

Symposium on Peaceful Uses of Nuclear Science and technology: towards the 2015 NPT  
Review Conference and Beyond

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*Session 1, focusing on the importance of the peaceful use of nuclear science and technology in the  
context of the NPT, as well as other global agenda, such as development and climate change*

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Excellencies, ladies and gentlemen, good morning,

I am very pleased to be with you this morning, and at the outset, I would like to thank the Permanent Missions of Brazil and Japan for hosting this symposium on the peaceful uses of nuclear science and technology. As we prepare for the 2015 NPT review conference, and indeed, as we enter the year 2015 – the target year for the achievement of the Millennium Development Goals and the nexus for discussions on the challenges that the world continues to face – this symposium offers an important opportunity for us to examine the peaceful application of nuclear science and technology, and the role of science, technology and innovation in helping countries around the world to meet their development needs.

Before I embark on this topic, allow me first of all to tell you a little about my organization, the International Atomic Energy Agency, and in particular, about our technical cooperation programme. As you all know, the IAEA is the global hub for cooperation in the nuclear field. The Agency was set up in 1957 as the world's '**Atoms for Peace**' organization. We are part of the United Nations family, and we work with our Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technology. The Agency is built on three pillars: **technology**, **safety** and **verification**. We are best known for our role in verification, or safeguards, and we also play a well-known and leading role in establishing standards for the safe use of nuclear and radiation technology. We are less known, however, for our technical cooperation work.

I am always happy to have an opportunity to speak about this aspect of our work – it is a fascinating area, and the IAEA experience proves that scientific organizations play a truly important role in addressing development challenges.

The IAEA's technical cooperation programme – the TC programme – is the Agency's primary mechanism for supporting developing Member States in the peaceful application of nuclear science and technology. It is built on over fifty years of successful collaboration with Member States. The TC programme is determined by the needs of our Member States. They choose what is important for them, what problems they would like to address with our help. This is how their priorities become our priorities. We help Member States to address national development needs in fields where nuclear techniques offer advantages over other approaches, or where nuclear techniques can usefully supplement conventional means. Through this work, we have contributed to the achievement of the Millennium Development Goals. Science, technology and innovation are drivers of social and economic development and have the potential to be a game changer for all countries' efforts to achieve sustainable development.

All Member States are eligible to participate in the TC programme, although in practice our technical cooperation activities tend to focus on the needs and priorities of less developed countries. To give you an idea of the scale of the programme, last year, we delivered support to 124 countries through over one thousand projects. My colleagues will be speaking to you later on in more detail about several specific areas where nuclear technology can be peacefully applied, but I'd just like to give you an idea of the range of areas in which it can be used.

You are all aware already; of course, of the importance of radiation medicine in diagnosing and treating cancer, and probably everyone here has had an X-ray or a CT scan at some stage. Probably you are aware how essential nuclear medicine is in the diagnosis and treatment of various diseases, most importantly cancer and heart diseases. Even more, nuclear techniques can also be used to measure body composition, providing data that helps governments to improve their nutrition programmes, or to identify if a breastfeeding has been useful to the child. This technique can also tell if the weight gained by an individual is fat or muscle and how much.

We also respond swiftly to Member States' urgent and emerging health needs – like outbreaks of disease, for example. We are contributing to the fight against Ebola and other zoonotic diseases by providing equipment and training personnel. We appreciate the generous funding

through the Peaceful Uses Initiative that has allowed us to do so, so far. We are determined not only to support responses to the outbreak, but will assist in building national and regional capacities to prepare our Member States to respond to future similar viral outbreaks.

Water has become a scarcity in many parts of the world, and has the potential to create conflict among countries. It needs to be preserved and well managed before we reach a point of no return. Nuclear techniques – isotopic techniques – help us to identify unique characteristics in water, allowing us to discover where it is coming from, or if an aquifer is being recharged or if it is fossil water, or if drinking water supplies are threatened by contamination or if a dam's integrity is in danger. As a matter of fact we are assisting 13 countries in the Sahel region of Africa to map out the extent of five aquifer systems in the region, and to establish governance mechanisms for their use to avoid conflict.

