

# International nuclear safety cooperation

The Commission remains an important global player but lacks a comprehensive strategy and robust monitoring



EUROPEAN  
COURT  
OF AUDITORS

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# 01

## Main messages

### Why this area is important

- 01** Energy demand is rising worldwide and nuclear technologies provide a growing share of it, with new reactors becoming operational in various parts of the globe. The primary application of nuclear energy is electricity and heat generation. In addition, medicine, agriculture and space exploration also make use of nuclear technologies. The wide distribution of these technologies and the powerful effects of radiation in the event of malfunctions make safety a crucial requirement.
- 02** Nuclear safety represents the achievement of proper operating conditions, prevention of accidents and mitigation of their consequences, resulting in the protection of workers, the public and the environment from undue radiation hazards. It encompasses the safety of nuclear installations, of radioactive waste and of the transport of radioactive material.
- 03** Prime responsibility for nuclear safety lies with the organisation responsible for facilities and activities that give rise to radiation risks. Their regulatory oversight is a national responsibility. However, accidents such as those occurred at Chernobyl in 1986 and Fukushima in 2011 have heightened nuclear safety concerns around the globe. Not only did their radioactive fallout spread across state borders - carried by wind and ocean currents - but the accidents also had an impact on public opinion and governments, and burdened the international community with substantial remediation costs. Because it aims to prevent environmental hazards at international scale, nuclear safety has the characteristics of a global [public good](#).
- 04** The EU has historically been an active promoter of international nuclear safety cooperation, within and beyond its borders. Grants from the Instrument for Nuclear Safety Cooperation and loans from Euratom have supported a wide array of actions, ranging from

education and training to the provision of expertise and the supply of safety-related equipment, infrastructure and remediation works. End users of the EU support are typically nuclear regulators in partner countries and operators of nuclear facilities or uranium legacy sites. Although less than in previous periods, grants worth approximately €300 million were allocated to these forms of cooperation in each of the multiannual financial frameworks of 2014-2020 and 2021-2027, in addition to a €300 million loan disbursed to Ukraine between 2017 and 2021.

- 05** In this audit, we examined whether the Commission, together with the European External Action Service where applicable, has been effective in enhancing nuclear safety in non-EU countries. More specifically, we assessed the design of the EU's framework for international nuclear safety cooperation; the allocation of EU financial support during the 2014-2024 period; the outputs and results achieved by EU-funded actions aimed at improving nuclear safety in Armenia, Iran, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan; and the Commission's monitoring.
- 06** We audited this area because of the importance of nuclear safety in the context of concerns triggered by past accidents and, more recently, by Russia's war of aggression against Ukraine. The report provides policymakers and the public at large with an independent assessment of the effectiveness of the EU's international nuclear safety cooperation. It identifies some shortcomings and proposes recommendations for improvement that can contribute to the on-going legislative process regarding a new Instrument for Nuclear Safety Cooperation for the 2028-2034 period. More background information and details on the audit scope and approach can be found in [Annex I](#).

## What we found and recommend

- 07** Overall, we conclude that the Commission remains an important player in international nuclear safety cooperation, having helped deliver a large array of actions, albeit often later and sometimes at a higher cost than initially planned. However, its effectiveness is hampered by the lack of a comprehensive and up-to-date strategy and shortcomings in the monitoring of the financed actions.
- 08** The transboundary nature of nuclear safety risks establishes a clear relevance of international nuclear safety cooperation and, for decades, the EU has been an important contributor to the effort of improving nuclear safety around the globe. However, the Commission currently lacks a comprehensive strategy guiding the implementation of its actions in this field. The current programming documents focus on the Instrument for Nuclear Safety Cooperation and do not include such strategic guidance for other tools available to the Commission, such as the Euratom loans. They also do not clearly establish

the goals that the Commission aims to achieve in a nuclear landscape that evolved significantly over time and includes several other stakeholders pursuing similar cooperation objectives (paragraphs [12-24](#)).



### Recommendation 1

#### **Strengthen the Commission's strategic framework for international nuclear safety cooperation**

The Commission should strengthen its strategic framework for international nuclear safety cooperation by developing an up-to-date, comprehensive strategy to guide its cooperation actions. Such a strategy should identify the areas of greatest added value of EU action, while considering initiatives by other relevant stakeholders. It should also identify what goals the Commission intends to accomplish (including quantifiable key targets where possible), which tools it plans to use, which stakeholders should be involved and how they should coordinate.

**Target implementation date: end 2028**

- 09** We found that the Commission's process for selecting actions to fund from its Instrument for Nuclear Safety Cooperation was well grounded overall as it responded to well-defined nuclear safety needs and benefited from relevant nuclear expertise. We noted however the lack of scoring and ranking, according to pre-defined criteria, of the cooperation proposals received from partner countries. This hampers a meaningful comparison between them and, consequently, the assurance that EU funding was allocated to where it could deliver highest added value. In the case of revenue-generating nuclear facilities, we also noted the absence of an assessment of the beneficiary's self-financing capacity (paragraphs [25-33](#)).



## Recommendation 2

### Strengthen the process for selecting EU-funded actions supporting nuclear safety

The Commission should:

- (a) reinforce the selection of cooperation proposals, basing it on predefined relevant criteria, such as the urgency and magnitude of the nuclear safety risk that the proposals address, the added value of EU action, the maturity of the proposed action, the likely sustainability of the expected results, and the geopolitical context in which support is to be provided. This process should be appropriately documented;
- (b) where actions concern revenue-generating nuclear facilities such as power plants, assess the beneficiary's capacity to fund its own safety programmes and consider whether financing via loans would be a suitable alternative.

**Target implementation date: end 2027**

**10** Over the years, the EU support has contributed to the delivery of diverse and sometimes complex actions. These include significant achievements in the remediation of the former Chernobyl nuclear power plant in Ukraine and of several uranium mining legacy sites in Central Asia. Delays have however been a regular feature of the actions we reviewed, together with higher costs than anticipated, especially in large-scale construction or remediation works. While higher costs can be partly linked to the complexity and first-of-a-kind nature of some of these actions, we also noted persistent funding gaps and the lack of performance incentives as contributing factors. In some cases, the long-term sustainability of these actions is at risk (paragraphs [34-49](#)).



### Recommendation 3

#### Mitigate the risk of delays and cost overruns in international nuclear safety cooperation actions

The Commission should establish, from the outset, mitigating conditions to minimise delays and cost overruns during the implementation of actions. In particular, the Commission should ensure that:

- (a) costs, including any management costs, are estimated upfront (e.g. through feasibility studies based on the most accurate information available);
- (b) where multi-donor funding mechanisms are concerned, it takes into account, among others, the estimated costs and the availability of sufficient pledges from other donors before deciding whether to fund the action;
- (c) contractual arrangements with implementing partners under the indirect management mode include performance incentives that promote the delivery of outputs on time and on budget.

**Target implementation date: end 2027**

**11** In several aspects, the Commission has not been sufficiently monitoring the implementation of its actions. This is particularly the case regarding the €300 million lent to finance a large-scale safety upgrade programme carried out by the operator of nuclear power plants in Ukraine. The Commission disbursed the loan without having assurance that the funds would exclusively finance programme-related expenses incurred and paid by the borrower, and without formally approving the several modifications made to the programme over the years. As regards the Instrument for Nuclear Safety Cooperation, although the Commission monitors implementation closely, we noted shortcomings as regards its monitoring of the usage of EU-funded outputs and actual improvements in nuclear safety (paragraphs [50-57](#)).



## Recommendation 4

### Improve the monitoring of EU-funded actions on nuclear safety

The Commission should improve its monitoring of future EU-funded nuclear safety actions:

- (a) by collecting information on the actual use of the respective outputs after the completion of the action, and by complementing such information, where necessary, by means of on-the-spot visits;
- (b) in the case of Euratom loans, by reinforcing the monitoring mechanism with the aim of ensuring the borrower's compliance with key sound financial management obligations;
- (c) in the case of grants from the Instrument for Nuclear Safety Cooperation, by enhancing logical frameworks through the systematic inclusion of outcome indicators that align with action objectives and capture the effects of the actions on nuclear safety.

**Target implementation date: end 2028**

## A closer look at our observations

### **International nuclear safety cooperation is relevant, but the Commission lacks a comprehensive and up-to-date strategic approach**

- 12** In this section, we examine whether the Commission has a comprehensive framework guiding its intervention in the field of international nuclear safety cooperation.

### **International cooperation in nuclear safety is relevant given the transboundary nature of nuclear risks**

- 13** Prime responsibility for nuclear safety lies with the person or organisation responsible for facilities and activities that give rise to radiation risks. Regulating nuclear and radiation safety is a national responsibility<sup>1</sup>. However, accidents such as those which occurred at Chernobyl in 1986 and Fukushima in 2011 have heightened nuclear safety concerns around the globe. Not only did their radioactive fallout spread across state borders – carried by wind and ocean currents – but the accidents also affected public opinion and governments. Particularly in the case of Chernobyl, the accident also burdened the international community with substantial remediation costs. Nuclear safety is therefore not only a national concern, but an international one, which firmly establishes the relevance of international nuclear safety cooperation.

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<sup>1</sup> International Atomic Energy Agency, “Fundamental Safety Principles, Safety Fundamentals No SF-1”.

- 14** This is particularly relevant for the EU, as it has a significant number of nuclear power plants in operation within its borders as well as in its immediate vicinity – notably in Belarus, Russia, Switzerland, Ukraine, and the United Kingdom (see [Annex I](#)). In addition, in the context of its enlargement policy, the EU also aims to promote the alignment of candidate countries’ laws and regulations with [EU and Euratom law \(the “acquis”\)](#) in the field of nuclear safety.

## **The Commission lacks an up-to-date, comprehensive strategy guiding its intervention**

- 15** EU action in the field of nuclear safety is based on the [Euratom Treaty](#). Among other things, the Treaty mandates Euratom to create the conditions necessary for the speedy establishment and growth of nuclear industries, establish uniform safety standards as well as relations with other countries and international organisations aiming to foster progress in the peaceful uses of nuclear energy. This gives the Commission, responsible for the implementation of the Treaty, a broad range of action in the field of nuclear energy, inside and outside the EU.

