar potential source of abnormal situations. A few weeks later, it was decided at the European level to proceed with the so-called 'stress tests', the same kind of safety review of extreme situations. The test reports have been submitted to the Safety Authority by mid-September and final recommendations should be issued by the end of the year. From the first conclusions, there is no reason to stop immediately any power plant but many improvements can still be implemented for enhancing the plant resistance against natural events or unpredicted circumstances.

The proximity of national elections and the amplification of the crisis through media reports have created a difficult context for reactions from the public. As in many countries, the renewable are more fashionable but French people are also sensitive to the consequences of reducing the part of nuclear for the economy and the environment taking into account the fact that France, as Japan, has no fossil resource. The socialist party, presently in the opposition, has signed an agreement with the greens to reduce significantly the part of nuclear production but the content of the agreement is largely debated even by the candidate of their party to the presidential elections.

In some European countries already affected by the Tchernobyl accident, the reactions have been more strongly negative. Germany has decided to step out of nuclear power but the country was already hesitating to pursue a program in the field and is still producing half of its electricity by burning coal. Italy, which has no nuclear plant, Belgium and Switzerland has followed in the same way while many other European countries have chosen to continue building new NPP (UK, Finland, Poland, Eastern Europe...)

Among the issues politically debated in France is the construction of Flamanville 3, the first EPR built in the country. EPR is a reactor of the third generation which is also in construction in Finland and in China. The progress made with these third generation reactors is precisely to enhance the plant safety to reduce the probability of severe accidents, in particular core melting, and to mitigate the consequences of such an accident, if it cannot be avoided, in such a way that no radioactivity will be released outside the plant site.

Even if all the lessons from Fukushima are not yet completely clear, it seems obvious from what is known today that third generation reactors will be more suitable to face similar circumstances and to avoid at least a part of the environmental consequences.

France, with Japan and many other countries is also working in preparation of the fourth generation of nuclear production systems which should ensure the sustainability of this source of energy while still improving its safety and economy.

MONJU, the SFR prototype implemented in this area is an important tool for the development of the fourth generation and the international community gathered in the Generation IV International Forum has often expressed its utmost value, being confident in the Japanese teams to ensure its successful operation.