

ORIENT



ORIENT- NM

Organisation of the European Research Community on Nuclear Materials

A Coordination and Support Action in Preparation of a Co-Funded European Partnership on Nuclear Materials



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Work Package 1 – Dialogue with Member States and European Commission

Deliverable 1.2:

Questionnaire to request input from Member States and relevant national committees.

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Disclaimer

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List of abbreviations

EC	European Commission
ECP	European Co-funded Partnership
EJP	European Joint Programme
EU	European Union
GDPR	General Data Protection Regulation
MS	Member State
NM	Nuclear Materials
PCD	Personal Contact Data
POPD	Protection Of Personal Data
SRA	Strategic Research Agenda
TAG	Technical Advisory Group
WP	Work-package

Summary

The EU-funded ORIENT NM project will explore the possibility and assess the added value of establishing a European Co-Funded Partnership (ECP) on nuclear materials.

Accordingly, ORIENT NM will produce a convincing Strategic Research Agenda (SRA) on materials for all nuclear fission reactor generations, projected until 2040, with special focus on a plan for the first 5 years. This SRA will be consistent with national programmes ensuring that national priorities and expectations are taken into account in the preparation of the CEP on nuclear materials and fuels.

In this framework, the present document describes the development process of the ORIENT-NM Surveys in order to collect information on national programmes, in general, and analyse Member States interest for a ECP on nuclear materials and at which conditions.

The surveys have been sent to lists of selected relevant contacts drawn up during T1.1 of the ORIENT-NM Project “Identification of Member States and key national organisations contacts and first approach”.

Introduction

The objectives of ORIENT-NM are:

1. To design a plan for a European Co-funded Partnership (ECP)¹ on nuclear materials, in all its aspects, as follows:
 - To produce a convincing Strategic Research Agenda (SRA) on materials for all nuclear fission reactor generations projected until 2040, with special focus on a plan for the first 5 years.
 - To elaborate an efficient ECP governance and legal structure.
 - To identify appropriate ways of interactions between the ECP and other bodies and initiatives that bear connections with nuclear materials.
2. Define all of the above in close dialogue with Member States (MS) and European Commission (EC).

Specifically, the main objective of WP1 is to engage Member States representatives in a two-way dialogue:

- **Member States to ORIENT-NM:** to collect information on national programmes, analyse Member States' interest for a European Co-funded Partnership on nuclear materials, at which conditions and complying with what rules, e.g.: How is R&D managed at national level? Who are the national actors involved in Nuclear Materials R&D? Is there a national programme on Nuclear Materials? If so, what is its content, and which are the priorities? Which important nuclear facilities are available? Which plans exist for their future? Under which conditions is there availability to share them? Which co-funding schemes does each Member State envisage? Which scientific, technological, and socio-economic, challenges do the Member States expect the ECP to help address?
- **ORIENT-NM to Member States:** to provide all information (e.g., SRA from WP2, socio-economic benefits, structure and possible implementation, financial aspects from WP3, interaction with external world from WP4) to facilitate Member States' judgment about the prospects and opportunities offered by an ECP on Nuclear Materials, including use of their experimental infrastructure, in the form of documents and presentations. This dialogue will have to be based on direct contact (e-mail, phone), remote meetings (videoconferences or phone conferences), a preparatory meeting around month 8, and two large workshops that are envisaged to be organised at months 12 and 24.

Indeed, as part of the tasks of this WP, a first informal meeting will be organised (involving specifically Member States) in order to explain the way of working and the objectives of ORIENT-NM, as preparation of the foreseen two workshops (M12 and M24). Contextually, Member States representatives will be asked to answer a

¹ This is the instrument that in Horizon Europe will replace the European Joint Programme (EJP) instrument that was known in Horizon 2020. The project proposal accordingly mentions the EJP instead of the ECP.

questionnaire. The answers to this questionnaire will be used to guide the preparation of the SRA, as well as of the governance and legal structure of the ECP.

This deliverable describes the process of development of the initial ORIENT-NM Survey and the methodology for the distribution and the data collection.

Methodology

The text of the survey was developed through various brainstorming meetings amongst the project partners involved in task T1.1. “*Identification of Member States and key national organisation contacts and first approach*”. These partners include CIEMAT, CEA, CVR, EDF, JRC, KIT, KTH, NCBJ, NRG, RATEN, SCK CEN, VTT, together with ENEA, leading WP 1 “Dialogue with Member States and European Commission”, and EERA in charge of T1.1.

