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**COMMISSION STAFF WORKING PAPER**

**IMPACT ASSESSMENT**

*Accompanying the document*

**COUNCIL REGULATION**

**establishing an Instrument for Nuclear Safety and Cooperation**

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## TABLE OF CONTENTS

1.	Procedural issues and consultation of interested parties.....	4
1.1.	Organisation and timing.....	4
1.2.	Consultation and expertise (public and internal) .....	4
1.3.	Impact Assessment Board.....	5
2.	Problem definition .....	6
2.1.	The problem requiring action and the scope of the instrument regulation .....	6
2.2.	Review of evaluation reports .....	9
2.2.1.	Results of mid-term review of the financial instruments for external actions (2009) ..	9
2.2.2.	Study on legal instruments - linking evaluation results (2006-2011) to the legal instruments objectives.....	11
2.3.	Review of lessons learnt .....	12
2.4.	The underlying drivers of the problem .....	13
2.5.	Legal base for EU action.....	14
2.6.	Added value of the EU action.....	14
3.	Objectives .....	16
3.1.	Policy framework and objectives.....	16
3.2.	Consistency with external action priorities.....	18
3.3.	Consistency with other EU policies.....	18
3.4.	Geographical/thematic coverage.....	18
4.	Policy options.....	18
4.1.	Option 0: No further EU action (no Nuclear Safety Instrument).....	18
4.2.	Option 1: 'No change' (cooperation with third countries would continue in the framework of the existing INSC Regulation).....	19
4.3.	Option 2: Amend the INSC Regulation.....	19
4.4.	Option 3: New instrument.....	20
5.	Analysis of Impacts.....	20
5.1.	Likely economic, social and environmental impacts of each of the options .....	20
5.2.	Impacts on external action, in particular on Policy Coherence for Development .....	20
5.3.	Impact in terms of management / implementation modalities.....	20

6.	Comparing the options .....	21
6.1.	Weighing of positive and negative impacts per option.....	21
6.2.	Trade-offs and synergies associated with the options.....	22
6.3.	Preferred option .....	22
7.	Monitoring and evaluation.....	22
7.1.	Core indicators of progress towards objectives .....	22
7.2.	Outline for monitoring and evaluation arrangements .....	24

## 1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

### 1.1. Organisation and timing

The drafting of the Impact Assessment for the EU external action instruments for the period 2014-2020, including this document<sup>1</sup>, has been coordinated by a **Task Force** composed by services in charge of EU external action and the Legal Service. The **drafting teams**, appointed on 7 June 2011, have duly taken into consideration the consultations, reviews and studies mentioned in Section 2 and have liaised with other Commission services to ensure consistency with other EU policies. The Task Force has met with the drafting team in charge of this Impact Assessment on 7 June, 29 June, 14 July and 2 August 2011 for organisational and quality-check purposes.

An **Impact Assessment Steering Group**, composed by the members of the Task Force and representatives of interested Directorates General and the Secretariat General, was launched on 22 June 2011. It has met twice, on 13 and 26 of July 2011.

The review of this Impact Assessment by the **Impact Assessment Board** is scheduled on 14 September 2011.

In line with article 27 of the Financial regulation (Council Regulation (EC, Euratom) No 1605/2002) and article 21 of the Implementing rules of the financial Regulation (Commission Regulation (EC, Euratom) No 2342/2002), the present impact assessment is the ex-ante evaluation of the Instrument for Nuclear Safety Cooperation.

### 1.2. Consultation and expertise (public and internal)

#### Public consultations

The Commission held a public consultation on future funding for EU external action between 26 November 2010 and 31 January 2011. This process was based on an online questionnaire accompanied by a background paper 'What funding for EU external action after 2013?' prepared by Commission services and the European External Action Services involved. The 220 contributions received to the public consultation reflect a broad and diverse spectrum representing the variety of structures, views and traditions characterising the external action community.

A majority of the respondents (around 70%) confirmed that EU financial intervention provides a *substantial added value* in the main policy areas supported through EU financial instruments for external action<sup>2</sup>. The criterion of EU added value is put forward

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<sup>1</sup> The instruments are the following: Internal Agreement for the 11<sup>th</sup> European Development Fund, Development Cooperation Instrument, Instrument for Pre-Accession assistance, European Neighbourhood Instrument, Instrument for Stability, Instrument for Nuclear Safety Cooperation, European Instrument for Democracy and Human Rights, Partnership Instrument and the instruments for the EU-Greenland Partnership. The Macro-Financial Assistance instrument, the Common Foreign and Security Policy, the Humanitarian aid instrument and the Civil Protection mechanism are not part of this joint exercise.

<sup>2</sup> i.e. peace and security, poverty reduction, humanitarian aid, investing in stability and growth in enlargement and neighbourhood countries, tackling global challenges, promoting EU and international standards and values, and supporting growth and competitiveness abroad.

by many respondents as the main driver for the future: the EU should exploit its comparative advantage linked to its global field presence, its wide-ranging expertise, its supranational nature, its role as facilitator of coordination, and to the economies of scale.

Nearly all respondents (92%) support a *more differentiated approach*, tailored to the situation of the beneficiary country, based on sound criteria and efficient data collection, to be used as a way to increase the impact of EU financial instruments.

Over two thirds of respondents believe that *EU interests are sufficiently taken into account in its external action*, and that the latter should be based to a larger extent on EU values and principles, and on development objectives of the partner countries. Inversely, a minority considers that EU external action should concentrate more on EU's own interests in the global economy, particularly towards emerging economies.

A majority of respondents agree that *joint programming and co-financing with Member States* can increase the impact and the coherence of EU external action, simplify the delivery of aid and reduce overall transaction costs.

Regarding *like-mindedness and conditionality*, there is wide support among respondents for exploring conditionality based on the beneficiary country's respect for human rights, minorities, good governance and diversity of cultural expressions (78%), or on the quality of its policies and of its ability and willingness to implement sound policies (63%). However, a majority of respondents is critical towards basing external cooperation on the EU's own interests.

