Towards Optimized Use of Research Reactors in Europe
Project Number: 945 269

DELIVERABLE D1.1

Data Base of European RR fleet

Lead Beneficiary: ENEN

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Project Coordinator: Gabriel Pavel

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RE	Restricted to a group specified by the Beneficiaries of the TOURR project	
CO	Confidential, only for Beneficiaries of the TOURR project	

Version control table

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1.0	27.08.2021	Roberta CIRILLO	First draft
1.1	02.09.2021	Michaela Velčková, Petr Kořán	Reviewed by MST
1.2	24.09.2021	Roberta CIRILLO	Comments from Coordinator incorporated

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Project information

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EXECUTIVE SUMMARY

Since one of the main targets of the TOURR project is to assess the impact of the decreasing numbers of Research Reactors (RR), and suggest an optimization strategy for the existing RR fleet, the natural starting point was to get a picture of the current situation.
In order to do so, we developed a questionnaire, with the help of all project partners involved in WP1, and the project advisors, and distributed it to the highest possible number of RR in Europe.
Finally, the response rate was higher than 80% which enables us to draw meaningful conclusions.
Since this report is made public and given the extreme sensitivity of the data shared with us by the involved RR, only general conclusions will be reported in this document without specific mentioning of the issuer of the data.

CONTENT

1 INTRODUCTION

The TOURR project aims to suggest a strategy for maintaining and upgrading the existing research reactor (RR) fleet in Europe and building new ones.

The starting point is the assessment of the current status of the European RR fleet. This step is the goal of WP1 to which this deliverable belongs and represents the input for other reports.

The goal is to get an inventory of the existing RR, going beyond already existing databases. We need to gather information about the scope of the implemented applications, the scientific strength of each facility, their user distribution, future developing plans, actual needs and potential future needs.

For this reason, we developed a questionnaire and distributed it to the highest amount of RR operators.

Given the big amount of information we wish to collect, it turned to be a 23 pages questionnaire. Quite an extensive document. At the same time though, not all questions apply to every RR and also, we declared ourselves satisfied also in receiving partially filled questionnaires. This was a measure to encourage operators to provide a response. If for any reason they preferred not to answer, no question was blocking nor mandatory along the questionnaire.

Furthermore, the choice of not going for an online form, was made to avoid storage of sensitive data online.

2 THE EUROPEAN RR FLEET

In order to assess to whom we should send the designed questionnaire, we relied on the information present in the IAEA RR database (https://www.iaea.org/resources/databases/research-reactor-database-rrdb). This information is public and contains loads of technical details about RR all around the world.

For our scope, we selected facilities in eastern and western Europe and being in an operational state.

The project partners support was decisive in addressing the appropriate contact person in each facility. Although contact email addresses were present in the IAEA database (per each facility) we were not always receiving a reaction for various reasons (most of the time the contact changed during time). In some cases our emails even bounced back.

But thanks to personal and professional connections, it was possible to reach out to 25 RR facilities which led to 19 questionnaires filled and sent back to us. 19 out of 25 translates into 76% of response rate.

On top of those, there are 2 small assemblies for which we did not receive a dedicated questionnaire but still, the operator provided us with some generic information. It has to be noted that indeed there was no point in providing a questionnaire for these specific assemblies, either because they are very small and have the same applications as the main RR (just scaled down to a small neutron flux) or because they do not have any instrumentation attached to it.

If these 2 extra entries are considered it yields to 21 out of 25 which gives 84% as response rate.

Although the TOURR project is financed by the European Commission, we sent the questionnaire beyond EU borders, until covering the whole geographical Europe in order to have a wider view of the RR context.

At the end of the gathering process however, all the answers we have got are from EU RR.

We received data from Austria, Belgium, Czech Republic, France, Germany, Hungary, Italy, The Netherlands, Poland, Romania and Slovenia.

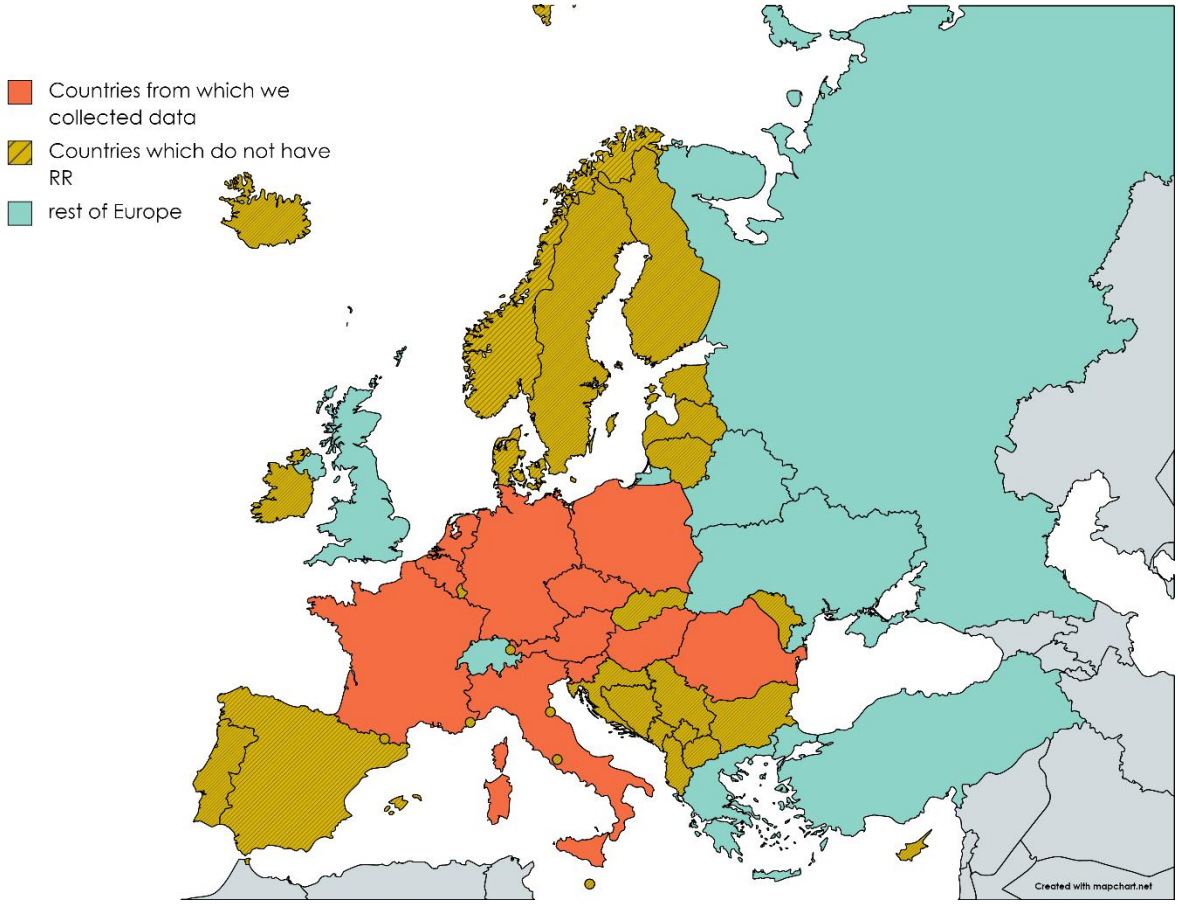

Figure 1 Visualisation of countries whose RR responded to the questionniare

2.1 The structure of the questionnaire

As previously mentioned, the resulting questionnaire is quite an extensive document.

The rationale behind its structure, is to get input for all the future reports required by the project. Or at least the majority of them.

Questions are articulated into 7 main sections:

1. Location of the RR
    a. Name of the facility and country
2. Technology of the RR
    a. What is the focus of the RR
3. Exploitation
    a. Users distribution
    b. Scientific and technological utilization of the RR
    c. Education and Training Applications of the RR
    d. Medical and industrial radioisotope production of the RR
    e. Radioisotopes production related questions
    f. Users distribution by field
    g. Users distribution by origin (academia, industry…)
    h. Information about the RR ability to satisfy all the demands

i. Information about cooperation with other research reactors to ensure continuity of supply

4. Sustainability
    a. Information about any problems/issues the RR may have encountered
5. Future
    a. Future developing plans
    b. Current needs
    c. Future needs
6. Conclusions
    a. A definition of the “SCIENTIFIC STRENGTH” of the RR
    b. Information about updates with respect to the characteristics described in the RR IAEA database
7. Contact details

2.2 The questionnaire distribution strategy

As a start, an email was sent to a list of contacts put together merging the contact details found on the IAEA RR database and project partners’ connections. This list is kept as confidential and used only in the limits of GDPR.

Moreover, an invitation to take part in this initiative (providing answers to a questionnaire in the frame of the TOURR project) was published both on TOURR dedicated webpage under the ENEN website (https://enen.eu/index.php/2021/05/04/tourr-initiative-research-reactors-survey/) and on the www.tourr.eu website.

The same initiative has been advertised on ENEN social channels, several times, and all project partners have been invited to take actions in order to maximize the outreach.

A full questionnaire template is provided as Annex 1. The accompanying email is provided as Annex 2.

2.3 Main general results

In order to ensure confidentiality of the provided data, only generic results will be presented.