Several questionnaire drafts were prepared, before developing the final agreed text. Apart from the technical content of the survey, a key issue was the audience to which it should have been addressed. Indeed, in order to establish a fruitful dialogue with representative of the Member State’s Nuclear Energy R&D sector, the ORIENT- NM team has identified two core groups: Programme Owners and Programme Managers. Programme Owners are intended as Government institutions responsible for national programmes/strategies/policies relevant to the envisaged ECP on Nuclear Materials (generally representing ministries). Programme Managers, in contrast, are national research Institutes/organizations/bodies in charge of the execution of programmes/strategies relevant to the envisaged ECP on Nuclear Materials (generally representing research organisations).

Initially, one single questionnaire had been planned, for both these categories. However, after careful consideration, it was decided to build two separate surveys. The survey presented in this deliverable is targeted towards a Programme Owners’ audience; the second one, tailored for Programme Managers, with more technical questions, has been sent separately and for convenience is also reported on this deliverable

Different formats were considered for the distribution of the survey, from the simple Word document to free online platforms or commercial apps. The offline document option, however direct and simple, was discarded because of difficulties in the gathering of the survey results, therefore it was decided to move towards online platforms.

Mainly three platforms were considered, one free – *Google Forms* - and two commercial ones – *Opinion Stage* and *Typeform*. Google Form has been used for the second questionnaire, to Programme Managers, but could not be used for this particular survey, because of the peculiar structure of some questions and the logical jumps between them, an option not available on this free platform. Instead, both *Opinion Stage* and *Typeform* offered this kind of logic customisation, therefore it was decided to use the platform with the best price/tools’ ratio, considering the instruments needed for the ORIENT- NM Survey (in terms of distribution, presentation, data analysis etc.): *Typeform*. This platform also allows easy data collection, transferring the

replies automatically to an excel sheet that can be downloaded directly from the webpage.

Programme Owner Questionnaire

The questionnaire for the Programme Owners is organized in four separate sections, as follows:

1. **Management and responsibilities of the national R&D programme on nuclear energy:** main actors and processes defining the content of the R&D activities in the nuclear energy and nuclear material field.
2. **National R&D funding dedicated to nuclear energy and nuclear materials:** dedicated budget per country.
3. **Potential interest in a future co-funded European partnership on nuclear materials:** experience with European Joint Programmes in H2020 and modalities for the potential participation in the new partnership on nuclear materials.
4. **Contact details of other national experts:** to answer a more specific survey to gather more information on national R&D programmes on nuclear materials, containing specific questions on different topics related to nuclear materials, such as technical R&D priorities and objectives, available associated costs, available nuclear facilities, etc.

This ORIENT-NM Survey, built on *Typeform*, has been distributed via email to the contacts list created within T1.1 of the Project. Indeed, after an internal contact exchange with the project partners, the National Contact Points for Nuclear Energy of the EU countries were also contacted to contribute to the project by identifying the Programme Owners and Programme Managers of their own countries in charge of R&D on Nuclear Energy and Materials.

The data collected from the survey will be analysed by the ORIENT-NM team and discussed during a workshop with the Member States representatives. This meeting will be the occasion to deepen and explain to the Member States representatives the ORIENT-NM project, its objectives and how it intends to interact with Member States and other stakeholders. Moreover, the Member State's representatives will be asked for their endorsement for the selected international Technical Advisory Group (TAG) and for proposals for additional experts.

This session will serve to build the basis for the future European Co-funded Partnership and will be directly connected with the activities carried out within WP 3 "EJP structure and functioning: legal issues, resource needs and implementation". The initial inputs for these activities will stem from this first ORIENT-NM Survey and the consequent gathering.

Programme Manager Questionnaire

The questionnaire for the Programme Managers focuses on public national research programmes and is organized in two separate sections, as follows:

1. **Information on national research programs:** main funding bodies, mandated organisations for EJPs, further contacts.
2. **Technical information:** nuclear energy policy, reactors of interest, list of relevant national projects if any, materials and decommissioning.

This ORIENT-NM Survey, built on *Google Form*, has been distributed via email to the contacts list created within T1.2 of the Project. Most recipients are members of the consortium. Contacts outside the consortium have been identified through consortium participants and in some cases coincide with the TAG external members.