### **Different intervention tools, managed separately**

- 16** To support international nuclear safety, the Commission has been employing two main funding tools, managed by two separate services.
- Grants funded from the EU budget in support of nuclear stakeholders in non-EU countries: this form of support has been in place since 1992 and is currently called “[European Instrument for International Nuclear Safety Cooperation](#)” (INSC), managed by the Directorate-General for International Partnerships (DG INTPA). It has been granted an allocation of €300 million for the 2021-2027 period (see also [Annex I](#)).
  - Euratom loans to finance safety and efficiency projects in nuclear power plants: originally created in 1977 in support of projects within Euratom, this tool has been available to a selection of non-EU countries since 1994 (currently Armenia, Russia and Ukraine, following the various stages of EU enlargement). This tool is currently active in the case of a €300 million loan to Ukraine, managed by the Commission’s Directorate-General for Budget.
- 17** The goals of the two tools employed by the Commission, geared towards improving the safety of nuclear facilities, partly coincide. But they also differ significantly, as loans to power plant operators may also support their efficiency – and consequently their productivity and competitiveness. This is an outcome that is out of the scope of the INSC and indeed its various versions explicitly limit the support to operators: for the

2014-2020 period, the [Regulation](#) excluded the supply of equipment; for 2021-2027, the [Regulation](#) limited support to operators to exceptional cases, strictly linked to the implementation of post-Fukushima [stress tests](#) and possible consequent recommendations. We observed in Armenia a lack of a comprehensive and coherent approach by the Commission in the use of the available instruments (see [Box 1](#)).

## Box 1

### Lack of a comprehensive and coherent approach in support to a nuclear power plant

The Armenian nuclear power plant started its operations in 1976 and was expanded to operate a second separate unit in 1980. Both were shut down in 1989 following an earthquake the year before, as a precaution against a potential future recurrence of similar seismic events. Because of a lack of energy supply alternatives, unit 2 was recommissioned and restarted in 1995. Now about 45 years old, the reactor still provides up to 35 % of the electricity generated in the country annually.

The EU has supported the power plant continuously since 1996, mainly through the provision of expertise and equipment related to safety upgrades. However, the old design and ageing of the Soviet-type reactor led the Commission to conclude, already in 2008, that it could not be upgraded to meet international safety standards fully, and to seek its shutdown and decommissioning as soon as possible, while acknowledging the need to continue financing the most urgent short term improvement measures<sup>2</sup>.

We note however the lack of a comprehensive approach for the decommissioning of the nuclear power plant. Although ultimately still seeking shutdown, over the 2014-2024 period, the Commission allocated more than €15 million to the power plant or to the regulatory authority in the context of further safety upgrades and even the repeated lifetime extensions of unit 2 – most recently until 2031. In effect, this contradicted the Commission's stated objective of shutting down that unit, even if this goal depends on the sovereign decision of Armenia. In some cases, it acted beyond the limitations set out in the INSC Regulation in force at the time – e.g. through the de facto supply of equipment to the power plant. This was notably the case of mobile diesel generators, which although formally contracted and owned by the Armenian Nuclear Regulatory Authority, in fact were designed and installed specifically to sustain safety systems of the power plant in case of certain nuclear safety incidents. Although Armenia is eligible for Euratom loans, which in turn allow it to finance the purchase of equipment by nuclear power plant operators, this tool has not been used to date for this purpose.

<sup>2</sup> Commission Communication "Addressing the international challenge of nuclear safety and security", [COM \(2008\)312](#).

**Picture 1: Armenian nuclear power plant**



*Source:* Armenian nuclear power plant.

**Picture 2: EU-funded equipment – Emergency mobile diesel generators for the Armenian nuclear power plant**



*Source:* Armenian nuclear power plant.

**18** A third funding tool available to the Commission is the Neighbourhood, Development and International Cooperation Instrument - Global Europe, a €79.5 billion instrument co-managed by several Commission services which, for the 2021-2027 period, merges several external action instruments that were separate in previous budgetary periods. To date, it has been used to finance security measures primarily under its thematic programme on Peace, Stability and Conflict Prevention, while its scope includes certain nuclear safety activities (some similar to those of the INSC, notably education, training and safeguards).

### Concurrent cooperation initiatives from key international players

**19** The United Nations' International Atomic Energy Agency (IAEA) was created in 1957 and, as of 2025, comprises 180 member states (including all 27 EU member states). Its [statute](#) covers a broad range of activities aimed at supporting the safe, secure and peaceful use of nuclear energy. These include exchanging scientific and technical information, training scientists and experts, establishing and administering safeguards for nuclear materials, and adopting safety standards and promoting their application at the request of member states. These activities match and extend beyond those covered by the INSC. The IAEA has also received key specific mandates, notably through the [Treaty on the Non-Proliferation of Nuclear Weapons](#), entrusting it with safeguard verification responsibilities, as well as through several safety-related conventions<sup>3</sup>, under which signatory states share safety information between themselves, the Commission and the IAEA.

**20** To implement its activities, the IAEA has resources that largely surpass those of the EU's INSC. Out of a total [budget](#) of some €757 million for 2025, the IAEA allocated €43 million to nuclear safety and security (under its regular budget) and some €128 million to its [technical cooperation programme](#). This programme is the IAEA's primary mechanism for transferring nuclear technology to its member states, including assistance to improve radiation safety and nuclear security worldwide. It offers a vast range of peer review and advisory services to member states on a voluntary basis. The EU's INSC contributed to the IAEA's budget over the 2014-2024 period with some €30 million, or some 7 % of the total INSC allocations during that period.

**21** Besides the IAEA's technical cooperation programme, other initiatives with similar objectives also coexist with the EU's INSC. Among others, several EU member states bilaterally, the [European Bank for Reconstruction and Development \(EBRD\)](#), the [US](#), [Norway](#), and Russia also sponsored nuclear safety initiatives that relate to or pursue the same objectives as those of INSC-funded actions. In June 2025, the [World Bank](#) also

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<sup>3</sup> [Convention on Nuclear Safety and Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.](#)

announced its intention to support the safe, secure and responsible use of nuclear energy in developing countries.

**22** Managing its own specific instrument allows the Commission to be independent and flexible when selecting its priorities. However, the strong similarities between the specific objectives of the INSC and some of the initiatives of other relevant stakeholders mean that the Commission would have benefited from an assessment at strategic level of areas where EU intervention can have biggest impact taking into account those initiatives. The risk of overlaps regarding activities with the same objectives is a concern that has been raised by the Council since 2008<sup>4</sup> and is explicitly stated in Article 6 of the [INSC Regulation](#). It is also regularly raised by individual member states in the annual meetings of the INSC Committee and by the Commission itself in its INSC action documents. Despite overlapping objectives, we did not find any instances of double funding (i.e. the same activity being funded twice) within the sampled contracts. Regular meetings between the Commission and the IAEA, under their memorandum of understanding, and the establishment of donor cooperation platforms at country or regional level (e.g. Armenia, Central Asia, Ukraine) helped to mitigate the risk of double funding.

### Gaps in prior strategy documents

**23** The [2008 Communication “Addressing the international challenge of nuclear safety and security”](#), as well as the 2014 strategy and the [2021 multiannual indicative programme](#), all adopted by the Commission, contain elements providing a longer-term perspective for nuclear safety cooperation. However, they are partly out of date or are focused only on the INSC and do not propose a holistic approach to international nuclear safety cooperation that encompasses all instruments available to the Commission. In the case of the 2014 strategy and 2021 programme, we also note insufficient identification, based on a safety needs assessment, of those areas where EU intervention has the greatest potential to add value to other ongoing national or international initiatives.

**24** We note therefore, the lack of an up-to-date, comprehensive strategy for international nuclear safety cooperation. Such strategic framework, while anchored in the mandate given by the Euratom Treaty, would serve as further reference on the added value of EU action, what goals the Commission intends to accomplish, what tools it plans to use, which stakeholders should be involved and how they should coordinate. The absence of such a strategy, either standalone or integrated into a wider nuclear cooperation strategy, is significant in view of an evolving nuclear safety landscape (see [Annex I](#)), the availability of different intervention tools, and the concurrent cooperation initiatives from other

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<sup>4</sup> [Council Conclusions](#) on assistance to third countries in the field of nuclear safety and security, December 2008.

international players. It reduces clarity about what the EU is trying to achieve and hinders a coordinated implementation of all available instruments.

## **Overall, selection of actions is based on well-defined nuclear safety needs, but lacks robust prioritisation**

- 25** In this section, we examine the process by which the Commission selected actions to be funded by the INSC, to determine whether it was thorough and resulted in the selection of the most relevant action proposals.

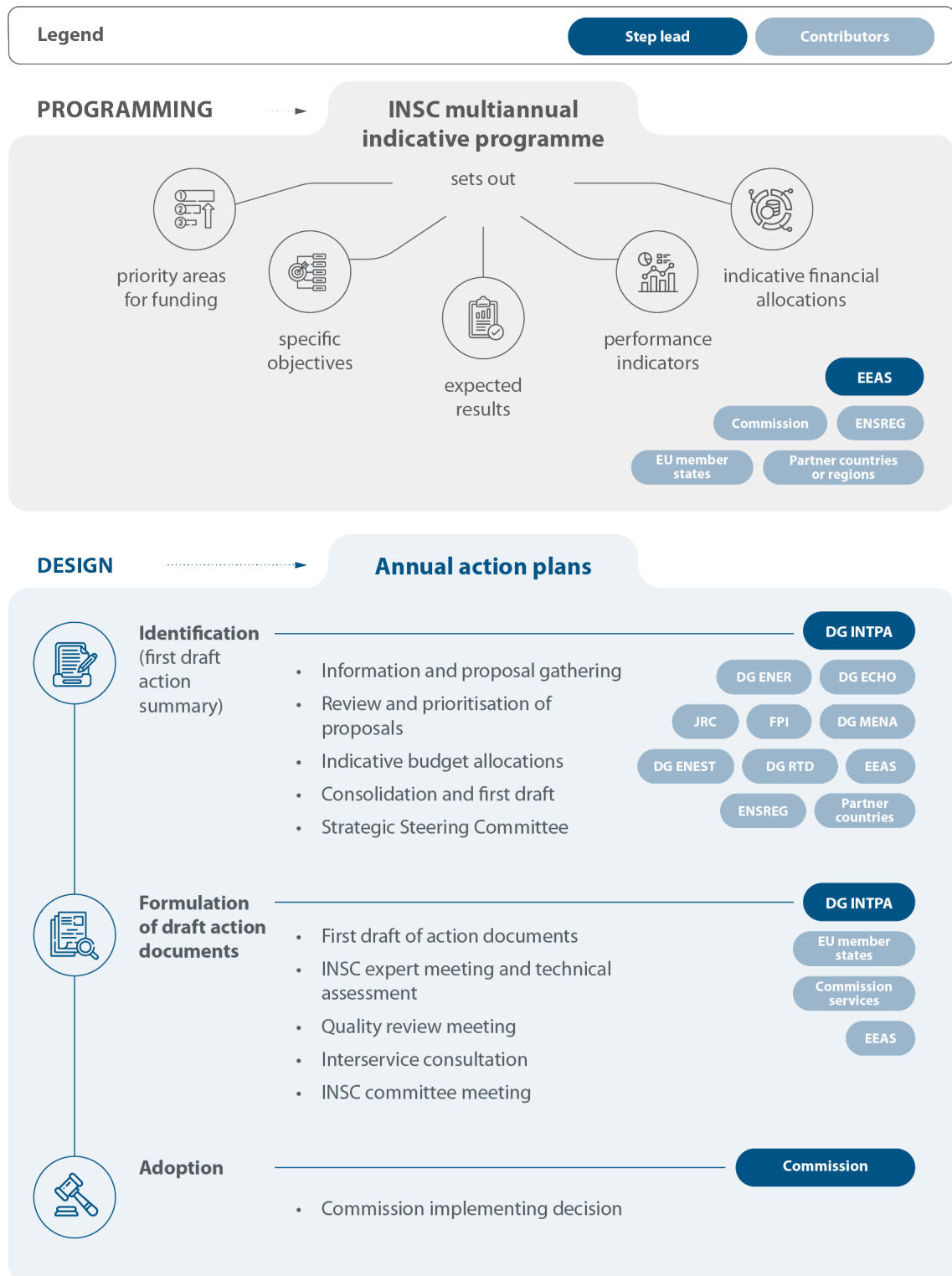
## **The Commission has established a well-grounded selection process based on specific nuclear safety needs**

