



SNETPFORWARD

D3.1 Conditions and scope of the calls for studies

Date: 09 /06 /2023

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Document information (if appropriate)

Grant Agreement	n°101060646
Project Title	SNETP strengthening to consolidate collaboration within and beyond the nuclear sector
Project Acronym	SNETPFORWARD
Project Coordinator	Abderrahim Al Mazouzi (EDF)
Project Duration	JULY 2022 – JULY 2025
Related Work Package	WP3
Related Task(s)	Task 3.2
Lead Organisation	NRG
Contributing Partner(s)	NRG, UJV, EDF, FORATOM
Due Date	30 april 2023
Submission Date	9 june 2023
Dissemination level	PU

Introduction : description of the process

Beginning of 2023, the Scientific and Industrial Innovation Committee (SIIC) of SNETP met to define a list of potential topics to be tackled within the SNETPFORWARD's call for study. During this meeting, from the initial list of 10 topics, priorities were defined on 4 topics:

- Technico-economic study on the impact of the Ukrainian conflict on the Ukrainian and European wide nuclear R&D&I landscape,
- Nuclear digital innovation,
- Nuclear research landscape,
- Identification of challenges European nuclear start-ups are facing towards deployment

First scopes emerged from SIIC members for each topic and after discussion within the SIIC and with the SNETPFORWARD's project officer, it was decided to address the last topic internally (*Identification of challenges European nuclear start-ups are facing towards deployment*).

Each scope was reviewed and approved by all SIIC members. Topics were presented to the SNETP Governing Board members, which approved them.

A process has been defined, reviewed and approved by the SIIC and submitted to SNETP's lawyer for final approval. From SNETP's lawyer feedback, adjustments were made to keep the process as transparent, fair and open as possible and in line with the SNETPFORWARD Grant Agreement.

1. Call for study launched by SNETP in the frame of the SNETPFORWARD Project

Subject: Invitation to proposal of studies '<-TITLE>'

Dear Madam/Sir,

SNETP, referred below as the contracting authority, is planning to award the contract resulting from the below procurement procedure.

Article 1. Object and scope of the procurement

Title: <-TITLE>

Type of contract: services

Duration of the contract, framework agreement or dynamic purchasing system:

Short description: <DESCRIPTION IN 1 OR 2 LINES>

Estimated total value: <VALUE> EUR

Description of the procurement: <HALF PAGE DESCRIPTION>

Duration in months: <DURATION OF CONTRACT IN WEEKS OR MONTHS>

This contract is subject to renewal: <YES/NO>

Article 2. SNETP presentation

The Sustainable Nuclear Energy Technology Platform (SNETP) was launched in 2007 and is recognized by the European Commission as an European Technological and Industrial Platform (ETIP) within the SET Plan (European Technology and Innovation Platform). With the objective to represent the nuclear fission related technologies under a unique legal entity, SNETP is an international non-profit association under Belgian law since 2019.

The SNETP Association gathers today 3 pillars, NUGENIA (Nuclear Generation II & III technologies), ESNII (European Sustainable Nuclear Industry Initiative) and NC2I (Nuclear Cogeneration Initiative).

Article 3. Awarding procedure

3.1. Submission of proposal: Economic operators interested in this contract are invited to submit a proposal in English via email (studies.snetp@snetp.eu) indicating as object: SNETPFORWARD Call for Study – Proposal

Within the scope of this proposal, the economic operators should be a legal entity with an office in EU Member States and third countries associated to the EC Programme. Please note that if these criteria are not met, the proposal will not be submitted to the evaluation phase.

Please note that it is not possible to submit a proposal after the time-limit for receipt.

3.2. Documents expected: it is expected for all candidates, with no consideration of the amount of the proposal, two documents:

One document considered as the technical document; and
a second one presenting the budget on one page (following the excel template provided).

3.3. <FOR PROPOSAL OF STUDIES UNDER €25.000>

The submission must respect a 5-pages limit (technical document).

After the deadline, all submissions will be reviewed by 2 independent anonymous reviewers from the SNETP Scientific and Industrial Innovation Committee. The reviewers shall provide transparent feedback on all proposals. SNETP reserves the right to request additional information or clarification on the proposal submitted.

