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Communication dated 26 May 2009 received from the Permanent Mission of Austria to the Agency enclosing a working paper regarding Multilateralisation of the Nuclear Fuel Cycle

The Secretariat has received a communication dated 26 May 2009 from the Permanent Mission of Austria, transmitting a working paper entitled "Multilateralisation of the Nuclear Fuel Cycle: Increasing Transparency and Sustainable Security". The working paper is based on a food-for-thought paper previously submitted by Austria on 10 May 2007, and issued as INFCIRC/706.

As requested in that communication, the working paper is herewith circulated for the information of all Member States.

Multilateralisation of the Nuclear Fuel Cycle: Increasing Transparency and Sustainable Security

Working Paper submitted by Austria

This paper elaborates on a food-for-thought paper submitted by Austria in May 2007. (INFCIRC/706)

1. INTRODUCTION

Article IV of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) establishes the "inalienable right" of all the Parties to the Treaty to "…use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty". In exercise of this right, several States have opted to include nuclear power in their energy mix. After decades of decline, experts predict that overall global nuclear power capacity might increase in the coming years.

Because of its inherent dangers, nuclear technology continues to represent the potentially most destructive threat to global security. Every expansion in the use of nuclear power leads to the spread of fuel cycle services, thus increasing the risk of misuse for non-peaceful purposes, whether by States or non-State actors. The anticipated rise in demand for fuel cycle services, as well as the associated risks of weapon proliferation, nuclear terrorism, illicit trafficking, and accidents involving radioactive materials requires new frameworks for reducing the threat of misuse – or careless use - of nuclear energy.

As we strive for the complete elimination of nuclear weapons, and as this goal begins to see reflection in the official policies of nuclear-weapon States, the need for a long-term vision to address non-proliferation concerns gains increasing urgency. Given the mutually reinforcing nature of disarmament and non-proliferation efforts, it is vital to ensure that any progress towards disarmament of nuclear weapons is not hindered in any way by concerns over non-proliferation.

Legitimate concerns of States which rely on nuclear energy regarding the supply of fuel for their reactors need to be addressed, as well as concerns regarding misuse and proliferation. In today's world, international challenges can only be solved by close cooperation and inclusive, transparent and verifiable multilateral systems. The crisis of confidence and mutual mistrust on nuclear issues requires a bold new approach to the nuclear fuel cycle.

Several proposals have been made. Building on work done in the past, the IAEA and its Director General, Dr. Mohamed ElBaradei, have been leading the debate and providing the key forum for advancing these proposals[1]. Austria contributed to this debate by presenting a short food-for-thought paper at the First Session of the Preparatory Committee in 2007 (NPT/CONF.2010/PC.I/7; circulated at the IAEA as INFCIRC/706). The current paper develops some of the ideas further.

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[1] See in particular the IAEA report on a *Possible New Framework for the Utilization of Nuclear Energy: Options for Assurance of Supply of Nuclear Fuel*, June 2007, and the Director General's Introductory Statement to the IAEA Board of Governors, 5 March 2009

2. GENERAL OUTLINE

Multilateralisation of the nuclear fuel cycle has the following principal objectives:

- increase transparency on global nuclear fuel cycle activity;
- assure security of supply of nuclear fuel and fuel services for peaceful purposes for those States which have chosen to include nuclear power in their energy mix;
- increase security for all by addressing various non-proliferation concerns;
- create conditions which can reinforce efforts towards the complete elimination of nuclear weapons.

Austria believes that the interests of all States would be served by the introduction of maximum transparency through a new multilateral framework of supervision of all stages of the nuclear fuel cycle “from the cradle to the grave". Such a framework would better reflect the needs and realities of our global community in the 21st Century.

Concerns have been expressed that some proposals for multilateral approaches to the nuclear fuel cycle might undermine or curtail developing countries' right to the use of nuclear energy for peaceful purposes. It is important to emphasise that the approach outlined here is not an attempt to divide the nuclear community into suppliers and recipients. On the contrary, the proposed framework would ultimately lead to a more comprehensive implementation of Article IV, where the benefits of advanced nuclear technologies would be made available to all States who seek them on a fair and equal basis. While the primary motivation for moving towards such a non-discriminatory approach stems from non-proliferation considerations, it is evident that multilateralisation of the nuclear fuel cycle could also have considerable advantages in terms of safety, security, and cost.

The establishment of a multilateral fuel cycle arrangement is likely to be implemented in phases, through various complementary instruments and by different actors. This should be done as part of an agreed framework. Austria’s proposed framework seeks to take account of a number of existing proposals, some of which are already at an advanced stage of implementation.

3. PROPOSAL FOR MULTILATERALISATION OF THE NUCLEAR FUEL CYCLE

Two parallel tracks would be pursued simultaneously, the first focused on building transparency and mutual confidence, and, crucially, allowing the IAEA to build a fully comprehensive picture of each State's nuclear capabilities and activities, and the second setting out steps towards towards multilateralisation of the nuclear fuel cycle.