A vast majority of respondents support a stronger focus on *monitoring and evaluations systems* in the future instruments and in projects/programmes implementation.

As concerns the means to enhance the *visibility of EU external funding*, a majority of stakeholders support increasing efforts for information and communication activities, in particular in beneficiary countries; however EU visibility appears to be better served by effective policies, strategies and presence in third countries, than by additional spending for communication. The ideas of *reinforcing EU's coordinating role* among other donors and of ensuring that implementing partners give more visibility to EU funding also obtain a strong support from stakeholders.

### **1.3. Impact Assessment Board**

The Instrument for Nuclear Safety Cooperation's draft impact assessment was submitted to the Impact Assessment Board on 5 August 2011. The Board issued its opinion on 09 September 2011. The Board recommended that the report should be improved in various respects in particular as regards:

- 1 Problem analysis, setting of the objectives, policy choices
- 2 Analysis of impact, illustrate with examples
- 3 Improve presentation and shorten the text

## 2. PROBLEM DEFINITION

### 2.1. The problem requiring action and the scope of the instrument regulation

#### Definition of the problem

Nuclear safety<sup>3</sup> and safeguards<sup>4</sup> are issues of paramount importance, both in connection with the operation of nuclear power plants and other nuclear installations, as well as, more generally, any other radiological practice.

The Chernobyl accident in 1986 and the Fukushima-Daiichi accident in 2011 highlighted the global importance of nuclear safety. In order to fulfil the objective of the Euratom Treaty to create the conditions of safety necessary to eliminate hazards to the life and health of the public, the European Atomic Energy Community (the 'Community') should be able to support nuclear safety in third countries.

There is also a particular need for the Community to continue its efforts in support of the application of effective safeguards of nuclear material in third countries, building on its own safeguard activities within the European Union.

The EU established a *Community framework for nuclear safety of nuclear installations* through the adoption of the Council Directive 2009/71/Euratom of 25 June 2009. A Council directive approved on 19 July 2011 established a *Community framework for the responsible and safe management of spent fuel and radioactive waste*. It is important to ensure that third countries adhere to comparable principles.

The commitment of third countries to implement the highest safety standards and safeguards can be considered partly fulfilled by them joining the relevant international convention and treaties (e.g. the Convention on Nuclear Safety and the Non Proliferation Treaty). However, some third countries, particularly in the EU neighbourhood, have shown difficulties in complying with the terms laid down in the international conventions and treaties they did adhere to. In addition, not all third countries which may give cause for safety concerns to the EU citizens have joined the relevant international Conventions.

The promotion and enforcement of the highest standards of nuclear safety and radiation protection within the boundaries of the EU may not be sufficient to suitably protect the general public and the environment. Therefore action with third countries needs to be envisaged. In parallel, action is also required to help ensuring effective nuclear safeguards in third countries.

Some major achievements of the nuclear safety instrument

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<sup>3</sup> **Nuclear safety** concerns the achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment

<sup>4</sup> The **safeguards** system comprises an extensive set of technical measures by which the IAEA [and Euratom within the EU] independently verify the correctness and the completeness of the declarations made by States about their nuclear material and activities.

Three major projects implemented under the instrument illustrate the achievements and impact of the INSC on nuclear safety in the neighbourhood.

#### The Chernobyl Shelter Fund (CSF):

The CSF managed by the European Bank for Reconstruction and Development (EBRD) provides the financing of major projects at the Chernobyl site (including the New Safe Confinement (NSC)). The finalisation of the NSC has been delayed due to unforeseen technical difficulties which resulted in increased cost. The Commission has set up a contact group within EBRD with the other G8 donors to monitor the implementation of the project. The EU as major donor to the fund through the INSC also became the driving force for the success of the April 2011 pledging conference to ensure the completion of the project. The Shelter Fund can be a model for developing similar major nuclear safety projects financed by the future INSC

#### The Armenian Nuclear Power Plant (NPP)

The Medzamor NPP is one of the first generation nuclear reactors of Russian design in the EU neighbourhood. This power plant presents nuclear safety risks due to its design, its location in a highly seismic area and also to the lack of proper maintenance by the Armenian operator. Under the coordination of the International Atomic Energy Agency (IAEA), together with other donors, the INSC has set up a major assistance programme to resolve the major safety issues of the plant. Only 6 years were needed from the evaluation of the safety issues and their classification in the IAEA urgency scale (Categories 1 to 4) and the implementation of the projects. This cooperation with the IAEA may serve as example for future cooperation with Agency and other donors

#### The evaluation of the safety of the Ukrainian nuclear power plants

Following a Memorandum of Understanding signed between Ukraine and the EU, an evaluation of the safety of the Ukrainian NPPs was performed under a joint project Ukraine-EU-IAEA. The project was co-financed by the Commission (mostly the INSC) and the IAEA. The result of the evaluation demonstrated that the Ukrainian Regulator has in place a comprehensive regulatory system with a sound legal infrastructure respecting the relevant international conventions in force. It also concluded that the design and operational safety of the Ukrainian NPPs were compliant with the majority of the IAEA safety requirements. The progress noticed by the IAEA was very often the result of projects funded under the Tacis and INSC programmes.

The INSC has started to expand its activities, based on lessons learned in projects as described above. This experience in large scale and multi-donor projects may be useful in future when the instrument will be faced to the results of the stress tests conducted in third countries..

#### Scope of the current instrument

The above objectives are being pursued, in the period 2007 to 2013 through the Instrument for Nuclear Safety Cooperation (INSC), adopted through Council Regulation (EURATOM) No 300/2007 of 19 February 2007. The implementation of the measures foreseen under the INSC was founded on the prior experience gained by the European

Commission in assisting countries in the Commonwealth of Independent States (CIS), through the TACIS Nuclear Safety Programme.

