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FIVE DECADES OF NUCLEAR PARTNERSHIP

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What a difference a decade makes.

When I spoke here 10 years ago as the NEA turned 40, nuclear power had stopped growing in Western Europe and North America. The outlook was uncertain in other parts of the world. Public perceptions were mainly negative. When we talked about transferring nuclear technology to developing countries, we generally meant applications in medicine and industry, not nuclear power.

By contrast, at the IAEA General Conference in Vienna two weeks ago, so many of our Member States announced that they were considering the introduction of nuclear power that I stopped counting. Most of them were from the developing world. In the OECD, countries which used to talk about phasing out nuclear power seem to have changed their minds, while others are planning new reactors.

There are now 439 nuclear power reactors in the world, only two more than when I spoke to you in 1998. The great majority are still in OECD countries, which account for 84 percent of global electricity generated by nuclear power. Not a single new country has introduced nuclear power in that time.

But change is definitely in the air. No fewer than 50 countries have informed the IAEA that they are considering introducing nuclear power. Twelve of these are actively preparing nuclear energy programmes, including Turkey, Egypt, Vietnam and Nigeria. Among existing nuclear power users, China is constructing six power reactors and expects its installed capacity to increase five-fold by 2020. Russia plans to add at least 26 new large reactors between now and 2020, plus 10 smaller units, more than doubling its nuclear

capacity. India is building six reactors and aims to increase its installed capacity eight-fold by 2022.

Meanwhile, our Member States continue to work on technological innovation, which will be essential to maximize the benefit of nuclear energy for sustainable development. Work now underway includes the closed fuel cycle using fast neutron systems and the development of small and medium sized reactors suitable for countries with small grids. The aim is to make nuclear power inherently safe, proliferation-resistant and more cost-effective in the long term. All of this has important implications for the work of both of our organizations.

Role of Nuclear Power

You are all familiar with the factors driving what some are calling a nuclear renaissance: surging global demand for energy, uncertainty about energy supply and concern about climate change. Nuclear energy appears to offer at least a partial solution to these challenges. Your sister organization, the IEA, expects the world's energy consumption to grow about 50% by 2030, with electricity use doubling globally and tripling in developing countries. Nuclear energy is still expected to account for about 14 percent of global electricity generated in 2030, similar to today.

Every country has a right to develop nuclear power, but also a responsibility to do it properly. Sometimes we need to lower the expectations of countries about how quickly they can hope to have nuclear power reactors in operation. It can take a minimum of 10 years just to put the basic infrastructure in place. This is not an area where you can cut corners.

Countries considering the introduction of nuclear power are increasingly seeking the IAEA's expert and impartial advice in analysing their options and choosing the best energy mix. To ensure that newcomers use nuclear energy efficiently, safely, securely and with minimal proliferation risk, we impress upon them the need to plan properly, to build the human resources and infrastructure, to establish independent and effective regulators and to adhere to international safety, security and non-proliferation instruments.

We have developed milestones or check-lists to help countries work systematically towards the introduction of nuclear power. We develop models for energy planning and analysis for Member States which do not have them and we train local experts and help them to analyse national options. We provide guidance, organize workshops and give specific assistance if a country starts down the road to a nuclear power plant. We offer advice in drafting national nuclear legislation and we train regulators and operators.

Naturally, we stress that the primary responsibility to ensure safety and security lies with the countries concerned. However, we also make the companies – and countries – which supply the equipment and expertise aware of their responsibility. In most cases, that means OECD companies and countries. This is because failures of either safety or security can have consequences stretching well beyond national borders, as the Chernobyl accident demonstrated. Suppliers of nuclear technology owe a duty of care to the recipients and to the world at large. Overall, safety is much better than it was 10 years ago, but we still have vulnerabilities in safety, as well as in security.

Public attitudes towards nuclear energy have become more positive in the past decade. This is partly due to improvements in both the reliability and safety record of existing power plants – not to mention the fact that they are now more economical to run. But concern

about waste will remain until the first final repository for high-level waste is operational. Naturally, we can never be complacent. A single nuclear accident anywhere in the world could severely undermine the prospects for nuclear energy everywhere. In some countries, we see a troubling combination of old reactors and weak regulators. This could be a ticking bomb. It is in all our interests to ensure that the highest safety standards are upheld everywhere.