The ambition of TOURR is to evaluate the current and future needs of RR and neutron sources in Europe along 5 science and technology axes:

- Education and training
- Basic and fundamental research and its instruments
- Medical applications, including isotope R&D as well as beam applications
- Material testing, including fuel, structural material and its instrumentation
- Core physics testing for reactors in "zero power" installations

Respondents have been invited to tick all applicable answers coherent with the above. The outcome is a confirmation on how the principal use of RR is basic research along with education and training purposes. A plot is presented in Figure 2.

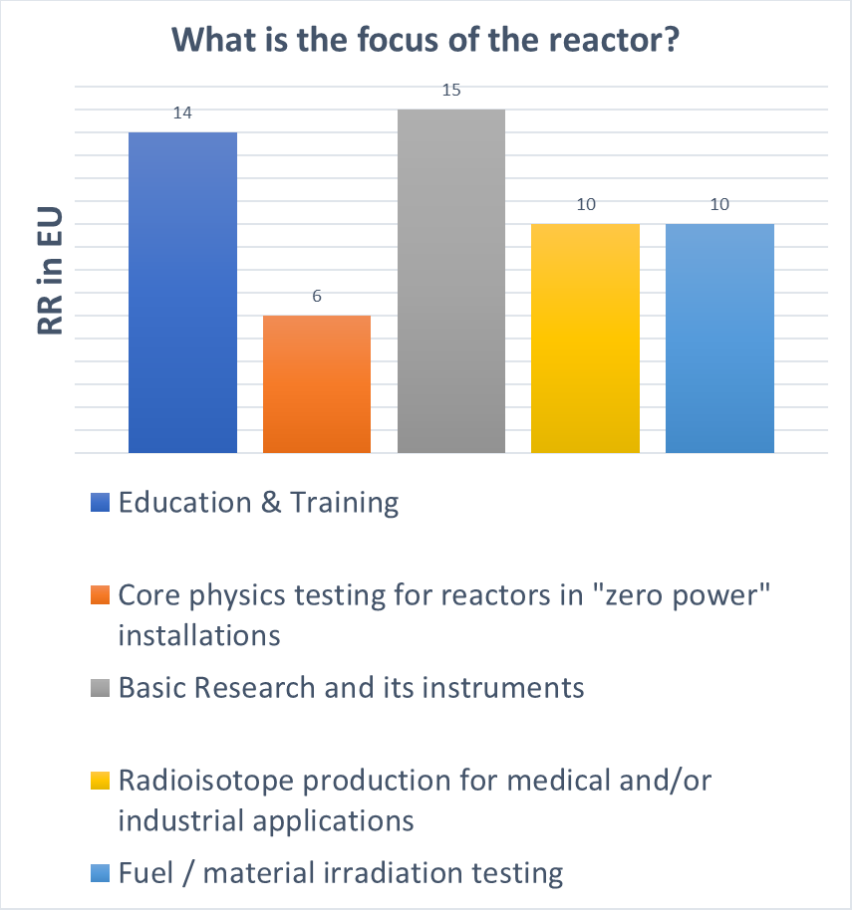

Figure 2 Research Reactor main focus

In order to know the population of users, the following figures illustrate their distribution according to:

- demanded RR application, figure 3,
- the typology of students, figure 4,
- RR operators (technical population), figure 5,
- distribution of users from the private sector figure 6,
- distribution of users of RR products (like museums or hospitals), figure 7,
- distribution of users among computational experts, figure 8.

In order to avoid too scattered answers an arbitrary threshold of >20% has been indicated, after consulting with the partners. The scope is to have only macro categories indicated but at the same time not to lose information about RR users.

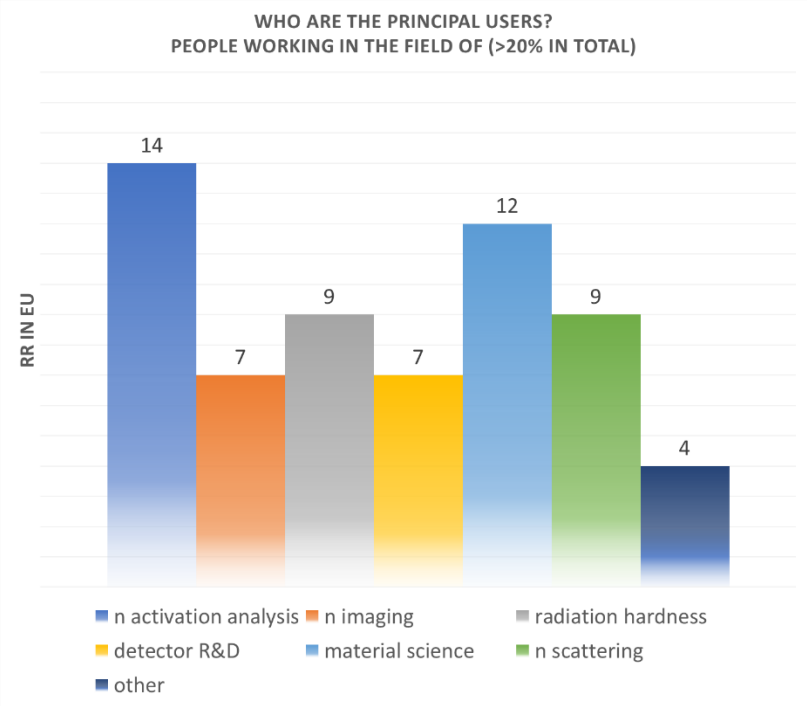

Figure 3 RR users distributed according to the RR application demanded

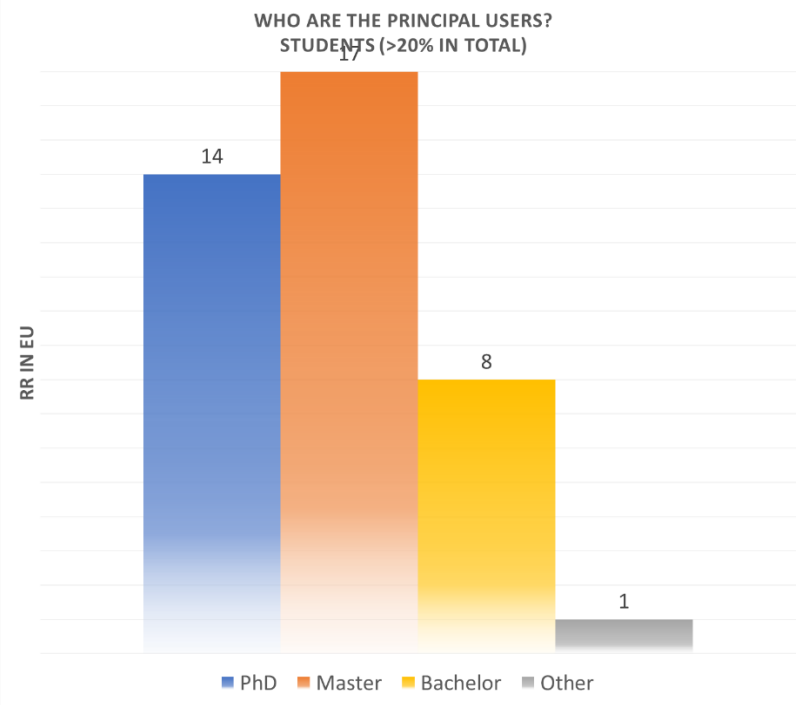

Figure 4 RR student-users distributed according to which education diploma they hold

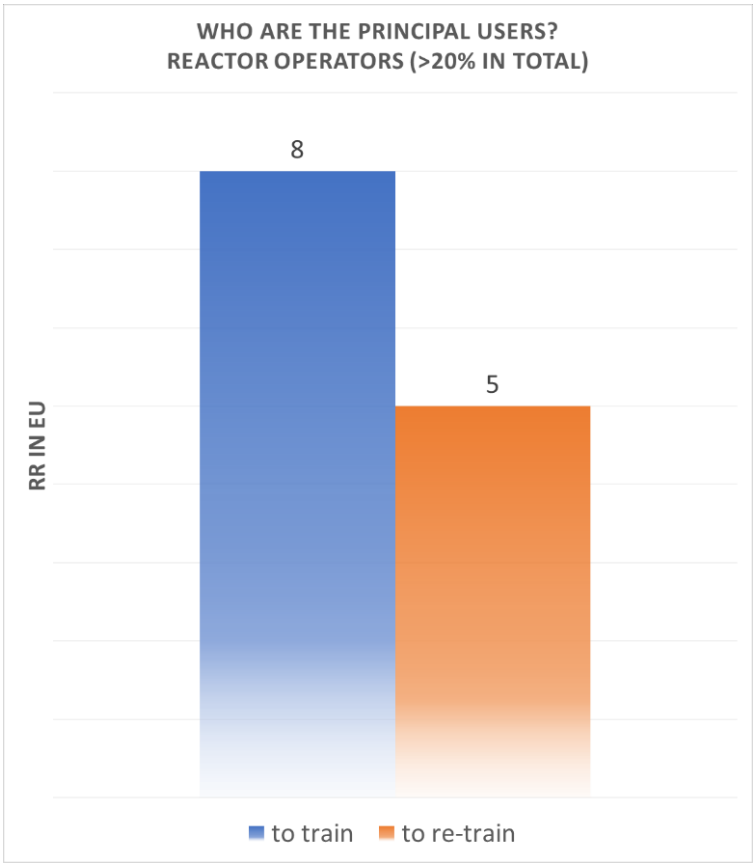

Figure 5 RR operators-users distributed according to 1st training, or subsequent one