- 26** In the case of the INSC, actions to be funded are described in an annual action plan, formally adopted by a dedicated Commission implementing decision<sup>5</sup>. The adoption, as in other international cooperation instruments managed by the Commission, is the culmination of a process with several steps (*Figure 1*).

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<sup>5</sup> Article 7 of [Council Regulation \(Euratom\) 2021/948](#) establishing a European Instrument for International Nuclear Safety Cooperation (2021 INSC Regulation).

**Figure 1 | Key steps in the adoption of annual action plan**



Source: ECA, based on INSC regulations and DG INTPA procedures.

- 27** In accordance with the INSC regulations in force<sup>6</sup>, multiannual indicative programmes were prepared by the European External Action Service (EEAS), in close cooperation with and formally adopted by the Commission – namely in 2014, 2017 and 2021. Based on these programmes, but also on continuous information gathering from several stakeholders, the Commission designed action plans that, on an annual basis, were subject to a formal procedure of review and adoption.
- 28** The overall process combined requests from partner countries with technical expertise available within the Commission (notably through its [Joint Research Centre](#) and the Directorate-General for Energy, in addition to DG INTPA), as well as from outside sources (notably through representatives from individual EU member states). It also benefited from geopolitical input from the EEAS and consultations with other Commission services. In general, the process implemented by the Commission provided solid grounding to select relevant actions that addressed specific nuclear safety needs in partner countries. Notwithstanding this positive assessment, we found a number of shortcomings, described in paragraphs [29-33](#) below.

### **Selection of actions lacks scoring and ranking according to pre-defined criteria, reducing its transparency**

- 29** Despite the overall thoroughness of the action selection process, we noted insufficient rigour in the initial stages of the process, up to the initial prioritisation and first draft of the action plans (see [Figure 1](#)). In particular, we noted that action proposals were not formally scored and ranked according to pre-defined criteria, with the aim of ensuring that EU-funding was channelled to mature actions with highest added value. While the reviews conducted by DG INTPA included several relevant factors – for example, urgency, maturity, or complementarity – this analysis was not systematically documented in a manner that would have allowed a meaningful and transparent comparison between different action proposals.
- 30** International nuclear safety cooperation is part of a broader effort to uphold and promote the EU's values and interests worldwide<sup>7</sup>, with the implication that multiple geopolitical considerations may also affect the need for and outcomes of actions funded by the INSC.

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<sup>6</sup> Article 12 of [Council Regulation \(Euratom\) 237/2014](#) establishing an Instrument for Nuclear Safety Cooperation (2014 INSC Regulation); Article 17 of the [2021 INSC Regulation](#); Article 9 of Council Decision [2010/427/EU](#) establishing the organisation and functioning of the European External Action Service.

<sup>7</sup> Recital 1 of the [2021 INSC Regulation](#).

However, the absence of formal weighting of the different selection criteria adds discretion to the Commission's selection decisions and reduces their transparency. In some instances – most notably in respect of Central Asia and Iran – the evidence we collected indicates that the INSC actions we audited were driven primarily by these geopolitical considerations, rather than by a nuclear safety risk deemed significant enough to justify their selection over competing proposals in the European neighbourhood.

## **From the outset, some actions were affected by maturity shortcomings or by insufficient demonstration of the need for EU funding**

- 31** In some cases, we noted that some INSC actions we audited were selected and launched despite challenges and maturity shortcomings known from the outset.
- (a) Actions aimed at improving nuclear safety and safeguards in Iran were based on the 2015 [Joint Comprehensive Plan of Action \(JCPoA\)](#), endorsed by the UN's Security Council. With the withdrawal of the United States from this agreement in 2018, compounded by Iran's gradual non-compliance with its commitments under the JCPoA starting in 2019, crucial conditions for the successful completion of the EU's INSC actions were materially affected. In this regard, we noted several alerts issued by the IAEA about its ability to provide assurance on the exclusively peaceful nature of Iran's nuclear programme<sup>8</sup>. In line with the Council's conclusions of [2019](#) and [2022](#), the Commission continued to keep the EU's commitment to the JCPoA. It launched new INSC contracts in December 2021 and November 2023, worth a combined value of €11.6 million. However, these took a long time to conclude (16 and 53 months respectively, after the Commission's financing decisions) and were also, from the outset, affected by serious implementation restrictions. These restrictions related to the travel of EU and Iranian officials, and difficulties in delivering equipment because of sanctions being reimposed after the US withdrawal. In effect this significantly slowed down the implementation of the actions.
  - (b) In respect of the remediation of uranium legacy mining sites in Central Asia, the Commission's initial contribution in 2015 of €16.45 million was made in the absence of feasibility studies (which only became available at a later stage), accurate references as to the overall time frame and cost of the remediation activities the Commission intended to support, or any pledging from international donors other than the EU. This eventually contributed to delays in implementation.

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<sup>8</sup> IAEA safeguards statement for [2021](#) and [2022](#).

(c) In Armenia, the Commission's actions made extensive use of "fee-based contracts", hiring experts and making them available to the end users, in most cases without defining the exact expected outputs in advance. Instead, they were defined at the start of the actions and subject to modification throughout their implementation. In these cases, risks related to the non-delivery of expected outputs remained with the Commission, and two of the four contracts led to additional work in follow-up contracts. This situation was also observed in one contribution agreement related to remediation works in Ukraine.

**32** In the case of support to the Armenian nuclear power plant, a revenue generating facility, the Commission's selection process did not include an analysis of the beneficiary's capacity to fund its own safety upgrade programmes, which according to international standards<sup>9</sup> are primarily the responsibility of the nuclear facility operator.

**33** In the case of support for the remediation and spent fuel management of the former Chernobyl nuclear power plant in Ukraine, we noted that the Commission, following high level exchanges with the concerned EU member states, opted to contribute in excess of the historical burden-sharing that had been previously followed between the G7 countries and the EU, the original promoters and main donors to such activities. In 2015 and 2016, the Commission's contributions to the Chernobyl Shelter Fund amounted to €70 million (42 % of the combined contributions), whereas they would have been limited to €45.6 million had the proportion of the EU's contribution remained the same as in the previous pledging exercise (27.6 % in 2011). We noted a similar situation in respect of the 2017 contribution to the Nuclear Safety Account, which funded, among other things, the dry spent fuel facility at Chernobyl: the Commission's contribution of €19.1 million represented 39 % of the G7 and EU total, exceeding by €5.4 million what would have been the historical burden share of the EU. The overall European contribution (EU, France, Germany, Italy and the UK) remained limited to the 65 % of the overall effort, this in effect meaning that the EU budget in part replaced the historic contributions of the European members of the G7.

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<sup>9</sup> IAEA, "Fundamental Safety Principles, Safety Fundamentals No SF-1".

## EU support contributed to the delivery of diverse and sometimes complex actions, but often faced delays, and, in some cases, higher costs and risks to sustainability

- 34** In this section, we examine whether EU-funded nuclear safety actions delivered their planned outputs on-time and on-budget. We also examine whether the longer-term sustainability of such outputs was provided for in the underlying contracts and identified, where applicable, specific risks to their sustainability.

### The EU supported the delivery of a wide range of actions, including large and complex projects

- 35** During the 2014-2024 period, the INSC financed 173 contracts covering actions in 20 partner countries and seven multinational regions. The scale and nature of such actions was diverse, covering education and training, provision of expertise to stakeholders in the preparation and review of specific safety documents, and the supply of safety-related equipment, infrastructure and remediation works. End users of the EU support were typically nuclear regulators in partner countries and operators of nuclear facilities or uranium legacy sites. [Annex II](#) provides details about the contracts sampled.
- 36** From the 14 contracts we sampled, five were fully closed at the time of the audit and two others had essentially completed their initially planned activities. We observed a mixed picture as regards these seven contracts: five delivered the planned outputs; one delivered most but not all of the agreed outputs; and one contract expired without delivering any of the key expected outputs.
- 37** The EU supported the delivery of several large-scale and complex actions. [Box 2](#) highlights three actions that drew the largest EU contributions during the 2014-2024 period – some €137 million or 34 % of the total EU allocations. Implementation took place in cooperation with the EBRD, which managed dedicated funds pooling resources from the EU as well as other donors. While the two actions at Chernobyl were completed, in the case of the Environmental Remediation Account (ERA), implementation was ongoing at the time of the audit.

## Box 2

### Large-scale actions funded by the INSC

#### Picture 3: New safe confinement at Chornobyl



Source: Chornobyl nuclear power plant.

The arched confinement structure covers the remains of Chornobyl's reactor 4, destroyed by the 1986 accident. Its purpose is to mitigate risks resulting from the degradation and possible collapse of the existing "object shelter", which had been built in hazardous conditions soon after the accident. As part of the Shelter Implementation Plan, the new confinement was completed in 2019 to prevent radioactive contamination of the outside environment and enable the deconstruction of the old shelter inside. The total EU contribution during the audited period was €70.5 million. Overall, the works linked to the execution of the plan, including the stabilisation of the old shelter, the new confinement and related activities, cost €2.2 billion (see [Figure 3](#)). They were funded by the Chernobyl Shelter Fund, to which the EU, the main donor, contributed approximately €432 million (or close to 20 % of the total cost).