The data collected from the survey will be analysed by the ORIENT-NM team and discussed during the workshop that is expected to be organised around month 12.

Respect of the GDPR

The questionnaire has been distributed in accordance with the rules of the General Data Protection Regulation (GDPR)². All the data gathered through the survey have been subject to the consent of the recipient, who was invited to insert his/her personal data on the ORIENT-NM platform. The entire process is described in the ORIENT-NM Deliverable 7.1 on Ethical Requirements.

In particular, the data requested within the ORIENT-NM Survey include: first and last name, affiliation and email. These personal data are suitably protected in compliance with the GDPR, as follows:

- Contacts are clearly informed of why they are contacted, the nature of the foreseen activities and what is expected from them; they are also explicitly asked to actively confirm that they wish to be kept on the list of ORIENT-NM contacts, by actively providing a minimal amount of information through a link to an appropriate webpage – if they do not want to, their data will be erased. They may also ask for deletion at any time during the duration of the project.
- The personal data are securely kept and are only accessible to a restricted number of persons involved in ORIENT-NM; they will only and strictly be used for the purposes of the project; they may be passed on in the future ECP if relevant and with the owner's consent, or else destroyed.
- Filling-in the questionnaires is purely voluntary; the answers remain accessible to a few people only, although their general analysis may be disclosed, under the sole responsibility of the ORIENT-NM consortium.

² REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN>

Questionnaire for Programme Owners

Here following the body of the questionnaire that was sent to the selected contact via the Typeform platform.

Section 1: Management and responsibilities of the national R&D programme on nuclear energy

1. Which actors mainly define the content of the R&D activities in the nuclear energy field in your country?

- a) One or more ministries
Please provide the names of the bodies [allow comment]
- b) One or more agencies
Please provide the names of the bodies [allow comment]
- c) One or more associations
Please provide the names of the bodies [allow comment]
- d) One or more industrial companies
Please provide the names of the bodies [allow comment]
- e) One or more Research Centres
Please provide the names of the bodies [allow comment]
- f) One or more Universities
Please provide the names of the bodies [allow comment]
- g) Others
Please provide the names of the bodies [allow comment]

2. Which of these actors define the priorities, if any?

- a) One or more ministries
Please provide the names of the bodies [allow comment]
- b) One or more agencies
Please provide the names of the bodies [allow comment]
- c) One or more associations
Please provide the names of the bodies [allow comment]
- d) One or more industrial companies
Please provide the names of the bodies [allow comment]
- e) One or more Research Centres
Please provide the names of the bodies [allow comment]
- f) One or more Universities
Please provide the names of the bodies [allow comment]
- h) Others
Please provide the names of the bodies [allow comment]

3. Which organizations provide R&D funding (programme owners) on nuclear energy in your country?

Please provide the names of the bodies.
[allow comment]

4. Which organizations manage R&D funding (programme managers) for nuclear energy research in your country?

Please provide the names of the bodies.
[allow comment]

5. Is there a formally defined, possibly written R&D Programme on nuclear energy in your country?

a) Yes.

5.1 Which body or organization defines and/or coordinates it?

[allow comment]

b) No.

c) I don't know.

6. If the answer to question 5 is no, please answer this question: Is R&D on nuclear energy the result of scattered interests among the actors mentioned in questions 1 and 2?

a) Yes.

6.1 Please, provide the names of those actors: [allow comment]

b) No.

c) I don't know.

7. Is there a formally defined, possibly written R&D specific Programme on nuclear materials in your country?

a) Yes.

7.1 Which body or organization defines and/or coordinates it?

[allow comment]

b) No.

7.2 Is R&D on nuclear materials part of the R&D Programme on nuclear energy?

a) Yes.

b) No.

c) I don't know.

7.3 Is the R&D on nuclear materials the result of scattered interests among the actors mentioned in questions 1 and 2?

a) Yes.

b) No.

c) I don't know.

8 I don't know.

Section 2: National R&D funding dedicated to nuclear energy

8. Is there a dedicated budget to finance R&D projects on nuclear energy in your country?

a) Yes.

8.1 Please, indicate its order of magnitude in M€/year, if possible

0-0.5, 0.5-1, 1-5, 5-10, 10-50, 50-100, >100

b) No.

c) I don't know.