Isotopic techniques can also help to track the movement of water through soil, and its uptake in plants – and this leads to better irrigation practices for farmers. Nuclear technology plays an important role in environmental monitoring – it can be used to give early warning of harmful algal blooms in the oceans, and it can also be used to find out where air pollution is coming from, or how climate change is affecting soil stability. In fact we have a fascinating project going on at the moment which is using nuclear techniques in polar and mountainous regions to study the impact of climate change on land-water-ecosystem quality.

Poverty remains a global challenge. We can help in food security. By exposing seeds to gamma rays, we can speed up the natural process of mutation and help develop plants that are more resistant to disease, or tolerant to drought or salinity with high yield. Just recently, one of our interregional projects led to the development of strains of wheat that are resistant to Ug99, or black stem rust, a virulent wheat disease that threatens global food security. Nuclear techniques are not only used for crop development, they are also used to support better farming practices, and to improve livestock breeding and health. Little insects can destroy and damage crops. The Sterile Insect Technique is helping to rid entire regions of insect pests like tsetse, fruit fly and cactus moth.

Industry is another field where we can play a major role. The support we provide to our Member States in this area helps them to compete in the international market. Non-destructive testing, for example, is a less known use of nuclear technology, but it is what

ensures the structural integrity of airplanes in the air, oil and gas pipelines on the ground, and pressure vessels in power station. It is another ‘X-Ray’, but this time not for humans, but for materials. Radiation technology can be used for cleaner industrial processing, and in food safety. Medical supplies can be sterilized, food can be preserved, and the polymer industry can thrive. It is chemical free, clean, fast and efficient.

Almost every aspect of development – from poverty reduction to the improvement of health care – requires reliable access to modern energy services. Energy is the engine of development. The IAEA helps developing countries to build their energy planning capacities. For Member States considering nuclear power, the IAEA offers a broad range of services.

Finally, let me mention safety. Safe application of nuclear technology is a priority for the IAEA, and we provide our Member States with extensive support. Without a functioning regulatory structure, countries cannot benefit fully from nuclear technology.

**Ladies and gentlemen,**

I would like to speak in some more detail about the role of science, technology and innovation – STI – in development. This role has been increasingly noted in recent years, and the outcome document of the Rio+20 conference in 2012, *The Future We Want*, recognized “*the importance of strengthened national, scientific and technological capacities for sustainable development.*” The same document also called for the establishment of a process to develop sustainable development goals, or SDGs, building upon the Millennium Development Goals and converging with other post 2015 development agenda activities.

The Agency has participated actively in discussions on the post-2015 development agenda since 2012, underscoring the importance of including strong national science, technology and innovation institutions in the SDG framework. One element of the SDG discussions of particular relevance to the Agency was the UN Secretary-General’s proposal for a global technology transfer mechanism and science and technology networks that enable research and development cooperation.

In September this year, the UN will hold a summit to adopt the post-2015 development agenda. Agreement on the SDGs is an important opportunity for the Agency’s technical cooperation, as 13 of the 17 new SDGs relate directly to our technical areas. We will be holding a side event at the IAEA General Conference in September this year to examine the

relevance of these goals to Agency technical cooperation and to suggest how the SDG framework could provide resource mobilization opportunities and increase the socioeconomic impact of the TC programme. If our Member States decide to endorse these key UN development goals, new doors will open for partnerships, including with the private sector.

Ladies and gentlemen,

The IAEA, through its technical cooperation programme, and through coordinated research projects which my colleagues will certainly mention, helps Member States to apply nuclear science and technology for the good of humankind. Working together, the IAEA and Member States can address pressing development needs, aiming to produce concrete benefits for the public good, reaching the sick in hospitals, the farmer in the field, families as they go about their daily lives. In using this technology, we are limited only by our imagination – I cannot underscore enough its importance, and the role of the Agency in harnessing it with our Member States for peace and development.

I thank you for your attention.