

EUROPEAN INDUSTRIAL ALLIANCE on SMALL MODULAR REACTORS (SMRs)

TERMS OF REFERENCE

1. BACKGROUND

Working towards the objective of a climate neutral Europe by 2050, and in line with the RepowerEU strategy¹, the European Industrial Alliance on Small Modular Reactors (“the Alliance”) aims to facilitate and coordinate stakeholders’ cooperation at EU level for the development, demonstration and deployment of Small Modular Reactors (SMRs) as a viable and competitive technological solution to decarbonise the European energy system in the next years.

As set out in the Communication “Securing our future. Europe’s 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society”², SMRs can contribute to achieve 90% carbon emission reduction by 2040, and, at the same time, increase the strategic autonomy and resilience of the EU economy.

The European Industrial Alliance on SMRs will help support the safe and cost-effective development of a dynamic and innovative nuclear supply chain in Europe, facilitate the creation of a large domestic market for SMRs, and contribute to the creation of a strong industrial basis, in line with the EU Green Deal Industrial Action Plan³ and the objectives of the Net-Zero Industry Act⁴.

Building on the work of the European SMR Pre-Partnership⁵, the support expressed by several Member States and by industry stakeholders at the occasion of the European Nuclear Energy Forum of October 2023, as well as on the report adopted⁶ by the European Parliament in December 2023, the Alliance will provide a European platform to accelerate the development and deployment of SMRs projects by the early 2030s, while ensuring respect for the highest safety, environmental standards, social and labour rights and promoting the creation of quality jobs and industrial competitiveness.

The Alliance will be the focal point for conducting joint actions with all actors in the nuclear supply chain, including industry, investors, social partners, Member States and regions, civil society, research and technology organisations and NGOs.

The Alliance will seek to create a positive investment environment and explore innovative financial models to combine and leverage diverse funding sources. It will help connect project promoters with potential end-users and will seek synergies with other relevant initiatives such as the European Clean Hydrogen Alliance, the European Raw Materials Alliance and the European Solar Photovoltaic Industry Alliance.

The Alliance will help improve knowledge about possible bottlenecks in the nuclear supply chain, avoid strategic dependencies on nuclear fuel and raw materials, address nuclear waste management issues and overcome any obstacles to the safe and rapid, cost-effective deployment of SMRs by

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN>

² [Recommendation for 2040 emissions reduction target \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A1013%3AINIT)

³ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/green-deal-industrial-plan_en

⁴ https://single-market-economy.ec.europa.eu/publications/net-zero-industry-act_en

⁵ <https://www.nucleareurope.eu/project/european-smr-pre-partnership/>

⁶ https://www.europarl.europa.eu/doceo/document/A-9-2023-0408_EN.html

identifying appropriate policy and regulatory solutions in the countries that are interested to SMRs, in full respect of the EU acquis.

Moreover, the Alliance will help promote research, innovation, and circularity in the nuclear supply chain. SMRs, and Advanced Modular Reactors (AMRs), will use advanced reactor technologies allowing for a more efficient use of nuclear fuel..

2. OBJECTIVES

The **general objective** of the **European Industrial Alliance on SMRs** is to facilitate and accelerate the development, demonstration, and deployment of the first SMRs projects in Europe in the early 2030s, by assisting emerging SMRs projects to reach the demonstration and deployment phase.

In this perspective the Alliance will pursue the following **specific objectives**:

- (i) Facilitate and accelerate the safe and cost-effective development and deployment of SMRs projects through supporting relevant stakeholders' (including established and emerging European companies) collaboration to structure, advance and deploy their products in the European market and beyond.
- (ii) Strengthen the enabling conditions for SMR development by mapping and assessing the performance and completeness of the European nuclear supply chain, including raw materials availability, fuel cycle supply, waste management, research & innovation, skills development as well as identifying relevant regulatory and non—regulatory solutions, in full respect of the EU acquis.
- (iii) Provide feedback and recommendations to the Commission and Member States on relevant policies to ensure the highest safety and environmental standards for the development and deployment of SMRs, including through collaboration with nuclear regulatory authorities, the European Nuclear Safety Regulators Group (ENSREG) and other public authorities.
- (iv) Provide guidance and recommendations on relevant policies to raise public awareness about SMRs' benefits and challenges and launch an open, transparent, and inclusive debate with social partners, stakeholders and the civil society, particularly on topics such as siting process, social acceptance, public engagement, radioactive waste management and decommissioning of SMRs.
- (v) Identify and prioritise the future needs for qualified and trained workforce and of training provision, building on the already existing programmes and instruments.
- (vi) Foster nuclear research and development activities with a special focus on developing and deploying innovative nuclear fuels required for AMRs operation.
- (vii) Promote collaboration with trusted international partners and expand the EU potential to export SMRs technologies to global markets.

The Alliance will provide a framework for coordinating activities, preparing analytical studies, sharing best practices and developing joint actions aimed at fostering the deployment of SMRs in Europe.

It will promote collaborative actions between SMR project promoters, public and private entities and associations, Member States, regions, social partners, regulators, research and technology organisations, education and training institutions, investors, civil society and NGOs.

The Alliance will contribute to address the investment challenge in the SMR sector by identifying investment barriers and explores incentives for new investments. In this context, the Alliance will map the financial support sources that are available at EU (in particular for research, safety and skills development) and national level and will contribute to identify specific solutions tailored to the level of maturity and specificities of individual SMR projects, without prejudice to the applicable EU rules (including State aid rules).

In addition, the Alliance will facilitate interaction of SMR project promoters with potential users such as low-carbon hydrogen producers, and energy intensive industries to assess their interest to use and co-fund SMRs projects for electricity and/or heat provision, including off-grid possibilities.

The Alliance will also ensure a close cooperation with national and European regulatory bodies and the Commission on relevant standardisation issues.

The Alliance will pay particular attention to increasing public engagement, responding to public opinion's safety and environmental concerns, building trust and ensuring local ownership of projects to facilitate future SMR deployment. In this context, the Alliance will promote analysis and exchanges on the best ways to deal with other important SMR-related aspects, including radioactive waste management and decommissioning.

The Alliance will also closely collaborate with SMR-related projects funded under the RTD Euratom Research and Training Programme, with the JRC, and international bodies such as the International Atomic Energy Agency (IAEA) and with the Nuclear Energy Agency (NEA) of OECD.

3. TASKS

The Alliance will elaborate by Q1 2025, and subsequently implement, a **Strategic Action Plan** to deliver on the following tasks:

Task 1: The Alliance will facilitate interactions between vendors, project developers, suppliers, financial institutions, and investors to explore investment possibilities and develop new cost-sharing financial models. The Alliance will also facilitate the market up-take by assessing the feasibility of appropriate projects and will promote partnerships among European suppliers to overcome specific bottlenecks and share risks.

Task 2: The Alliance will develop by Q4 2024 technology roadmaps aiming to:

- Identify the most promising and advanced safe and cost-effective SMR/AMR designs and technologies which would be supported under the Alliance with priority.
- Identify the strategic technological combinations in terms of raw materials, fuels, and digital technologies to enhance EU independence with respect to SMRs/AMRs.
- Provide recommendations on specific areas including application challenges in different sectors including fuel and components fabrication, standardisation & regulation issues, SMRs siting, project feasibility, etc.

These technology roadmaps will consider recent tools developed for instance in IAEA PRIS⁷ and NEA SMR Dashboard⁸ regarding the readiness level of the considered SMR technologies.

Task 3: The Alliance will promote connections with potential end-users, including energy-intensive industries, hydrogen producers, transport companies, mining operators, data centres, municipalities, to investigate opportunities and feasibility for utilising SMRs for electricity and/or heat provision, including the “off-grid” local use of SMRs.