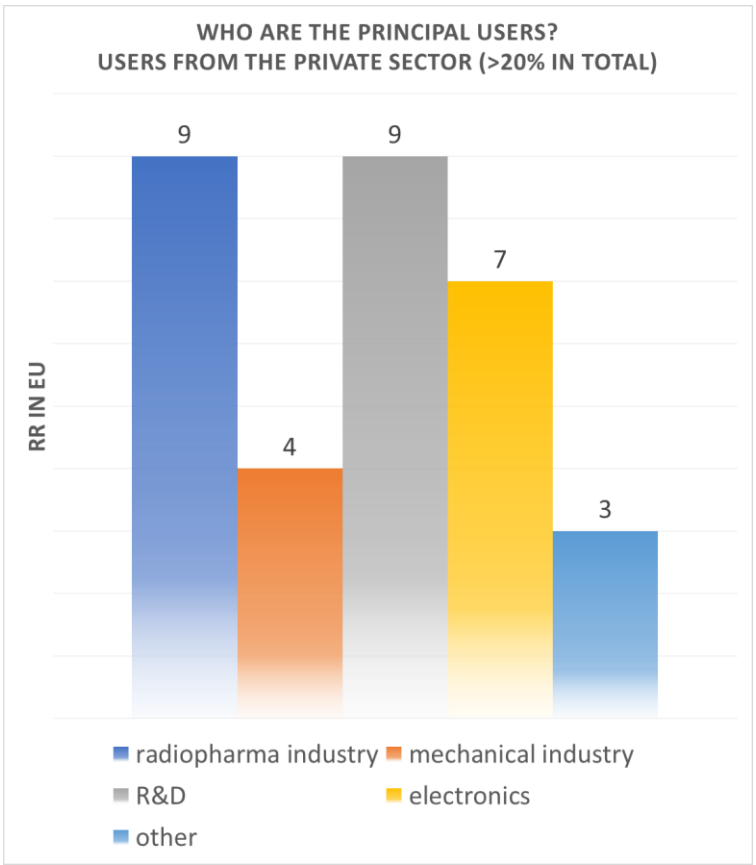

Figure 6 RR users distribution according to their affiliation to a private sector branch

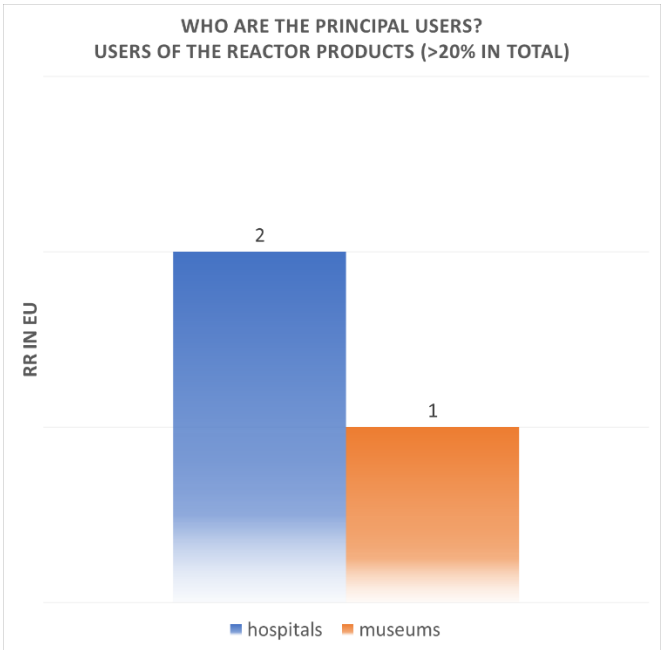

Figure 7 RR product users distribution

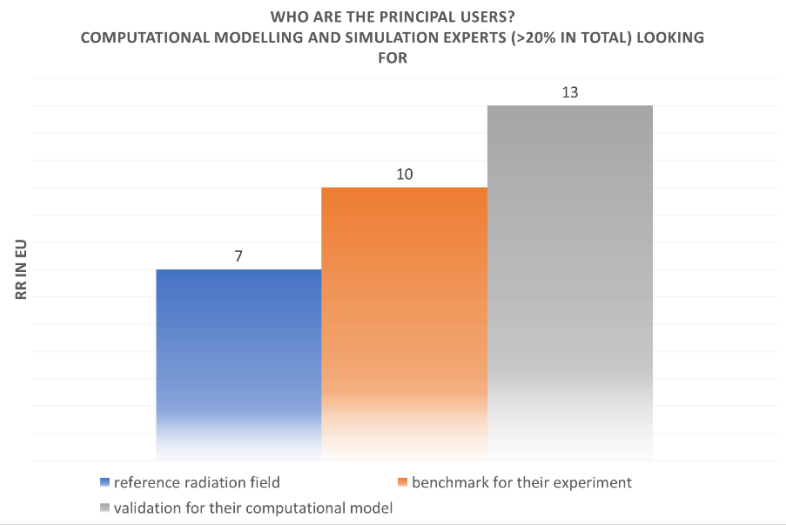

Figure 8 Distribution of computational experts users of the RR

The next series of plots shows the degree of exploitation of various applications: classified as low, medium or high and categorized as science & technology (figure 9), education & training (figure 10) or related to isotope production applications (figure 11).