**Picture 4: Dry spent fuel facility at Chernobyl**



Source: State Scientific and Technical Center for Nuclear and Radiation Safety (SSTC NRS).

The facility allows the storage of spent nuclear fuel from the operation of units 1-3 of the Chernobyl nuclear power plant, the last of which was shut down in 2000. Dry storage of the 21 000 spent fuel assemblies is designed to mitigate the risks of water leaks and cooling failures associated with the wet storage facility currently in use. The new facility was completed in 2021 and has since been gradually receiving the spent fuel assemblies, packed in cylindrical canisters. The total EU contribution during the audited period was €19.1 million. Overall, since the launch of the project in 1996 until the end of 2024, the construction of this facility cost €486 million (see [Figure 3](#)).

**Picture 5: Remediation of uranium legacy mining sites in Central Asia**



Source: ECA.

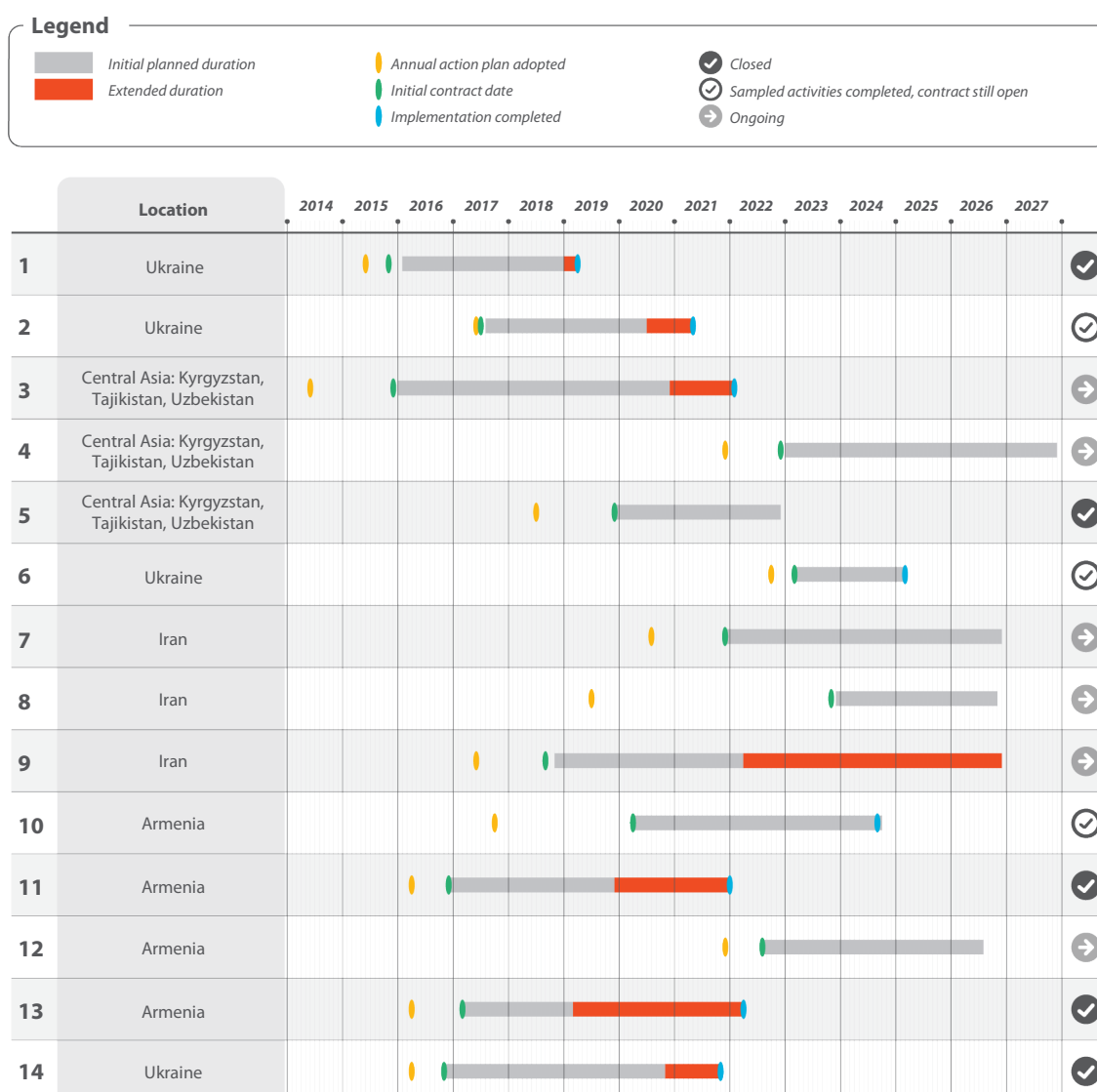
The EU co-funded ERA supports targeted clean-up activities at seven priority uranium legacy sites across Kyrgyzstan, Tajikistan and Uzbekistan. Based on feasibility studies and environmental impact assessments, remediation work includes covering or fencing contaminated areas, closing mine shafts (vertical openings) and adits (horizontal openings), relocating or stabilising radioactive tailings ponds and waste rock dumps, preventing erosion, and demolishing unsafe contaminated structures. By reducing exposure to contaminated soil and water, ERA aims to restore safe living conditions for the people in the densely populated Ferghana Valley region. The total EU contribution was €47.2 million. As at October 2025, the remediation activities were ongoing (see [Figure 3](#)).

## **Actions were often completed late and in some cases over budget**

- 38** Actions in the audited sample often suffered delays in implementing their activities. Overall, out of 14 INSC-funded contracts, only two delivered their outputs within the time frame provided for in the original contracts signed by the Commission (see [Figure 2](#)). The vast majority suffered delays, either in respect of the date of their full completion (seven cases) or in respect of the achievement of internal milestones within contracts that were still ongoing at the time of the audit (four cases). Delays ranged between 11 and

48 months, in five cases requiring a formal modification of the contract duration. In one case, the contract expired without having delivered any of its key outputs, mostly due to the failure to secure framework agreements with the participating countries, as well as the effects of the COVID-19 pandemic (see also paragraph 36).

**Figure 2 | Duration of actions funded by the INSC in the audited sample**



*Note:* In three cases (2, 6 and 10), although the contracts are still ongoing from an administrative perspective, the activities we sampled have been completed.

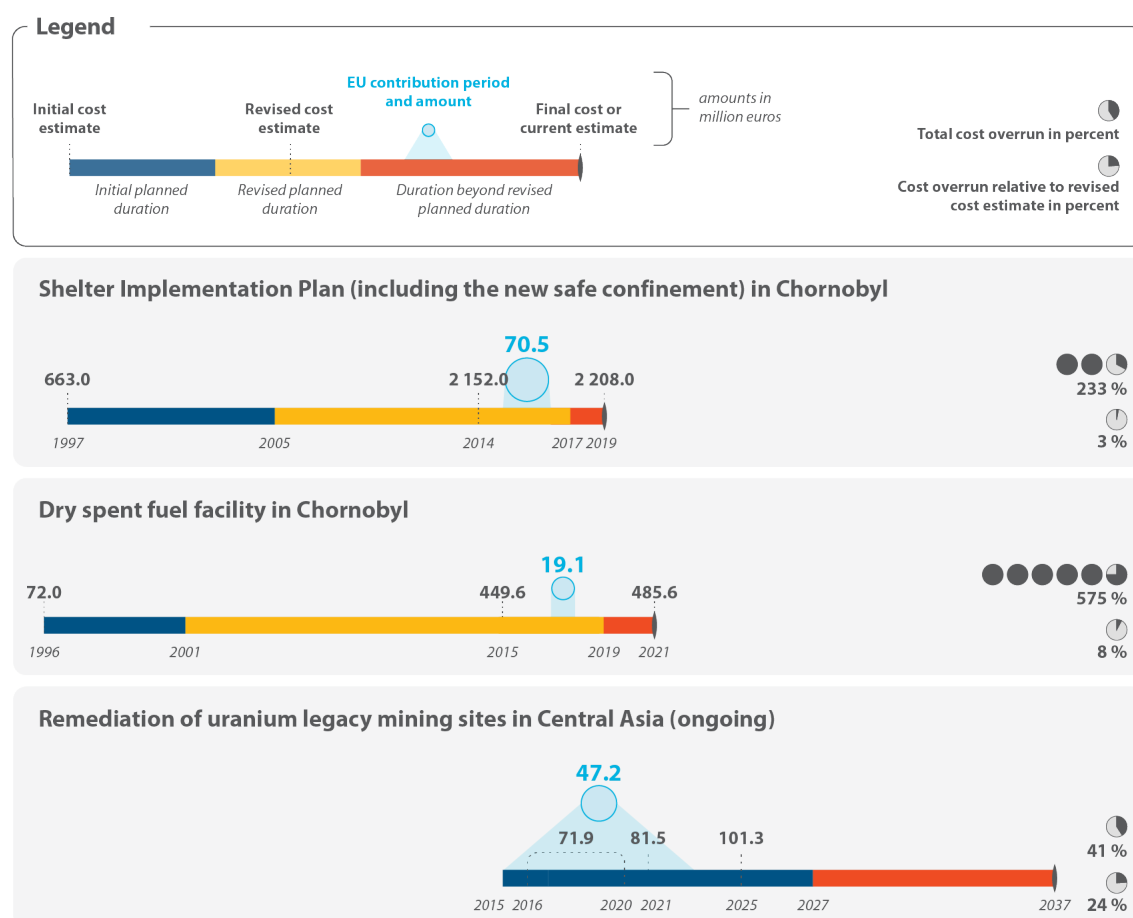
*Source:* ECA, based on contracts and implementation reports provided by the Commission or its implementation partners as of June 2025.

**39** In some cases, this situation was compounded by actual costs exceeding their original budgets, even if in this regard, the audited sample is very heterogenous. Out of the 14 sampled contracts, five had delivered the planned activities at the time of our audit. Within these, we found two cases where outputs were delivered within the initially planned budget, while in three others that budget was exceeded.

## INSC-funded large-scale actions

**40** The three largest INSC actions (see [Box 2](#)) were long-term multi-stakeholder and complex undertakings, which inevitably raised unique challenges in their implementation. In particular, the new safe confinement at Chernobyl was a first-of-a-kind construction and the remediation of uranium legacy mining sites in Central Asia covers three different countries and seven different sites. [Figure 3](#) shows that these actions were or still are affected by delays and considerable total cost overruns.

