Action Document for Nuclear Waste Management

| 1. Title/basic act/ CRIS number | Safe management of spent fuel and radioactive wastes  
CRIS number: 2018/040-964 and 2018/040-965  
Financed under the Instrument for Nuclear Safety Cooperation |
| 2. Zone benefiting from the action/location | Eastern Neighbourhood: Ukraine, Central Asia: Kyrgyzstan, Tajikistan and Uzbekistan, Western Balkans: Bosnia and Herzegovina, Serbia |
| 4. Sector of concentration/thematic area | Nuclear Safety  
DEV. Aid: YES |
| 5. Amounts concerned | Total estimated cost: EUR 12 628 700  
Total amount of EU budget contribution EUR 11 500 000 |
| 6. Aid modality(ies) and implementation modality(ies) | Project Modality  
Direct management procurement of services and supply  
Component B: Indirect management with the International Science and Technology Centre  
Component C: Indirect management with the United Nations Development Programme (UNDP)  
Component D: Indirect management with the International Atomic Energy Agency |
| 7 a) DAC code(s) | Main DAC code - 23510 |
| b) Main Delivery Channel | 10000 – Public Sector Institutions |
| 8. Markers (from CRIS DAC form) | General policy objective | Not targeted | Significant objective | Main objective |
| Participation development/good governance | ☐ | X | ☐ |
| Aid to environment | ☐ | ☐ | X |
| Gender equality (including Women In Development) | X | ☐ | ☐ |
| Trade Development | X | ☐ | ☐ |
| Reproductive, Maternal, New born and child health | ☐ | X | ☐ |
| RIO Convention markers | Not targeted | Significant objective | Main objective |
| Biological diversity | X | ☐ | ☐ |
| Combat desertification | X | ☐ | ☐ |
| Climate change mitigation | X | ☐ | ☐ |
| Climate change adaptation | X | ☐ | ☐ |
SUMMARY
In accordance with the Multi Annual Indicative Programme 2018–20\(^1\), the overall objective of the action is to provide support in the safe management of radioactive wastes and spent nuclear fuel as well as in environmental remediation of former nuclear sites, which contributes to climate change adaptation.

1 CONTEXT

1.1 Sector/Country/Regional context/Thematic area

Legacy of former uranium processing facilities and former nuclear sites in Central Asia, the Balkans and Ukraine, as well as the safe management and storage of spent nuclear fuel from the Chernobyl nuclear power plant, are both nuclear safety issues with high priority to prevent and remediate situations that affect the health of local population and their environment.

Component A: Ukraine

With the support of the European Union (EU) and other international donors, Ukraine continues its efforts to deal with the consequences of the 1986 Chernobyl disaster. The severity, complexity and geographical extent of the hazards are such, however, that it will take many decades to complete this work and to put the resulting radioactive wastes into a permanently safe condition.

Within Ukraine, work of this kind is mostly budgeted via the 2008 National Targeted Environmental Programme on Radioactive Waste Management (here, the State Programme) which is implemented by the State Agency of Ukraine for the Management of the Exclusion Zone (SAUMEZ). Management of the budgeted funds currently rests with the Ministry of Finance, which has other priorities - not least the crisis in the east of the country. Consequently, SAUMEZ does not always have access to the funding it needs and the State Programme proceeds more slowly than intended. This has led to an extension of the State Programme into 2018.

It is expected that a replacement State Programme will be published in 2018 and that it will be designed to comply with the EU Council Directive 2011/70/Euratom\(^2\) for the responsible and safe management of Spent Fuel and Radioactive Waste. Significantly, Parliament has agreed that, for the new State Programme, SAUMEZ responsibility will be widened to cover both technical and financial matters. This should allow SAUMEZ to direct the State Programme more effectively and anticipates future governmental reforms.

An important component of the 2018 Action Programme will aim to support SAUMEZ in upgrading its capabilities so that this new State Programme can be realized in accordance with international best practice. A second component concerns the replacement of obsolete equipment for dosimetric monitoring of personnel within the whole Chernobyl Exclusion Zone (ChEZ) and environmental monitoring in and around two nuclear facilities there.

Component B and C below are part of the international efforts to address the issue of environmental remediation of uranium legacy sites in Central Asia. The International Atomic En-

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\(^1\) C(2017) 7254 of 06.11.2017
\(^2\) OJ L 199/48, 19.07.2011
nergy Agency which is coordinating the different programmes (the concerned countries, the Commonwealth of Independent States and the EU) has published a Strategic Master Plan (SMP) which describes the overall programme for a sustainable solution. Waste components B "Water monitoring system in Central Asia" and C "Local engagement in Central Asia" are both regional initiatives while the Strategic Master Plan (SMP) priority list is based on individual national sites. Nevertheless, the SMP is throughout the text underlining the importance of enhancing the efforts into "water monitoring" and "stakeholder engagement" as these components are full parts of best international practices when implementing remediation programs.

Component B: Water monitoring system in Central Asia

Uranium mining and processing activities performed during the Soviet Union era in Central Asia have left an extensive legacy of radiological and toxic waste. A considerable amount of uranium ore was also imported to Central Asia for processing from East European Countries such as East Germany, the Czech Republic, Bulgaria and Romania increasing the volumes of tailings in the region.

Overall, about 1 billion tonnes of waste generated from uranium ore mining and processing activities is presently stored in tailings sites and in waste dumps, which are currently closed to operations, as well as in shutdown mines in Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan and Uzbekistan. The waste containment structures, where they exist, are often inadequate and frequently damaged, and are unstable in the local geological and geotechnical environment.

Tajikistan and Kyrgyzstan have inherited together with Uzbekistan the majority of uranium legacy sites. The first two countries especially, do not have the technical capabilities and economic means to ensure the safe management and develop national strategies for environmental remediation of these sites.

Many of the uranium legacy sites are located adjacent to river basins and in particular to tributaries of the Syr Darya River, whose water is essential to the development of the fertile Ferghana Valley and of the region in general. Uzbekistan, located downstream the Syr Darya River, depends on the quality and quantity of the water it receives from the neighbouring countries. Failure of waste containment structures in Kyrgyzstan and Tajikistan would certainly have cross-boundary implications in addition to the risk to the local population.

The monitoring of the river systems and their catchments is, therefore, a priority for the region, as potential incidents in the course of remediation of the legacy sites and emergency situations after flash-floods or landslides may have a severe impact on the use of the water.

Moreover, monitoring of the river waters and of the uranium legacy sites must be supported by adequate analytical capabilities of the laboratories in the region for radiological and chemical analysis that are not always available.