Track 1: "Cradle to Grave” Information System for Transparency and Confidence Building:

A. Goal

An IAEA “cradle to grave” information system would greatly facilitate the work of the Agency, ensuring that it commands a fully comprehensive picture of the global nuclear industry, and each State’s capabilities, activities and transfers, at each stage of the fuel cycle. It would also increase

significantly the quantity and quality of information available to States. All States would benefit equally from this system, which would provide greater clarity as to the nature of each State's nuclear activities and thus enhance overall confidence regarding nuclear issues.

B. How and When

Much of the information which would form part of the "cradle to grave" information system is already gathered by the IAEA for verification and other purposes. This would be drawn together and supplemented, in order to form a complete profile on each State, regardless of its level of nuclear activity. The IAEA should be requested to propose a detailed conceptual framework for the information system as soon as possible, taking account of confidentiality requirements.

C. Core elements

The information system would comprehensively capture data on all States, through periodic and real-time submission of data.

For States with nuclear power programmes or research reactors, the information system would comprehensively capture data on all stages of the nuclear fuel cycle, from the time that nuclear material is mined or imported - in whatever state of processing - to the time that spent fuel is finally disposed of, put into long-term storage or rendered irrecoverable. Nuclear Weapon States would also be required to share initial information on their strategic fuel supplies and strategic facilities, pending agreement on a Fissile Material Cut-Off Treaty, which is expected to include provisions for full transparency and verification.

For States without nuclear power programmes, the system would capture information on any source or special fissionable material held for non-power applications. In addition, some States with ore deposits relevant to nuclear programmes may not have such programmes, but would nonetheless be covered by the system.

The type of information which each State would be required to provide includes:

- Periodic information on all national capabilities and operational capacities for each stage of the nuclear fuel cycle, including mining of source material, processing, storage and transport, conversion, enrichment, fuel fabrication, fuel assembly, reactor operation, reprocessing, and disposal and storage of spent fuel and other radioactive waste;
- Real-time information on all national and trans-national transactions involving source or special fissionable material and nuclear fuel services;
- Periodic or real-time information, as appropriate, on all activities and transactions relating to non-power applications of nuclear energy.

Together with the information currently gathered by the IAEA as part of its verification work and pursuant to other mandates and programmes, the additional information obtained through the "cradle to grave" information system would provide the IAEA and States with a complete global picture. The IAEA would publish a periodic assessment of the global nuclear fuel and fuel services market based on information provided. The resulting transparency - facilitated by the gradual multilateralisation envisaged under Track 2 - should constitute a significant confidence-building measure.

Track 2: Multilateralisation of the Nuclear Fuel Cycle

A. Goal

Much of the current mistrust in international affairs has its origin in national nuclear programmes. History has provided ample evidence that cooperative endeavours among States can reduce mistrust by introducing checks and balances. As regards the nuclear fuel cycle, the best way of providing sustainable security for all is by ensuring that States work together in all stages of the cycle. Jointly-operated facilities also have the advantage that customer States are not dependent on the national policies of individual provider States. Multilateral facilities can thus provide supply assurances, without calling into question existing Article IV rights, while at the same time addressing non-proliferation concerns.

B. How and When

The groundwork for multilateralisation would begin with the establishment of a nuclear fuel reserve, as a confidence-building measure. At the same time, the IAEA would gradually assume the functions of a virtual broker for all fuel cycle-related transactions. Existing facilities would eventually be transformed to new forms of multilateral or regional ownership and new facilities would be established as multilateral facilities from the outset. Finally, a decision would be taken, that the rights enshrined in Article IV, insofar as they apply to the nuclear fuel cycle, would be exercised exclusively through multilateral endeavours.

C. Core elements

(i) Nuclear fuel reserve under IAEA control

To immediately address concerns expressed by some States about the potential for disruption of supply of nuclear fuel for political reasons, a nuclear fuel reserve or bank under IAEA control would be established, as proposed by the Nuclear Threat Initiative and others. The creation of a last-resort reserve of low enriched uranium (LEU) for States whose supply has been interrupted - and who are in good standing with the IAEA - can provide important reassurances.

The IAEA should be requested to provide a detailed blueprint for the operation of the fuel reserve as soon as possible. Factors to be considered include the following:

- the conditions for accessing fuel from the reserve;
- physical location of the LEU stocks;
- a procedure for determining the price;
- questions related to safety, security and safeguards.

The conditions for accessing the LEU reserve should convince States of the benefits of reliance on multilaterally-sourced fuel, rather than domestic development of the full nuclear fuel cycle, without disturbing functional markets. The involvement of the IAEA should reassure potential customer States that any decision to supply from the nuclear fuel bank would be taken on a non-discriminatory and non-political basis. Criteria would be established in advance and applied objectively and consistently.

(ii) IAEA as virtual broker

In parallel to the decision to establish the "cradle to grave" information system, referred to under Track 1, the IAEA would be granted the mandate to act as a mandatory virtual broker in all transactions related to the nuclear fuel cycle.

The virtual broker arrangements would apply to all transactions involving source or fissionable materials - regardless of the stage of processing - as well as fuel cycle services such as uranium

conversion, uranium enrichment, reprocessing, and disposal and storage of spent fuel and other radioactive waste.

