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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

Addressing the international challenge of nuclear safety and security

(presented by the Commission)

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1. INTRODUCTION

The 1986 Chernobyl accident highlights the catastrophic consequences of nuclear power plants that have a deficient design in countries with a poor safety culture and an inadequate operational safety and regulatory framework.

It is likely that the number of nuclear plants (NPPs) in the world will rise as international actors seek to increase energy security by diversifying their energy mix, in an effort to maintain economic competitiveness against the backdrop of historically high oil prices, or as a way of reducing or avoiding greenhouse gas emissions.

The objective of this communication is to review the safety and security challenges posed by the increasing geographical spread of nuclear energy and to propose recommendations on:

(1) key issues where the EU provides added value;

(2) a work programme based on geographical and technical priorities;

(3) possible elements of nuclear safety and security packages to assist third countries.

2. THE SPREAD OF NUCLEAR POWER

The nuclear energy generation is an established part of the energy mix in a number of developed countries and some of them are looking to expand its use. As examples, Russia and China have both announced plans to expand their nuclear capacity by more than 20 GW each by 2020. Russia is also expanding its sales of nuclear technology; it has sold nuclear power plants to China and India (under construction) and recently concluded a contract to build a nuclear plant in Bulgaria.

A number of countries which do not currently generate nuclear energy have manifested their interest in building NPPs. Some of them are in the neighbourhood of the EU (Jordan, Egypt, Tunisia, Algeria, Morocco, Belarus) while others such as Saudi Arabia, UAE, Vietnam, Thailand, Chile and Venezuela are further away. The Arab League and the Gulf Cooperation Council also promote the use of nuclear energy by their members. Some countries of these groups are in geopolitically challenging regions. The issues surrounding Iran's nuclear development are well known.

The EU has a mature nuclear industry and, as a result of its lengthy experience in the field, has the capacity to cooperate with partners building or intending to build NPPs in order to ensure that all nuclear activity is conducted in line with the highest standards of safety and security. Safety and non-proliferation issues must be considered as the two interlinked pillars of EU policy in this regard.

3. NUCLEAR SAFETY

3.1. Legacy from the Tacis Nuclear Safety Programme

With the break-up of the Soviet Union in 1991, some of the NIS countries had NPPs of varying ages and designs but lacked the economic resources, independent capability or safety management policies to upgrade them to western standards. The IAEA was tasked with identifying the shortcomings in nuclear safety across Central Europe and the NIS countries. The TACIS Nuclear Safety Programme was established to address these challenges and took into account the G7 strategy adopted in Munich in 1992[1].

The assistance provided under the Tacis Nuclear Safety Programme since 1991, in particular in Russia and Ukraine and to a lesser extent in Kazakhstan and Armenia, needs to be continued. There is a need for consolidation and some traditional sectors, such as the support provided to regulators, will need to be maintained in the foreseeable future. On-site assistance at the NPPs is evolving towards safety of their operations and will also need to continue.

In Russia it is important to continue following up on the evolution of the first generation reactors which do not meet current internationally accepted nuclear safety standards and which in the EU are considered uneconomical to upgrade. This issue will have to be brought up in the context of electricity trade between UCTE and IPS/UPS systems, with the objective of obtaining a commitment from Russia regarding the early closure of these reactors.

Cleaning the heritage of the Northern Fleet in NW Russia will continue. The dismantling and storage of radioactive waste from nuclear submarines, ice breakers, floating bases and land bases pose serious technical and financial problems. The EC has contributed €40 million under the Tacis nuclear safety programme to the nuclear window of the Northern Dimension Environmental Partnership (NDEP) fund and has carried out several projects and studies in the area. Further funding is envisaged.

In Ukraine, the EU is a major donor to the Chernobyl Shelter Fund (CSF), with a contribution of some €240 million so far, and to the Nuclear Safety Account (NSA), which funds projects related to the decommissioning of the site. Both of these funds are managed by the EBRD. In addition, the Commission runs other projects, including the Industrial Complex for Solid Radwaste Management (ICSRM) funded by TACIS for a total amount of about €50 million. Further pledges will be required to fund the projects under the CSF and the NSA. The Euratom loan facility has been used to provide a USD83 million loan to finance the modernisation programme of Rovno 4 and Khmelnitsky 2 units (the K2R4 Project). As with Russia, support will continue to be provided to nuclear regulators in the foreseeable future. On-site assistance at the NPPs is evolving towards safety of their operations and will need to continue.