Task 4: The Alliance will map and regularly assess the performance and completeness of the European supply chain, including raw materials availability, circularity, and nuclear fuel production and process for SMRs deployment, and identify relevant regulatory and non-regulatory solutions in this respect. In this context, the Alliance will further explore new ways to strengthen the supply chain for nuclear manufacturing and fuel supply and waste management in Europe, identify bottlenecks faced by European companies that hinder or impede the development of their products and propose solutions. In particular, the supply chain map will identify which parts are considered as strategic assets for EU nuclear industry, identify possible gaps, and develop a plan on how to address them. It should also attract new suppliers towards nuclear, help the existing ones to reorganize their processes and support factory production of series components.

Task 5: The Alliance will map the availability of financial support, attract private investment, and facilitate the dialogue and matchmaking between producers and investors, including public organisations such as municipalities. The Alliance will work to identify and coordinate investment opportunities, project pipelines and technology portfolios.

Task 6: The Alliance will identify and prioritise future needs for research, innovation, qualification, demonstration, and skills development in cooperation with the Sustainable Nuclear Energy Technology Platform (SNETP) to be addressed in the next European (including Euratom) programmes and/or national programmes. It will also support cooperation between all relevant stakeholders for the development and demonstration of AMRs technologies to accelerate technology readiness. It will strengthen the cross-sectoral cooperation in compliance with the revision 2023 of the SET-plan⁹. A detailed analysis on this topic of skills at EU level should be prepared by the Alliance by mid 2025.

Task 7: The Alliance will explore the skills and training needs for the SMR value-chain and suggest solutions to strengthen education, training, and skills development for a competent workforce. In this regard, the Euratom and the Pact for Skills Program will serve as tools to address the needs identified. By capitalising on ongoing skills projects, this would facilitate the setting up of a nuclear Academy under the NZIA Academies framework.

Task 8: The Alliance will strengthen exchanges and contacts of project promoters with the European Nuclear Safety Regulators Group (ENSREG) and national regulatory authorities. It will promote higher coordination among the national regulatory authorities across the EU for pre-licensing and licencing phases, in view to reinforce the EU Single Market. It should be noted that ENSREG will not be a

⁷ <https://pris.iaea.org/pris/>

⁸ https://www.oecd-nea.org/jcms/pl_78743/the-nea-small-modular-reactor-dashboard?details=true

⁹ Communication on the revision of the Strategic Energy Technology (SET) Plan, COM/2023/634 final

member of the Alliance to ensure its independence. The Governing Board will include ENSREG in an observer function.

Task 9: The Alliance will facilitate cooperation between stakeholders, European & international organisations, and relevant Commission services, regarding standardisation issues related to design variability, supply chain availability (components, and manufacturing process), standardised quality control methods, verification, and validation (V&V) procedures, thus facilitating the circulation of goods amongst Member States.

Task 10: The Alliance will also engage in a dialogue with social partners, stakeholders, civil society organisations, NGOs and citizens about SMRs and the costs risks and benefits of their deployment. For that, it will engage with local stakeholders through a transparent and open process and will share best practices for siting and identifying possible existing sites or conditions for new sites (surface, existing grid connection, grid needs, interoperability issues related to grid integration, cooling resources, etc) as well as for ensuring full respect for labour, social and environmental standards in a fair and inclusive manner.

The Alliance will also address topics not covered by the European Pre-Partnership on SMRs such as environmental sustainability and a Zero Pollution ambition, fuel cycle, waste management, SMRs decommissioning, public engagement, and safeguards by design.

4. WORKING METHODS

The operational work of the Alliance will be organised around several **Technical working groups** that will deal with topics like project development, project finance, supply chain availability, public engagement, radioactive waste and spent fuel management, research & innovation, development and training provision, safety, security and safeguards¹⁰. The Governing Board will determine the exact number and topic of the working groups and create new ones when there is a well justified need identified by the Alliance. For practical reasons, the number of members of each working group may be limited.

In addition to technical working groups, **Project-based working groups** would be created to provide tailor made support to eligible SMR projects to reach out the demonstration and deployment phase. To this end, each project-based working group will bring together utilities, designers, supply chain factories, fuel cycle stakeholders etc. that will be directly involved in these SMR projects. This will be done in complement and association with the support to be provided for strategic projects under the proposed NZIA platform.