**Figure 3 | Specific analysis of large-scale actions**



*Note:* EU contribution refers to grants from the INSC awarded during the period 2014-2024 only. Initial estimates retrieved from feasibility studies, implementation plans or grant agreements, as available. Interim and final estimates retrieved from implementation reports.

*Source:* ECA, based on data from the Commission, the EBRD and the Coordination Group for Uranium Legacy Sites.

**41** In the case of INSC co-funded infrastructure at Chernobyl (including the new safe confinement and the dry spent fuel facility), cost estimates had increased since the launch of those actions, primarily because of technical and regulatory hurdles, but also driven by economic factors such as inflation and exchange rate risks that were ultimately borne by the funds administered by the EBRD. These increases eventually led to funding gaps and

calls for additional contributions from donors - €70 million from the EU's budget in support of the new safe confinement and €19.1 million for the dry spent fuel facility. Such delays and cost increases continued to affect the actions until the end of their implementation. In the case of the new safe confinement, financial incentives offered to the contractor for timely delivery of selected milestones contributed to a reduction of delays and cost increases after 2014. For the dry spent fuel facility, such incentives were not established. The final outcome was compounded by additional COVID-related stoppages and is still dependent on an ongoing arbitration process between the beneficiary and its contractor.

- 42** Launched in 2015, ERA was from the outset affected by the late availability of the necessary feasibility studies, which were only gradually issued between 2016 and 2020. This was compounded by persistent funding gaps (see **Box 3**) and, in the case of Uzbekistan, by the recipient organisation's initial lack of technical, administrative and financial capacity.

### Box 3

#### Persistent funding gap affecting ERA

Almost 10 years after the launch of ERA and less than 3 years before its planned closure in December 2027, only four smaller sites had been fully remediated. Based on our analysis, remediation of the remaining three larger sites, representing 86 % of the total cost, is unlikely to be completed before 2032 (Kyrgyzstan) and 2037 (Tajikistan). For Tajikistan, given funding limitations and the high level of investment needed, there is a risk that remediation might not materialise.

The EU's contribution of €47.2 million (or 83 % of ERA's resources) and contributions of some €10 million from other international donors<sup>10</sup> have so far proved insufficient to cover all of ERA's estimated costs, leading to delays in launching remediation works. Over that period of 10 years (from 2015 until 2024), the Commission, with the support of the EBRD, only organised one pledging conference, in 2018.

The funding gap of ERA also increased because the remediation is proving to be more expensive than originally planned. While the initial feasibility studies indicated an aggregate cost of approximately €72 million for the seven sites, the current estimates raise that amount to €101.3 million (a 41 % increase). A key driver of these increases was a modification of the remediation solution for the Mailuu-Suu site in Kyrgyzstan, following further studies triggered by the 2023 earthquake in Türkiye. Other contributing factors included management costs charged by external consultants exceeding those foreseen in feasibility studies and inflation.

<sup>10</sup> Belgium, Lithuania, Norway, Spain, Switzerland and United States.

In addition to construction and management costs, ERA also needs to cover administrative expenses incurred by the implementing partner. These are approved on a yearly basis by ERA donors. By 30 August 2025, these amounted to €4.4 million, thereby contributing to the gap between available funding and expenditure.

- 43** The Financial Regulation allows for the remuneration of implementing partners to be performance-based<sup>11</sup>. We noted however a lack of performance incentives in the contractual arrangements between the Commission and its implementing partners in the contracts under the indirect management mode that we audited.

### **Euratom loan for Ukraine’s large-scale safety upgrade programme**

- 44** The implementation in Ukraine of a large-scale safety upgrade programme on all its active nuclear power plants, financed by a €300 million Euratom loan, shows a pattern of delays and cost overruns similar to other INSC-funded large-scale actions. By the time the Commission disbursed the first instalment of €50 million in 2017, the borrower had already requested an extension of the programme’s completion date, from 2017 to 2020. By the end of 2021, when Euratom agreed its final disbursement, only 81 % of the measures had been fully completed. As of 31 December 2024, although completion rate reached 84 %, the implementation of the remainder of the programme had been delayed even further. The borrower was not expecting its conclusion before 2030 and pointed to the impossibility of determining a projected completion date due to the ongoing war. Overall, the programme’s cost estimate increased from €1.4 billion to €1.6 billion (16 %). The EU’s contribution to the programme remained limited to the original €300 million loan.
- 45** Delays were caused, almost from the outset, by the slow set up of project management structures and fulfilment of other pre-conditions, preventing the disbursement of funding from Euratom and the EBRD. This was compounded by the borrowers’ limited own funding and by Ukraine’s electricity requirements, which reduced the duration of technical outages during which upgrades could be made. Since 2022, delays were exacerbated by Russia’s war of aggression against Ukraine, which has had major consequences for the programme’s implementation. In particular, the occupation of the Zaporizhzhia nuclear power plant entailed the suspension of planned safety upgrades and electricity production, together with the loss of the corresponding revenues.

<sup>11</sup> Article 155 of [Regulation 2018/1046](#) or Article 158 of [Regulation 2024/2509](#).

## In some cases, long-term sustainability remains a significant challenge

**46** Ukraine was the largest beneficiary of the EU's international nuclear safety cooperation over the 2014-2024 period, having received support amounting to €170 million in grants and €300 million in loans. However, Russia's occupation of nuclear facilities and continued aggression have meant that the long-term sustainability of these investments is at risk and remains, where physically accessible, dependent on the continuation of such support. We note in particular the following:

- (a) Between 2022 and 2024, the INSC has allocated over €15 million aimed primarily at the restoration of equipment and installations damaged or looted by Russian forces. This support has been partly (€7 million) channelled via the [International Chernobyl Cooperation Account](#). This is another multi-donor fund managed by the EBRD, which adapted its original goal of aiding the decommissioning of the Chornobyl nuclear power plant to include the restoration of nuclear safety in the exclusion zone.
- (b) In February 2025, a [drone](#) hit the roof of the new safe confinement over Chornobyl's nuclear power plant unit 4, one of the INSC's large-scale actions, resulting in damage to the roof itself and causing a fire that destroyed part of its inner layers. After 22 years of design and construction work and €2.2 billion invested in the Shelter Implementation Plan (€432 million of which came from the EU budget), the new confinement is no longer fit for purpose and requires major repairs, [as confirmed by the IAEA](#). The cost and funding sources for these repairs are still being assessed by the Ukrainian authorities, with support from the Cooperation Account.

**Picture 6: Damaged roof of the new safe confinement at Chornobyl**



*Source:* Chornobyl nuclear power plant.

- (c) The transfer of spent fuel assemblies to the newly built dry spent fuel facility at Chornobyl has been significantly slowed down by the war. Against an initial target of transferring 2 500 assemblies per year, fewer than 630 have actually been transferred on average during the 2022-2024 period. As of June 2025, based on information received from the beneficiary, close to 17 000 assemblies (80 % of total) remained in the old wet storage facility.
  - (d) The borrower of Euratom's loan has thus far complied with its repayment terms, which are limited to annual interest until 2027. Hence, no actual loss has been recorded by the EU budget. However, the financial situation of the borrower has deteriorated due to the war and, in particular, to the loss of the Zaporizhzhia nuclear power plant which, just before the outbreak of the war, generated around 44 % of the company's electricity. Future compliance with the repayment terms of the loan instalments in the context of the ongoing war may depend on continued support by the international community.
- 47** The strategic master plan for the remediation of uranium legacy sites in Central Asia defines a regional water monitoring system as a central component of the remediation strategy. However, the INSC action launched to implement this monitoring system expired in 2022 without having achieved any of its key objectives – the system was not installed. This undermines the sustainability of remediation works by impeding early warnings of

cross-border contamination, coordination and data sharing between the three countries concerned. In addition, in the case of Uzbekistan, responsibility for the long-term sustainability of the remediated sites was only assigned in November 2025 to a governmental agency and the mechanisms necessary for the effective implementation of that responsibility were then still under development. In the case of Tajikistan (see [Box 3](#)), the delay in implementing remediation works further prolongs and increases the risk of cross-border contamination.

- 48** In Armenia, the continuous EU support to the nuclear regulatory authority and power plant since the 1990s did not yet lead to self-sustainability at national level. Both the regulatory authority and the operator continue to struggle with persistent staff shortages or expertise gaps. The latter have been reduced thanks to international assistance from the EU, and also from the IAEA, Germany, Russia and the United States. As at the end of 2024, five different INSC-funded actions were ongoing, worth some €12 million in total. Such cooperation is explicitly envisaged in wider cooperation documents such as the EU-Armenia [Comprehensive and Enhanced Partnership Agreement](#), in force since 2021, and the Resilience and Growth Plan of 2024. Nonetheless, the Commission lacks a comprehensive approach for decommissioning the existing nuclear power plant.
- 49** Overall, for our sample, we noted that agreements providing EU support to nuclear safety actions through the INSC do not contain sustainability clauses requiring end users to use and maintain the EU-funded outputs (infrastructure, equipment or training material) for a minimum period of time. On the positive side, we noted that the Commission's supply contract that we examined incentivises sustainability by including the financing of a first set of spare parts and the support to end users during installation.

## The Commission's monitoring is in several aspects insufficient

- 50** In this section, we examine whether the Commission had set up a robust monitoring system to track the implementation of the Euratom loan and of the INSC, as well as the actual impact of its actions on nuclear safety.

