The role of nuclear energy: expected contribution and key success factors

Diplomatic Academy

Muzikzimmer, Vienna - February 20th

● I am delighted to be here with you this afternoon and would like to convey my sincere thanks to the Diplomatic Academy for welcoming this conference with such a distinguished assembly.

I would also like to thank the French Ambassador to the United Nations in Vienna, Her Excellency Mrs. Marion Paradas, for having organized this conference for me.

● Two years ago the accident at Fukushima rocked our world. It shook public confidence in nuclear power just as the Chernobyl accident did before it.

But nuclear energy has by no means spelled its end.

I) Before turning our attention to the future, let me give you my vision of where nuclear power stands nowadays in the world.

● Firstly, the structural challenges we have to face are still the same:

- **Energy security**.

- Access to **affordable and competitive energy** to support our economic development, which is critical in these challenging economic times.

- **Environmental sustainability** for all.

● According to the energy outlook of the International Energy Agency of the OECD, published last November, nuclear capacity should increase by about **50% up to 2035**.

13 GW of nuclear new build will **need to be commissioned each year** on average over the period.

● Considering the expected growth in energy demand, the share of nuclear should remain stable *(from 13% today to 12 % in 2035)*.

● **Germany has opted for a radical shift** after the nuclear accident in Japan. As direct results, electricity prices, CO2 emissions and grid congestions have surged.

- There is an ongoing debate on **who should pay the bill** for the phase-out of nuclear energy (25 billion € of investments according to German bank KfW). Households as of today? Industrial customers? Both?...

- There is also the issue of the economic impact on neighbouring countries as German decision has been taken in isolation.

But Germany is a rather isolated case.

China is just one example of a nation moving confidently forward with its commitment to new nuclear construction.

And hot on their heels are the major **emerging economies**: India, Brazil, South Africa, Turkey and Vietnam have serious projects.

In **Europe**, calls for tender are underway or under consideration in many countries, in UK, Czech Republic, Finland and Poland to name a few.

And when you see **oil-producing countries** such as the UAE and Saudi Arabia choosing nuclear energy as part of their energy mix, I think you'll agree that the outlook for nuclear is positive.

● And **what about France** and its consistent energy policy for the past 40 years?

- New French President François Hollande has clearly confirmed that nuclear power will remain the main component of the energy mix in France while the share of renewable energies will increase.

This was good news for French industries, since electricity accounts for **half of the production cost** in certain branches.

- Construction at Flamanville – where EDF is currently building an AREVA-designed EPR reactor – is also an expression of French adherence to the highest standards of safety.

- We warmly welcome **the public debate that has just been launched**. 8 debates took place in France since the 80s. It is part of the transparency and dialog that energy policy deserves.

● And **what about Japan?** We follow developments with strong interest. Legitimate emotions are still running high but the new government has clearly confirmed that nuclear energy will remain a key contribution in the mix.

● **In the US, the only real economic issue** is in deregulated markets as long as shale gas domestic prices remain at low level.

But can this situation continue? Can the global imbalance in gas prices remain (US vs. Europe vs. Asia)? Can a country take the risk of depending on a single source of energy to meet its energy needs?

II) Looking forward: what are the key Success factors for nuclear energy in the world ?

II.1) Now more than ever, safety is the *sine qua non* condition for the development of nuclear power.

● The mobilization of the nuclear industry and the safety authorities to act on the lessons learned from the accident at Fukushima has been exemplary.

● The stress tests, performed in all regions of the world, have demonstrated an **unprecedented cooperation between** Safety Authorities.
They should result now in national action plans, investments in the existing fleet and accelerated harmonization initiatives.

● But this is not only a regulatory issue. **Our industry as a whole must seize the matter**.
To this extent, WANO's (World Association of Nuclear Operators) is taking a very strong action after Fukushima, through a dedicated action plan.
Inter alias, its headcount is being tripled. Its peer reviews are being reinforced, through a widened scope, a greater depth and an increased frequency.

- As far as AREVA is concerned we have performed the Complementary Safety Reviews on our French nuclear cycle installations.

● We have noted **positive conclusions regarding our EPR reactor** from the Finnish, the British and the French safety authorities.