The establishment of a watershed monitoring system and the strengthening of the analytical capacity of the laboratories in the region have also been set among the high priorities in the 2017 IAEA developed "Strategic Master Plan for Environmental Remediation of Uranium Legacy Sites in Central Asia"³ that has been approved by the affected Central Asian States and international organisations involved in environmental remediation in Central Asia.

³ https://nucleus.iaea.org/sites/connect/CGULSpublic/Pages/default.aspx
This proposed action is a follow-up of the INSC project REG4.01/10\textsuperscript{4} completed in November 2017 and aims to support the watershed monitoring system and, in general, the supervision of the uranium legacy sites remediation activities. Two components of the initial project were the design of the regional watershed monitoring system and the establishment of the essential analytical laboratory.

Component B is of high importance as an independent water monitoring system is crucial to continually monitor potential contamination of the waterways located next to legacy sites by the regulatory.

Component C: Local engagement in Central Asia

Several international organisations are currently active in Central Asia including the EU, the IAEA, EBRD and CIS to address issues related to the safe management and remediation of uranium legacy sites. All initiatives are being implemented through the Coordination Group for Uranium Legacy Sites (CGULS) that provides a framework for coordination under the auspices of the IAEA.

While most of the efforts are focused on remediation of uranium legacy sites and on providing technical solutions, public awareness on radioactive risk and citizens’ engagement in radioactive risk reduction remains less addressed.

To address this gap, an initial component on stakeholder engagement for Uranium Legacy Remediation in Central Asia was launched by the EU in the frame of INSC project MC4.02/13\textsuperscript{5} in joint management with UNDP under the Environmental and Security Initiative (ENVSEC). The activity of the project was focused on Tajikistan and Kyrgyzstan.

This project is ending in first quarter 2018 and it has achieved significant, albeit initial, results. Sociological surveys were organized to reveal the perception of the local population of the risk from the uranium tailings and stakeholders’ capacity. The research shed light on urgent needs of stakeholders with regards to awareness raising and radiological safety. This allowed the OSCE-supported Aarhus Centres to organize tailored awareness raising activities and establish Public Environmental Information Centres (PEICs) in the project areas to ensure that stakeholders are informed and involved in the remediation process. Customised capacity development strategies for the national and local stakeholders on the full remediation process, including feasibility studies and environmental impact assessment were also carried out to ensure sustainable stakeholder engagement.

While the initial MC4.02/13\textsuperscript{5} project has made many achievements and created a solid foundation for increased public awareness and engagement in radioactive risk reduction, there is a need to continue and strengthen these efforts to ensure long-term sustainability of the results and support public participation in the remediation programmes. The proposed action for a second phase of the Stakeholder Engagement for Uranium Legacy Remediation in Central Asia project will be based on the achievements and lessons learnt from the first phase.

Component C is of high importance as all practical experiences have shown that it is critical to actively involve and inform the local population that will live next to and witness the remediation activities. Three positive reasons: 1) They are properly informed on an early stage of the planned project activities, eventual risks and annoyances 2) They can report on an early

\textsuperscript{4} C (2010) 8265 of 29.11.2010
\textsuperscript{5} C(2013) 5553 of 30.08.2013
stage any incident / abnormal events to the right authorities so prompt actions can be taken 3) They will have a much stronger ownership of the remediation project which is very important for the long term sustainability.

Component D: Contribution to solid radioactive waste management at the Vinča site

Current situation

The commitment of the Beneficiary is key for the successful completion of the project supported by this component. The Commission has already discussed the issue with the IAEA and the Serbian authorities before programming the corresponding project. Dialogue with Serbia will be pursued in the light of the recent agreement that Serbia signed with Rosatom to cooperate again at the Vinča nuclear site. The Commission will in particular request clarification of the type of activities expected under the agreement and assess the impact on its own activities.

Supported by the European Union (EU) and international donors, Serbia continues its efforts to decommission the Vinča nuclear site (VIND programme). The EU has already successfully engaged with the Vinča site on a complementary programme dealing with liquid waste. The corresponding project is pending the on-going signature of the necessary Financing agreement with Serbia to be contracted.

Fresh and spent nuclear fuel, from the RA research reactor, was repatriated to the Russian Federation in 2002 and 2010 respectively.

The Vinča Institute of Nuclear Sciences served, for many years, as the main radioactive waste management facility in former Yugoslavia, being also a national storage facility for the radioactive waste from institutional activities (research, medical, military, etc.) as well as a centre for research and waste solidification technology development. The main fraction of low and intermediate level waste (LILW) is temporarily stored in two hangars (H1 and H2) commissioned in 1968 and 1982 respectively. The old hangars are not leak tight and the construction is corroded and mechanically damaged. The construction of a new storage hangar (H3) was completed in 2010. A Waste Processing Facility (WPF) exists on the site.

Component E: Support to Regulatory Authority of Bosnia and Herzegovina

The regulatory infrastructure in Bosnia and Herzegovina consists of The State Regulatory Agency for Radiation and Nuclear Safety (SRARNS) established by law in 2007 and technical services authorized by SRARNS for various practices, including two public health institutes with centres for Radiation Protection in Sarajevo and Banja Luka, clinical centres and hospitals, as well as private companies. SRARNS reports directly to the Council of Ministers and is staffed with 17 persons of which only 10 have a technical background. Consequently, SRARNS lacks experienced staff and expertise to perform its mission adequately.

Presently there are two centralised Radioactive Waste (RAW) storage facilities, one in each entity. A central RAW storage facility is situated in Rakovica near Sarajevo and is operated by the Radiation protection centre of the Public Health Institute of FBIH (PHI FBIH). The PHI FBIH employs a number of people with knowledge and experience, as well as some equipment for RAW management. The second central storage facility is in Banja Luka and was operated by the Cajavec Company. After the bankruptcy of the Cajavec company all radioactive sources were left in the storage room. Currently this room is under supervision of the Institute for Metrology that operates an SSDL laboratory on the same premises. The Institute for Metrology neither owns the sources nor has a responsibility for them. A majority of the other RAW storage facilities, mainly at industrial sites, are in bad conditions and disused radioactive sources are stored in their original containers. None of the existing storage facili-
ties in Bosnia and Herzegovina are licensed by SRARNS, nor are they accepting new sources. The only exception is the Rakovica storage facility which accepts new sources, in case of emergency, with special approval from SRARNS. For the moment Bosnia and Herzegovina has neither an action plan nor funding for implementing its RAW strategy.