Proposals submitted outside the time limit, exceeding the budget limit, or exceeding the page limit provided in this invitation are not eligible for review and award.

3.4. <FOR PROPOSAL OF STUDIES ABOVE €25.000>

The submission must respect a 10-pages limit (technical document).

After the deadline, all submissions will be reviewed by 3 independent anonymous reviewers from the SNETP Scientific and Industrial Innovation Committee member organization. The reviewers shall provide

transparent feedback on all proposals. SNETP reserves the right to request additional information or clarification on the proposal submitted.

Proposals submitted outside the time limit, exceeding the budget limit, or exceeding the page limit provided in this invitation are not eligible for review and award.

Article 4. Legal effects of this invitation

This invitation of proposal is in no way binding on the contracting authority. The contracting authority's contractual obligation will begin only when the contract with the successful candidate is signed by both parties.

Until the signature of the contract, the contracting authority may cancel the procurement procedure without the candidates being entitled to claim any compensation. In case of cancellation of the procurement, the decision will be substantiated, and candidates will be properly notified.

This Call is not subject to the provisions of the EU and national legislations on public procurement.

Article 5. Opening of proposals

5.1. Presentation: Candidates can be invited to attend a virtual session describing the main objectives of the study. One representative per candidate will be allowed.

5.2. Questions and answers: During the opening of the call for study, questions can be send to studies.snetp@snetp.eu indicating as object: SNETPFORWARD Call for Study – Questions

Article 6. Funding: the selected proposal will receive 30% as pre-funding to start the study.

Article 7. Evaluation phase (after the opening of proposals)

7.1. Except in duly justified cases, candidates who have failed to submit evidence or to make statements as required in the procurement documents, shall be contacted by the contracting authority to provide the missing information or clarify supporting documents.

7.2. Evaluation will take place based on three criteria, i.e. excellence, management and capacity, and requested budget. For each criterion, the candidate can receive a score between 1 and 5.

- Excellence:
 - Clarity and pertinence of the work description.
 - Response to the study goals
 - Soundness of the proposed methodology, including if applicable the underlying concepts, models, and assumptions.
- Management and capacity:
 - Quality and effectiveness of the work plan, time plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall.
- Requested Budget: following the Excel template provided
 - Proposal with the better cost-effectiveness will receive the highest score.

The following scores will be awarded:

- Equal scores if difference with highest proposal is within 10% of study budget
- 1 point separate score if difference is between 10 and 20% of study budget
- 2 point separate score if difference is between 20 and 40% of study budget
- 3 point separate score if difference is between 40 and 70% of study budget
- 4 point separate score if difference is between 70 and 100% of study budget

7.3. The scores per criterion will be averaged by the reviewers and rounded off with 1 decimal and subsequently summed up over the three criteria. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10. All criteria will have the same weight.

7.4. Proposals that pass the individual threshold AND the overall threshold will be considered for funding. Other proposals will be rejected.

7.5. If no candidate can be selected based on the above thresholds, SNETP will follow the below procedure:

- In case of equal scores, the score on excellence will be decisive. In case there is still no decision, the score on price will be decisive.
- In case this also leads to no decision, the coordinator of the SNETP Scientific and Industrial Innovation Committee together with the independent reviewers may decide to further prioritize by considering the other following factors related to the objectives of the call:
 - Alignment with the SNETP strategy
 - Overlapping with studies already existing

These factors will be documented in the review report and motivated accordingly

Article 8. Award phase

Based on the above criteria selection, candidates will be notified of the outcome of this procurement procedure by e-mail.

Article 9. Type of procedure:

This call for study is an open call to all EU Member States and third countries associated to the EC Programme.

Applications must be submitted online within the deadlines set out in this document.