9. Is there a dedicated budget to finance R&D projects on nuclear materials in your country?

a) Yes.

9.1 Please, indicate its order of magnitude in M€/year, if possible

0-0.1, 0.1-0.2, 0.2-1, 1-2, 2-10, 10-20, >20

b) No.

c) I don't know.

Section 3: Potential interest in a future co-funded European partnership on nuclear materials

10. Do you have experience with any current European Joint Programs in H2020, e.g., CONCERT or EURAD?

a) Yes.

10.1 Which one?

[allow comment]

10.2 Based on your current experience, are you satisfied with the added value they bring to your country?

a) Yes.

Please, indicate the reasons [allow comment]

b) No.

Please, indicate the reasons [allow comment]

c) No.

11. Do you consider that a European R&D co-funded partnership on nuclear materials, centred around and driven by research funders and other public authorities, would be a suitable instrument to promote nuclear materials R&D in your country?

a) Yes.

11.1 Would your country be interested in participating and supporting the development and implementation of a future European R&D co-funded partnership on nuclear materials?

a) Yes.

b) No.

c) I do not know.

11.2 Do you think that a share of e.g., 50%/50% (MS/EU) would be sufficient to guarantee that the national priorities are correctly considered?

a) Yes.

b) No.

c) I do not know.

11.3 Would your country be ready to support it with a higher share?

a) Yes.

b) No.

c) I do not know.

11.4 Please, provide your comments about an optimum co-funding scheme.

[allow comment].

11.5 Please, specify the type of contribution your country is willing to commit to.

a) Ear-marked funding.

b) In-kind contribution³.

³ National/regional funding for projects, resulting from the transnational calls, is counted as financial contributions. Any direct expenditure of a partner in the consortium (other than providing financial support to third parties) for activities of the partnership are, in principle, in-kind contributions. The coordination and management of a partnership or the use of

- c) A mix of both options with preference for ear-marked funding.
- d) A mix of both options with preference for in-kind contribution.
- e) A mix of both with equal importance.
- f) Other possibilities [specify].

11.6 What could be the approximate contribution provided by your Member State to a European R&D co-funded partnership on nuclear materials?

- a) Less than €50k/year.
- b) Between €50k/year and €100k/year.
- c) Between €100k/year and €500k/year.
- d) Between €500k/year and €1M/year.
- e) Between €1M/year and €2M/year.
- f) More than €2M.

- b) No.
- c) I do not know.

12. In your opinion, which type of activities should the European R&D co-funded partnership on nuclear materials mainly support? [Multiple answers possible]

- a) Materials solutions for safe long-term operation of current reactors.
- b) Materials qualification for the design of innovative nuclear systems.
- c) Development of innovative materials solutions to improve nuclear energy sustainability.
- d) Development of a methodology for autonomous optimization/discovery of nuclear materials.
- e) Energy materials for extreme conditions of cross-cutting interest.
- f) Other [specify].

13. Would you be interested in contributing with your advice to the activities carried out under the ORIENT-NM project to explore the possibility of establishing a future co-funded partnership on nuclear materials, by taking part in dedicated workshops?

- a) Yes.
 - b) No.
 - c) I do not know.
- [allow comment]

Section 4: Contact details of other national experts

14. A second survey will be conducted to gather more information on national R&D programmes on nuclear materials, containing specific questions on different topics related to nuclear materials, such as technical R&D priorities and objectives, available associated costs, available nuclear facilities, etc. If someone else should answer this more specific survey, could you please provide the contact details of the most suitable expert(s)?

- a) Name.

a research infrastructure could be examples of such an activity. Institutional funding of research performing or governmental organisations, if they are implementing R&I activities in the partnership, can also qualify as in-kind contribution.



- b) Surname.
- c) Organization.
- d) Email.

Examples from the online platform



ORIENT-NM Survey in connection with a possible Co-funded European Partnership on nuclear materials including fuels

You are being contacted as Member State representative in order to make sure that your requirements and expectations are taken into account in the preparation of the CEP on nuclear materials and fuels.

Figure 1: Opening slide of the ORIENT-NM Survey.