1.1.1 Public Policy Assessment and EU Policy Framework

The Instrument for Nuclear Safety Cooperation (INSC)\(^6\) participates to the double objective of safety and safeguards, which is anchored in the EU’s development and aid effectiveness commitments, and the implementation of the 2030 Agenda. It also contributes to President Juncker’s priority 9 (EU as a stronger global actor) responding to fast evolving challenges and threats although in a much specialised policy area. It is also aligned with the Sustainable Development Goals 6 & 15 (clean water & halt and reserve land degradation), 16 (Strong Institutions) and to a lesser extend 5 (Gender equality).

1.1.2 Stakeholder analysis

Component A: Ukraine

The widening of SAUMEZ’s responsibilities with respect to the State Programme make this an appropriate time to provide support to SAUMEZ so that it can implement the new State Programme in line with international best practice and Council Directive 2011/70/Euratom.

The second part of the component entails the specification and replacement (to the extent possible) of obsolete systems for dosimetric monitoring of personnel in the ChEZ and environmental (radiation) monitoring at two specific nuclear facilities there so that work ongoing within the ChEZ can be implemented safely.

Component B: Water monitoring system in Central Asia

The project will be implemented in four different countries: Kyrgyzstan, Tajikistan, Uzbekistan and Mongolia. The action is oriented to the national laboratories, local administrations and authorities responsible for health, environment and management of uranium legacy sites. Responsibilities fall under a number of different organisations in the different countries.

Component C: Local engagement in Central Asia

The main stakeholders of the project are the people living in areas with uranium legacy sites, local authorities and the governments of Kyrgyzstan, Tajikistan and Uzbekistan. The project will build on the solid stakeholder network that UNDP within the ENVSEC framework have successfully established under the initial MC4.02/13 project.

Component D: Contribution to solid radioactive waste management at the Vinča site.

The Public Company Nuclear Facilities of Serbia (PC-NFS) is responsible for managing the legacy nuclear waste at the Vinča site. This action will strengthen the management of legacy radioactive waste on the Vinča site.

Component E: Support to Regulatory Authority of Bosnia and Herzegovina

The State Regulatory Agency for Radiation and Nuclear Safety (SRARNS) is responsible for the licensing of RAW management facilities in Bosnia and Herzegovina. Presently none of the existing RAW storage facilities in Bosnia and Herzegovina are licensed by SRARNS.

\(^6\) OJ L 77, 15.3.2014, p. 109
This action will strengthen the regulatory Authority of Bosnia and Herzegovina by transferring best EU practices for the licensing process of radioactive waste management facilities.

1.1.3 Priority areas for support/problem analysis

The environmental remediation projects in Central Asia and Ukraine are contributing to the Climate Change Adaptation in the concerned regions. Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. As an example, the environmental remediation program in CA is all about Climate Change Adaptation. The EU is preventing serious ecological and environmental risks (disaster) by remediating fragile and unsecure tailings sites located next to the rivers. These rivers are more and more frequently experiencing spring flash floods due to rapidly melting glaciers in Central Asia. Climate change will generate increased natural hazards (as e.g. rain fall, landslides, mudflow, etc.) that will in turn disperse toxic materials if not properly remediated.

Component A: Ukraine

Support to SAUMEZ is a priority in order to allow it has solid capabilities to efficiently direct the replacement State Programme designed to comply with the EU Council Directive 2011/70/Euratom for the responsible and safe management of Spent Fuel and Radioactive Waste. The first part of the action is focused on supporting SAUMEZ in establishing a sustainable Programme Management Infrastructure (PMI), based on international best practice. It is believed that an appropriate PMI will efficiently support the SAUMEZ in delegating and outsourcing its activities as a body of state administration in the field of radioactive waste management.

The second part is focused on improving dosimetric and environmental monitoring practices and equipment within the ChEZ. The continuous measurement and control of radiation exposure to workers in the ChEZ is fundamental to ensure the safety of personnel. The currently used dosimetric equipment is obsolete and needs to be replaced. Two important components of the radioactive waste management infrastructure within the ChEZ are the “Vektor” complex and “Buriakivka” disposal facility. According to the Ukrainian regulations in force, the environment within and around these facilities must be monitored for radiation. The currently used monitoring equipment is obsolete and inadequate and needs to be replaced.

Component B: Water monitoring system in Central Asia

The establishment of a regional watershed monitoring system is set among the priorities to support the safe and secure remediation of the uranium legacy sites in Central Asia in the "Strategic Master Plan on Environmental Remediation of Uranium Legacy Sites in Central Asia" developed by experts of the IAEA’s Coordination Group for Uranium Legacy Sites (CGULS) and approved by the governments of the Central Asian countries. This document sets the priorities and cost estimates for the reduction of the risks caused by the abandoned uranium legacy sites in Central Asia. The continuous monitoring of the water quality of the river systems in Central Asia is fundamental to minimise the risks triggered from emergency situations caused by, for example, flash-floods, landslides, or incidents in the course of site remediation activities in areas where toxic wastes resulting from past uranium extraction and processing are located. A potential failure of uranium tailings containment would not only have a severe environmental impact on important national water sources and on the population relying on these sources, but can

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7 A summary of which can be found at https://www.iaea.org/sites/default/files/strategic-master-plan.pdf
potentially have unpredictable political cross-boundary implications in the region. A correct monitoring of river waters and uranium legacy sites cannot be achieved without adequate analytical capabilities to be available and this is also covered by the action.

**Component C: Local engagement in Central Asia**
The successful implementation of the EU action for environmental remediation of uranium legacy sites in Central Asia will depend on the buy-in of the concerned population. The involvement and outreach to local authorities and people in the targeted regions and sites is therefore a must. This outreach has already started under previous initial programme with a proven efficiency. As the remediation programme is in its crucial phase with the international donors’ conference planned in the fall 2018, the continuation of the engagement with the population is of utmost importance for the support to the implementation of the interventions set out in the Strategic Master Plan on Environmental Remediation of Uranium Legacy Sites in Central Asia.

**Component D: Contribution to solid radioactive waste management at the Vinča site**
Low and Intermediate Level Radioactive waste (LILW), at the Vinča site, are stored in two hangars (H1 and H2) commissioned in 1968 and 1982 respectively. The hangars are not leak-tight or isolated from the environment. The construction is corroded and in some places mechanically damaged. The hangars are situated close to a small stream and there is an immediate risk of radioactive leakage to the groundwater. The decommissioning of hangars H1 and H2 including the classification and storage of the LILW in the new hangar H3 are of utmost importance due to the risk of radioactive leakage to the environment.