Article 10. Time limit for receipt of proposals or requests to participate:

Date: 15th October 2023

Brussels time: 17:00

2. SCOPE: Nuclear & Digital Innovation

The European Council has acknowledged the need to ensure energy security while respecting Member States' right to choose their energy mix and to choose the most appropriate technologies. The EU needs all sectors and possible solutions to enable a transformational change to its economy and make Europe the first climate-neutral continent in the world. The EU's Energy Strategy Plan foresees that nuclear energy will remain an important factor of the EU's energy mix until 2050 – and even beyond. Technological sovereignty will require joint efforts in education, training, research, and innovation efforts. In the nuclear sector, this is crucial for ensuring high-level of safety and radiation protection in Europe, to properly manage radioactive waste and spent fuel, and to develop future technologies of tomorrow including intrinsically safe reactors and closing the nuclear fuel cycle. The objective of SNETP is to develop strategic research and innovation agenda addressing the scientific and technical gaps and needs to ensure that the nuclear sector can play its role in the decarbonization strategy of the union, highlighting the importance of R&D&I facilities and the needed human resources and skills gaps in the EU nuclear sector.

Digitization, artificial intelligence and digital reality tools offer the European nuclear industry a significant opportunity to improve safety, reduce costs and increase efficiency. Digitization involves the application of digital technology to processes, services and products, and can provide the nuclear industry with improved remote monitoring capabilities, predictive maintenance, and automated processes. This can help to reduce operational costs, while also providing more accurate and timely data for decision-making and operations. AI can be used to analyze data and detect anomalies, enabling more efficient operations and better decision-making. Digital reality tools can be used to facilitate training, simulate emergency scenarios, and verify engineering designs. This can help to improve safety, reduce waste, and increase efficiency in the nuclear industry.

Nuclear industry has been at the edge of digital computing to address safety of handling nuclear material and activities with their related radioprotection challenges while keeping trace of compliance to regulatory requirements. Industry, aiming at zero emissions, brings additional and revisited technologies that allow to address the development needs for new nuclear installations that will have to be in operations for more than 50 years. Nuclear industry already started but now needs to execute its transformation from historical document centric methodology towards data centric activities. It also needs to extend the digital continuity across its nuclear energy supply chain, from uranium mining through electricity production up to recycling and dismantling.

This study aims at identifying opportunities of the EU workforce active in the digital activities being within industry, universities, research centers or technical safety organizations being member of SNETP or not that are active in all the fields/topics related to the nuclear sector as described in the Strategic Research and Innovation Agenda of SNETP. The study shall focus in covering the following topics:

- Digitalization of field workers interventions in extended enterprise business model: electronic work report, data collect and operating procedure control with mobile devices and / or augmented reality, connected worker during maintenance in operations or in shutdown phase, and construction works
- Digital for equipment ageing in long lifecycle installations (> 40 to 60 years or more), remote monitoring, predictive maintenance
- Digital for nuclear safety: traceability of safety requirement, periodic safety equipment review
- Digital continuity for engineering, procurement construction but also operation (production and maintenance) within the extended supply chain, up to dismantling:
 - o Data Exchange / Data Hub / Market place platform

- Extended Enterprise collaboration platform
- Digital reality tools that can be used to facilitate training and simulate emergency scenarios in the nuclear industry
- Digital for nuclear waste management and decommissioning: collaborative supply chain planning optimization, identification with Radio Frequency Identification (RFID), and traceability
- Digital for radioprotection: connected dosimetry, IoT for radioprotection measure, 3D radioprotection maps of installation, environmental surveillance leveraging geographic information systems)

The expected work is to analyse the opportunities of the nuclear sector in the digital world and to provide a broadladscape of the applications being adopted by the verious stakeholders (utilities, fabricants, suppliers, R&D, TSOs, ...)

Existing works and initiatives of European and international nuclear associations active in digital transformation will be leveraged to initialize the analysis.

3. SCOPE: Technico-economic study on the impact of the Ukrainian conflict on the Ukrainian and European wide nuclear R&D&I landscape

Since the start of the Ukrainian conflict, the Ukrainian nuclear landscape has been deeply impacted. However, also other European countries have been affected. This study should focus on the impacts of the Ukrainian conflict on the R&D&I landscape in the Ukraine and Europe wide. Not only have Ukrainian facilities been damaged or destroyed, also there has been an outflow of quality personnel across the borders.

It is hardly possible for policy makers to decide what to do to prevent safety incidents and to anticipate an upcoming resurrection of the nuclear R&D&I landscape in the Ukraine, without understanding the state of Ukraine's nuclear infrastructure, the impact of restrictions in R&D&I relations with Russia and Belarus, and the diaspora of the Ukrainian researchers.