It is characterized by its robustness (particularly against natural hazards and external aggressions), by the extent and redundancy of its safety provisions and by the inclusion in the design of the severe accident mitigation.

The EPR reactor, is designed **to keep its surrounding populations and environment safe**.

- In this post-Fukushima context, we have also worked closely with utilities to support them in their safety assessments and safety enhancements through our "**Safety Alliance Framework**".
This program provides a structure for analyzing issues around resistance to major hazards, robustness of cooling capability, and prevention of environmental damage.

● Moving forward, greater harmonization of nuclear safety should continue to be looked for.

This harmonization process **at international scale** is a pre-requisite for the development of nuclear power worldwide.

Public opinion no more understands why safety requirements are different from one country to another.

● **The IAEA is definitely the key body to drive the safety harmonization between the countries and to ensure the implementation of the best standards and practices**.

Five key initiatives should continue to be promoted by the Agency, in the frame of its post Fukushima action plan:

- **Independent safety authorities**. Safety authorities must be both independent and competent.

- **Regular safety revisions** in the spirit of continuous improvement taking on board scientific progress and notably with regard to natural risk assessments.

- **An accelerated transition to Gen III reactors**. Their safety features must become the unquestioned standard at world level.

The safety objective to reinforce the prevention of accidents and to mitigate their consequences should become **a common reference**.
Let me mention here the relevance of the safety objectives as formulated by the Western European Nuclear Regulators' Association for new nuclear reactors.

- The necessary implementation of the best practices, of the lessons learnt from Fukushima and of the **peer review recommendations**.

A number of safety enhancements and good practices have been identified all over the world after Fukushima.

They have been shared at IAEA level and show a good convergence on the ideas and principles.

The stake is now **the quality and depth of their implementation**. The Agency has a key role to play in this matter, by reinforcing the reporting process performed at the Convention on Nuclear Safety meetings, the peer review follow-up, the pressure put on the States through the cooperation programmes.

● Another key issue to regain public confidence will be the **successful remediation of the Fukushima Daiichi site** [and the monitoring of the consequences of the accident on the population].

- Both the Japanese and the international public opinions are looking for transparent information and independent reviews.

In this regard, the **IAEA has issued regular reports to the public** on the current status of the nuclear plant, including information on environmental radiation monitoring.

- Since March 2011, remediation of contaminated areas has successfully leveraged worldwide best service providers. **International cooperation should be sustained** to implement and develop the technologies that will ensure safe dismantling operations.

II.2) Non proliferation must remain a permanent objective.

● The nuclear industry and AREVA in particular place great importance on **non-proliferation**, which is essential to the acceptance – and therefore the sustainable development – of nuclear power.

Non-proliferation is one of the basic principles behind the civil nuclear industry.

President Eisenhower's vision of **Atoms for Peace** has largely become a reality. Civil nuclear power has undergone major development worldwide.
Today, more than 440 reactors generate electricity, and numerous research reactors are operating across the globe.

● **The IAEA** plays a crucial role in promoting the safe development of civil nuclear energy while ensuring that nuclear materials are not diverted to weapons program.

The work of the Agency was recognized a few years ago by a **Nobel prize** to its Director General.

AREVA fully supports the IAEA in its dual mission and thanks the Agency for always getting industrial players involved in its work when their experience can help find effective solutions.

● If the responsibility for preventing the spread of nuclear weapons falls first with governments, **the nuclear industry is on the front line**, as it produces, treats, distributes and uses fissile materials in its facilities and develops associated technologies.

AREVA fully shares and implements the French government objectives and policy. That means that we have in France **a high level of Euratom and IAEA safeguards** on our nuclear installations.

In our exports, **peaceful purposes are always a condition**, even with Nuclear Weapon States.
AREVA is ready to supply countries with light water reactors, such as its EPR reactor, that by themselves do not present a proliferation risk, provided effective safeguards and conditions are accepted and implemented in these countries.

● Moreover, the nuclear industry can play an important role in meeting the objective set by the international community to favor the development of nuclear energy worldwide while avoiding the dissemination of sensitive technology, enrichment and reprocessing.
Indeed, a **well-functioning fuel cycle market**, with sustainable suppliers like AREVA providing enrichment and used-fuel recycling services at competitive prices,

can make it unnecessary and uneconomic for new countries to acquire national enrichment and recycling facilities.