The **scope of the INSC** covered the following main areas:

- Promotion of the highest standards of nuclear safety and radiation protection to be applied to nuclear facilities and other radiological practices outside of the EU, in view of safeguarding the health of the citizens and the environment.
- Responsible approach to nuclear safety aspects related to the environment (disposal of spent fuel, waste management, decommissioning of installations, restoration of sites, etc.).
- International cooperation on nuclear safety to ensure that the highest and most robust levels of nuclear safety are in place and implemented.
- The opportunity to encourage and assist other countries to adopt the highest nuclear safety standards and responsible radioactive waste and spent fuel management taking into account the common frameworks developed in the EU (EU directives on nuclear safety and radioactive waste and spent fuel management).
- Promotion of an effective framework and methodologies for the implementation of nuclear safeguards worldwide.

The current instrument has enlarged its geographical area from the countries of the CIS (Ukraine, Armenia, Belarus, Georgia, Uzbekistan) to 13 additional third countries (status in 2011) from the Southern Mediterranean neighbourhood and Middle East (Jordan, Iraq, Egypt, Morocco), Asia (Philippines, Indonesia, Malaysia, China, Mongolia and Vietnam) and Latin America (Brazil, Argentina and Mexico).

This scope should be expended under the new instrument, with a revision of the geographic scope (see paragraph 4.3 here below).

#### Evolution since the adoption of the present instrument

It is expected that over the period 2014 to 2020, the above motivations to engage in cooperation with third countries in the domains of nuclear safety, radiation protection and nuclear safeguards will remain valid.

Some major projects carried out under the INSC (in particular those related to the remediation of the Chernobyl site<sup>5</sup> and nuclear plant improvement projects) will have been mostly completed by 2014. However other important projects concerning restoration of mining sites (legacy of uranium mining, which did not respect basic environmental requirements), disposal of spent fuel, waste management and decommissioning of installations will need to be dealt with as a programme priority.

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<sup>5</sup> The major Chernobyl projects, which are financed through EBRD managed funds, are currently scheduled to be completed in 2015. The international donors (mostly G8 and the EU) have already pledged enough funds to cover the cost of the projects. No further sums are planned for the EBRD managed funds for Chernobyl over the period 2014-2020.

The lessons learnt in the wake of the Fukushima-Daiichi accident will play an important role in the improvement of nuclear safety in the coming years. The results of the EU Member States comprehensive and transparent risk and safety assessments (“stress tests”), which are due to be extended to the EU neighbouring countries and possibly other third countries, are expected to have a considerable impact in the design, operation, maintenance and regulation of nuclear power plants. The experience gained within the EU will be important to other third countries. The experience gained in the coordination of activities with IAEA and other donors will also help to optimise the impact on safety of the undertaken measures.

## **2.2. Review of evaluation reports**

Some reviews on a number of policy areas have been undertaken e.g.

### *2.2.1. Results of mid-term review of the financial instruments for external actions (2009)*

Annual reports on the progress achieved in the implementation of the INSC have been submitted to the European Parliament and the Council, as per Article 18 of Council Regulation No 300/2007<sup>6</sup>. These reports have shown a regular implementation of the actions foreseen in the first Annual Action Programmes, and a regular commitment of the budget allocated to the instrument.

In addition, a report evaluating the implementation of the Regulation in the first three years has been prepared, to be submitted in the near future to the European Parliament and the Council (as per Article 21 of the Regulation). This report was based on an assessment of the programme carried out by a team of independent experts appointed by the Commission.

The Article 21 report concluded that each of the specific measures foreseen in the INSC has been addressed by one or more projects adopted in the period 2007 to 2009. However limited attention has so far been paid to nuclear safeguards, to the development and implementation of strategies for decommissioning existing installations and to the remediation of former nuclear sites (with the exception of the Chernobyl site though bilateral and multilateral initiatives).

*The report found also that the INSC implementation was well targeted and the projects well conceived. When successfully implemented, the projects are expected to contribute significantly to enhance nuclear safety and nuclear safety culture. The INSC projects with focus on exchange of know-how and practices were found to be particularly appreciated by partners in target countries. ...The concerns which were raised in respect of the implementation of the INSC Regulation, and how they might be mitigated, can be addressed within the existing provisions of the Regulation. Consequently, there is no need for a legislative proposal to be introduced [to modify the Instrument] as foreseen in Article 21 of the INSC.*

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<sup>6</sup> Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Instrument for Nuclear Safety Cooperation, First Report - Annual Action Programmes for 2007, 2008 and 2009. Ref. COM(2011) 111 final, SEC(2011) 284 final.

### Interface with the Instrument for Stability (IFS)

Nuclear safeguards cooperation falls under the INSC scope, however safeguards projects are also eligible under the Instrument for Stability (IFS) (established by Regulation (EC) No 1717/2006 of the European Parliament and of the Council of 15 November 2006). The overlap is apparent in the control of illicit trafficking of radiological and nuclear materials which falls in the framework of Priority 1 (chemical, biological, radiological, and nuclear (CBRN) risk mitigation) of the IFS; however the establishment of the necessary regulatory framework and methodologies for the implementation of nuclear safeguards is clearly identified in the framework of the INSC.

In order to prevent overlap and to enhance complementarity of the two instruments in this regard, it was recommended to clarify in the relevant Strategy Papers which kind of nuclear safeguards cooperation activities were eligible under each instrument. The matter needs to be reconsidered in the context of the new instruments for the period 2014-2020.

### Delay on implementation of projects

The relatively long time elapsed between the conception of new project proposals and the start of the actual implementation of the relevant actions was identified as a significant issue. An investigation of the causes of such delay was recommended in order to adopt appropriate corrective measures. In some circumstances e.g. inspection of the primary circuit of the Armenian nuclear power plant, the delays between project definition and implementation have been reduced to less than 12 months.