The Memorandum of Understanding on Energy signed in 2005 with Ukraine[2] foresees the evaluation of the safety of the Ukrainian NPPs. A Commission – IAEA – Ukraine joint project on this question, funded mostly by the Instrument for Nuclear Safety Cooperation, was

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1 A parallel programme was adopted under Phare to carry out nuclear safety improvements in the EU candidate countries.

2 Memorandum of Understanding on cooperation in the field of energy between the European Union and Ukraine, signed in Kiev on 1 December 2005 by the President of the European Council Mr Blair, the President of the European Commission Mr Barroso and the President of Ukraine Mr Yushchenko.

started recently. The EU made its support for the ultimate accession of Ukraine to the Energy Community subject to satisfactory assessment of the level of nuclear safety in all Ukrainian operating NPPs**.** The safety upgrade of these plants is also an obligation of the Ukrainian utility as agreed in the contract for the Euratom loan for K2R4.

In Armenia, the Medzamor NPP, a Soviet-designed first generation reactor, suffered in a big earthquake in 1988 and was subsequently shut down. However, due to energy shortages, the Government decided to restart Unit 2 of the NPP in 1995. While pressing the Government of Armenia to set a firm closure date for the plant, and in coordination with other donors under the aegis of the IAEA, the EU has contributed some €25 million to carry out the most urgent nuclear safety modifications. In the meanwhile, the Government of Armenia has indicated 2016 as the intended closure date for the plant. This date is unacceptable to the international community and the EU side continues to press the Armenian Government for earlier closure. However, to reduce the risks posed, particularly in the South Caucasus' region, by the continued operation of the plant, assistance to implement the most urgent short-term safety improvement measures needs to be continued.

In Kazakhstan, following a request for assistance by the Government to the international community, the IAEA led a group of international donors to establish an Assessment Plan for the Semipalatinsk Nuclear Weapons Test Site. The Commission services collaborated extensively in this work, which led to a Commission project to survey the site. In addition, the Commission will continue to fund projects for the decommissioning of the Aktau NPP.

The Commission services maintain their active participation within the G8 Nuclear Safety and Security Group (NSSG), which took over the activities of the G7 Nuclear Safety Working Group (NSWG) created in 1992. This group outlined the programme for nuclear safety improvements in the NIS/CEEC to be funded by the international community. In 1995, the NSWG negotiated the Memorandum of Understanding between Ukraine, the G7 and the Commission, which resulted in the closure of the last operating unit at Chernobyl in December 2000. The group has been instrumental in seeking additional pledges to cover the systematic cost increases of the Chernobyl projects and in leading international nuclear safety and security initiatives.

3.2. New Nuclear Safety Projects

The fact that a number of our partners are considering either the launch of a nuclear programme or expanding their current activities poses a new challenge for the EU.

Most of the 'developing countries' wishing to start a nuclear power generation programme do not currently have the legislative and regulatory infrastructure needed to ensure that safety is the leading concept in design, construction and operational decisions. In addition, these countries often do not have the required expertise or adequate industrial infrastructure. These facts pose challenges in the field of nuclear safety and security that are of concern to the EU. Furthermore, some countries with existing nuclear power programmes, particularly those where a rapid expansion is foreseen, may also need considerable external help.

As the Tacis Nuclear Safety Programme came to an end in 2006, a new **Instrument for Nuclear Safety Cooperation** (INSC) with global geographical scope was adopted to continue and expand the actions of the Commission in the field of nuclear safety and safeguards. The financial resources under this instrument, for the period 2007-2013, amount to some €524

million[3]. In addition, the Euratom loan facility remains operational for Russia, Ukraine and Armenia.

As the need for assistance in Russia and Ukraine is diminishing and new needs are arising in countries outside NIS, the Commission needs to reassess how to prioritise its activities with third countries[4] in the field of nuclear safety and security. The objectives of future assistance/cooperation to/with third countries can be summarised as follows:

– improving the nuclear safety culture (including at the design and operation levels);

– improving protection against ionising radiations;

– addressing problems related to radioactive waste and spent fuel;

– assisting in implementing nuclear safeguards.