Balancing Potential Risks

The potential downside of a nuclear renaissance is the spread of nuclear material to many more countries. This clearly increases the risk that nuclear material could be diverted to make nuclear weapons. Countries that have mastered uranium enrichment and plutonium separation, or which do so in future, are de facto nuclear weapons *capable* states, meaning they could develop nuclear weapons in a very short time if they walked out of the Non-Proliferation Treaty or attempted to do so in a clandestine manner. This is too narrow a margin of security, in my opinion. These countries may genuinely have no intention today of ever making nuclear weapons, but that can change in a short time if their perception of the risks to their national security changes. And security perceptions, as we know, can change very rapidly.

That is why we need to think seriously about some form of multinational control over the fuel cycle. This should provide assurance that every country that wants nuclear energy – and is in compliance with its safeguards obligations – has guaranteed access to a supply of nuclear fuel that will not be interrupted for political reasons. I first made this proposal five years ago. A number of ideas have been put forward since then on developing a new,

multilateral framework for the nuclear fuel cycle. This could be done in different ways. But I believe any such framework must be global and non-discriminatory.

The ideal scenario, in my opinion, would be to start with a nuclear fuel bank under IAEA auspices. Then we should agree that all *new* enrichment and reprocessing activities should be placed exclusively under multilateral control. Ultimately, all *existing* facilities should also be converted from national to multilateral control. This is an ambitious agenda and it is clearly not going to happen overnight. But ambitious and creative measures are necessary if we are ever going to halt the spread of nuclear weapons.

IAEA/NEA Cooperation

Let me now turn to relations between our two organizations. Cooperation has been close ever since the creation of the NEA's predecessor organization and we have made considerable progress over the years. Our membership overlaps and our work is complementary in nuclear safety, energy and related fields. I believe we have been successful in avoiding unnecessary duplication and ensuring coordination.

The IAEA has a unique role in areas such as safeguards, security and technical cooperation. We can also act as a multiplier by sharing OECD related knowledge with the wider IAEA membership. Our two organizations take part in technical meetings together and engage in systematic annual consultations on our work programmes. We cooperate effectively in nuclear related data and the transfer of knowledge, in technology development – including the Generation IV International Forum and INPRO – and, not least, in safety. I am grateful to the NEA for co-sponsoring our Safety Standards, particularly the revision to the International Basic Safety Standards. My good friend Luis Echavarri, the able leader of the NEA, is an active member of our International Nuclear Safety Group (INSAG), which

provides authoritative guidance on nuclear safety approaches, policies and principles. I also look forward to the World Nuclear Energy Outlook which the NEA is presenting today.

It is always risky making predictions, but I am confident that cooperation between the IAEA and the NEA will remain excellent and will continue to grow in the next 50 years.

Conclusion

I began by saying what a difference a decade makes. And change is certainly a constant in all our lives. Some things, however, never seem to change.

When I spoke at your 40th birthday celebrations, the world was undergoing a financial crisis – just as it is today. The IAEA’s regular budget has not changed much in ten years. Our Technical Cooperation Fund remains inadequate. The Agency still lacks appropriate legal authority and resources. There has been no movement on nuclear disarmament. As was recently noted, the IAEA is not the lead Agency for nuclear disarmament, but: “Progress towards disarmament, or the lack of it, will deeply affect the success of the IAEA’s non-proliferation mission.”

That quote is from a recent report on the future of the IAEA by a *Commission of Eminent Persons*, which I appointed last year. The report contains some bold recommendations on what we should be doing up to 2020 and beyond and will require a bold response from our Member States. For example, the Commission recommends that global safety and security standards – and peer reviews – should be made binding; that we should be given more legal authority and resources to implement safeguards; that our budget should be doubled by 2020; and that our technical cooperation programme should be expanded. And much more besides.

The road ahead will not be easy. But I believe that everything the Commission recommends is do-able if we are able to look at the big picture and see more clearly the risks we face as well as the opportunities that lie ahead.

We at the IAEA have valued our partnership with the NEA since its inception and look forward to strengthening it. I congratulate the NEA on its 50th anniversary and wish you every success for the next half-century.