### Suspension of the cooperation with the Russian Federation

Failure in concluding Financing Agreements with the Russian Federation related to adopted Annual Action Programmes for 2007 and 2008 led to the suspension of nuclear safety cooperation with Russia under the INSC<sup>7</sup>. This was identified as an issue of concern as it prevents new cooperation between the EU and Russia under the INSC. To date, in spite of the efforts of the Commission to establish a renewed cooperation framework, a solution does not appear at hand. Nevertheless, this interruption of cooperation does not affect the implementation of projects on installations of Russian design in other countries. Russian Institutes and manufacturers can continue to participate in the INSC awarding procedures.

### Simplification

Programming and implementation of the INSC could be simplified by a better definition of the thematic and geographic priorities for the selection of cooperation projects.

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<sup>7</sup> Limited cooperation continued under the INSC in order to complete ongoing projects, for which a new Financing Agreement was not required, however this will cease once the projects are completed.

### 2.2.2. *Study on legal instruments - linking evaluation results (2006-2011) to the legal instruments objectives*<sup>8</sup>

The Study on Legal Instruments and Lessons Learnt from the Evaluations analysed how the following major objectives of the INSC were being fulfilled:

- i) Existence of an effective nuclear safety culture;
- ii) Protection of EU citizens against radiation;
- iii) Establishment of safeguards for accounting and control of fissile material;
- iv) Prevention of nuclear accidents;
- v) Mitigation of the consequences of nuclear accidents;
- vi) EU cooperation with the IAEA.

Most of the results were positive; however the report also noted mixed results concerning nuclear safety culture and safeguards suggesting that the actions in question were not yet assured.

The evaluation reports recognize that the EU has made useful contributions to promoting nuclear safety principally in neighbourhood countries and that it has in fact a record of being one of the largest foreign contributors. The EU's contribution was particularly noteworthy in addressing the aftermath of the Chernobyl disaster where it acted effectively in an emergency situation and at an appropriate scale by providing up to 50%<sup>9</sup> of the international funding required.

At the same time, , the evaluators also recognize that progress cannot be purely attributed to the EU's input nor is there much certainty as to the longer-term sustainability of the impact. One of the results also specifically mentions that '*Overall progress in nuclear safety is very hard to evaluate, as no risk assessment has been conducted recently*'.

#### Identification of Any Overall Trends or Lessons Learnt

It is apparent from the Energy Thematic Evaluation (2008) that the European Commission's has built up considerable expertise and credibility in the sector and a good network of collaborating institutions both within the EU at national level and internationally under the auspices of the IAEA. hTherefore a good basis exists on which to build further EU work in this area. However the evaluators of the 2008 study also noted a number of points which are important to stress for the future:

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<sup>8</sup> Ref. Study on Legal Instruments and Lessons Learnt from the Evaluations Managed by the Joint Evaluation Unit, based on an evaluation carried out by the European Centre for Development Policy Management. Draft Final Report, March 2011.

<sup>9</sup> The EU is the largest contributor to the Chernobyl Funds managed by the EBRD, these were set up to finance projects at the site costing about EUR 2 billion. The EU's contributions to these Funds amount to some 25% of the total. In addition the EU financed directly other specific projects at the Chernobyl site.(EC Services' note).

- (1) Over time without the crystallizing effect of a major nuclear disaster, such as Chernobyl, it is becoming increasingly difficult for the European Commission to build consensus around the policies it proposes to the Council<sup>10</sup>.
- (2) There is clearly still considerable work to be done to achieve the full “*Effective nuclear safety culture*” that the INSC instrument talks about as “...*partner governments seem less convinced than the EU of the necessity of promoting the independence and the technical and institutional strengthening of the Regulatory Authorities.*”

Although no strong overall conclusion can be drawn on the effect of the INSC due to the limited evidence emerging from the evaluations, the limited evidence is positive. The EU is now an experienced and credible actor in the field. Yet there are clearly continuing issues to be tackled and not all of them will be straightforward. On the basis of the evidence available therefore it appears to be important to maintain an EU budget in this area.

Having argued that the INSC should probably be maintained as a separate instrument does not mean however, that no improvements could be made to the instrument. In particular the paucity of results identified in the evaluation reports does suggest that there is a case for strengthening the evaluation of EU work financed from the INSC. The clear reference to the need for an overall risk assessment of nuclear safety would also support such a conclusion.

### **2.3. Review of lessons learnt**

The root causes of the major nuclear accidents have been mainly lack of nuclear safety culture<sup>11</sup>, design safety (safety aspects of the plant design) and operational safety. It was therefore considered appropriate that the nuclear safety cooperation programmes of the European Union addressed the nuclear operators, to improve the situation on the ground, and the nuclear regulators to ensure that they had the required technical capability and independence to enforce adherence to appropriate nuclear safety standards.

In the CIS, , under the Tacis nuclear safety programme, safety related equipment had to be supplied to ensure that urgent cases were promptly resolved. However, as these cases have been addressed and the programmes are guided by the principle of the most efficient use of resources and avoidance of practices which might have commercial and competition implications, supply of equipment has, in general, been discontinued under the INSC.

Under the INSC, cooperation was initiated with a number of third countries which intend to use nuclear energy as part of their energy mix (the so called 'emerging countries'). The cooperation covered mainly the building up of the capacity of the regulators, the

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<sup>10</sup> The situation changed considerably after the Fukushima-Daiichi accident. (EC Services note).

<sup>11</sup> Safety culture was originally defined in IAEA's INSAG 4 as “that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.”

regulatory infrastructure and waste management strategies to ensure that a nuclear safety culture and framework is developed at a sufficiently early stage. The selection of the countries followed the criteria proposed by the Council. This has become an important part of the programme which should be continued, but may require a clearer definition of the criteria.

The consequences of nuclear accidents can, to some extent, be mitigated by emergency preparedness. Therefore, emergency preparedness needs to remain an important part of the programme.

Major accidents with radiological consequences have required the help of the international community to the affected population and to restore the sites to an environmentally safe situation. This was the case with Chernobyl where the major construction projects are entering the final phase. The possibility should be left in future programmes to cooperate with third countries in this respect, if needed and appropriate.