**Component E: Support to Regulatory Authority of Bosnia and Herzegovina**
Presently there are two centralised RAW storage facilities, one in each entity. A central RAW storage facility is located in Rakovica near Sarajevo. None of the storage facilities in Bosnia and Herzegovina are licensed by the Regulatory Authority (SRARNS). The licensing of the storage facilities is of high priority for safety and security reasons. The Regulatory Authority lacks experienced staff and expertise to perform its mission adequately. The Regulatory Authority needs support in order to adequately license the existing RAW storage facilities.

## 2 Risks and Assumptions

<table>
<thead>
<tr>
<th>Risks</th>
<th>Risk level (H/M/L)</th>
<th>Mitigating measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of ownership by the relevant Authorities</td>
<td>M to H</td>
<td>Urgent discussions/communications with all relevant authorities, at the highest level, not only the direct beneficiaries, in coordination with Commission services.</td>
</tr>
<tr>
<td>The failed licensing of H3 in Vinča would prevent successful implementation of component D</td>
<td>H</td>
<td>Close coordination with Serb authorities and IAEA and implementation will only start when licensing is sufficiently progressed</td>
</tr>
</tbody>
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**Assumptions**
- Good communication and support from the all stakeholders, authorities, beneficiary and end-users.
- The waste storage facilities in Bosnia Herzegovina are licensable
- Independent expert support, e.g. by JRC will be available to further define measurable indicators during implementation
3 LESSONS LEARNT, COMPLEMENTARITY AND CROSS-CUTTING ISSUES

3.1 Lessons learnt

Extensive and broad experience has been gained in successfully implementing similar activities in other third countries, both in the framework of the TACIS\(^8\) Nuclear Safety Programme and the Instrument for Nuclear Safety Cooperation (INSC). This experience will be used in optimising the design and implementation of this action.

Communication and support from the beneficiary and end-users will still be a key element for a successful implementation.

3.2 Complementarity, synergy and donor coordination

EU-funded projects in Ukraine have led to several important achievements, not least the creation of the New Safe Confinement (NSC) that now protects the destroyed reactor and its “sarcophagus” from further weather-related deterioration. Once the NSC has been sealed the work of remediation can begin. However, considering the very great hazard posed by the mass of fused nuclear fuel within the sarcophagus and the uniqueness of the situation, this work will take many years to complete.

In addition, much has been done to improve radioactive waste management in the ChEZ generally. Major projects include:

- Industrial Complex for Solid Radioactive Waste Management (final commissioning underway);
- Liquid Radioactive Waste Treatment Plant (early operation);
- Interim Spent Fuel Storage Facility (Stage 1 Commissioning);
- Centralized Long-term Storage Facility for Highly Radioactive Sources at the site of complex “Vektor” (Final Stage of Commissioning; conditional license for operation issued by SNRIU).

Smaller projects have aimed to make incremental improvements so as to facilitate the achievement of larger goals such as

- compiling a more accurate estimates of the large quantity of radioactive waste buried within the ChEZ;
- providing adequate storage and disposal facilities for radioactive waste;
- decommissioning of Units 1 to 3 of the Chernobyl power plant;
- making arrangements for monitoring the safety of the various facilities and responding to alarms;
- improvements to the safety of regional radioactive waste collection and storage centres; etc.

Progress with these projects has not always been as rapid as desired due in part, in recent years, to political preoccupation with the crisis in the east of the country and non-availability of budgeted funds for the State Programme. Given this situation, EU funding has been crucial in maintaining momentum in the programme. Nevertheless, much remains to be done.

In Central Asia, a series of environmental impact assessment and feasibility projects have

\(^8\) Technical Assistance to the Commonwealth of Independent States
been implemented to define the best remediation options for each priority site. This initial phase of the EU’s environmental remediation flagship program for uranium legacy sites in Central Asia has been successfully completed. The proposed activities under the present Action are the continuation of the programme based on the outcomes of previous studies, and part of the second phase of the programme that will implement the remediation work activities during the next 10 to 15 years.

The EU has supported (2009-2016) the VIND programme through its Instrument for Pre Accession (IPA). Serbia is part of an ongoing regional IPA project supporting the regulatory authorities in Western Balkan countries. The EU has supported Bosnia and Herzegovina through its Instrument for Pre Accession (IPA) e.g. by supplying a Secondary Standards Dosimetry Laboratory (SSDL) to the Institute for Metrology in Banja Luka. Bosnia and Herzegovina is also a member of the ongoing IPA regional project for support to the regulatory authorities in Western Balkan countries.

3.3 Cross-cutting issues

The project components will contribute to the overall improvement of the living conditions of the population concerned, to environmental sustainability and the risk mitigation of the radiation hazards linked to radioactive wastes. Mismanaged nuclear waste and spent fuel causes undesired and unacceptable risks to the environment. The proper management reduces the current and future health and environmental risks and is therefore linked to aid for the environment.

4 DESCRIPTION OF THE ACTION

4.1 Objectives/results

The overall objective of the Action is to provide support in the safe management of radioactive wastes and spent nuclear fuel as well as in environmental remediation of former nuclear sites.

Component A: Ukraine

Recalling that the Government of Ukraine intends that SAUMEZ should assume budgetary and technical control of the State Programme, the overall objective of the Action is to improve the technical and human capabilities of SAUMEZ so that the State Programme can be realized safely and efficiently. These capabilities include improvements in human and organizational skills and the replacement of outdated dosimetric and environmental (radiation) monitoring equipment in the ChEZ.

Component B: Water monitoring system in Central Asia

The objective will be supported by strengthening the capabilities of Kyrgyzstan, Tajikistan, Uzbekistan and Mongolia in the fields of nuclear and radiation safety. More specifically by providing the regional capacity of water monitoring system related to uranium legacy sites.

Component C: Local engagement in Central Asia

The general long-term objective will be supported by improving the safety of uranium legacy sites in Central Asia through justified remediation actions. This will need involvement of local stakeholders in environmental remediation activities in Central Asia.

Component D: Contribution to solid radioactive waste management at the Vinča site
The safe disposal of the legacy LILW on the Vinča site will contribute to the environmental safety of Serbia and includes the decommissioning of the interim storage hangars H1 and H2.

**Component E: Support to Regulatory Authority of Bosnia and Herzegovina**

The objective is supported by strengthening the capabilities of Bosnia and Herzegovina in the fields of radioactive waste management, nuclear and radiation safety, by ensuring the present RAW storage facilities are licensed or another solution is found.

**4.2 Main Activities**

**Component A: Ukraine**

It is envisaged that the component will consist of two main parts as described below.