The definition of programmes and projects to achieve these objectives will take into consideration the limitations imposed by the available financial means and human resources.

3.3. Other Instruments

The EU has several other means at its disposal when developing cooperation. Nuclear safety and security issues are covered by the Euratom Treaty which allows the Commission, with the approval of the Council, to conclude international agreements in this field[5]: Agreements aimed at fostering cooperation in the peaceful use of nuclear energy and on nuclear research have been signed with several countries, including, inter alia, Australia, Canada, Switzerland, United States, Japan, Argentina, Ukraine and Uzbekistan.

The EU has signed also agreements in the field of nuclear safety with countries such as Ukraine and Kazakhstan. The Community is also party to a growing number of international agreements with third countries and is strengthening cooperation with international organisations, in particular the IAEA, to promote non-proliferation, nuclear safety and security.

Furthermore, the Community Nuclear Research and Education/Training Policy, which includes the Euratom Fission Programme under the Seventh Framework Programme, has resources for indirect and for direct actions by the Joint Research Centre (JRC). This could provide for important synergies in the areas of nuclear safety and security.

4. NUCLEAR SECURITY AND NON-PROLIFERATION

4.1. Current situation

Nuclear safety (in other words, the safe design, operation and decommissioning of nuclear installations, and regulation of waste disposal) cannot be dissociated from nuclear security

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[3] These will be used mainly under the budget line 19.060401.

[4] Countries covered by the Pre-Accession Instrument are excluded. Industrialised/high income countries are also excluded in principle.

[5] Chapter 10 of the Euratom Treaty (Art. 101).

(physical security of nuclear installations, trafficking of nuclear materials, control of orphan sources, detection capacity, emergency response).

Given the possible dual use (peaceful and military) of some materials, equipment and nuclear installations[6], the growth of nuclear power could increase proliferation risks[7]. In addition, there are serious concerns that non-state actors could misuse peaceful nuclear technologies for terrorist or other criminal ends. Tackling nuclear smuggling requires new capability-building at national, regional and international levels.

In order to address nuclear security risks, several initiatives have recently been launched with a view to reinforcing IAEA verification mechanisms, nuclear export control rules, border monitoring and the "multilateralisation" of the nuclear fuel cycle[8]. The joint statement on enhanced cooperation that is being prepared by the Commission and the IAEA is also aiming at the overall reduction of security risks in nuclear energy.

The EU has been supporting the above measures through the 2003 EU Strategy against the Proliferation of Weapons of Mass Destruction and also by providing full backing to the UN Security Council Resolution 1540 (April 2004). In accordance to the GAERC conclusions of 17 November 2003, the EU is also introducing the non-proliferation clause in agreements with third countries. Furthermore, the Commission will promote the ratification and implementation, by all states which have or aspire to have a civilian nuclear power programme, of the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (as amended in Vienna on 8 July 2005).

The European Programme for Critical Infrastructure Protection includes also an external dimension which foresees the conclusion of specific memoranda of understanding and exchange of best practices with third countries in view to increasing the security of critical infrastructure.

Via Community programmes and Council Joint Actions, the EU has been active since the beginning of the 1990s in reducing proliferation risks, with a special focus on CIS countries, and intends to address the risks and threats worldwide with the newly adopted Stability Instrument. The Instrument addresses a range of issues aiming at preventing proliferation of Weapons of Mass Destruction[9]. Finally, the proliferation risks will also be addressed in the ongoing revision of the European Security Strategy.

The security of supply of nuclear fuels is also a major factor for countries operating NPPs and for those considering starting nuclear power programmes. Long-term supply relations are important for suppliers and users of nuclear materials in the interest of stable and predictable functioning of the market. Euratom has concluded agreements for cooperation with the major supplier countries (eg: Australia, Canada, US, Kazakhstan), which make provision for regular consultations between the parties. The agreements also include "peaceful use" clauses for

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6 As outlined in the Council Regulation (EC) No 1334/2000 of 22 June 2000 on setting up a Community regime for the control of exports of dual-use items and technology.