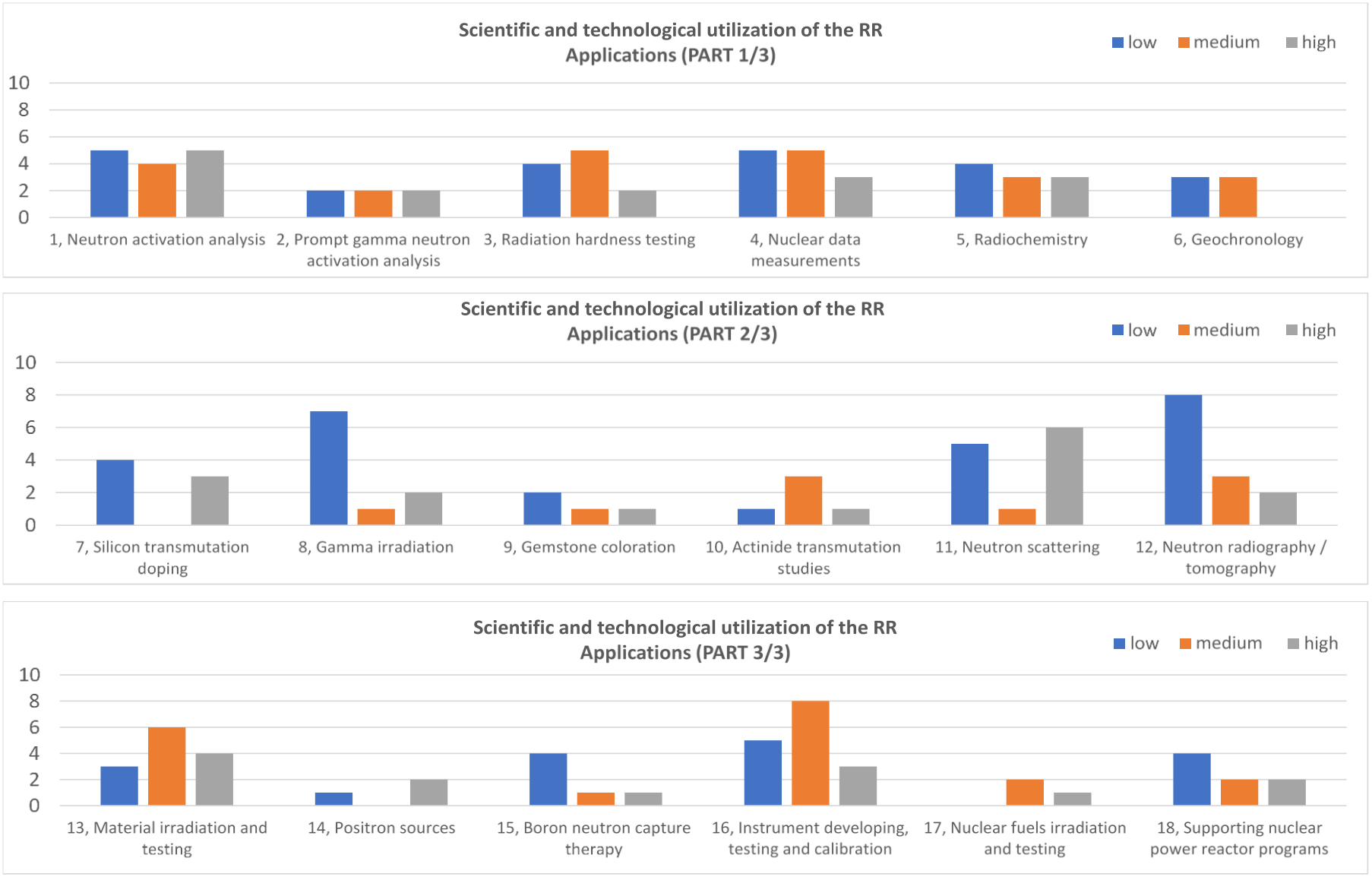

Figure 9 Science & Technology applications, and at what level they are exploited

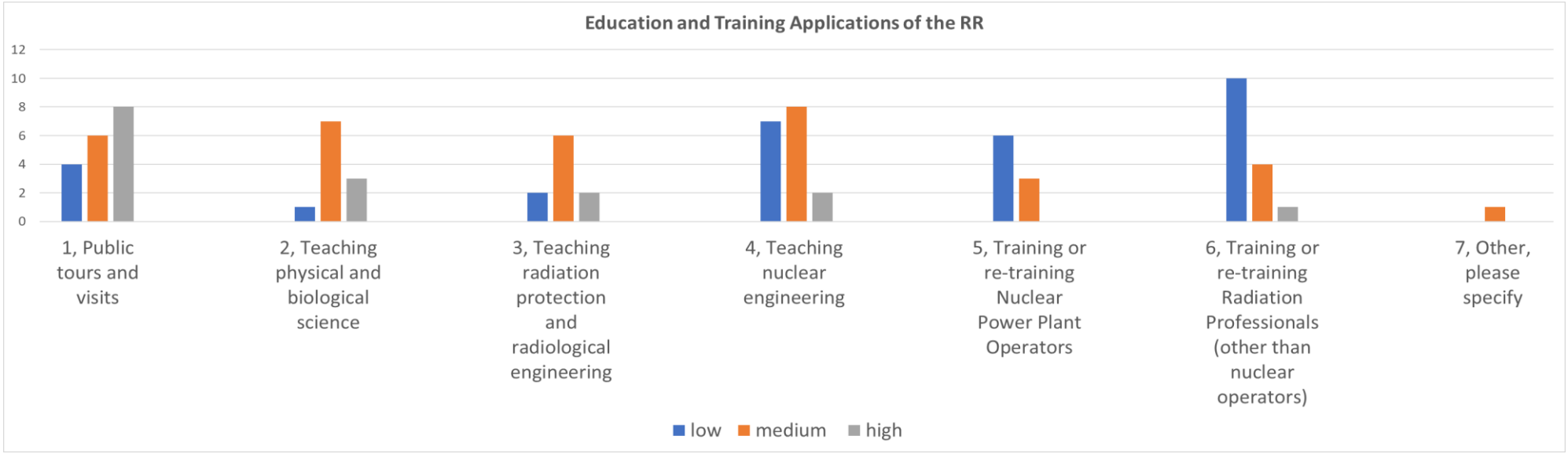

Figure 10 Education & Training applications, and at what level they are exploited

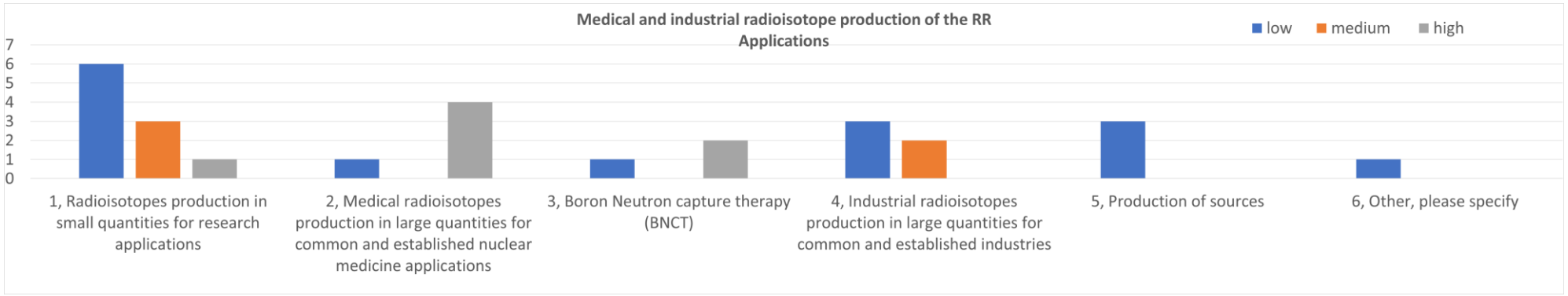

Figure 11 Radio-isotope production related applications, and at what level they are exploited

The following series of figures, gives some insights about the amount of users the RR receives, figure 12, the affiliation of the users, figure 13.

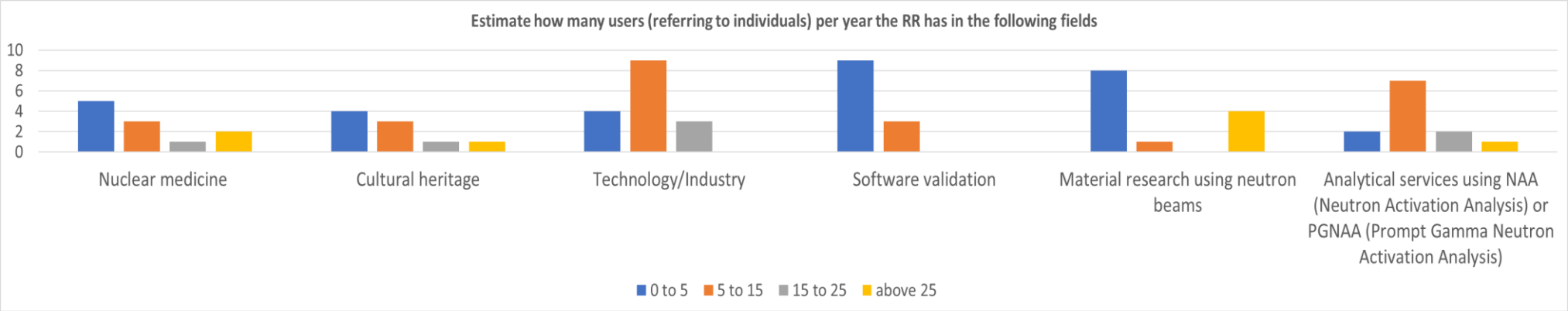

Figure 12 RR users counting individuals, referring to a specific activity

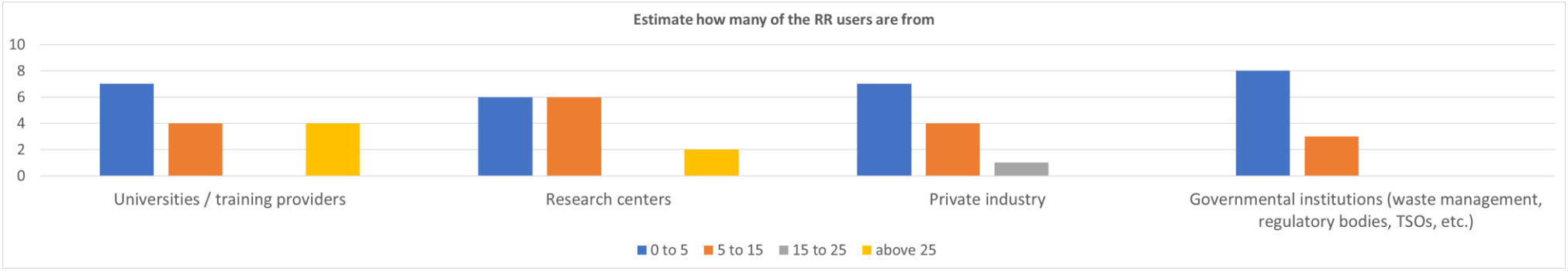

Figure 13 RR users, counting individuals, classified accroding to their affiliation

Since the ultimate scope of the project is to provide an optimisation strategy, several questions were aimed at assessing if the actual RR fleet can satisfy all the demands it receives (figure 14) and if they collaborate with other isnstitutions (figure 15) in order to ensure continuity of supply.
This type of questions allow to understand if the availability of RR is too low for example and if some cooperations are already in place.