The fuel cycle industry has a responsibily **ensuring that reactors have access to long term supply of fuel**, as long as recipient states comply with non-proliferation rules. This requires smoothly operating markets, with robust industrial capacities.

● **The management of used fuel** is another sensitive issue in the nuclear fuel cycle.

Today, certain countries and utilities have opted for treatment and recycling while others prefer to store their used fuel.

AREVA believes **that the closed fuel cycle approach** is the best industrial solution available today, and that under the appropriate nonproliferation controls and conditions, it offers a sensible path in the future for some countries.

AREVA's experience shows that treatment and recycling can provide a very good fuel-cycle option at a competitive cost. It is an **economically, environmentally, and socially responsible approach** to the management of used nuclear fuel.

With such a model, most countries could enjoy the benefit of nuclear energy without having either **to master or develop locally any sensitive technologies**, significantly contributing to stabilizing the world's geopolitics.

● In the longer term, **most fourth generation reactors will probably use a closed-loop cycle**. I strongly believe fast breeder technologies and new treatment processes will develop.

Industry takes action by implementing safe and sustainable industrial tools and by continuously seeking and developing new technologies which offer better resistance to proliferation.

II.3) Finally, we must responsibly manage the environmental impact of nuclear activities.

●Let's **debunk the myth of an unsolved, nuclear waste problem**!

- The **closed fuel cycle approach** is a proper industrial solution, available today.

  In the AREVA La Hague and MELOX plants, no less than 96 percent of the used fuel produced by our customers can be recycled into MOX fuel.

- Regarding high level nuclear waste, **deep geological repositories**, proven safe by a number of studies including those of French ANDRA, should become reality before 2030 in Finland, Sweden and France.

II.4) Beyond these preconditions - safety, non proliferation and minimized environmental impact - let me here list a number of key success factors to ensure that nuclear energy retains its rightful place in the energy mix.

● First and foremost, it is time to **abandon ideological stances** and false debates that oppose nuclear and renewable energies.

It is not a question of "either / or." They can – and should – coexist. They are **complementary solutions** for generating low carbon electricity and both have a legitimate role in the energy mix.

● Second, to see through the energy transition, **investors need new guarantees** :

- A **stable framework** which encourages competitive but long-term and capital-intensive investments.

In the EU deregulated market environment, we need: relevant **CO2 pricing**, different **business models** such as co-investment, long-term contracts or **more ambitious approaches** such as the British one – which takes benefits to all low carbon energies.

- In the current economic crisis, **the issue of competitiveness** becomes paramount to sustain our industry and to address an increasingly important issue, energy poverty.

A decarbonisation strategy with massive recourse to renewable energies does not take costs into account.

- But competitiveness requests foresight: our present efforts in **research and development** mean more certainties in the future!

In several ways: safety, performance and waste management (Generation IV reactors), response to local needs (small and medium reactors), etc.

● In this context, **which actions** should we undertake now?

- Investments in infrastructures must provide **a support to the economy** and fall under growth programs.

- International bodies, States and industries must invest more in **research and innovation**, if only for safety issues.

- As regards to renewables, we should progressively lower subsidy schemes and focus on improving the **competitiveness of renewable energies** through technology and research.

● In conclusion, let me insist that **the role of the IAEA is extremely important** for the definition of the highest, harmonized, safety and non-proliferation rules.

● But **nuclear industry must also give the utmost importance to non-proliferation** by complying with regulations and the national and international directives in force, and also by disseminating nonproliferation culture among its teams.

Everyone, from the smallest utility to the highest regulatory body, is **accountable for the safety and security** of nuclear energy.

And as Director General Amano said during last General Conference, “highest standards of safety must be the basis of all nuclear power programs”.

● Provided these conditions are met, bearing in mind the need to bolster the global economic growth with non carbon electricity at a reasonable price, **it is my conviction that nuclear energy will play a major role** in the world’s future energy mix.

Ladies and gentlemen, I thank you for your attention.