7 See Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (as amended in Vienna on 8 July 2005).

8 An example is the US-led Global Nuclear Energy Partnership (GNEP) whereby a consortium of nations with advanced nuclear technology would provide fuel services and reactors to countries that 'agree to refrain from fuel-cycle activities' such as enrichment and recycling. This is essentially a fuel leasing approach, wherein the supplier takes responsibility for the final disposal of the spent fuel.

9 The main budget line used for this purpose will be 19.060201.

nuclear materials and provide for the application of safeguards which remain relevant when nuclear materials are exported to third countries.

4.2. Future activities

The Community will continue its efforts to ensure that the highest standards of non-proliferation measures, safety and security which are being further developed within the Community are also observed internationally[10]. The Community should be open to explore increased cooperation with third countries in order to promote non-proliferation, safety and security. When negotiating and signing Euratom international agreements, the Community will seek to obtain the adherence of its partners to all relevant international conventions. In this context, it should be noted that a specific Communication on the Community competencies given by the Euratom Treaty in the field of nuclear non-proliferation will be addressed by the Commission to the Council and the Parliament.

5. EU ADDED VALUE

Any country that is aiming to use nuclear power for civil purposes and to strictly respect internationally recognised safety and security requirements will face the challenge of developing capabilities (both in human and financial resources and infrastructure) and of establishing the legislative framework and institutions necessary to respect the international obligations. The EU, through the Community Institutions and the Member States, can provide a considerable contribution based on its extensive experience in dealing with nuclear power, the implementation of the Tacis nuclear safety programme (see above) and the range of instruments at its disposal.

The Commission's intervention will focus exclusively on activities designed to improve nuclear safety and security, including studies, the development of legislation, institution building and in some exceptional cases of existing nuclear power plants on equipment. Particular attention should be given to safety, security and non-proliferation training with the objective of mitigating the lack of fully trained human resources in the countries concerned. Support packages should be designed with the objective of ensuring sustainability after EU support has ceased.

6. PROGRAMMING CRITERIA FOR THE PERIOD 2007-2013

Cooperation with the countries that have benefited from Tacis assistance will continue in the foreseeable future. For other countries, funding priorities will be based on strategic, geographic and technical criteria.

6.1. Strategic and geographic criteria

The following strategic and geographic considerations should be taken into account in due time when defining priorities for allocating assistance with regard to nuclear safety and security.

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[10] See Commission Communication of 10.1.2007 on "An Energy Policy for Europe", COM(2007)1 final, pp. 18 and 19.

– The geographic, strategic and geopolitical importance of the country for the EU, including geographical proximity and the contribution of the Instrument for Nuclear Safety Cooperation (NSC) and Instrument for Stability (IfS) to achieving the objectives of the European Neighbourhood Policy[11];

– The willingness of the country to cooperate and its non-proliferation credentials;

– The political stability of the country as well as its capacity, in particular, to contribute financially over a long period.

6.2. Technical criteria

From a technical standpoint, the following aspects need to be taken into account when defining priorities for EC cooperation with third countries:

– The urgency of the problems[12] in relation to the safety of the citizens and installations as well as security;

– The imminence of the country's development of a credible nuclear power programme.

The various third countries may be categorised according to the current state of play with respect to their experience with nuclear power and their declared ambitions, as follows:

– Countries with operational Nuclear Power Plants;

– Countries operating Research Reactors which may or may not wish to start a nuclear power programme;

– Countries with no Research Reactors intending to start a nuclear power programme.

In addition to the nuclear safety issues, some countries will need to improve protection against ionising radiations and to be assisted in implementing nuclear safeguards.

7. CONCLUSIONS

As the geographical spread of nuclear energy increases, the EU needs to build on its established policy and expertise and continue its work with partners to promote the highest standards of nuclear safety and security.

The Commission will identify with partners what assistance can be supplied, to support best practice in existing civil nuclear programmes and, where new programmes are to be launched, to ensure that safety and security are fully respected in decision-making processes, in the conception and execution of plans and in the subsequent operation of plants.

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[11] Within the neighbourhood countries wishing to start a nuclear programme, the Maghreb and Mashrek regions are particularly important, due to their proximity to the Union. The Middle East region is a second priority

[12] Countries with existing nuclear power programmes, particularly those with rapidly expanding ones and which have not been considered before, may need to be looked into on a priority basis.