Past activities related to the nuclear fuel cycle, the use of nuclear powered ships and submarines and radioisotopes have not always been up to the standards required to protect the population and the environment. Governments and local authorities have been left with the difficult task of restoring affected sites to an environmentally safe situation and the disposal of nuclear spent fuel and waste, for which international cooperation may be required. This part of the nuclear safety programme should be among the instrument's priorities in the future.

In order that spent nuclear fuel and nuclear waste be dealt with in a proper and responsible way, the nuclear safety programmes have provided for cooperation with third countries to establish national strategies for the spent fuel and nuclear waste. As the European Union has just adopted a radioactive waste and spent fuel management directive, third countries should continue to be encouraged to adopt similar high standards, cooperation in this field should also be continued as a matter of priority.

The promotion of international cooperation will remain essential to ensure coordination of activities by the different actors and the best use of resources. The IAEA will continue to play a fundamental role in this respect, particularly to enhance the Global Nuclear Safety Regime (the framework for achieving the worldwide implementation of a high level of safety at nuclear installations). Support to IAEA activities, particularly those of global or regional nature should continue to be envisaged, with the appropriate visibility for the EU actions /contributions.

#### **2.4. The underlying drivers of the problem**

- Following the Fukushima-Daiichi accident, issues related to risk and safety assessments of operating nuclear power plants ('stress tests') are likely to become more relevant and to be extended to other nuclear facilities, including research reactors, spent fuel interim storage facilities, radioactive waste storage and disposal facilities.
- Cooperation with nuclear regulators (including their technical support organizations) should remain at the centre of the nuclear safety cooperation, while

cooperation with nuclear operators needs to be reconsidered taking into account the performance and results of the ‘stress tests’ and specific circumstances.

- Disposal of spent fuel, waste management, decommissioning of installations, restoration of sites have gained increased relevance over the years. Future cooperation in these areas should be treated as a programme priority<sup>12</sup>.
- Geographical proximity to the EU (pre-accession countries and EU neighbourhood) should remain a priority. Nevertheless, it should not be an exclusive criterion..
- The evolution of the international situation requires a change in focus and in priorities rather than a change in the broader scope of nuclear safety cooperation.

## **2.5. Legal base for EU action**

The legal base of the INSC (Regulation No 300/2007) is the Euratom Treaty (in particular the Article 203). Considering the legislative framework for nuclear safety at EU level, this should remain the case with the future regulation, unless the scope is enlarged (see discussion on different options under paragraph 4. here below).

## **2.6. Added value of the EU action**

### Nuclear safety

With a large number of commercial nuclear power plants (146 out of 436 worldwide) and nuclear power providing for about 30% of the electricity generation, the EU has accumulated a long experience in the domain of nuclear safety, including in decommissioning of nuclear installations and radioactive waste management. As a result a wide expertise in all the domains of nuclear safety is available in EU Member States. The diversity of technologies, which requires different approaches, allows for the necessary flexibility in addressing the needs of third countries.

The EU has adopted common legal frameworks concerning nuclear safety and radioactive waste and spent fuel management. In this respect, the EU has set up an example and expects to persuade others to adopt similar high standards.

### Global Challenges, Global Response and Global Leadership

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<sup>12</sup> Possible projects may include, inter alia, the remediation of uranium legacy sites in Central Asia (object of an international initiative strongly supported by the UN organisations and by the Governments of the region, to which the Commission already participates through the INSC); the recovery, processing and storage of sunken objects in the Arctic Sea (nuclear submarines and other objects containing spent nuclear fuels and radioactive waste, part of the Soviet Union's nuclear legacy); and issues related to the responsible management of radioactive waste in countries that do not presently have any nuclear power generation capacity or consider developing it. A symbolic case in this respect is Iraq, with a comprehensive programme for the dismantling of its shut-down, heavily damaged, nuclear installations and the management of the resulting radioactive waste. Other third countries also face problems related to the management of radioactive waste deriving from practices not related to power production (e.g. in the medical sector), which need to be properly addressed at the level of their nuclear regulatory authorities and organizations responsible for waste management.

In the face of increasingly complex challenges, none of the EU's internal priorities – security, growth and job creation, climate change, access to energy, health and pandemics and migration - will be achieved in isolation from the wider world. In times of economic crisis, a more coordinated and integrated approach between the EU and its Member States through joint programming will bring about more added value, increased strength and legitimacy, and more impact and effectiveness.

The EU is in a uniquely neutral and impartial position to deliver on external action on behalf of and with Member States, giving enhanced credibility in the countries in which it works. It is best placed to take on the role of global leader on behalf of its citizens.

#### The critical weight of the EU

With 27 Member States acting within common policies and strategies, the EU alone has the critical weight to respond to global challenges, while the action of Member States can be limited and fragmented, with projects which are often too small to make a sustainable difference in the field. This critical mass also puts the EU in a better position to conduct policy dialogue with partner governments. This is reflected, for example in the strong position of the EU in discussions and negotiations with the G8 and the European Bank for Reconstruction and Development (EBRD), which manages large nuclear safety funds on behalf of international donors.

The INSC should remain an instrument accompanying the EU policy dialogue with third countries.

When programming its cooperation, the EU pays particular attention to the structural as well as economic capacity of the countries concerned. The possibility to react to unforeseen needs is envisaged within the current INSC regulation and was made available to Japan after the Fukushima accident.

#### The EU is best placed to coordinate

The EU has a network of international agreements all over the world, not matched by individual Member States, which gives them influence in almost all fields of international relations, including nuclear safety. The EU plays a major role in this domain but needs to continue enhancing its visibility.

The EU can do more than other international organisations as it has a holistic approach to development and external relations.

Division of labour through the EU is a crucial component of its added value. With its network of international agreements with partners and organisations all over the world, the EU is a natural coordinator, and can influence almost all fields of international relations, which individual Member States, acting within common policies and strategies, cannot do alone.

Furthermore, at a time of budgetary restrictions, when several Member States are compelled to exit entire sectors and countries, the EU is able to continue playing an active role.