## The Commission relies on monitoring work done by third parties as regards the loan to Ukraine, without a clear framework of roles and responsibilities

- 51** In June 2013, the Commission approved a Euratom loan of up to €300 million to support a large-scale safety upgrade programme for nuclear power units in Ukraine, to be implemented by their operator Energoatom, a company owned by the Ukrainian State. This loan, backed by a guarantee issued by the state of Ukraine, followed the approval of a similar loan by the EBRD in March 2013, for the same amount and purpose. In implementing its decision, in August 2013 the Commission signed a loan facility agreement with Energoatom (borrower) and disbursed the full €300 million in four instalments, between 2017 and 2021. The Commission approved such disbursements on the basis of (i) requests issued by the borrower confirming that all applicable loan conditions had been complied with and (ii) certificates issued by a monitoring consultant hired and managed by the EBRD on behalf of both lenders.
- 52** We found however that the Commission's monitoring of the loan's implementation has been insufficient in several aspects. The borrower modified the original safety upgrade implementation plan several times, and although it communicated these changes to both lenders, it never received formal approval by the Commission, despite an explicit requirement to that effect in the loan facility agreement. Instead, the Commission stated that it relied on the EBRD's actions regarding its own loan (see paragraph 54). Moreover, out of four requests for postponements of the overall completion date (see also paragraphs 44-45), two that were issued since 2022 also did not receive formal Commission approval. The monitoring consultant reported repeated breaches of certain clauses of the loan agreement, such as the borrower's failure to fully comply with insurance requirements, to demonstrate that its electricity revenues cover its costs, including costs related to nuclear safety, and to contribute to the decommissioning fund during the 2020-2024 period. Such situations are described in the loan agreement as possible events of default on the Euratom loan, allowing the Commission to demand its cancellation, if not yet disbursed, or accelerated reimbursement. However, the Commission did not provide evidence of having assessed whether these breaches justified such steps, or having sought their resolution.
- 53** In addition, the Commission approved each of the loan disbursements over the 2017-2021 period without confirmation that such disbursements related to costs already incurred and paid by the borrower. This reduces the assurance that EU financing was exclusively used to support the safety upgrade programme. According to reporting from the consultant, by the end of 2021, the borrower had only spent in the project €235 million out of the total €300 million it had at that point received from Euratom. Even

though the borrower gradually executed additional project-related expenditure in the subsequent years, by June 2025 an underspending of €10 million persisted.

**54** Compounding this situation, the Commission did not establish a formal relationship with third parties playing significant roles in the Euratom loan, notably with the EBRD on which the Commission ultimately relied on as regards monitoring. This includes the relationship with the monitoring consultant, in which the EBRD but not the Commission is the contractual counterpart. The Commission received a copy of the original monitoring contract, which expired in 2018. Even if the Commission continued to receive quarterly monitoring reports as well as certificates in support of its decisions to approve loan disbursements, since that date it has been unaware of the scope, terms and conditions under which such services continued to be provided past 2018.

### **In most cases, monitoring is focused on outputs, not actual improvements in nuclear safety**

**55** INSC grant agreements typically include a “logical framework matrix”, as part of the Commission’s monitoring framework. In this matrix the Commission and its counterpart agree on the expectations concerning the funded action, as regards its objectives, specific outputs and overall impact. The matrix includes indicators with baselines, targets and a timeline for their achievement. This is a good practice which enables the Commission to monitor action implementation and potentially assess and aggregate its outcomes. In addition, other elements reinforce the Commission’s monitoring of action implementation:

- (a) the utilisation of expertise available within the Joint Research Centre to assist DG INTPA in the technical follow-up of ongoing actions and assessment of results;
- (b) the implementation of “results oriented monitoring” (ROM) in selected actions, where the Commission hires external contractors to review ongoing interventions, including on-the-spot missions.

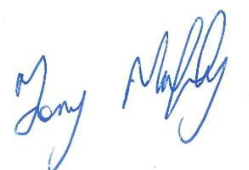
**56** However, when reviewing the practical implementation of these monitoring procedures, we noted that the logical matrix was used in 9 out of 14 contracts we sampled. In seven of these nine instances, the matrix focused on outputs (the delivery of the planned activities), not on outcomes (the effects of those activities). In addition, we noted the absence of contractual requirements to actually use funded outputs (paragraph 49). These factors reduce the framework’s effectiveness in helping to determine whether and to what extent the action actually contributed to a higher level of nuclear safety in a given facility or country. In the ROM reports we reviewed, the Commission’s contractors corroborate this assessment. At the same time, these contractors mitigate this lack of focus on outcomes to

some extent, by providing a deeper analysis of the results achieved by the concrete action they reviewed. However, ROM is not systematically used across all INSC-funded actions: in our sample, only five out of 14 contracts underwent such review. The Commission therefore lacks a system to comprehensively monitor the outcomes of its support, at action, facility, national or regional level, and to use that information to strengthen its decision-making in the design of future actions and in the assessment of their urgency.

**57** Despite the absence of such a comprehensive assessment, we nevertheless noted the achievement of tangible results related to nuclear safety in the sampled INSC-funded activities that had been completed, as indicated in implementation reports. The results are varied in nature but include the reduction of radioactivity at Chernobyl and in uranium legacy sites in Central Asia where works were completed. They also include, in Armenia, the implementation of stress-test recommendations and the reduction of the risk of radioactive releases to the environment in case of nuclear accidents, together with the extension of the power plant's licence to operate until 2031.

This report was adopted by Chamber III, headed by Ms Bettina Jakobsen, Member of the Court of Auditors, in Luxembourg at its meeting of 27 January 2026.

*For the Court of Auditors*



Tony Murphy  
*President*

# Annexes

## Annex I – About the audit

### Nuclear safety

- 01** Nuclear safety is defined by the IAEA<sup>1</sup> and the EU<sup>2</sup> as the achievement of proper operating conditions, prevention of accidents and mitigation of their consequences, resulting in the protection of workers, the public and the environment from undue radiation hazards. The fundamental safety objective is to protect people from the harmful effects of ionising radiation. Safety encompasses nuclear installations, radioactive waste and the transport of radioactive material<sup>3</sup>. Although interconnected, nuclear safety differs from nuclear security in that the latter refers to the prevention, detection and response to criminal or intentional unauthorised acts involving nuclear or radioactive material, associated facilities or activities.
- 02** A variety of sectors use nuclear technologies, including agriculture, medicine and space exploration. However, the primary application of nuclear technologies is the generation of electricity and heat. In 2024, nuclear power supplied around 4.8 % of global energy demand that reached nearly 650 exajoules in that year, after having grown consistently over the past decade<sup>4</sup>. As of July 2025, approximately 376 gigawatt-electric (GWe) of total net installed capacity were available through 416 nuclear power reactors across 31 countries. At the same time, there were one hundred nuclear power reactors operating across 12 out of 27 EU member states<sup>5</sup>, with a net installed capacity of about 98 GWe in

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<sup>1</sup> IAEA Nuclear Safety and Security Glossary, pp. 139-140.

<sup>2</sup> Article 3(2) of [Council Directive 2009/71/Euratom](#) establishing a Community framework for the nuclear safety of nuclear installations.

<sup>3</sup> IAEA Nuclear Safety and Security Glossary 2022.

<sup>4</sup> International Energy Agency, "[Global Energy Review 2025](#)".

<sup>5</sup> Belgium, Bulgaria, Czechia, Spain, France, Hungary, the Netherlands, Romania, Slovenia, Slovakia, Finland, and Sweden.

total<sup>6</sup>. About a fifth (23 %) of the electricity produced in the EU in 2023 was generated by nuclear power plants, according to Eurostat, which is more than the double compared to 9 % at global level<sup>7</sup>. In December 2023, a group of 25 countries participating in the 28th United Nations Conference of the Parties (COP) – 12 of which were EU member states – signed a declaration with the aim of tripling nuclear energy capacity by 2050. Six additional countries joined that pledge during COP 29 in 2024, bringing the total to 31.

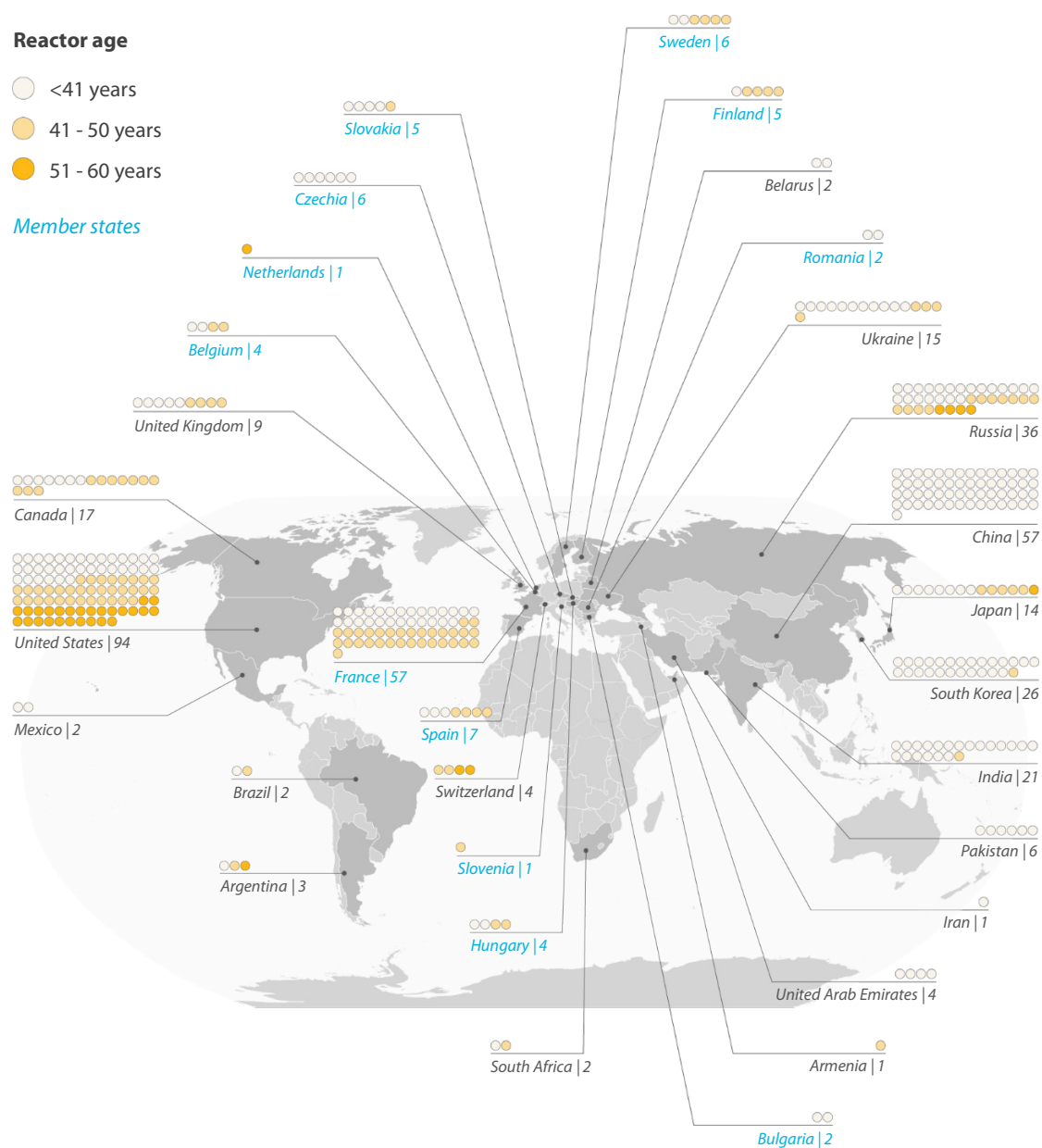
**03** Given the limited number of newly built nuclear reactors in recent years, particularly in Europe and North America, the average age of reactors worldwide has increased over time. A total of 278 reactors comprising two-thirds of the world’s operating fleet were connected to the grid at least 31 years ago. This includes 160 reactors which have been connected for at least 40 years – most of which are located in France, Russia and the United States (see *Figure 1*).