2 → Which actors mainly define the content of the R&D activities in the nuclear energy field in your country?*

Description (optional)

Choose as many as you like

<input type="checkbox"/>	A One or more ministries
<input type="checkbox"/>	B One or more agencies
<input type="checkbox"/>	C One or more associations
<input type="checkbox"/>	D One or more industrial companies
<input type="checkbox"/>	E One or more research centres
<input type="checkbox"/>	F One or more universities
<input type="checkbox"/>	G Other

Figure 2: Question 2 of the ORIENT-NM Survey.

16 → Is there a dedicated budget to finance R&D projects on nuclear energy in your country?*

Description (optional)

A Yes

B No

C I don't know

Figure 1: Question 16 of the ORIENT-NM Survey.

29 → Please, provide your comments about an optimum co-funding scheme.

Description (optional)

Type your answer here...

Figure 2: Question 29 of the ORIENT-NM Survey.

Questionnaire for Programme Managers

Questionnaire on public national research programmes on nuclear materials

Country: ...

Questionnaire answered by: [name, surname, affiliation, e-mail]

I. Information on national research programs

1. Please, list the main funding bodies supporting public research programmes related to nuclear materials at:

- National level (Ministries, Research Agencies, Industrial Research Agencies, ...):
>
- Regional level (Regional Secretariats for research, ...):
>
- Councils or Institutions (Regulatory bodies, ...):
>

2. Please, identify the organization that, in your country, should eventually be mandated, and by whom, to manage the member state participation in the co-funded European partnership on nuclear materials:

- Research owner
 - Institution:
 - Contact Person:
- Institution receiving the mandate (research manager):
 - Institution:
 - Contact Person:

3. List the persons of your institution that could help ORIENT-NM to set the adequate contacts in your country to reply specific questions regarding the national position on co-funding options and strategies.

(It is the aim of ORIENT-NM-WP1 to set a number of short telco meetings with the contact persons defined in the previous question, in order to compile precise information on the position of the Owner and Manager institutions regarding the future CEP rules. The meetings will ideally start in January 2021 and conclude in May 2021)

- Contact person in your institution:
- Has he/she been informed about the project and its aims?

II. Technical information

Tick this box if your country possesses running nuclear power plants
 If there are NPPs

- Is the national policy to

- Phase out of nuclear If so by when?
- Continue with nuclear with the same or lower installed power
- Expand the nuclear installed power

Tick the nuclear systems of interest:

(of interest means that: (1) those reactors are installed or might be installed in the future, (2) in the country there are groups of sufficient critical mass working to develop those reactors or participating in their design)

Type of reactor	Large reactors	SMR (if applicable)
PWR (specify further if needed)		
BWR (specify further if needed)		
VVER (specify further if needed)		
Candu (specify further if needed)		
GenIII/III+ (specify)		
SFR		
LFR		
GFR		
(V)HTR		
SCWR		
MSR		
Other (specify)		
Fusion reactors		

Does your country (or do major public or semi-public nuclear actors in your country) lead, support, or participate in the development of a medium-to-large scale nuclear project (e.g. reactor demonstrator/prototype, test reactor, other nuclear facility)?
 If so which one(s)?

What is the main reason for the government of your country to support financially research on nuclear energy in general and on nuclear materials in particular?

List nuclear materials related projects of your knowledge that have been funded by national or regional sources and their main goal (if any) between 2015 and 2020 (include projects that ended after 2015 and started before 2020)

Project name	Main goal	Budget* (k€)

* (Approximate) budget of public or semi-public origin (ministry, agency, regional office, ...)

Regarding the strategy on NPP decommissioning in your country:

- Does an official roadmap exist?
- Is materials research part of it?

Have you identified in your country any need concerning material science and technology from fields related to nuclear, such as synchrotron, nuclear medicine, accelerator facilities, ...? Can you envisage any synergy between them?

Analysis of the replies

On 18th March 2021, six Programme Owners had replied to the questionnaire for them, representing six different Member States, i.e., Italy, the Netherlands, Belgium, Finland, Germany, and Croatia, while 16 Programme Managers had replied to the other questionnaires, representing 14 Member States and Associated Countries, namely, Hungary, Finland, Belgium, the Netherlands, Slovakia, Sweden, Italy, Romania, Spain, Czech Rep., Slovenia, France, Germany, Poland and Switzerland.

Nevertheless, joint efforts of consortium partners will be made in the weeks ahead to have a wider-ranging representation of Member States and Associated Countries replying to the questionnaire.



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