### 3. OBJECTIVES

#### 3.1. Policy framework and objectives

The need to adopt the highest nuclear safety standards worldwide has recently become even more evident in the wake of the Fukushima-Daiichi accident

The health, environmental, social and economic impact of nuclear accidents in third countries in the EU has been confirmed to be potentially very high. The need to establish effective cooperation aimed at preventing accidents through the establishment of high levels of nuclear safety is being reaffirmed.

. While the EU recognizes that the use of nuclear power is a sovereign decision, it is in the EU's best interest that nuclear installations are operated safely, in particular in the EU neighbourhood, and that nuclear materials are properly accounted for. The EU will cooperate with third countries and organizations in these respects.

##### General objectives

- Cooperate in the implementation of the highest nuclear safety standards in third countries in order *to create the conditions of safety necessary to eliminate hazards to the life and health of the public*, as nuclear accidents have trans-boundary consequences (Euratom Treaty).
- Cooperate with third countries *to make certain, by appropriate supervision, that nuclear materials are not diverted to purposes other than those for which they are intended* (Art. 2b of the Euratom Treaty).

##### Specific objectives

- Support the promotion and implementation of the highest standards of nuclear safety and radiation protection in nuclear installations and radiological practices in third countries.
- Support the development and implementation of responsible strategies concerning the disposal of spent fuel, waste management, decommissioning of installations and restoration of former nuclear sites.
- Support international cooperation on nuclear safety to ensure that the highest and most robust levels of nuclear safety are in place and implemented.
- Support the promotion and implementation of effective frameworks and methodologies for the improvement of nuclear safeguards worldwide.

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##### Operational Measures to be implemented to support the objectives

The following measures are of particular importance for supporting the achievement of the above objectives.

- (a) the promotion of an effective nuclear safety culture at all levels, in particular through:
  - continuous support for regulatory bodies, technical support organisations, and the reinforcement of the regulatory framework, notably concerning licensing activities, *including the review and follow up of the risk and safety assessments ('stress tests')*;
  - Cooperation with third countries in the domain of radioactive waste and spent nuclear fuel management (i.e. transport, pre-treatment, treatment, processing, storage and disposal) and development of specific strategies for the responsible management of spent nuclear fuel and waste;
  - the development and implementation of strategies for decommissioning existing installations and the remediation of former nuclear sites; the recovery and safe disposal of nuclear objects sunken in the sea or dispersed on land;
  - *support for the performance of effective and comprehensive safety and risk assessments (in line with the specifications adopted by the EU Member States) and incorporation of the lessons learnt*, so that high safety levels can be achieved;
- (b) the promotion of effective regulatory frameworks, procedures and systems to ensure adequate protection against ionising radiations from radioactive materials, in particular from high activity radioactive sources, and their safe disposal;
- (c) the establishment of the necessary regulatory framework and methodologies (*including nuclear forensics methods*) for the implementation of nuclear safeguards<sup>13</sup>, including for the proper accounting and control of fissile materials at State and operators level;
- (d) the establishment of effective arrangements for the prevention of accidents with radiological consequences as well as the mitigation of such consequences should they occur (*monitoring the environment in case of releases, design and implementation of mitigation and remediation activities*), and for emergency-planning, preparedness and response, civil protection and rehabilitation measures;
- (e) measures to promote international cooperation (including in the framework of relevant international organisations, notably IAEA) in the above fields, including the implementation and monitoring of international Conventions and Treaties, exchange of information *capacity building* and training *in the domain of nuclear safety* and research.

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<sup>13</sup> Cooperation in this domain is limited to the technical aspects of safeguards, the non-proliferation aspects should be dealt within the framework of the IFS.

The above measures should not be limited to countries operating (or with foreseen) nuclear power plants, but also include those having civil nuclear installations and radiological practices, including, inter alia, research reactors and laboratories, radioactive waste management facilities, uranium ore mining and processing sites. As such, cooperation will extend to countries that may neither have nor have planned the construction of nuclear power plants.

### **3.2. Consistency with external action priorities**

The measures adopted in the framework of cooperation in the domain of nuclear safety must be consistent with the EU's overall strategic policy framework. In particular they must be consistent with the overall cooperation framework established with single partner countries.

### **3.3. Consistency with other EU policies**

Consistency with the measures envisaged in the domain of chemical, biological, radiological, and nuclear (CBRN) risk mitigation, in the framework of the IFS must be ensured, particularly those related to nuclear safety, including countering illicit trafficking of nuclear and radiological materials, border control and emergency preparedness.

### **3.4. Geographical/thematic coverage**

The need to focus the nuclear safety cooperation in the EU neighbourhood and accession countries is obvious. Nevertheless, it should not exclude the possibility for actions in other geographical areas, as appropriate (in particular if EU overseas territories are concerned). Criteria concerning the prioritization of cooperation with third countries, the specific topics to be addressed (safety/safeguards/environmental remediation/other) and the type of beneficiary need to be more clearly established in the context of a new regulation.

Today, the INSC covers activities in 18 countries (see above 2.1). It could be expanded to several (up to 10 more) additional countries of the CIS and of the neighbourhood or accession countries (in particular those maintaining research reactors or having no policy for hospital or industrial nuclear waste).

The specific domains of nuclear safety listed in paragraph 3.1 above should all be covered in the new regulation.

## **4. POLICY OPTIONS**

Possible options including a 'no EU action' and a 'no change' option are discussed below. These options must be linked to the estimated budget allocated to the new instrument (EUR 631 million).

### **4.1. Option 0: No further EU action (no Nuclear Safety Instrument)**

Some cooperation activities in nuclear safety could be included in the geographical cooperation instruments and be implemented as such. However this would create

difficulties regarding the legal basis of the respective instruments, as nuclear safety falls under the Euratom framework.