*Establishment of an appropriate Programme Management Infrastructure inside the State Agency of Ukraine for the Management of the Exclusion Zone.*

It is assumed that the new State Programme will be adopted in 2018 thus prior the implementation of this component. The European Commission is closely monitoring this issue and in case of any delays the component will follow the Strategic Road Map elaborated with Ukraine which is at the basis of the concept of the new proposal for a State Programme for Radioactive waste management. This project will support SAUMEZ in its adoption of governmental reforms and to implement the State Programme by helping it to embed international best practice with respect to (amongst other things):

- Control of the ChEZ;
- Long-term strategic planning;
- Institutional organization;
- Resource (including financial) management;
- Legislation and regulation;
- Change management.

*Modernisation of the dosimetric control system in the Exclusion Zone and environmental (radiation) monitoring at the “Vektor” Complex and the “Buriakivka” disposal facility.*

A preliminary gap analysis, taking duly into account the contribution of past INSC projects (as e.g. the delivery of a mobile radiation laboratory) will be performed prior the implementation of this component. This project will support the replacement of obsolete systems with new systems for

- dosimetric monitoring of personnel within the ChEZ; and
- monitoring of environmental radiation within and adjacent to two existing radioactive waste management facilities.

The work will include the design of the replacement systems to meet international best practice and, so far as the budget allows, the supply of equipment.
Component B: Water monitoring system in Central Asia
The action is envisaged to consist of the following main components:

- Supply of watershed monitoring stations
- Supply of equipment for analytical laboratories
- Capacity building and training of personnel

The watershed monitoring stations are to be installed in Tajikistan, Kyrgyzstan and Uzbekistan in identified locations downstream of uranium legacy sites. The stations are planned to consist of three types:

- "mini" monitoring stations with basic equipment for the monitoring of essential parameters such as meteorological parameters, earthquake sensors, pH-value, electrical conductivity, water temperature, oxygen, turbidity and water level and will include an automated sampler;
- "maxi" stations with an extended set of equipment for the monitoring of chemical, physical and radiological parameters and will also include an automated sampler;
- mobile monitoring sets to be used for calibration, comparison of results and also to obtain quick results during alarm situations.

The supply will include site preparation, installation and commissioning of the stations as well as capacity building and training of personnel.

The laboratory equipment will consist of devices for radiological and chemical analysis, essential to improving the capacity of the countries for the purpose of adequately monitoring the uranium legacy sites and enhancing surveillance of the environment. The supply will include the set-up of equipment in the laboratories and the training of personnel.

Component C: Local engagement in Central Asia
The Action forms a follow-up phase of the activities performed and achievements obtained in the initial INSC project MC4.02/13, and it will strengthen the efforts to support public participation and ensure long-term sustainability of the environmental remediation program. The action is regional and is planned to be implemented in Kyrgyzstan, Tajikistan and Uzbekistan.

The main results of the action are among others:

- Increased information on uranium mining waste impacts and on remediation options to the public and to the local decision makers
- Stronger engagement of the population in radioactive waste management and remediation programmes
- Strengthened coordination and knowledge sharing at regional and global level
- Reduced risk of radioactive waste through social-economic measures in the target communities

Component D: Contribution to solid radioactive waste management at the Vinča site
The action forms a follow-up of the activities performed under previous IPA projects and consists of the following two components:

- safe and secure processing and conditioning of radioactive wastes and disused sources;
- decommissioning of old solid radioactive waste storage hangars (H1 and H2).
Component E: Support to Regulatory Authority of Bosnia and Herzegovina

This action consists of the following components:

- The licensing process of radioactive waste storage facility(ies) will be supported by transferring EU best practices and updating the corresponding regulatory framework as necessary to align with the EU Acquis;
- The review of the two options for a new central radioactive waste storage versus an upgrade of the existing central RAW storage including cost estimates for both options;
- The review of the safety case for a central RAW storage facility submitted by the operator to the regulatory authority. A 2 + 2 approach could be proposed to produce a Preliminary Safety Assessment Report (PSAR) building on the existing safety case by the operator and reviewed by the Regulatory Authority;
- Training and capacity building for the Regulatory Authority in radioactive waste management (e.g. licensing and inspection, outreach and communication to the public, site selection criteria etc.); this capacity building will be achieved by the revision of the existing regulatory framework after a gap analysis versus the EU acquis. The identified needs will be addressed by drafting the necessary regulatory documents and providing corresponding training to the concerned SRARNS staff;
- Limited consultancy assistance on specific additional nuclear safety issues; (e.g. radon, fire safety of category I radioactive sources etc.);

4.3 Intervention logic

By creating environmentally safe conditions at the Chernobyl site, the Central Asia legacy sites, and the Vinča site, the risk to unwarranted exposure to radiation of the public and environment will be reduced. Predecessor projects are under implementation and are progressing well; some have reached an advanced stage of completion, which allow the next stage to achieve the long term goals.

For the Vinča activity, the positive assessment of the situation and the assumption that the objectives can most effectively achieved through the continuation of existing funds and projects has led to the choice of supporting the IAEA in the ongoing activity.

5 IMPLEMENTATION

5.1 Financing agreement

In order to implement this action, it is foreseen to conclude a financing agreement with the partner country, referred to in Article 184(2) (b) of the Financial Regulation for the Component A: Ukraine.

In order to implement the other actions proposed, i.e. for components B, C, D and E, it is not foreseen to conclude a financing agreement with the partner countries, referred to in Article 184(2) (b) of Regulation (EU, Euratom) No 966/2012.

5.2 Indicative implementation period

The indicative operational implementation period of this action, during which the activities described in section 4.1 will be carried out and the corresponding contracts and agreements implemented, is 96 months from the entry into force of financing agreement for Component A and from the date of adoption by the Commission of this Action Document for Component B, C, D and E.
Extensions of the implementation period may be agreed by the Commission’s authorising officer responsible by amending this decision and the relevant contracts and agreements; such amendments to this decision constitute technical amendments in the sense of point (i) of Article 2(3)(c) of Regulation (EU) No 236/2014.

5.3 Implementation modalities for an action under project modality

Component A: Ukraine - Direct management – Procurement of Services and Supply

<table>
<thead>
<tr>
<th>Subject in generic terms, if possible</th>
<th>Type (works, supplies, services)</th>
<th>Indicative number of contracts</th>
<th>Indicative trimester of launch of the procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support to the State Agency of Ukraine for the Management of the Exclusion Zone (SAUMEZ)</td>
<td>Services and supplies</td>
<td>2</td>
<td>Q1/2019</td>
</tr>
</tbody>
</table>

Component B: Water monitoring system in Central Asia - Indirect management with an international organisation (ISTC).