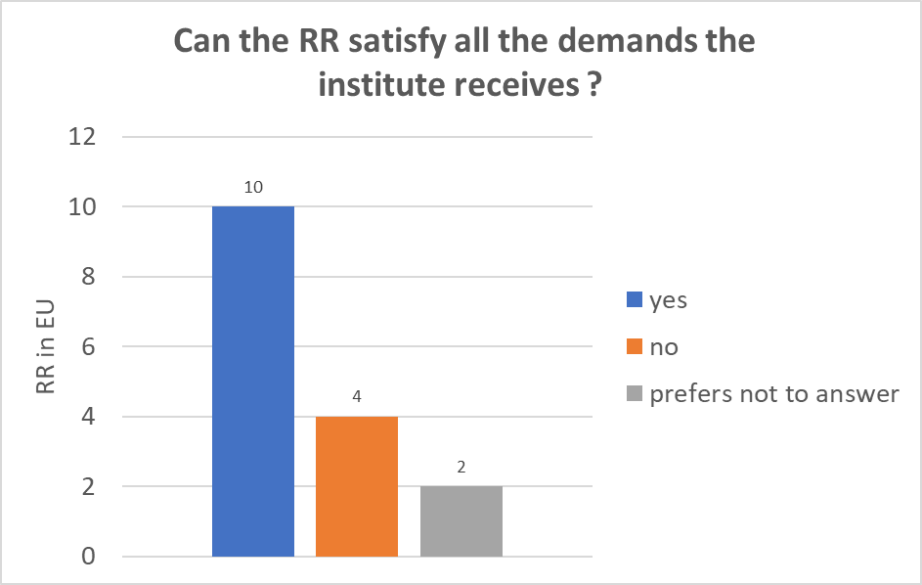

Figure 14 Answers about possibility to satisfy all the received demands

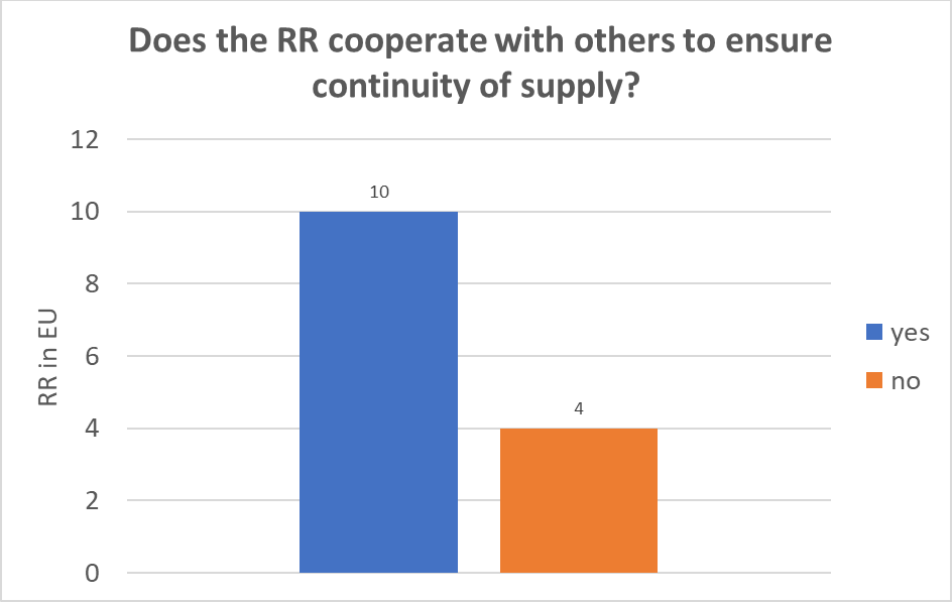

Figure 15 Answers about collaboration with other RR.

To conclude, an overview of the areas in which RR encountered some problems (figure 16). It is plain to see that the most sensitive is related to refurbishments.

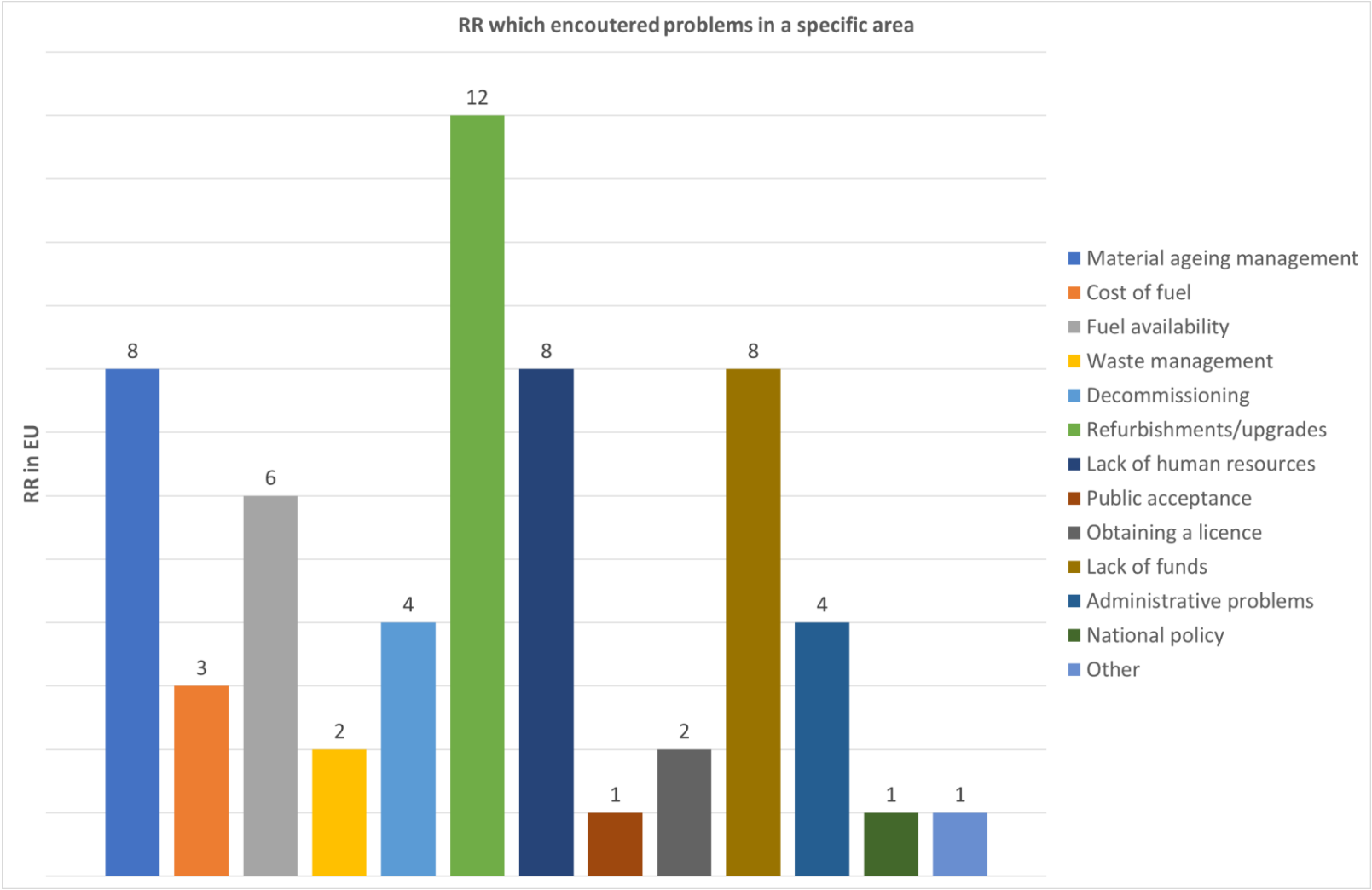

Figure 16 Specific areas in which the RR encountered problems

3 CONCLUSIONS

In order to build this database of European RR fleet, we prepared a questionnaire that we asked RR operators[1] to fill in and return to us.

Main conclusions deriving from the questionnaire analysis are summarized hereafter.

The main focuses of RR are basic research and educations and training.

The principal users of RR are people working in the field of neutron activation analysis, followed by material scientists. The larger student population (making use of RR resources) is composed by Master students; whilst the private sectors sees both R&D professionals and radiopharmaceuticals experts being the principal users of RR. At the same time, when looking at the population of computational modelling experts, the majority of users refers to RR to get their model validated.

Regarding technological applications, the majority of RR implements neutron scattering and neutron activation analysis at a high level. The least implemented applications appear to be the ones related to positron sources and actinides transmutation studies.

In the education and training field, the majority of RR allow public visits and tours whilst only 1 RR is involved in the teaching of biological sciences.

The last *tranche* of applications covers medical related applications and the moslty exploited one is the production of isotopes in large quantities for established nuclear medicine applications, rather than producing small quantities of radioisotopes for research purposes. A few RR have also the ability of producing sources.

In terms of individuals, the majority of people make use of neutron beams and they mostly come from universities or other institutions providing training.

About half of the RR can satisfy all the demands they receive and however many RR already have private collaboration agreements in place to ensure continuity of supply.

Lastly, a glance to specific areas which might have been found problematic for the RR.

Refurbishment and upgrades resulted to be problematic for most RR, besides this, lack of funds, lack of human resources and management of material ageing are problematic areas indicates by several RR. It is interesting to notice that only 1 RR has some troubles in gaining public acceptance.

The response rate to the questionnaire was higher than 80%. All respondents are from EU RR. We received data from Austria, Belgium, Czech Republic, France, Germany, Hungary, Italy, The Netherlands, Poland, Romania and Slovenia.

We consider this a big achievement given the sensitivity of the shared data and the natural initial “reluctance” in providing answers that we had to face at the beginning.

A high response rate such as this, allows us and all the project partners to shape our further analysis in a meaningful way. Reports stemming from the questionnaire data collection will remain confidential i.e. shared among project partners and the European Commission services only.

[1] To avoid any confusion: operator is intended as “facility, firm, industry…” managing the RR exploitation. Not the technical personnel in charge of daily operation.

4 ANNEX 1 - QUESTIONNAIRE

TOURR | nuclear research reactors

"This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945 269."