**4.2. Option 1: 'No change' (cooperation with third countries would continue in the framework of the existing INSC Regulation)**

The necessary fine-tuning of the cooperation framework, in view of the developments and lessons learnt as well as the need to refocus the implementation of the Regulation could be taken account of in the preparation of the Strategy Papers. However this option would not allow for a revision of the geographic scope and for a new setting of the criteria for cooperation and priorities in the regulation. In addition, it would not be in line with the proposed budget.

**4.3. Option 2: Amend the INSC Regulation**

An amended Regulation may provide for taking into account the evolution of the international situation on nuclear safety, for incorporating the lessons learnt and the criteria for cooperation. This would permit a clearer understanding of the limits of intervention when considering cooperation projects, leading to a simplification and a more efficient decision-making process than is the case for the existing regulation.

The amended regulation could also provide for a revision of the geographical scope to include the countries in the pre-accession process (currently covered by the Instrument for Pre-Accession (IPA)) whenever such an extension proves to be relevant (e.g. for supporting nuclear regulations for countries which decided to embark into nuclear energy production, prevention of illicit trafficking of nuclear materials). However IPA will continue to be used for actions that support the candidate countries and potential candidates in order to be eventually in line with the EU acquis, i.e. the Euratom Treaty and related Euratom Council Directives plus the International Conventions to which the EU is a party.

The geographic scope would thus include all 'third countries' (non EU Member States) which satisfy the criteria for cooperation. This option would include countries covered by the IPA as well as industrialized / high income countries. The latter should be included only to allow for exceptional measures to be undertaken, for example following major nuclear accidents, as in the case with Fukushima in Japan, if needed and appropriate.

In addition, an amended Regulation could provide for more clarification on the range of cooperation with countries that neither have nuclear power plants in operation nor are expected to embark into nuclear power programmes, but seek nonetheless cooperation in the domain of the management of radioactive waste, decommissioning and the related licensing issues.

A specific mandate to cooperate in large scale and long-term projects for the recovery and management of sunken radioactive objects in the Arctic Sea or on sites with dispersed radioactive sources and to address the remediation of uranium legacy sites (worldwide) could be included. Participation in international funds to address these issues would be fully possible within the foreseen budgets.

Detailed guidance on criteria for cooperation with third countries and the priorities could be provided in an annex to the regulation.

#### **4.4. Option 3: New instrument**

Safety, security and safeguards are complementary. Clearly security (protection) and safety are closely related as safety necessarily contributes towards protection. A new instrument could provide for a unified approach towards nuclear safety, security and safeguards (the '3S') and further explore the synergies between the INSC and the IFS. In this case, the issues related to radiological and nuclear materials risk mitigation, which are presently addressed in the framework of the IFS, would be covered by an 'extended' INSC Regulation.

### **5. ANALYSIS OF IMPACTS**

#### **5.1. Likely economic, social and environmental impacts of each of the options**

Nuclear accidents may have dramatic economic, social and environmental impacts, as demonstrated by the Chernobyl accident (1986) and the Fukushima accident (2011). They may affect also the health of populations. Both accidents produced large contaminated areas, fatalities, displacement / resettlement of affected population and resulted in the need to decommission / dismantle very expensive nuclear power plants and to replace the lost power generating capacity. Such accidents disrupt economic and social life and affect the choices concerning the energy mix in some countries (moratorium or phasing out nuclear energy). Furthermore they may have an impact on the environment as the replacement power plants may require, for example, the use of fossil fuels or hydropower.

The EU proposed actions are intended to help prevent the occurrence of nuclear accidents and to minimize and mitigate their consequences (through emergency preparedness measures) should they occur. Each of the above options pursues these objectives. However, option 0 would be likely to discontinue most of the on-going actions undertaken by the EU on nuclear safety.

#### **5.2. Impacts on external action, in particular on Policy Coherence for Development**

Except for option 0, which would discontinue cooperation on nuclear safety with third countries, no specific impacts are anticipated on Policy Coherence for Development.

However the external action in the domain of nuclear safety would appear to be more effective if an amended Regulation is adopted which would resolve the shortcomings of the present INSC.

#### **5.3. Impact in terms of management / implementation modalities**

There appears to be no major differences in the implementation modalities of the Options 1, 2 and 3 outlined above. Option 3 would maintain the present situation and role of the EEAS, but Options 1 and 2, concerning regulations whose legal basis is the Euratom Treaty, would imply a leading role for the Commission services both at the

policy definition level and at the implementation level. In any case, coherence with EU's external action and external policy strategies must be ensured.

Option 0 would raise major problems with the legal basis as well as implementation issues due to the difficulties in mobilising the necessary resources and specific expertise in the context of the geographic instruments.

## 6. COMPARING THE OPTIONS

### 6.1. Weighing of positive and negative impacts per option

**Option 0** - limited cooperation might still be possible in the framework of the geographical instruments, but it would likely lead to the discontinuation of most of the on-going actions on nuclear safety, including cooperation with nuclear regulatory authorities in the EU neighbourhood countries. It would have a definite impact on the credibility of the EU vis-à-vis the partner countries with which it is already engaged in cooperation in the domains of nuclear safety and safeguards.

This option would require a multiple legal basis. During the implementation phase it may raise difficulties due to the requirement for specific competences on nuclear safety as well as in coordination. The fragmentation would also lead to a possible reduction in the visibility of the EU actions.

Should this option be pursued, the basic objectives and the underlying issues risk not being addressed by the EU.

**Option 1** - would simply extend the application of the INSC through the period 2014-2020. It would basically leave the situation as it is, with the current problems of interpretation and implementation not being addressed in the Regulation but left to be defined in high-level programming documents (e.g. Strategy Paper and Multi-Annual Indicative Programme), whose definition might remain controversial and time-consuming.

This option has the advantage of simplifying discussion and using the current structure and experience gained in the previous period. However it would miss the opportunity to provide a clearer mandate to address consequences of nuclear accidents (through dedicated mitigation activities), to better define the scope currently covered by the INSC and IFS concerning issues related to nuclear safeguards and to clarify the criteria and priorities for cooperation with third countries.