5. MEMBERSHIP

The following eligibility criteria for membership in the Alliance shall apply:

1) Membership of the Alliance is designed for entities (“Member Organisations”) legally established in the European Union or in EEA countries and candidate countries¹¹, or with a legal representative established in the European Union. Entities under the control of an entity established in a country

¹⁰ Preliminary list of topics coming from the European SMR pre-Partnership Stakeholders’ Forum which took place the 26 October 2023 in Brussels.

¹¹ Albania, Bosnia and Herzegovina, Georgia, Kosovo, Moldova, Montenegro, North Macedonia, Serbia, Türkiye, Ukraine.

under EU sanctions shall not participate to the work of the Alliance. Membership will not be open to individuals appointed in a personal capacity.

2) The Alliance is open to all public and private entities with relevant activities in SMRs and which meet the eligibility criteria set out in the point 7 below, including companies, associations, social partners, education and training providers, research and technology organisations, investors, civil society organisations, NGOs, and representatives of EU Member States, regional and public authorities. Legal entities, which do not have such activities themselves, but through their members (for example, industry associations), may become “Member Organisations”, subject to the relevance of the legal entities activities to the objectives of the Alliance.

3) In order to benefit from direct membership and participation in the Alliance and its activities, members of associations, subcontractors, constituting parties or shareholders shall apply for membership of the Alliance individually.

4) An organisation’s membership of the Alliance will be conditional on the signature and compliance with the Alliance’s Declaration (including the competition compliance programme), preceded by the assessment of information provided under point 7.

5) In the event of a change during the membership which might put into question the fulfilment of the eligibility criteria, the relevant legal entity shall inform the European Commission sufficiently in advance, which shall assess whether these eligibility criteria and conditions continue to be met and shall address the potential impact on the organisation’s membership of the Alliance.

6) Member Organisations who no longer act in accordance with the principles set forth in the Alliance Declaration, or are no longer capable of doing so, upon request of the Commission, shall no longer be invited to participate in any meetings of the Alliance and may be replaced for the remainder of their term of office.

7) Prior to the signature of the Alliance Declaration, applicants shall provide the European Commission with all relevant information necessary for the assessment of compliance with the eligibility criteria, in particular the following:

- a. The entity shall have relevant existing or planned activities in the EU or in an EEA country that are of practical utility to the Alliance in the fields set out in section 3 and 4 of the Terms of Reference.
- b. Signature of the Competition Compliance Programme (Annex II in the Alliance Declaration).
- c. Compliance with EU Data Protection rules and respecting security of sensitive information: the entity shall provide assurances in this regard, and that it shall not provide any information related to the Alliance and related projects to third parties, except general information about the Alliance’s work that may be disseminated to non-members and exclusively upon specific request of the European Commission.
- d. A written commitment that it has and will ensure in the future¹² to have no conflict of interest¹³ whatsoever with the Alliance’s objectives or with specific objectives of the project groups to which it participates.

¹² For the period of membership and two years after membership is finished.

¹³ This involves any actual, potential and perceived conflict of interest.

These points will be assessed by the Secretariat of the Alliance with the support of the European Commission on the basis of information provided by the applicant. In case of concerns, such assessment may result in a refusal by the European Commission of the application of a given eligible organisation or its participation rights restricted.

Entities that apply for Membership through their legal representative in the EU, shall inform the European Commission of the accountability and liability arrangements between the entity and the legal representative.

The entities which are not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity, are normally presumed to respect point (c).

8) Without prejudice to membership, the Commission, for instance upon proposal of the Governing Board, may restrict discussions related to certain essential strategic tasks affecting security interests of the Union, be it in working groups or Alliance's General Assembly agenda points, to Member Organisations not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity.

To select the Members of the Alliance, an open **Call for membership** will be published after the official launch of the Alliance. The assessment of applications will be done by the Commission assisted by the secretariat of the European SMR pre-Partnership. Once the secretariat of the Alliance is nominated, it will become responsible for assessing future applications for both types of working groups in association with the Commission.