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<sup>6</sup> IAEA Power Reactor Information System (PRIS) database, extracted in July 2025.

<sup>7</sup> International Energy Agency, “Global Energy Review 2025”.

**Figure 1 | Number and age of reactors in operation worldwide**



Source: ECA, based on IAEA reference data series "Nuclear Power Reactors in the World" (December 2023) and IAEA Power Reactor Information System (PRIS) (July 2025).

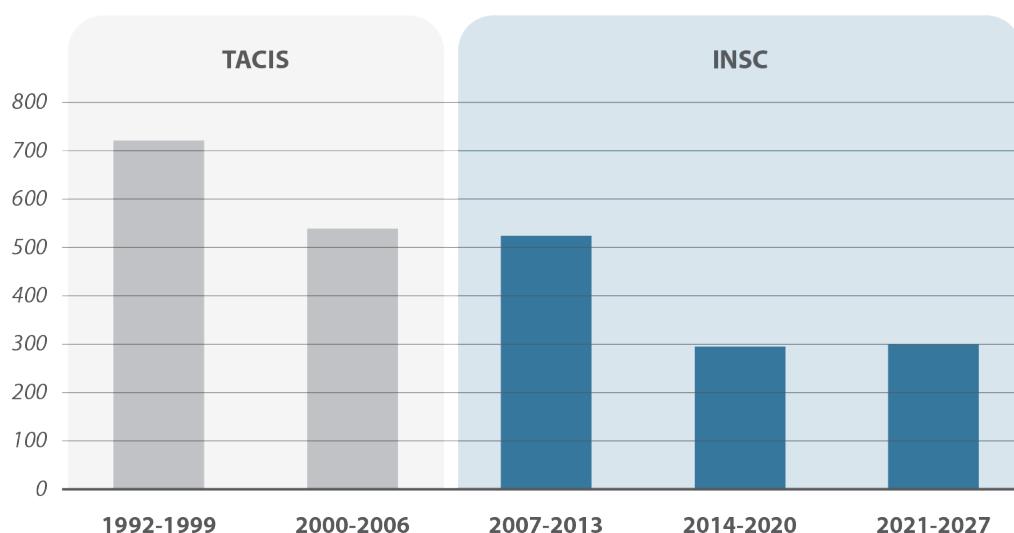
## The EU's international nuclear safety cooperation instruments

**04** EU action in the field of nuclear safety, including international cooperation, is based on the [Euratom Treaty](#). Originally signed in 1957 between Belgium, Germany, France, Italy, Luxembourg and the Netherlands, all other member states of the EU have joined since then, forming the European Atomic Energy Community (Euratom). Euratom shares the same executive bodies and member states with the EU, while, further, the majority of actions based on the Euratom Treaty are funded through the EU budget. Therefore, for the purposes of this report, we use the two terms "EU" and "Euratom" interchangeably.

## An evolving nuclear safety landscape

**05** The nuclear safety landscape has evolved since the beginnings of the EU's cooperation in this field. The 1986 Chernobyl accident and the collapse of the Soviet Union in 1991 raised major concerns about the safety of nuclear facilities operated in the newly independent states. This situation led to the launch of the Technical Assistance to the Commonwealth of Independent States (TACIS) programme with an EU-funded allocation of €1 260 million dedicated to nuclear safety during the 1992-2006 period, some €84 million per year. During this period, the safety situation in the TACIS geographical area saw a gradual improvement – most notably the permanent shutdown of Chernobyl-like reactors from the Soviet era in Lithuania and Ukraine, and programmes to significantly upgrade other models. This allowed the Commission to gradually reduce the size of the successor cooperation programmes down to €300 million in 2021-2027 (to approximately €43 million per year), while expanding the geographical scope, which is now worldwide. [Figure 2](#) provides an overview of EU support to international nuclear safety in the form of grants.

**Figure 2 | Evolution of EU grants for international nuclear safety cooperation under the TACIS and the INSC (in million euros)**



*Note:* For the 2014-2020 period, the initial endowment of the INSC (€225 million) was supplemented with an additional €70 million to fund a contribution to the Chernobyl Shelter Fund ([Box 2](#)).

*Source:* European Commission.

**06** More recent developments, such as the Fukushima accident in 2011 and Russia's war of aggression against Ukraine since 2022, have highlighted new risks and, together with the emergence of new technologies such as small modular reactors, further reshaped the nuclear safety landscape.

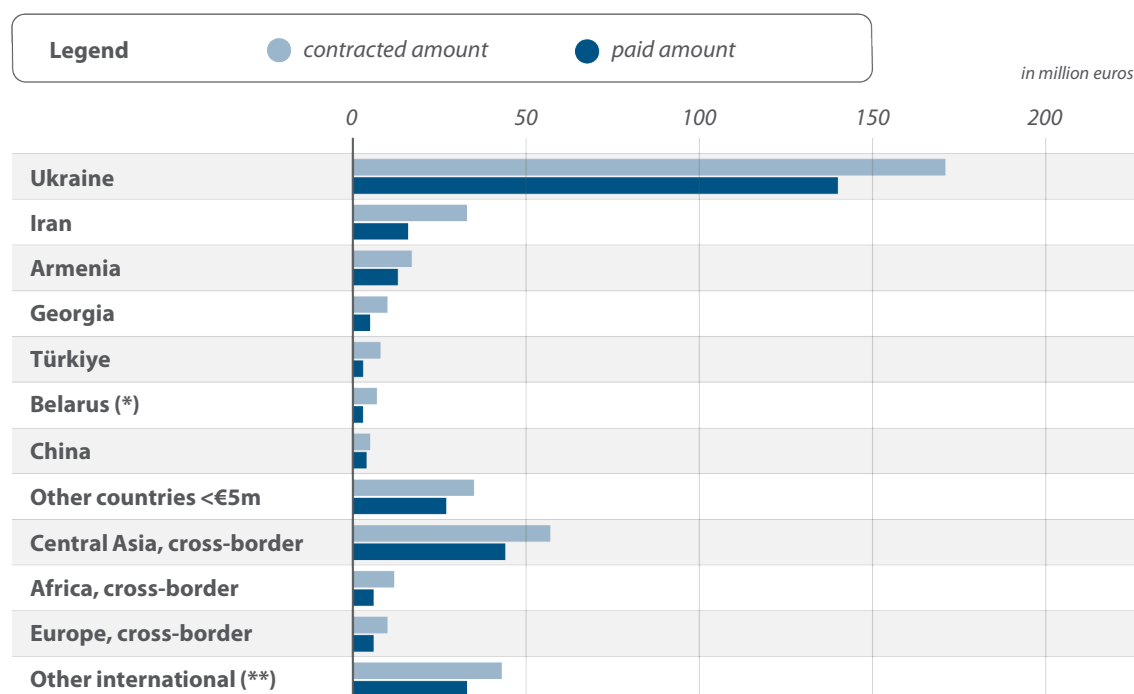
## The current funding instruments for international nuclear safety cooperation

- 07** Council Regulation (Euratom) 2021/948 established the European Instrument for International Nuclear Safety Cooperation, endowed with €300 million to cover the 2021-2027 period. It follows the prior 2014-2020 INSC and retained the same objectives:
- the promotion of an effective nuclear safety and radiation protection culture, implementation of the highest nuclear safety and radiation protection standards, and continuous improvement of nuclear safety;
  - responsible and safe management of spent fuel and radioactive waste and the decommissioning and remediation of former nuclear sites and installations;
  - the establishment of efficient and effective safeguards for nuclear material in non-EU countries.
- 08** Although EU-funded support is often provided via contractors, the ultimate beneficiaries of cooperation are regulatory authorities in the partner countries, national agencies in charge of managing radioactive waste, or stakeholders of a [system of accounting and control of nuclear material](#). Nuclear power plant operators can also be beneficiaries of EU-funded cooperation, however only in the exceptional cases described in the INSC Regulation<sup>8</sup>.
- 09** The geographical scope of the INSC is global. However, it considers [candidate countries for EU accession](#) and countries covered by the [European Neighbourhood Policy](#) as priorities. Ukraine has been its main focus, benefiting from some €170 million or 42 % of all contracted amounts during the 2014-2024 period (see [Figure 3](#)).

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<sup>8</sup> Paragraph 1(b) of the Annex to 2014 INSC Regulation; Article 13 of 2021 INSC Regulation.

**Figure 3 | 2014-2024 INSC contracted and paid amounts per location (in million euros)**



Note: (\*) Cooperation with Belarus via the INSC terminated following Russia's invasion of Ukraine in 2022; (\*\*) "Other international" refers to contracts covering nuclear safety actions without a specific geographical scope.

Source: ECA, based on contract data provided by the Commission in July 2025.

- 10** In addition, on the basis of a [1977 Council Decision](#) empowering the Commission to issue Euratom loans for the purpose of contributing to the financing of nuclear power plants, a loan facility was agreed in 2013 between Euratom and Energoatom, a state-owned company responsible for operating nuclear power plants in Ukraine. Between 2017 and 2021 the Commission disbursed, on behalf of Euratom, a total of €300 million to the borrower with the purpose of improving the safety of its plants. The reimbursement of this loan is due to start in 2027. The provisioning of this loan is funded from the INSC.

## Roles and responsibilities

- 11** Different EU and Commission services contribute to international nuclear safety cooperation. The most prominent role is that of DG INTPA, which leads the annual planning and daily management of the INSC – in coordination with the Directorate-General for Enlargement and Eastern Neighbourhood and the Directorate-General for Middle East, North Africa and Gulf for actions in these geographical areas and with the technical support of the Joint Research Centre. The multiannual indicative programme of the INSC is led by the European External Action Service (EEAS), supported by the Commission, in

consultation with partner countries or regions as well as representatives of the [European Nuclear Safety Regulators Group](#) (ENSREG). Both the multiannual indicative programme and the annual action plans are subject to [examination](#) by representatives of member states through the INSC committee. Implementation of the INSC may be managed directly by DG INTPA, or indirectly by implementing partners entrusted with this role through contribution agreements (e.g. the [EBRD](#), the [IAEA](#) and the [Science and Technology Center in Ukraine](#)), for the implementation of specific actions.