Should this option be pursued, the outstanding issues in the implementation of the INSC would not be addressed or resolved.

**Option 2** - would allow the present uncertainties and inconsistencies to be resolved and provide the opportunity to clearly establish the future focus of EU cooperation in the domain of nuclear safety and safeguards. A revised Regulation would provide a clearer basis for the development of the Strategy papers and Multi-annual Indicative Programmes. The clearer definition of geographic and thematic objectives and priorities in the regulation itself would improve the efficiency of the implementation of the

instrument. A more effective and timely management of the project cycle could therefore be expected.

In comparison with options 0 and 3, it would allow for continuity and the use of the experience of a well tried system, while resolving a number of issues which have been identified. This, as well as the utilization of a single legal basis, would simplify the approach and the discussions on the new instrument. This appears to more than compensate for a possible greater coherence to be gained by an entirely new instrument covering nuclear safety, security and safeguards (option 3).

**Option 3** - could provide for a unified approach towards nuclear safety, security and safeguards (the '3S') and resolving the outstanding overlapping / conflict between the INSC and the IFS. However, while resolving the overlapping / conflict of interpretation between nuclear safeguards and nuclear security measures (which might include not only illicit trafficking but also, e.g., nuclear forensics), it would maintain the need for close coordination with other risk mitigation actions (chemical and biological).

In addition, the discussion of such a new instrument would likely be problematic and time-consuming due to the complexity of the dual legal basis and the prerogatives of the EU Member States on security matters. The adoption of a dual legal basis might also have an impact on the consistency with the approach on matters under the exclusive competences established under the Euratom Treaty (nuclear safety and safeguards).

It appears preferable to resolve the identified issues by better coordination during the elaboration of strategy papers and the implementation phase of separate regulations for the INSC and IFS.

## **6.2. Trade-offs and synergies associated with the options**

Option 2 can be regarded as an improvement of the situation relative to option 1. If adopted, it is expected to simplify the implementation of future cooperation on nuclear safety and safeguards with third countries.

Option 3 would take advantage of the synergies between the actions currently undertaken in the context of the INSC and IFS, however it would require complex negotiations and might not lead to a major simplification of the current situation (option 1).

## **6.3. Preferred option**

Option 2 appears to be the one offering the most advantageous solution while providing for continuity of the EU's actions and resolving the problems experienced in the implementation of the current Regulation.

# **7. MONITORING AND EVALUATION**

## **7.1. Core indicators of progress towards objectives**

The INSC is an enabling Regulation establishing the essential elements and the basis for the EU intervention. The annual action programmes detail the activities to be carried out

by the EU, including the objectives pursued by the respective actions and the expected results. Specific indicators are defined prior to implementation, having in mind the particularities of each action.

The implementation of the actions complies with performance-based management, which serves the following purposes:

- making the most of limited resources;
- improving decision making processes and decisions;
- achieving transparency and accountability.

A performance management system involves the setting of objectives, the decision of how to measure progress and the selection of indicators. This implies a three stage process, firstly a sound analysis of the policies with a common understanding – through policy dialogue – of the objectives and of the logical linkages between the objectives, activities and outcomes. Next comes the question of identifying what can be measured in relation to the objectives, which of the purposes above it serves and the availability, reliability and precision of statistical data, including such questions as the frequency of measurement and the use of proxy indicators. Finally the decisions need to be codified to the link between the programmes, the methods of calculation, the interpretive framework and the allocation of responsibility for their provision.

The success of the nuclear safety cooperation with third countries in achieving the above objectives may be assessed, inter alia, through the following results indicators.

#### Results indicators

- Number and importance of issues identified during IAEA Integrated Regulatory Review Service (IRRS) missions (concerning nuclear regulators);
- Number and importance of issues identified during IAEA Operational Safety Review Team (OSART) missions (concerning nuclear operators);
- Number and importance of reported nuclear safety incidents, by the respective country;
- Signature and ratification of international treaties and conventions;
- Status of development and implementation of spent fuel and nuclear waste strategies;
- For ‘emerging countries’, number and importance of issues identified during IAEA IRRS missions and progress in ‘Establishing the Safety Infrastructure for Nuclear Power Programme’ (Ref IAEA DS 424).
- Number and importance of irregularities in IAEA nuclear safeguards reports.

## **7.2. Outline for monitoring and evaluation arrangements**

The European Commission's Monitoring and Evaluation systems are increasingly focussed on results. They involve internal staff as well as external expertise.

Task Managers in Delegations and Headquarters continuously monitor the implementation of projects and programmes in various ways, including wherever possible through field visits. Monitoring provides valuable information on progress; it helps managers to identify actual and potential bottlenecks, and to take corrective action.

External, independent experts are contracted to assess the performance of EU external actions through three different systems. These assessments contribute to accountability, and to the improvement of ongoing interventions; they also draw lessons from past experience to inform future policies and actions. The tools all use the internationally-recognised OECD-DAC evaluation criteria including (potential) impact.

Firstly, at the project level, the Headquarters-managed Results Oriented Monitoring (ROM) system provides a brief, focused snapshot of the quality of a sample of interventions. Using a highly structured, standardised methodology, independent ROM experts attribute grades which highlight the strengths and weaknesses of the project and give recommendations on how to improve effectiveness.

Project-level evaluations, which are managed by the EU Delegations (when they are in charge of the projects), deliver a more detailed, in depth analysis and help project managers to improve ongoing interventions and prepare future ones. External, independent experts with thematic and geographic expertise are hired to conduct the analysis and gather feedback and evidence from all stakeholders, not least the final beneficiaries.

The Commission also conducts strategic evaluations of its policies, from programming and strategy to the implementation of interventions in a specific sector (such as health, education etc), in a country or region, or of a specific instrument. These evaluations are an important input to the formulation of policies and the design of instruments and projects. These evaluations are all published on the Commission's website and a summary of the findings is included in the Annual Report to the Council and the European Parliament.