The EU nuclear safety regulators and ENSREG will not be members of the Alliance as nuclear safety regulators need to maintain their independent and neutral role regarding nuclear projects. ENSREG will contribute to the objectives of the Alliance as an observer. It will put in place the appropriate internal working structure for regulators to interact with project based working groups on relevant subjects.

The Governing Board will set the eligibility criteria for SMRs projects after consultation of the Alliance. The list provided in Annex 1 is indicative. Membership in a project-based working group will be restricted only to entities that are involved in the project. Participation of a legal entity in a SMR project that is assessed eligible for support under the Alliance will not automatically imply membership of this entity in the Alliance. Each such entity should fulfil the eligibility criteria for membership in the Alliance provided in section 5.

6. GOVERNANCE

The Alliance will operate under principles of openness, transparency, diversity, and inclusiveness.

- **Openness:** The Alliance will allow interested eligible parties who can actively contribute to its objectives and are ready to sign the Declaration of the Alliance. A continuous membership review process could be considered.
- **Transparency:** All the output documents and relevant information (membership, working methods) will be published through a dedicated website.
- **Diversity and inclusiveness:** Membership will include not only the SMR industry and their customers, but also upstream and downstream industries, financial institutions, NGOs and civil society, and public authorities.

The governance of the Alliance includes following three bodies:

- The **General Assembly** will consist of all Alliance's Members who are eligible legal entities according to the criteria set in section 5 and have signed the Declaration of Alliance. The main goal of the General Assembly will be to review the key achievements of the Alliance based on a report prepared by the Governing Board and provide its opinion on the overall objectives for the following period. The General Assembly meeting will be organised annually, with administrative support provided by an entity to be designated by the European Commission. The Commissioners for Energy, for Internal Market and for Innovation, Research, Culture, Education and Youth will co-chair the General Assembly meetings.

In addition, a broader gathering of all SMRs stakeholders - the **SMRs Stakeholders Forum** - will be organised annually to accommodate SMRs stakeholders who are not members of the Alliance and to discuss topics of wider stakeholders and public interest. It may be held back-to-back with the General Assembly so that the participants of the Stakeholders Forum have the opportunity to receive updates and provide feedback on the matters discussed in the General Assembly.

- The **Governing Board** will comprise a balanced group of 10-15 representatives including relevant services of the Commission, a representative from Nucleareurope and SNETP as well as the chairperson (or the vice-chairperson) of each of the Technical Working Groups; all these representatives should be Members of the Alliance and they will possess the right to vote. The Governing Board will also include, as observers (without right to vote), a representative from ENSREG. Finally, the Governing Board may invite a representative from each of the selected SMRs projects to join the meetings as observers to report to the Governing Board about the progress of their projects and possible bottlenecks.

The General Assembly will confide responsibility for the endorsement of deliverables to the Governing Board that will also oversee the Alliance's operational work performed in between the Assembly meetings. The main responsibility of the Governing Board will be to oversee the activities conducted within the working groups, monitor, and report on progress. The Governing Board will also report annually to the General Assembly about the progress made by the Alliance and potential other issues. The Governing Board will convene at least three times a year.

The Governing Board will organise on an ad-hoc basis roundtable discussions with representatives of EU Member States participating in the Alliance, representatives of the EU nuclear safety regulators, industry CEOs representing the user community of SMRs as well as representatives of civil society organisations, and financial institutions (such as EIB, EBRD and other financing organisations interested in SMR-related investments). The purpose of these discussions will be to discuss specific topics of interest to the Alliance and provide suggestions to the Governing Board.

The Governing Board will receive administrative support by the **Secretariat** of the Alliance that should be a member of the Alliance. It will be designated by the European Commission. The administrative management of the Alliance that will be ensured by the Secretariat will be based on a code of conduct agreed with the Commission. The Secretariat will also be responsible to regularly issue the Alliance's newsletter to inform the SMR community about policy developments, important achievements and forthcoming events.

- The **Technical Working Groups** will work on specific tasks decided by the General Assembly. They will bring together various stakeholders such as developers, vendors, research institutes, financial institutions, representatives of the supply chain, training centres and representatives from the

civil society. The European Commission will provide technical support to the relevant working groups also with its direct and indirect research actions on safety and safeguards for SMRs. The Working Groups may convene multiple times a year. The Working Groups will receive administrative support by an entity (or multiple entities) designated by the industry in agreement with the European Commission.