This action may be implemented in indirect management with the International Science and Technology Centre (ISTC) in accordance with Article 58(1)(c) of Regulation (EU, Euratom) No 966/2012. This implementation entails the call for tenders to finance the above mentioned activities. This implementation is justified because the ISTC is a competent organisation in charge of the nuclear security activities in the region funded under the Instrument contributing to Stability and Peace. Therefore, ISTC will allow the pooling of resources to address globally the issue of nuclear safety, safeguards and security in the region. ISTC is based in Kazakhstan with local offices in Kyrgyzstan, Tajikistan and Uzbekistan and it has the necessary competences and privileges for project implementation. The ISTC has a strong case record of implementing supply projects in the region.

The entrusted entity would carry out the following budget-implementation tasks: issue of the necessary contracts for the project implementation in the beneficiary countries. All contracts to implement the action will be awarded and implemented in accordance with the procedures and standard documents laid down and published by the ISTC.

The entrusted international organisation is currently undergoing the ex-ante assessment in accordance with Article 61(1) of Regulation (EU, Euratom) No 966/2012. The Commission’s authorising officer responsible deems that, based on the compliance with the ex-ante assessment based on Regulation (EU, Euratom) No 1605/2002 and long-lasting problem-free cooperation, the international organisation can be entrusted with budget-implementation tasks under indirect management.

Component C - Local engagement in Central Asia - Indirect management with an international organisation (UNDP)

This action may be implemented in indirect management with the United Nation Development Programme (UNDP) in accordance with Article 58(1) (c) of Regulation (EU, Euratom) No 966/2012.
This implementation is justified because UNDP and the partner organisations in the ENVSEC\(^9\) interagency consortium have a strong presence and experience in dealing with the local stakeholders in the affected uranium legacy sites in Central Asia. The international organisation together with the ENVSEC consortium partners implemented successfully the INSC initial stakeholder engagement project for the uranium legacy sites in Central Asia (MC4.02/13).

Joint management with this international organisation in accordance with Article 53d of Financial Regulation 1605/2002 is possible because the organisation is bound by a long-term framework agreement (FAFA). The entrusted international organisation has undergone the ex-ante assessment in accordance with Article 61(1) of Regulation (EU, Euratom) No 966/2012. The Commission’s authorising officer responsible deems that, based on the compliance with the ex-ante assessment based on Regulation (EU, Euratom) No 1605/2002 and long-lasting problem-free cooperation, the International organisation can be entrusted with budget-implementation tasks under indirect management.

**Component D: Contribution to solid radioactive waste management at the Vinča site - Indirect management with an international organisation (IAEA)**

This action may be implemented in indirect management with the International Atomic Energy Agency (IAEA) in accordance with Article 58(1) (c) of Regulation (EU, Euratom) No 966/2012.

The entrusted entity would carry out the following budget-implementation tasks: managing all the necessary contracts for the decommissioning of the solid radioactive waste storage hangars H1 and H2 at the Vinča site, through the relevant procurement rules. All contracts to implement the action will be awarded and implemented in accordance with the procedures and standard documents laid down and published by the IAEA.

The entrusted international organisation has undergone the ex-ante assessment in accordance with Article 61(1) of Regulation (EU, Euratom) No 966/2012. The Commission’s authorising officer responsible deems that, based on the compliance with the ex-ante assessment based on Regulation (EU, Euratom) No 1605/2002 and long-lasting problem-free cooperation, the International organisation can be entrusted with budget-implementation tasks under indirect management.

**Component E: Direct management – Procurement of Services**

<table>
<thead>
<tr>
<th>Subject in generic terms, if possible</th>
<th>Type (works, supplies, services)</th>
<th>Indicative number of contracts</th>
<th>Indicative trimester of launch of the procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support to The State Regulatory Agency for Radiation and Nuclear Safety (SRARNS) in Bosnia and Herzegovina</td>
<td>Services</td>
<td>1</td>
<td>Q1/2019</td>
</tr>
</tbody>
</table>

Both in indirect and direct management, the Commission will ensure that the EU appropriate rules and procedures for providing financing to third parties are respected, including review

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\(^9\) ENVSEC is an interagency consortium of international agencies with specialized and complementary mandates and expertise in providing an integrated response to environment and security challenges with particular focus on conflict prevention and peacebuilding. ENVSEC partners are OSCE, UNDP, UNECE, UNEP, REC and NATO.
procedures, where appropriate, and compliance of the action with EU restrictive measures affecting the respective countries of operation.\(^{10}\)

### 5.4 Scope of geographical eligibility for procurement and grants

The geographical eligibility in terms of place of establishment for participating in procurement and grant award procedures and in terms of origin of supplies purchased, as established in the basic act and set out in the relevant contractual documents shall apply.

The Commission’s authorising officer responsible may extend the geographical eligibility in accordance with Article 9(2)(b) of Regulation (EU) No 236/2014 on the basis of urgency or of unavailability of products and services in the markets of the countries concerned, or in other duly substantiated cases where the eligibility rules would make the realisation of this action impossible or exceedingly difficult.

### 5.5 Indicative budget

<table>
<thead>
<tr>
<th>Component</th>
<th>EU contribution (amount in EUR)</th>
<th>Indicative third party contribution, in currency identified (in EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component A – Ukraine</td>
<td>5 700 000</td>
<td>1 128 700</td>
</tr>
<tr>
<td>Component B – Water</td>
<td>3 000 000</td>
<td></td>
</tr>
<tr>
<td>Component C – UNDP</td>
<td>1 000 000</td>
<td></td>
</tr>
<tr>
<td>Component D – IAEA</td>
<td>800 000</td>
<td></td>
</tr>
<tr>
<td>Component E – Bosnia and Herzegovina</td>
<td>1 000 000</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11 500 000</strong></td>
<td></td>
</tr>
</tbody>
</table>

### 5.6 Organisational set-up and responsibilities

Component A: The implementation of this project will be done through a service contract.

Component B: The implementation of this project will be coordinated and led by the ISTC.

Component C: The implementation of this project will be coordinated and led by the UNDP.

Component D: The implementation of this project will be coordinated and led by the IAEA.

Component E: The implementation of this project will be done through a service contract.

### 5.7 Performance monitoring and reporting

The day-to-day technical and financial monitoring of the implementation of this action will be a continuous process and part of the implementing partner’s responsibilities. To this aim, the implementing partner shall establish a permanent internal, technical and financial monitoring system for the action and elaborate regular progress reports (not less than annual) and final reports. Every report shall provide an accurate account of implementation of the action, difficulties encountered, changes introduced, as well as the degree of achievement of its results (outputs and direct outcomes) as measured by corresponding indicators, using as reference the logframe matrix (for project modality). The report shall be laid out in such a way as to allow monitoring of the means envisaged and employed, and of the budget details for the action. The final report, narrative and financial, will cover the entire period of the action implementation.