The TOURR Project: Towards Optimized Use of Research Reactors in Europe

Europe has a broad and very diverse landscape of Research Reactors (RRs), many of them 30-50 years in operation, well maintained and regularly upgraded. Yet financial pressure, caused by a combination of declining interest and the absence of a sound financial model, led to closure of many of them and a few others will close soon. Those negative trends call for a coordinated European action to assess the impact of the decreasing number of RRs, identify future needs (including new neutron sources), draw a roadmap for upgrade of the existing RR fleet, and a model for harmonized resource management. TOURR project is a response to this challenge.

RRs in Europe play, since about 50 years, an important role in supporting R&D in different areas. Many RRs coalitions have grown in recent years and dedicated databases have been implemented to disseminate facility information and to facilitate interactions among operators. The existing data bases (e.g. RRDB[2] maintained by IAEA) concentrate on RR technical and operational parameters, whereas for our purpose it is fundamental to investigate more deeply each facility from the point of view of implemented applications, their future plans and available capacities.

QUESTIONNAIRE AIM: This questionnaire is intended to acquire information on facility utilization and their relation with external stakeholders and users in the time interval 2020-2030 and gathering information beyond already existing databases.

DISCLAIMER: we are aware that some questions may touch upon sensitive issues. As a result, it is possible that not all the questions of this questionnaire will be answered. ***No question is mandatory nor blocking in the process to submit your contribution****. If you prefer to leave any questions unanswered, please do so. It would help us if, in such cases, you could provide a short explanation on why you cannot disclose such information (e.g. commercial agreement, sensitive information, information not fully quantified…)*

DATA PRIVACY: we will apply strict confidentiality in handling all data coming from this Questionnaire. Since the project partner managing this task is ENEN (European Nuclear Education Network), you are welcome to visit this page to get acquainted with the details of GDPR privacy policy.

[Estimated time to complete 3 hours, the questionnaire has a lot of pages but not all questions will apply to each RR]

[2] https://nucleus.iaea.org/RRDB/

1. LOCATION

1a. Name of the facility	Click or tap here to enter text.
1b. Country in which the RR is located	Click or tap here to enter text.

2. TECHNOLOGY

2a. What is the focus of the reactor (please select *all* applicable options)

☐ Education and training
☐ Core physics testing for reactors in "zero power" installations
☐ Basic research and its instruments
☐ Radioisotope production for medical and/or industrial applications

In case the focus of the reactor is "medical applications"

Is the facility producing any radioisotopes? ☐ YES ☐ NO
If YES, which ones? (please list them as X-nnn, Y-nnn…)
Click or tap here to enter text.
If you prefer not to answer, can we know the reason why such information cannot be disclosed?
Click or tap here to enter text.

☐ Fuel / material irradiation testing

In case the focus of the reactor is "fuel/material testing"

Is the facility testing any materials? ☐ YES ☐ NO
If YES, which ones? (please list them)
Click or tap here to enter text.
If you prefer not to answer, can we know the reason why such information cannot be disclosed? (open answer)
Click or tap here to enter text.

3. EXPLOITATION

3a. Who are the principal users (users can be considered as direct & indirect stakeholders also), (please select *all* applicable answers – by *principal* we mean users that take more than 20% of the Reactor Time)

Researchers working in the field of (>20% in total):	☐ Neutron activation analysis ☐ Neutron imaging ☐ Radiation hardness ☐ Detector research and development ☐ Material Science ☐ Neutron Scattering ☐ Other (please specify) Click or tap here to enter text.
Students (>20% in total):	☐ PhD students ☐ Master Students (doing their internship or not) ☐ Bachelor students ☐ Other (please specify) Click or tap here to enter text.
Reactor operators (>20% in total)	☐ to train ☐ to re-train ☐ Other (please specify) Click or tap here to enter text.

Users from the private sector (>20% in total)	☐ Radiopharmaceutical industry ☐ Mechanical industry ☐ R&D ☐ Electronics ☐ Other (please specify) Click or tap here to enter text.
Users of the reactor products (>20% in total)	☐ Hospitals ☐ Museums ☐ Other (please specify) Click or tap here to enter text.
Computational Modelling and Simulation experts (>20% in total) looking for	☐ A Reference radiation field ☐ A Benchmark for their experiments ☐ Validation for their computational model ☐ Other (please specify) Click or tap here to enter text.

3b. Scientific and technological utilization of the RR
(Please, indicate the research areas in which the RR is involved. Select *all* applicable options – sub questions apply only if once specific application is selected).

1. ☐ **Neutron activation analysis**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

2. ☐ **Prompt gamma neutron activation analysis**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place

☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

3. ☐ **Radiation hardness testing**

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

4. ☐ **Nuclear data measurements**

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

5. ☐ **Radiochemistry**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

6. ☐ **Geochronology**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

7. ☐ **Silicon transmutation doping**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

8. ☐ **Gamma irradiation**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

9. ☐ **Gemstone coloration**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

10. ☐ **Actinide transmutation studies**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

11. ☐ **Neutron scattering**

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

12. ☐ **Neutron radiography / tomography**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.
If YES, what obstacles are preventing your institute to do so: ☐ No obstacle, the expansion is already taking place ☐ Lack of manpower ☐ Lack of financial resources ☐ Lack of customers ☐ Lack of time ☐ Lack of expertise ☐ Other (please specify) Click or tap here to enter text.
☐ Is there an existing action plan to address any of these obstacles? Click or tap here to enter text.
13. ☐ **Material irradiation and testing**
To what degree do you think this application is exploited at the RR of your institute: ☐ Low ☐ Medium ☐ High
Would your institute like to expand the utilization of your RR for this application? ☐ YES ☐ NO
If NO, can you briefly describe the reason: Click or tap here to enter text.
If YES, what obstacles are preventing your institute to do so: ☐ No obstacle, the expansion is already taking place ☐ Lack of manpower ☐ Lack of financial resources ☐ Lack of customers ☐ Lack of time ☐ Lack of expertise ☐ Other (please specify) Click or tap here to enter text.
☐ Is there an existing action plan to address any of these obstacles? Click or tap here to enter text.
14. ☐ **Positron sources**
To what degree do you think this application is exploited at the RR of your institute : ☐ Low ☐ Medium ☐ High
Would your institute like to expand the utilization of your RR for this application? ☐ YES ☐ NO
If NO, can you briefly describe the reason: Click or tap here to enter text.
If YES, what obstacles are preventing your institute to do so: ☐ No obstacle, the expansion is already taking place ☐ Lack of manpower ☐ Lack of financial resources ☐ Lack of customers ☐ Lack of time ☐ Lack of expertise ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

15. ☐ **Boron neutron capture therapy**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

16. ☐ **Instrument developing, testing and calibration**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

17. ☐ **Nuclear fuels irradiation and testing**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)
  Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

18. ☐ **Supporting nuclear power reactor programs**

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)
  Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

19. ☐ **Other**, please specify Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers

☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

3c. Education and Training Applications of the RR
(Please, indicate the research areas in which the RR is involved. Select *all* applicable options – sub questions apply only if once specific application is selected).

1. ☐ **Public tours and visits**

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

2. ☐ **Teaching physical and biological science**

To what degree do you think this application is exploited at the RR of your institute:
☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?
☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

3. ☐ **Teaching radiation protection and radiological engineering**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

4. ☐ **Teaching nuclear engineering**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

5. ☐ **Training (or re-training) Nuclear Power Plant Operators**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:

Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place

☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

6. ☐ **Training (or re-training) nuclear professionals (other than nuclear plant operators)**

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?
Click or tap here to enter text.

7. ☐ **Other**, please specify Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute:

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If NO, can you briefly describe the reason:
Click or tap here to enter text.

If YES, what obstacles are preventing your institute to do so:
☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)
Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles?

Click or tap here to enter text.

3d. Medical and industrial radioisotope production of the RR

(Please, indicate the research areas in which the RR is involved. Select *all* applicable options – sub questions apply only if once specific application is selected).

1. ☐ **Radioisotopes production in small quantities for research applications**

Which radioisotopes your answers are referring to Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

2. ☐ **Medical radioisotopes production in large quantities for common and established nuclear medicine applications**

Which radioisotopes your answers are referring to Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

3. ☐ **Boron Neutron capture therapy (BNCT)**

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

4. ☐ **Industrial radioisotopes production in large quantities for common and established industries**

Which radioisotopes your answers are referring to Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

☐ No obstacle, the expansion is already taking place
☐ Lack of manpower
☐ Lack of financial resources
☐ Lack of customers
☐ Lack of time
☐ Lack of expertise
☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

5. ☐ **Production of sources** (e.g. I-125 seeds for brachytherapy)

Please indicate which source your answers are referring to Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

6. ☐ **Other**, please specify Click or tap here to enter text.

To what degree do you think this application is exploited at the RR of your institute :

☐ Low ☐ Medium ☐ High

Would your institute like to expand the utilization of your RR for this application?

☐ YES ☐ NO

If no, can you briefly describe the reason:

Click or tap here to enter text.

If yes, what obstacles are preventing your institute to do so:

- ☐ No obstacle, the expansion is already taking place
- ☐ Lack of manpower
- ☐ Lack of financial resources
- ☐ Lack of customers
- ☐ Lack of time
- ☐ Lack of expertise
- ☐ Other (please specify)

Click or tap here to enter text.

☐ Is there an existing action plan to address any of these obstacles

Click or tap here to enter text.