Project-based working groups will be also created to bring together utilities, designers, supply chain factories, fuel cycle stakeholders, etc. that are directly involved in eligible SMRs projects aimed to deploy an SMR design or technology in the EU by the early 2030s. The project-based working groups will provide support in complement and association with the NZIA platform for aspects as permitting acceleration and issues related to market access. An SMR project may become the focus of a Project-based working group when it fulfils several criteria to be set by the Alliance; an indicative list is presented in Annex I.

The Alliance will not provide any funding to members or potential SMR projects. Entities responsible for administrative tasks may receive a financial support.

7. COOPERATION & CONSULTATION

The Alliance will collaborate closely with the European Commission and relevant stakeholders on matters pertaining to SMRs and associated policies. Regular consultations and dialogues will ensure alignment with EU objectives and regulations for the energy sector in achieving the climate neutrality of the EU economy in 2050. The Commission may consult the Alliance on any matters regarding the development of SMR technologies.

8. PROTECTION OF PERSONAL DATA

The Alliance commits to complying with EU data protection regulations in all its operations and communications, ensuring the privacy and security of all involved parties' personal information.

Annex I - Indicative criteria for SMR projects

A SMR project may become the focus of a Project-based working group when it fulfils several criteria to be set by the Alliance at a later stage; an indicative list is presented below.

- **The project provides a significant added-value to the European economy by:**
 - a. Creating jobs, economic growth, intellectual property, as well as fostering strategic independence.
 - b. Committing to disseminate new knowledge within the EU, to license IP resulting from the project on (Fair, Reasonable and Non-Discriminatory) FRAND terms within the EU and encompassing cross border effective collaborations within the EU.
 - c. Establishing minimum thresholds for Capital Expenditure (CAPEX) spent within the EU.
 - d. Exploiting the local supply chain to enhance regional economic benefits within the EU.
 - e. Possessing IP-rights in the EU for the construction, operation and dismantling of SMRs to strengthen EU's sovereignty and ensure export possibilities.
 - f. Relying on a fuel supply chain from European-based companies to maintain or increase security of supply, improve nuclear waste management and enhance sustainability.

- **It receives a broad support from diverse European stakeholders** including Member States, utilities, licensees, suppliers, end-users, and project developers that are ready to work on the project design or technology.

This is ensured when at least two of the following criteria are met:

- a. The project intends to be implemented in one EU Member State and has announced its willingness to develop or built or perform research on SMRs in National Energy and Climate Plan (NECP) submitted by their country.
 - b. The project is one of the laureates of an open and transparent selection process launched by an EU Member State or has been awarded a financial support by an authority in an EU Member State.
 - c. The project is already involved in pre-licensing activities, alone or in the frame of a collaboration with other members of the Alliance, with at least two EU nuclear safety regulators.
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- **It complies with the EU legislative framework, and particularly with the Euratom Programme legislative framework¹⁴**, notably:
 - a. The project is in adherence to Euratom safeguards, EU nuclear safety, radioactive waste and spent fuel management, and basic safety standard regulatory frameworks, and any relevant standards or guidance documents issued by WENRA (Western European Nuclear Regulators' Association), and ENSREG (European Nuclear Safety Regulators Group).
 - b. The project is in adherence to the relevant EU environmental legislation, including but not limited to Directives related to Environmental Impact Assessment (EIA), conservation of natural habitats and of wild fauna and flora and EU legislation and policies in the field of water.

¹⁴ EU national competent authorities in cooperation with the European Commission will need to ensure that these conditions are met.

- It addresses net-zero objectives by:

- a. Supporting the Alliance to promote nuclear energy to achieve net-zero objectives.
- b. Including initiatives targeting electricity, heat, or hydrogen production to expand the reach of nuclear energy in sustainable energy systems.

Each SMR project shall submit a strategic plan addressing the above items as part of their application. The Governing Board will be responsible to assess each application and report back to the applicants.