The Commission may undertake additional project monitoring visits both through its own staff and through independent consultants recruited directly by the Commission for independent monitoring reviews (or recruited by the responsible agent contracted by the Commission for implementing such reviews).

5.8 Evaluation

Having regard to the nature of the action, an ex-post evaluation will not be carried out for this action or its components.

In case an evaluation is not foreseen, the Commission may, during implementation, decide to undertake such an evaluation for duly justified reasons, either on its own decision or on the initiative of the partner.

The evaluation reports shall be shared with the partner country and other key stakeholders. The implementing partner and the Commission shall analyse the conclusions and recommendations of the evaluations and, where appropriate, in agreement with the partner country, jointly decide on the follow-up actions to be taken and any adjustments necessary, including, if indicated, the reorientation of the project.

The financing of the evaluation shall be covered by another measure constituting a financing decision.

5.9 Audit

Without prejudice to the obligations applicable to contracts concluded for the implementation of this action, the Commission may, on the basis of a risk assessment, contract independent audits or expenditure verification assignments for one or several contracts or agreements.

The financing of the audit shall be covered by another measure constituting a financing decision.

5.10 Communication and visibility

Summaries of completed projects will be included in a database managed by the JRC. Communication and visibility of the EU is a legal obligation for all external actions funded by the EU.

This action shall contain communication and visibility measures, which shall be based on a specific Communication and Visibility Plan of the Action, to be elaborated at the start of implementation.

In terms of legal obligations on communication and visibility, the measures shall be implemented by the Commission, the partner country, contractors, grant beneficiaries and/or entrusted entities. Appropriate contractual obligations shall be included in, respectively, the financing agreement, procurement and grant contracts, and delegation agreements.

The Communication and Visibility Manual for European Union External Action shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations.

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11 https://nuclear.jrc.ec.europa.eu/tipins
APPENDIX - INDICATIVE LOGFRAME MATRIX (FOR PROJECT MODALITY)

The activities, the expected outputs and all the indicators, targets and baselines included in the logframe matrix are indicative and may be updated during the implementation of the action, no amendment being required to the financing decision. When it is not possible to determine the outputs of an action at formulation stage, intermediary outcomes should be presented and the outputs defined during inception of the overall programme and its components. The indicative logframe matrix will evolve during the lifetime of the action: new lines will be added for including the activities as well as new columns for intermediary targets (milestones) for the output and outcome indicators whenever it is relevant for monitoring and reporting purposes. Note also that indicators should be disaggregated by sex whenever relevant.

<table>
<thead>
<tr>
<th>Results chain</th>
<th>Indicators</th>
<th>Baselines (incl. reference year)</th>
<th>Targets (incl. reference year)</th>
<th>Sources and means of verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure the safe management of radioactive wastes and spent nuclear fuel.</td>
<td>Amount of waste in improved condition as result of this activity</td>
<td>0 (2018)</td>
<td>All affected 100 % (2024)</td>
<td>Reports to the IAEA Joint Convention on the safety of spent fuel management and on the safety of radioactive waste management (here shortly IAEA Joint Convention)</td>
<td></td>
</tr>
</tbody>
</table>

Component A: Ukraine

| Specific objective(s): Outcome(s) | SO A1 – Safe management of spent fuel and radioactive waste in Ukraine. | Capability of SAUMEZ to direct the replacement State Programme for the management of radioactive waste. | SAUMEZ lacks sufficient technical and organisational instruments to fulfil its role as director of the replacement State Programme (2018) | SAUMEZ can direct the State Programme in compliance with the EU Directive 2011/70/Euratom for the responsible and safe management of spent fuel and radioactive waste | Reports to the IAEA Joint Convention and information elicited from other international contexts. | SAUMEZ will be given all necessary authorisation to act in its role as the director of the State Programme. |
**Component B: Water monitoring system in Central Asia**

<table>
<thead>
<tr>
<th>Specific objective(s):</th>
<th>Outcome(s)</th>
<th>Type, quantity and quality of equipment routinely applied to monitor personnel dose and environmental radiation levels</th>
<th>Correct monitoring cannot be carried out due to obsolete equipment (2018)</th>
<th>Personnel dose monitoring and environmental radiation monitoring in the ChEZ operate according to international best practice.</th>
<th>Official reports on personnel dose and environment radiation monitoring in the ChEZ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO A2 – Effective dosimetric monitoring of personnel and environmental monitoring in and around two nuclear facilities within the Chernobyl Exclusion Zone (ChEZ).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O A1.1 An appropriate Programme Management Infrastructure (PMI) inside the State Agency for Ukraine for the Management of the Exclusion Zone (SAUMEZ).</td>
<td></td>
<td>Programme management infrastructure established.</td>
<td>No appropriate PMI (2018)</td>
<td>An appropriate PMI is in place (2024)</td>
<td>Audit reports on the PMI</td>
</tr>
<tr>
<td>O A2.1 Modernisation of the dosimetric control system in the Exclusion Zone and environmental monitoring at the &quot;Vector&quot; complex and at the &quot;Buriakovka&quot; disposal facility.</td>
<td></td>
<td>Amount of equipment supplied and put in operation</td>
<td>Equipment is outdated and not fit for correct monitoring (2018)</td>
<td>The dosimetric control operates according to international best practice (2024)</td>
<td>Results of on-site acceptance tests and operation experience</td>
</tr>
</tbody>
</table>

**Partial Table:**

<table>
<thead>
<tr>
<th>Specific objective(s):</th>
<th>Outcome(s)</th>
<th>Type, quantity and quality of equipment routinely applied to monitor personnel dose and environmental radiation levels</th>
<th>Correct monitoring cannot be carried out due to obsolete equipment (2018)</th>
<th>Personnel dose monitoring and environmental radiation monitoring in the ChEZ operate according to international best practice.</th>
<th>Official reports on personnel dose and environment radiation monitoring in the ChEZ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO B1 – Release of contaminants from toxic uranium mining wastes in the river basins in the region will be detected promptly.</td>
<td></td>
<td>Capability to monitor potential contaminant release into the river systems.</td>
<td>No monitoring capability is available. The Technical Specification of the necessary system is available. (2017)</td>
<td>River systems are properly monitored (2021)</td>
<td>Periodic reports on water quality by the regulators of the Central Asian countries.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Outputs:**

- SAUMEZ has the human and financial resources to maintain the monitoring systems.
- SAUMEZ fully supports the project making available all necessary information to the contractor and appointing adequate personnel to participate in project activities.