3e. Radioisotopes production related questions

1. For how many full power days the reactor operates within a year?

Click or tap here to enter text. Days

2. How long are the reactor operating cycles?

- ☐ 1 week
- ☐ 2 weeks
- ☐ month
- ☐ other, please specify Click or tap here to enter text.

3. Is loading /unloading of radioisotopes possible while the reactor is operating?

☐ YES ☐ NO

Does the opportunity exist today?

☐ YES ☐ NO

If yes, do you plan to keep this opportunity until 2030?

☐ YES ☐ NO

If yes, will there be longer technical breaks in its availability?

☐ YES ☐ NO

If no, do you plan to launch such an option?
☐ YES ☐ NO

If yes, in which year? Click or tap here to enter text.

4. Does the reactor facility have hot cells for the radioisotope processing and final product production and transporting?
☐ YES ☐ NO

Does the opportunity exist today?
☐ YES ☐ NO

If yes, do you plan to keep this opportunity until 2030?
☐ YES ☐ NO

If yes, will there be longer technical breaks in its availability?
☐ YES ☐ NO

If no, do you plan to launch such an option?
☐ YES ☐ NO

If yes, in which year? Click or tap here to enter text.

5. Does the reactor have a pneumatic (flexo)rabbit system for the production of the short-lived isotopes?
☐ YES ☐ NO

Does the opportunity exist today?
☐ YES ☐ NO

If yes, do you plan to keep this opportunity until 2030?
☐ YES ☐ NO

If yes, will there be longer technical breaks in its availability?
☐ YES ☐ NO

If no, do you plan to launch such an option?
☐ YES ☐ NO

If yes, in which year? Click or tap here to enter text.

6. Is the leakage control of the hoppers carried out before loading the target material into the reactor?
☐ YES ☐ NO

Does the opportunity exist today?
☐ YES ☐ NO

If yes, do you plan to keep this opportunity until 2030?
☐ YES ☐ NO

If yes, will there be longer technical breaks in its availability?
☐ YES ☐ NO

If no, do you plan to launch such an option?
☐ YES ☐ NO

If yes, in which year? Click or tap here to enter text.

3f. Estimate how many users (referring to individuals) per year the RR has in the following fields (please base your answers on average numbers over the past 5 years – if none, skip the question)

Nuclear medicine
☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25

☐ if the figure is much above 25, please provide a realistic figure for the facility
Click or tap here to enter text.

Cultural heritage
☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25

☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Technology/Industry ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Software validation ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Material research using neutron beams ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Analytical services using NAA (Neutron Activation Analysis) or PGNAA (Prompt Gamma Neutron Activation Analysis) ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
3g. Estimate how many of them are from (please base your answers on average numbers over the past 5 years)
Universities / training providers ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Research centers ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Private industry ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
Governmental institutions (waste management, regulatory bodies, TSOs, etc.) ☐ Up to 5 ☐from 5 and 15 ☐from 15 to 25 ☐more than 25 ☐ if the figure is much above 25, please provide a realistic figure for the facility Click or tap here to enter text.
3h. Can the RR satisfy all the demands the institute receives (please base your answers on average numbers over the past 5 years) ☐ YES ☐ NO ☐ Prefers not to answer
If not, please estimate how big is the share you have to refuse

☐ about 25% ☐ about 50% ☐ about 75% ☐ more than 75

If you decline some requests, what kind of services did you refuse? And why?
Click or tap here to enter text.

☐ Prefers not to answer
Please detail why you prefer not to answer this question
Click or tap here to enter text.

3i. Do you cooperate with other research reactors to ensure continuity of supply?

☐ YES ☐ NO ☐ Prefers not to answer
In case preferring not to answer, please detail why
Click or tap here to enter text.

4. SUSTAINABILITY

4a. Are there any problems/issues the RR has encountered? (please select ALL applicable domains and describe briefly the type of issue the institute had to face)

☐ Material ageing management
Brief description of the problem: Click or tap here to enter text.

☐ Cost of fuel
Brief description of the problem: Click or tap here to enter text.

☐ Fuel availability
Brief description of the problem: Click or tap here to enter text.

☐ Waste Management
Brief description of the problem: Click or tap here to enter text.

☐ Decommissioning
Brief description of the problem: Click or tap here to enter text.

☐ Refurbishments/Upgrades
Brief description of the problem: Click or tap here to enter text.

☐ Lack of human resources
Brief description of the problem: Click or tap here to enter text.

☐ Public acceptance
Brief description of the problem: Click or tap here to enter text.

☐ Obtaining a licence
Brief description of the problem: Click or tap here to enter text.

☐ Lack of funds
Brief description of the problem: Click or tap here to enter text.

☐ Administrative problems
Brief description of the problem: Click or tap here to enter text.

☐ National policy
Brief description of the problem: Click or tap here to enter text.

☐ Other
Brief description of the problem: Click or tap here to enter text.

☐ Prefers not to answer
In case preferring not to answer, please detail why:
Click or tap here to enter text.

4b. Only if the RR is designed for radioisotope production
What is the biggest limitation in starting the production of new radioisotopes /new target materials?

☐ license
☐ lack of funds

☐ lack of qualified staff
☐ lack of market
☐ other, please specify Click or tap here to enter text.

5. FUTURE

5a. Future developing plans.

(We look for open answers to be given in the matrix below - Please, avoid simply YES and NO answers and, if possible, give an approximate time frame e.g. reference year by which such an action should be completed)

	Do you plan…				
	Continue operation in present conditions/scope?	Any new research?	Any upgrades/ refurbishment/ modernization?	Shut down the RR?	Build a new RR?
Current scenario	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Near future Approved scenario	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Long term Envisaged scenario	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

5b. Actual needs

Has the RR in your Institute encountered any problems in any of these domains / what are the actual needs today regarding the following points

☐ Organizational / government strategy and support
Brief description of the encountered problem / needs in this regard
Click or tap here to enter text.

☐ Fuel
Brief description of the encountered problem / needs in this regard
Click or tap here to enter text.

☐ Work force
Brief description of the encountered problem / needs in this regard
Click or tap here to enter text.

☐ Funding
Brief description of the encountered problem / needs in this regard
Click or tap here to enter text.

☐ Communication/ outreach
Brief description of the encountered problem / needs in this regard
Click or tap here to enter text.

☐ Prefers not to answer

In case preferring not to answer, please detail why:
Click or tap here to enter text.

5c. Future needs

We ask for OPEN ANSWERS in this case, so no limits in how much can be written. Please take into consideration these points in your answers:

- Is the facility committed to something specific already? (we refer to measurable quantities, hence specific productions or wok collaboration.)
- Are there plans to change any of the aspects of the RR technology?
- Will your organization of the work / exploitation of the RR change in the future?

Near Future, until 2025
Click or tap here to enter text.

Medium term, until 2030
Click or tap here to enter text.

Long term plans, until 2050
Click or tap here to enter text.

6. CONCLUSIONS

6a. How would you describe the "SCIENTIFIC STRENGTH" of the RR you are working on?
(We look for an open answer, to tell us anything we might have overlooked in the previous sections and/or anything you may want to add.)
Click or tap here to enter text.

6b. Was there any recent update to your facility with respect to the characteristics described in the RR IAEA database https://nucleus.iaea.org/RRDB/ ?

☐ YES ☐ NO

If yes, please describe what data are not up to date in the RR IAEA database.
Click or tap here to enter text.

6c. Is there a designated person from the RR facility/organisation who updates these IAEA RRDB records and how often is this done?
Click or tap here to enter text.

CONTACT DETAILS

Ideally, we ask 2 PEOPLE from each RR facility to fill out the questionnaire, a reactor operator and a researcher. We expect that the answers on the future of the RR facility, its limitations and desired focus area might differ substantially.

Reference person to get in touch with, in case we wish to discuss further the answers to this questionnaire:

NAME, first name	Click or tap here to enter text.
e-mail address	Click or tap here to enter text.
phone number	Click or tap here to enter text.
type of facility you are affiliated to	☐ research center ☐ university ☐ private sector ☐ other, please specify Click or tap here to enter text.