As a virtual broker, the IAEA would not take physical possession or legal title of the nuclear materials or services in question. However, the Agency would be in an optimal position to help provide assurances of supply to customer States. If a customer were unable to obtain fuel or services from a particular provider, the IAEA would be in a position to help identify alternative suppliers, using information already at its disposal - which would include information on the capacities of each country's facilities at each stage of the fuel cycle – and through pre-agreed stand-by arrangements. As a last resort, the nuclear fuel reserve would also be available.

(iii) Multilateralise existing nuclear fuel cycle facilities

As regards existing national facilities, incentives should be provided to encourage broader involvement by interested States, for instance by permitting them to become shareholders, influence strategic decisions at the facilities in question, and share profits and responsibilities. Shareholdings could provide important incentives to States for whom guaranteed supply is a primary consideration.

Under this model, operation of the plant would continue to lie with the States involved, but safeguards would in all cases be applied by the IAEA, to standards at least as high as those for facilities in States with a Comprehensive Safeguards Agreement and an Additional Protocol in force. Additional safeguards measures should also be considered in recognition of new types of multilateral ownership. The IAEA would have a role to play in certifying regional facilities, in order to guarantee high standards of safety and security.

In order to avoid any potential conflict with Article IV of the NPT, participation in a multilateral or regional fuel cycle facility would not require a State formally to forgo the right to development of national facilities, but it is expected that the incentive to develop national facilities would be greatly diminished, particularly as confidence grows over time in the ability of a regional facility to satisfy all fuel and fuel service demands. At the same time, the involvement of multiple partners would act as a barrier to "break out" from civil nuclear energy programmes to nuclear weapon programmes

In order to ensure smooth operation of regional facilities and reflect new ownership structures, appropriate amendments would be made to national export control legislation, and to the guidelines of relevant export control regimes.

Multilateral or regional facilities, such as the International Uranium Enrichment Centre (IUEC) being established by the Russian Federation on the site of the Angarsk Electrolysis Chemicals Complex, are already envisaged. The proposal by Germany for a "Multilateral Enrichment Sanctuary Project" (MESP), also provides a model which can serve this purpose.

(iv) All new fuel cycle facilities under multilateral control

Newly-built fuel cycle facilities would come under compulsory multilateral control from the outset. Agreements with the IAEA would ensure the highest verification, safety and security measures.

New multilateral facilities should offer a range of nuclear fuel services, both at the front and back-ends of the nuclear fuel cycle. Back-end services might be of particular interest to States without the means to dispose of or store waste. As technologies related to reprocessing of spent fuel improve in the coming years, it is expected that new methods for storage and disposal of spent fuel and radioactive waste will be found.

(v) Full multilateralisation of all facilities

At the end of the process, all fuel cycle facilities worldwide would be under multilateral control. IAEA verification would become more efficient and less costly, as a number of facilities could be expected to shut-down, leading to a more limited number of larger facilities, just as many as global demand requires.

A legally binding international instrument would limit the production or reprocessing of all nuclear material for civilian nuclear programmes to facilities under multilateral control. A separate agreement on a verifiable Fissile Material Cut-Off Treaty would ensure that production of nuclear material for strategic nuclear programmes would also be halted at this stage, if not earlier, allowing strategic facilities to be converted to civilian use under multilateral control, or closed-down. These steps would ensure a level playing field for all.

Assurances of supply of nuclear fuel would continue to be provided to States in good standing with the IAEA, and, in view of the multilateral nature of control, an IAEA fuel reserve would no longer be necessary.

Full multilateralisation would significantly reduce the threat of proliferation of nuclear weapons through a “break-out” from civil nuclear energy programmes, without dividing the world into “good” and “bad” States, or “haves” and “have-nots”. Export control regimes, such as the Nuclear Suppliers Group, would no longer prove necessary once full multilateralisation had been achieved.

At the back-end of the nuclear fuel cycle, multilateral storage facilities would reduce proliferation risks by pooling sensitive nuclear material in a limited number of facilities worldwide, under IAEA safeguards. Multilateralisation also has the potential to allow safer and more environmentally-sound storage and disposal of spent fuel and radioactive waste, carried out to the highest international standards.

4. THE WAY FORWARD

The debate on multilateral approaches to the nuclear fuel cycle will be enriched in the NPT Review Process and at the IAEA. Special efforts are required to ensure that non-NPT States are fully involved in the elaboration of any new framework, and consideration should be given to the convening, at the appropriate time, of a UN Conference to adopt a framework towards multilateralisation of the nuclear fuel cycle.

Austria recognises that the framework presented in this paper is ambitious. But if the upsurge in nuclear power capacity follows forecast trends, then it is important to act now. The broad concept outlined in this submission is not untested. Over fifty years ago, the founding members of the European Union decided to place potentially destabilising assets - coal and steel - under the supervision of a new supranational and democratic institution, the European Coal and Steel Community, thus ushering in a new era of enduring peace between the participating countries. This model can be applied on a global scale to nuclear technologies and make a significant contribution to peace and security for all.