- Audit reports on the PMI
- Periodic reports on water quality by the regulators of the Central Asian countries.

- The partner Central Asian countries will be able to ensure human, financial and technical resources for the management of the monitoring stations.
### SO B2 – The Tajik Republic, the Kyrgyz Republic, Uzbekistan and Mongolia have sufficient analytical capabilities to monitor the rivers and territories affected by the uranium legacy sites.

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Number and quality of the analytical measurements carried out.</th>
<th>No reliable measurements are available due to outdated essential radiological monitoring equipment (2017)</th>
<th>All essential radiological contamination is monitored according to international best practice. (2021)</th>
<th>Periodic reports on environmental monitoring on uranium legacy sites and affected areas.</th>
<th>The partner countries will be able to ensure human, financial and technical resources for the management of the laboratories.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O B.1 Water in areas with risk of contamination will be monitored.</td>
<td>Number of monitoring stations installed and functioning with project support</td>
<td>No monitoring stations exist (2017)</td>
<td>All the stations envisaged by the completed INSC project REG4.01/10 are installed and functioning (2012)</td>
<td>Results of the on-site acceptance tests and contractors’ reports endorsed by the End-Users</td>
<td>Full collaboration by the local authorities in granting all the necessary support and permits.</td>
</tr>
<tr>
<td></td>
<td>Number of operational laboratories equipped with appropriate monitoring support</td>
<td>Part of the essential laboratory equipment is lacking or outdated (2017)</td>
<td>All the laboratory equipment envisaged by the INSC project REG4.01/10 is installed and functioning (2022)</td>
<td>Results of the on-site acceptance tests and contractors’ reports endorsed by the End-Users</td>
<td>Full collaboration by the local authorities in granting all the necessary support and permits.</td>
</tr>
<tr>
<td></td>
<td>Number of operators trained on the use of the new equipment</td>
<td>Personnel is not trained on the use of new equipment to be installed (2018)</td>
<td>For all equipment delivered, at least one operator per laboratory is fully trained (2022)</td>
<td>Training certificates.</td>
<td>Full collaboration of the End-User organisations to appoint adequate personnel to be trained.</td>
</tr>
<tr>
<td>Component C: Local engagement in Central Asia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specific objective(s):</strong> The population of the areas affected by the uranium legacy sites are engaged in the site remediation process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outcome(s):</strong> The local population is not sufficiently informed and is lacking instruments for its effective engagement in the site remediation process. (2017)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Population is informed on radiological risks and supports the remediation activities.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Participation of public to debates and interest in the information centres.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outputs:</strong> Awareness raising in the public and in local decision makers on uranium mining waste impacts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Amount of members of the public and local decision maker organisations participating to the programme and their level of understanding of the risks.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A first project is ending in first quarter 2018 and it has achieved significant, albeit initial, results.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Most of the public is informed on the risks connected to the presence of the uranium legacy sites and to the remediation activities.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reports of the public information sessions.</strong> Full collaboration by the local authorities in granting all the necessary support and permits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analysis of the legal and regulatory framework regarding citizens participation in the uranium legacy sites management and remediation activities.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Completeness of the local legislation and regulations analysed.</strong> Legal and regulatory framework need to be analysed and recommendations (if any) are to be made for its improvement to international best standards.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The legal and regulatory framework in which to operate is known and recommendations are made for its improvement.</strong> Report on the activity by the contractor Full collaboration by the local authorities in granting all the necessary support and permits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Strengthen coordination and knowledge-sharing at regional level.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Amount of participants from different countries to the regional meetings and their level of interaction.</strong> No or little co-ordination is ongoing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Public, operators and authorities concerned by the uranium legacy sites from different countries get to know each other</strong> Report on the activity by the contractor Full collaboration by the local authorities in granting all the necessary support and permits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
and establish co-operation.

Study of models for socio-economical interventions to reduce radiological risks and enhance quality of life of the population effected by the uranium legacy sites.

Impacts of the different models are analysed

Study does not exist.

Recommendations for effective socio-economical interventions are proposed.

Report on the activity by the contractor

Full collaboration by the local authorities in granting all the necessary support and permits.

### Component D: Contribution to solid radioactive waste management at the Vinča site

<table>
<thead>
<tr>
<th>Specific objective(s)</th>
<th>Output</th>
<th>SO D1 The safe and secure decommissioning of the interim storage hangars H1 and H2.</th>
<th>Amount of waste transferred from H1 and H2.</th>
<th>Project plans are developed (2017)</th>
<th>All waste is removed (2023)</th>
<th>Project reporting, monitoring, inspections and auditing.</th>
<th>Licensing of H3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Radioactive wastes and disused sources safely processed and stored.</td>
<td>Fraction of RAW and disused sources processed and stored</td>
<td>0% (2018)</td>
<td>100% (2021)</td>
<td>Project reporting, monitoring, inspections and auditing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LILW radioactive waste storage hangars (H1 and H2) are decommissioned.</td>
<td>Grade of decommissioning of hangars H1 and H2</td>
<td>0% (2018)</td>
<td>100% (2021)</td>
<td>Project reporting, monitoring, inspections and auditing.</td>
<td></td>
</tr>
</tbody>
</table>

### Component E: Support to Regulatory Authority of Bosnia and Herzegovina

<p>| Specific objective(s): | Output | SO E1 Licensing of the RAW storage facilities in Bosnia and Herzegovina. | Licensing status of the storage facilities | 0 out of 2 is licensed (2017) | Decision on the licensability of 2 out of 2 facilities (2022) | Copy of published licensing documentation | The facilities are indeed licensable |</p>
<table>
<thead>
<tr>
<th>Outputs</th>
<th>O E1 Updated regulatory framework in accordance with the EU Acquis. Licensed RAW storage facilities.</th>
<th>Fraction of regulatory framework in line with the EU Acquis. Number of RAW facilities licensed.</th>
<th>Will be determined during implementation (2018)</th>
<th>To be defined during implementation (2022)</th>
<th>Project reporting, monitoring, inspections and auditing.</th>
<th>The facilities are licensable.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O E2 A decision on the licensing / licensability or alternative solutions will be taken.</td>
<td>Formal decision on licensing or licensability.</td>
<td>No decision (2018)</td>
<td>Decisions are made (2022)</td>
<td>Formal licensing decision documents.</td>
<td></td>
</tr>
</tbody>
</table>

2 Mark indicators aligned with the relevant programming document mark with '*' and indicators aligned to the EU Results Framework with '***'