Thank you so much for taking the time to fill in the questionnaire.
In order to submit your answers, you can send it back as an attachment to Roberta.cirillo@enen.eu

5 ANNEX 2 – ACCOMPANYING EMAIL

TOURR nuclear research reactors

** English version **

Dear Research Reactor Operator – Manager – Facility Owner,
We, at ENEN (ENEN – European Nuclear Education Network), are the coordinators of the EU-funded EURATOM project, TOURR.
TOURR is the acronym of "Towards Optimized Use of Research Reactors in Europe" project. It is a coordination action among 9 partners across the European Union (EU), out of which 6 are EU RR Operators.
Main targets of the project are to assess the impact of the decreasing number of RRs, identify future needs (including new neutron sources), draw a roadmap for upgrade of the existing RR fleet, and develop a model for harmonized resource utilization. Another aim of the project it is to evaluate the current and future need for neutron sources and for medical radioisotopes in Europe.
In order to have a picture of the current situation, we have prepared a Questionnaire (see attachment), which we kindly ask you to fill.
By participating in this survey, you will become part of the TOURR network. This means that, if you wish, you will be contacted each time we will organize an event in the framework of the project and the public project outcomes will be shared with you, in due time.
In case you decide to provide us with the data about your RR, please send us back the attached questionnaire, filled in by the end of June, i.e. **30.06.2021**, at the latest.
Even before that, you are welcome to provide us with an e-mail of the contact person at your side – we may share with this person any news and clarifications about filling the Questionnaire.
Since we are aware of the sensibility of the collected data, you are welcome to visit this page to get acquainted with the details of our GDPR privacy policy.
You can find more detailed info in the preamble of the attached Questionnaire.
Should you have any further questions, please do not hesitate to get back to us, by e-mail or phone call,
With our best regards,

** Русская версия **

Уважаемые коллеги!
ENEN (Европейская сеть образования в области ядерных технологий) является координатором проекта TOURR, финансируемого Европейским сообществом по атомной энергии ЕВРОАТОМ. Проект TOURR (сокр. от «На пути к оптимизированному использованию исследовательских реакторов в Европе») объединяет девять организаций-партнеров в Европейском союзе, шесть из которых являются организациями, осуществляющими эксплуатацию исследовательских реакторов (ИР).
Основными целями проекта являются: оценка последствий уменьшения количества исследовательских реакторов; определение будущих потребностей в них (включая новые источники нейтронов); составление дорожной карты для модернизации существующего парка ИР и разработка модели для согласованного использования ресурсов. Еще одна цель проекта – оценить текущую и будущую потребности в источниках нейтронов и медицинских радиоизотопах в Европе.
Чтобы иметь представление о текущей ситуации, мы подготовили анкету (см. Приложение), которую просим Вас заполнить данными о Вашем ИР и направить в наш адрес не позднее 30.06.2021. Еще до этого времени Вы можете отправить нам электронное письмо с адресом контактного лица, которому мы можем посылать дополнительную информацию и при необходимости дать разъяснения по заполнению анкеты.
Участвуя в этом опросе, Вы станете частью сети TOURR. Это означает, что с Вами будут связываться каждый раз, когда мы будем организовывать какое-либо мероприятие в рамках проекта. Результаты работ по проекту также будут сообщаться Вам в надлежащее время.
Мы с пониманием относимся к пожеланиям обеспечения конфиденциальности предоставляемой нам информации, и осознаем необходимость надлежащей защиты всех получаемых нами данных. Вы можете ознакомиться с деталями нашей политики конфиденциальности GDPR по ссылке https://enen.eu/index.php/gdpr-privacy-statement/
Более подробную информацию Вы можете найти в преамбуле прилагаемой анкеты.
Если у Вас возникнут дополнительные вопросы, пожалуйста, свяжитесь с нами по электронной почте или телефону.
С наилучшими пожеланиями,

** Version française **

A l'attention de l'Opérateur du réacteur de recherche – du Manager – du Propriétaire de l'installation,
Nous, l'ENEN (European Nuclear Education Network), sommes les coordinateurs du projet EURATOM financé par l'UE, TOURR.
TOURR est l'acronyme pour «Towards Optimized Use of Research Reactors in Europe" (Vers une utilisation optimisée des réacteurs de recherche en Europe). Il s'agit d'une action de coordination entre 9 partenaires à travers l'Union européenne (UE), dont 6 sont des opérateurs de Réacteur de Recherche (RR) de l'UE.
Les principaux objectifs du projet sont d'évaluer l'impact du nombre décroissant de RR, d'identifier les besoins futurs (y compris les nouvelles sources de neutrons), de dessiner une feuille de route pour la mise à niveau du parc de RR existant et de développer un modèle d'utilisation harmonisée des ressources. Un autre objectif du projet est d'évaluer les besoins actuels et futurs de sources de neutrons et des radio-isotopes médicaux en Europe.
Afin d'obtenir une image de la situation actuelle, nous avons préparé un questionnaire (voir pièce jointe), que nous vous demandons de bien vouloir remplir.
En participant à cette enquête, vous deviendrez membre du réseau TOURR. Cela signifie que, si vous le souhaitez, vous serez contacté chaque fois que nous organiserons un événement dans le cadre du projet et que les résultats publics du projet seront partagés avec vous, en temps voulu.
Si vous décidez de nous fournir les données relatives à votre RR, veuillez nous renvoyer le questionnaire ci-joint, rempli avant la fin du mois de juin, soit le **30.06.2021**, au plus tard.
Même avant cela, vous êtes invités à nous fournir un e-mail de la personne de contact à vos côtés - nous pouvons partager avec cette personne toute nouvelle et clarification concernant le remplissage du questionnaire, si nécessaire.
Étant donné que nous sommes conscients de la sensibilité des données collectées, vous êtes invités à visiter cette page pour vous familiariser avec les détails de notre politique de confidentialité.
Vous pouvez trouver des informations plus détaillées dans le préambule du questionnaire ci-joint.
Si vous avez d'autres questions, n'hésitez pas à nous contacter, par e-mail ou par téléphone,
Avec nos meilleures salutations,

**  versión española **

Estimado Operador de Reactor de Investigación – Gerente – Propietario de la instalación,
Desde ENEN (ENEN – European Nuclear Education Network), estamos coordinando el Proyecto TOURR, financiado por EURATOM.
TOURR es el acrónimo inglés del Proyecto: “Towards Optimized Use of Research Reactors in Europe”, o “hacia un uso optimizado de los reactores de investigación en Europa”. Se trata de una acción coordinada entre 9 socios a lo largo de la Unión Europea (UE), de los cuales 6 son operadores de reactores de investigación europeos.
Los objetivos principales del Proyecto son los de evaluar el impacto del decreciente número de reactores de investigación, identificar necesidades futuras (incluyendo nuevas fuentes de neutrones), desarrollar una estrategia para la actualización/modernización de la flota existente y desarrollar un modelo para el uso armonizado de los recursos. Otro objetivo añadido del Proyecto es el de evaluar las necesidades actuales y futuras de fuentes de neutrones así como de radioisótopos médicos en Europa.
Para poder obtener una radiogrfía representativa de la situación actual, hemos preparado un cuestionario (adjunto) que amablemete les pedimos rellenar.
Mediante la participación en esta encuesta, pasarían a ser parte del *TOURR Network*. Esto significa que, si lo desean, serán contactados cada vez que organicemos un evento en el marco del Proyecto y los resultados públicos del Proyecto serán compartidos con ustedes, en su momento.
Si deciden proporcionarnos la información de su reactor de investigación, por favor remitan de vuelta el cuestionario adjunto completado, antes del final de junio (**30/06/2021** como fecha límite).
Si lo desean, pueden proporcionarnos un correo electrónico de la persona de contacto por su parte; podemos compartir con dicho contacto cualquier novedad o aclaraciones respecto a rellenar el cuestionario.
Somos conscientes de la sensibilidad de los datos recopilados, os invitamos a visitar esta página para que puedan familiarizarse con los detalles de nuestra política de privacidad RGPD.
Encontrarán información adicional en el preámbulo del cuestionario. Si tuvieran cualquier pregunta al respecto, por favor no duden en ponerse en contacto con nosotros por correo electrónico o por teléfono.
Saludos cordiales,

** Versione italiana **

Stimato Gestore del Reattore di Ricerca,
La contattiamo in quanto ENEN (European Nuclear Education Network). Siamo i coordinatori del progetto EURATOM finanziato dall'UE, TOURR.
TOURR è l'acronimo di "Towards Optimized Use of Research Reactors in Europe". Si tratta di un'azione di coordinamento tra 9 partner in tutta l'Unione europea, di cui 6 sono operatori di Reattori di Ricerca (RR) in UE.
Gli obiettivi principali del progetto sono valutare l'impatto del numero decrescente di RR, identificare le esigenze future (comprese eventuali nuove sorgenti di neutroni), tracciare una tabella di marcia per l'aggiornamento della flotta di RR esistente e sviluppare un modello per l'utilizzo armonizzato delle risorse. Un altro obiettivo del progetto è valutare le necessità, attuali e future, per le sorgenti di neutroni e per i radioisotopi a scopo medicale in Europa.
Per avere un quadro della situazione attuale, abbiamo preparato un questionario (allegato), che chiediamo cortesemente di compilare.
Partecipando a questa raccolta dati, lei entrerà a far parte della rete TOURR. Ciò significa che, se lo desidera, sarà contattato ogni volta che organizzeremo un evento nell'ambito del progetto e i risultati pubblici del progetto saranno condivisi con lei, a tempo debito.
Qualora decidesse di fornirci i dati sul suo RR, la preghiamo di rispedirci il questionario allegato, compilato entro la fine di giugno, ovvero entro il **30.06.2021**, al più tardi.
Anche prima di rispedirci il questionario, puo' se vuole fornirci un'e-mail della persona di contatto a questo riguardo – se necessario, potremmo condividere con questa persona qualsiasi eventuale aggiornamento o chiarimento sulla compilazione del questionario.
Poiché siamo consapevoli della sensibilità dei dati raccolti, la invitiamo a visitare questa pagina per conoscere i dettagli della nostra informativa sulla privacy.
Puo' trovare informazioni più dettagliate nel preambolo del questionario allegato.
In caso di ulteriori domande, non esiti a contattarci, tramite e-mail o telefonata,
Con i nostri migliori saluti,