Therefore, a study is proposed to address the following questions:

- What is the physical state of the Ukrainian nuclear R&D&I infrastructures?
- Where are the former Ukrainian nuclear researchers employed now and how can this workforce be maintained to return operations in the Ukraine after the conflict?
- What is the state of the Ukrainian training centers and universities?
- How can other European countries anticipate on filling the gap of training centers, universities, and R&D&I infrastructures?
- What are the short- and long term risks of the damage to the Ukrainian R&D&I infrastructures and outflow of personnel with respect to nuclear safety in the Ukraine and Europe at large?

In support to these questions, also the following questions will be helpful to be answered:

- Consult the IAEA to learn what is the state of the Ukrainian (former) NPP sites?
- What is the state of the Ukrainian uranium mines?
- What is the state of the Ukrainian equipment production lines?

4. SCOPE: Nuclear research landscape in the EU

The European Council has acknowledged the need to ensure energy security while respecting Member States' right to choose their energy mix and to choose the most appropriate technologies to achieve the decarbonization targets. The EU needs all sectors and possible solutions to enable a transformational change to its economy and make Europe the first climate-neutral continent in the world. In the EU's long term strategy¹, the European Commission confirmed that nuclear will form the backbone of a carbon-free European power system, together with renewables

EU technological sovereignty will require joint efforts in education, training, research, and innovation areas. In the nuclear sector, this is crucial for ensuring high-level of safety and radiation protection in Europe, to properly manage radioactive waste and spent fuel, and to develop future technologies including intrinsically safe reactors and closing the nuclear fuel cycle.

Research, development, and innovation with sufficient skilled and trained Human Resources (HR) are important components for ensuring safe, efficient, and competitive usage of nuclear as low-carbon energy source. Indeed, nuclear technologies for both power and non-power applications are part of the EU's leadershipⁱ.

The European Union requires nuclear expertise and well-qualified workforce for present and future nuclear applicationsⁱⁱ. Most of the EU-nuclear assets (including NPPs, MTRs, Hot cells, specialised facilities, and labs) have been built in the 1970's and 1980's or even before, and many of them have been shut down or should in the near term. In addition, half of the EU's workforce involved in the construction and operation of nuclear facilities will soon reach retirement ageⁱⁱⁱ. It is therefore a matter of urgency that the know-how and competences are preserved and transferred to the next generation of scientists, engineers, and technicians^{iv}.

The objective of SNETP is to develop a strategic research and innovation agenda addressing the scientific and technical gaps and needs to ensure that the nuclear sector can play its role in the decarbonization strategy of the union, highlighting the importance of R&D&I facilities and the human resource and skills gaps in the EU nuclear sector.

This study aims at assessing the quality and the quantity of the EU workforce active in the R&D&I activities being within industry, universities, research centers or technical safety organisations being member of SNETP or not that active in all the fields/topics related to the nuclear sector as described in the SRIA of SNETP.

The study shall focus on mapping the landscape of the nuclear R&D&I on the EU by identifying and providing information about:

- The EU R&D&I organizations (who is doing what and where?)
- What & how is being done concerning knowledge preservation and transfer in the EU?
- Available R&D&I workforce (how much and where) and assessment of the needs in the upcoming decade
- National public budgets dedicated to R&D&I in the nuclear sector (how much and for what?)
- Public information of the private investment in the R&D&I across European industry (how much and or what)

¹ [A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy](#)

ⁱ <https://snetp.eu/wp-content/uploads/2021/09/SRIA-SNETP-1.pdf>

ⁱⁱ <https://www.nucleareurope.eu/downloads/nuclear-energy-powering-the-economy-full-study/?wpdmdl=42758&refresh=5cc15b9cd1ec31556175772>

ⁱⁱⁱ Report from the French Presidency of the Council, 'For a European dynamic in nuclear skills', Doc. 9799/22 RECH 326 ATO 38, June 2022.

^{iv} <https://op.europa.eu/o/opportal-service/download-handler?identifier=aeb54033-2255-11ea-af81-01aa75ed71a1&format=pdf&language=en&productionSystem=cellar&part=>