- 12** Beyond the INSC, the Euratom loan to Ukraine was originally set up and implemented by the Commission's Directorate-General for Economic and Financial Affairs. However, a Commission decision of 2020<sup>9</sup> empowered its Directorate-General for Budget to be the lead service responsible for the borrowing and lending operations carried out on behalf of Euratom and hence the oversight of that loan.
- 13** While not having a leading role in managing the EU's funding instruments for international nuclear safety cooperation, the Commission's Directorate-General for Energy (DG ENER) coordinates the implementation of the Euratom Treaty, supports DG INTPA's annual planning of the INSC and engages in bilateral agreements with partner countries. Among other things, these agreements cover voluntary stress-tests in nuclear power plants – facilitated by DG ENER, implemented with the support of ENSREG, and eligible for financing from the INSC.

## Audit scope and approach

- 14** Nuclear energy is high on the public and political agenda – either because it offers a low-carbon solution to increasing global energy demand, or because of safety concerns triggered by past accidents and, more recently, by Russia's war of aggression against Ukraine. The [Council recently reiterated](#) the need to continue to support the “highest nuclear safety, environmental and transparency standards, regionally, in the immediate vicinity of EU borders, and globally”.
- 15** The ECA has conducted important audit work in the nuclear field in the past, focusing on [nuclear safety](#) and on the [decommissioning of reactors](#) in EU member states. In this audit, we further examined whether the Commission has been effective in enhancing nuclear safety in non-EU countries. More specifically, we assessed whether:

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<sup>9</sup> [C\(2020\) 796](#).

- (a) the Commission, together with the EEAS, designed and established a comprehensive strategic framework for the EU's international cooperation in the field of nuclear safety;
- (b) the Commission properly justified the allocation of EU financial support to INSC actions and the disbursement of the Euratom loan;
- (c) EU-funded nuclear safety actions delivered outputs on time and within budget, as well as tangible and sustainable results;
- (d) the Commission set up a robust monitoring system to track the implementation of the INSC actions and their impact.

**16** The audit covered INSC expenditure contracted during the 2014-2020 and 2021-2024 periods, from which we selected a sample of 14 contracts based on their materiality, aiming also to capture different management modes, action scope (relating to the provision of expertise and the supply of safety-related equipment, infrastructure and remediation works), implementation status and geographical areas. The list of sampled contracts covering actions in Armenia, Central Asia, Iran, and Ukraine is presented in [Annex II](#). The audit also covered the only Euratom loan currently outstanding, to Ukraine (see paragraph [10](#)). The audit did not cover EU expenditure addressing primarily nuclear security, since criminal or intentional acts entail a separate range of risks, control frameworks and separate EU funding instruments.

**17** We analysed Commission and EEAS documents relating to the setting-up of the INSC and the establishment of the Euratom loan facility, as well as documentation of the sampled contracts. We interviewed Commission and EEAS staff involved in programming and managing the INSC and the Euratom loan facility, as well as a selection of implementing partners, national authorities, and beneficiaries. We performed desk reviews of documentation for all sampled contracts, complemented with on-the-spot visits to partner countries where INSC support addressed physical works: Armenia and Uzbekistan. Due to the continuation of Russia's war of aggression against Ukraine, we replaced our planned visit to actions located in Ukraine with videoconferences with key stakeholders.

**18** Our [audit methodology](#) complies with the international standards on auditing issued by the [International Organization of Supreme Audit Institutions \(INTOSAI\)](#).

## Annex II – List of contracts sampled

	Contract type	Nature of main activity	Location	MFF	Initial contracted amount	Contracted amount end 2024	
1	Delegation agreement	Infrastructure works	Ukraine	2014-2020	30.0	70.0	
2	Delegation agreement	Infrastructure works	Ukraine	2014-2020	19.1	19.1	
3	Delegation agreement	Remediation works	Central Asia: Kyrgyzstan, Tajikistan, Uzbekistan	2014-2020	16.5	37.0	
4	Contribution agreement	Remediation works	Central Asia: Kyrgyzstan, Tajikistan, Uzbekistan	2021-2027	10.3	10.3	
5	Contribution agreement	Remediation works	Central Asia: Kyrgyzstan, Tajikistan, Uzbekistan	2014-2020	3.0	3.0	
6	Contribution agreement	Equipment and monitoring	Ukraine	2021-2027	3.4	3.4	
7	Contribution agreement	Equipment	Iran	2014-2020	5.0	5.0	
8	Supply contract	Equipment	Iran	2014-2020	6.6	6.6	
9	Service contract	Consultancy services	Iran	2014-2020	3.9	3.9	
10	Service contract	Consultancy services	Armenia	2014-2020	4.0	4.0	
11	Service contract	Consultancy services	Armenia	2014-2020	2.2	2.2	
12	Service contract	Consultancy services	Armenia	2021-2027	2.0	2.0	
13	Service contract	Consultancy services	Armenia	2014-2020	1.2	1.8	
14	Delegation agreement	Remediation works	Ukraine	2014-2020	3.5	3.5	

Source: ECA, based on INSC contract data provided by the Commission, extracted on 10 July 2025.

# Abbreviations

Abbreviation	Definition/Explanation
<b>COP</b>	United Nations Conference of the Parties
<b>DG ECHO</b>	Directorate-General for European Civil Protection and Humanitarian Aid Operations
<b>DG ENEST</b>	Directorate-General for Enlargement and the Eastern Neighbourhood
<b>DG INTPA</b>	Directorate-General for International Partnerships
<b>DG MENA</b>	Directorate-General for the Middle East, North Africa and the Gulf
<b>DG RTD</b>	Directorate-General Research and Innovation
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>EEAS</b>	European External Action Service
<b>ENSREG</b>	European Nuclear Safety Regulators Group
<b>ERA</b>	Environmental Remediation Account for Central Asia
<b>IAEA</b>	International Atomic Energy Agency
<b>INSC</b>	Instrument for Nuclear Safety Cooperation (as established by Council Regulation (Euratom) 237/2014 or Council Regulation (Euratom) 2021/948, as applicable)
<b>JCPoA</b>	Joint Comprehensive Plan of Action
<b>ROM</b>	Results Oriented Monitoring
<b>TACIS</b>	Technical Assistance to the Commonwealth of Independent States

# Glossary

Term	Definition/Explanation
<b>Beneficiary</b>	Natural or legal person receiving a grant or loan from the EU budget for implementing a project or programme.
<b>Contribution agreement</b>	Agreement between the Commission and an organisation implementing action under indirect management that has demonstrated an ability to manage funds to the same level as the Commission.
<b>Default</b>	Failure to meet an obligation, such as to repay a loan in accordance with contractual conditions.
<b>Effectiveness</b>	Extent to which the objectives pursued are achieved through the activities undertaken.
<b>Efficiency</b>	Best relationship between the resources employed, the activities undertaken and the achievement of objectives.
<b>Environmental Remediation Account for Central Asia</b>	Multi-donor fund managed by the European Bank for Reconstruction and Development for addressing environmental and health risks posed by residual toxic and radioactive waste from Soviet-era uranium mines in Central Asia.
<b>European External Action Service</b>	The EU's diplomatic service, responsible for foreign and security policy.
<b>Feasibility study</b>	Assessment of whether a suggested method, plan or piece of work is possible or reasonable.
<b>Fee-based contracts</b>	Contractual arrangements in which services are paid on the basis of time actually worked.
<b>G7</b>	The Group of Seven (G7) is an informal grouping of seven countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) and the EU. Its members meet annually at the G7 summit to discuss global economic and geopolitical issues.
<b>Grant</b>	EU budget support for the costs actually incurred by a beneficiary for an eligible project or programme, usually not repayable.
<b>Impact</b>	Wider long-term consequences of a completed project or programme, such as socio-economic benefits for the population as a whole.
<b>Indicator</b>	Information used to measure or assess an aspect of performance.
<b>Indirect management</b>	Method of implementing the EU budget whereby the Commission entrusts implementation tasks to other entities (such as non-EU countries and international organisations)
<b>Milestone</b>	Intermediate target on the way to a specific objective, to be achieved by a predetermined date.

<b>Monitoring</b>	Systematically observing and checking progress, partly by means of indicators, towards the achievement of an objective.
<b>Outcome</b>	Immediate or longer-term, intended or unintended, change brought about by a project, such as the benefits resulting from a better-trained workforce.
<b>Output</b>	Something produced or achieved by a project, such as delivery of a training course or construction of a road.
<b>Performance</b>	Measure of how well an EU-funded action, project or programme has met its objectives and provides value for money.
<b>Programme</b>	Means by which specific EU policy objectives are delivered, generally through co-financed projects.
<b>Remediation</b>	Any measures that may be carried out to reduce the radiation exposure due to existing contamination of land areas through actions applied to the contamination itself (the source) or to the exposure pathways to humans.
<b>Result</b>	Immediate effect of a project or programme upon its completion, such as the improved employability of course participants or improved accessibility following the construction of a new road.
<b>Small modular reactor</b>	Small modular reactors (SMRs) are advanced nuclear reactors that have a power capacity of up to 300 megawatt electric per unit, which is about one-third of the generating capacity of traditional nuclear power reactors.
<b>Sound financial management</b>	Management of resources in accordance with the principles of economy, efficiency and effectiveness.
<b>Sustainability</b>	Capacity of EU funding to continue producing effects after it ends.

# Replies of the Commission and the European External Action Service

<https://www.eca.europa.eu/en/publications/SR-2026-08>

## Timeline

<https://www.eca.europa.eu/en/publications/SR-2026-08>

## Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber III – External action, security and justice, headed by ECA Member Bettina Jakobsen. The audit was led by ECA Member Marek Opioła, with support of his private office and the audit team. Linguistic and graphical support was provided by other ECA departments.

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European Court of Auditors, [special report 08/2026](#) “International nuclear safety cooperation – The Commission remains an important global player but lacks a comprehensive strategy and robust monitoring”, Publications Office of the European Union, 2026.

We examined whether the Commission, together with the European External Action Service, has been effective in enhancing nuclear safety in non-EU countries. Overall, we conclude that the Commission remains an important player in international nuclear safety cooperation, having helped deliver a wide range of actions, some of which are large and complex. However, these achievements often came later and sometimes at a higher cost than initially planned. For some, long-term sustainability remains a significant challenge. The Commission's effectiveness is also hampered by the lack of a comprehensive and up-to-date strategy, robust prioritisation of proposals, and shortcomings in the monitoring of the financed actions. We put forward recommendations to address these areas.

*ECA special report pursuant to Article 287(4), second subparagraph, TFEU.*



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