THE 47th JAIF ANNUAL CONFERENCE

Rebuilding Public Trust in Nuclear Energy-- Industry's Volition

"Expected future development of nuclear technologies in the world"

Bernard Bigot, Chairman, French Alternative Energies and Atomic Energy Commission (CEA)

Mr Chairman, Ladies and Gentlemen, Dear Japanese friends,

It is an honour and a great pleasure for me to participate in this 47th edition of the JAIF annual conference. I would like to thank the organisers of this Forum for the opportunity they give me to share my views on nuclear issues with such a distinguished audience, but only from the air, since it was not possible for me to be physically present with you today in Japan.

I choose to talk about the future development of nuclear energy in the world.

With the expected raise of the global population, and the expectations of everyone to have a better life, the energy demand will inevitably grow in

the forthcoming years despite all efforts which could be done for increasing energy efficiency and reducing energy intensity through energy savings. All international studies show that the world energy demand will increase by around 40% at least in the next fifteen years, and will possibly be multiplied by two in 2050. Due to limited resource availability and environmental requirements, the use of fossil fuels, currently representing more than 80% of the global energy consumption, will not be able to cover this increase. Furthermore, the awareness of the consequences of climate change and environment and health issues related to massive use of fossil resources will lead the public opinion and consumers to require more use of carbon-free energy. The security of supply will therefore become a major issue for many countries in the world. For all these reasons, indigenous nuclear and renewable energy production will play an increasing role.

In France, as probably as in a large part of others countries in the world, we are looking for an energy mix combining nuclear and renewable energies, in the next decades, in order to reduce our dependence on fossil fuels by improving our energy efficiency, and to rely more on low-carbon nuclear and renewable energies.

The French analysis is not an exception. Most countries have reaffirmed their intention to pursue their projects: Russia, and China, but also countries in an open liberal market framework such as United Kingdom or Finland, and countries which are developing such as Turkey, Vietnam, South Africa, or Poland. More than 60 reactors are currently being constructed in 13 countries (mostly in Asia and Russia). Even here in Japan, the discussions are very active about the Japanese energy policy, and I understand that nuclear should remain a strong component of the electricity production mix.

In France as in Japan, and as in the rest of the world, choosing nuclear energy is a decision nobody takes lightly. We all make this choice by strong necessity, based on the benefits for our countries: limited energy dependence, long-term economic competitive advantage compared to fossil energy, and reduced impact on the environment and climate.

I would like to focus here on how to create now the conditions for a sustainable development of a safe and responsible nuclear industry, which will contribute to meet the future global energy needs of the human population.

[Harmonized regulatory environment]

First, we are now in a time of larger standardization of reactor designs, and of globalization of the market, the supply chains, the vendors and the operators. A recent example is the case of Turkey, where Japanese and French industries will be working jointly with the Turkish utility, or the United Kingdom, where French and Chinese actors will be working together on one project, when French, Japanese and Americans will possibly be working on another.

This practice may make some projects possible by bringing together industrial and financing capacities and reducing the risks for the investors.

But this will also require a progressive harmonization of regulatory standards and the general implementation of best practices in safety: the on-going global consolidation of major industry players and the multiplication of international co-investments should be accompanied by the development of a harmonized international regulatory framework. First steps in this direction have been undertaken in Europe, through the Western European Regulators

Association WENRA and the European Nuclear Safety Regulators Group ENSREG. This already had a very visible impact, for instance in the EU post-Fukushima “stress tests”.

Such a harmonized regulatory framework at the worldwide scale, including for safety and transparency, could both improve public acceptance and lower risk for investors and the industry.

[Waste management]

Another example of what must be considered as known to allow a future for nuclear energy is the issue of nuclear waste management.

France, which operates a large fleet of 58 reactors, decided at a very early stage to process and recycle its spent fuel, currently in light water reactors, and much more efficiently in the future in fast neutron reactors. Developing solutions for the management of ultimate radioactive waste is an essential part of a responsible approach to nuclear energy. The National debate in France about the CIGEO project for a deep geological disposal facility for radioactive waste, demonstrates our commitment to address this issue in a fully transparent manner. Japan is also addressing this issue. And again we shall support the newcomer countries in defining their plans.

[Liability]

As a next example, I will address the issue of nuclear liability. The global character of the market, and the fact that a nuclear accident occurring

in one country may have strong consequences in another, affect the manner in which the public and the decision makers weight the benefits and risks of nuclear technology.

This is why it is essential to establish progressively such a global nuclear liability regime based on treaty relations between states, in order to ensure, in the low probability case of nuclear accident, a prompt and fair compensation for victims according to simple procedures approved by all.

We initiated a discussion with our American colleagues about the establishment of such a global nuclear liability regime, and this led to a joint statement on our commitment to contribute to this objective, signed in August last year by our respective ministers in charge of energy. One major point of this joint statement is that France and the United States encourage adherence to the enhanced international nuclear liability instruments, including the revised Paris or Vienna Conventions, and the Convention on Supplementary Compensation for nuclear damage. They also urge countries to adopt national laws that incorporate theses nuclear liability principles. We believe such actions will ensure adequate and equitable compensation for victims of nuclear damage arising from a nuclear accident, and will create the worldwide trust necessary for the development of nuclear energy and associated industrial activities.

I understand that Japan intends to ratify the CSC, and that this ratification will bring into force this international convention on liability: this is in our view a very positive step.

[Technology preparedness]

Finally, if we believe that nuclear has a long future, developing new technologies is a must. The design of Light Water Reactors has significantly improved since the 50's, in performance and in safety.

But these reactors only use a very small fraction of the energy content of the uranium resource extracted from the mine: less than 1%. Even if recycling in MOX fuel is going into the right direction, and allows also decreasing the volume and the radio-toxicity of the ultimate nuclear wastes, this is not enough for a sustainable nuclear energy future. The fast neutron reactor technology provides an answer.

Various technologies can be envisaged to develop such reactors, they have been analysed at an international level by the GenIV International Forum.

France, like Japan, has chosen to focus its R&D efforts on sodium cooled fast neutron reactors. We are currently designing an innovative industrial demonstrator called ASTRID that would be able to burn 60 to 80% of the natural uranium resource, and able to test the transmutation of minor actinides for reducing the volume and radioactivity of final waste.

It aims at demonstrating technological innovations contributing to the safety and the competitiveness in terms of use of resources and operability, in order to be deployed when needed, which may be around the mid-century.

This project is an opportunity for cooperation with several countries, including and especially with Japan which has developed strong capacities with its own program: we hope to be able to develop actively this French-Japanese cooperation.

[Conclusion]

As a conclusion, I would like to share with you my conviction that nuclear energy can play a major role during the 21st century to contribute in a sustainable way to the world energy needs, provided we actively take now the necessary actions to develop the relevant safety framework at an international level.

I am sure that France and Japan can actively contribute jointly to this task.

Thank you for your attention.