

EURADSCIENCE position paper on EURAD SRA

[Position Paper #2]

Preamble

The international network of research entities EURADSCIENCE addresses now and over the decades to come scientific excellence in (the full lifecycle of) radioactive waste management from cradle to grave. In this context, EURADSCIENCE is supporting the Research Entities (RE) College in the efforts of the EURAD Bureau to define a procedure for updating the strategic research agenda (SRA) of EURAD. As an independent, cross-disciplinary and inclusive organization, our overarching aim is to ensure scientific excellence and credibility in decision making on radioactive waste management, regardless of national implementation status, waste type or national inventory. Our approach in the EURAD SRA update process is to maintain a holistic view of scientific disciplines and provide scientific excellence to advance progress of national radioactive waste management programmes, and to ensure scientific credibility of waste management concepts as well as addressing fundamental requirements related to knowledge management. More generally speaking, EURADSCIENCE aims to bring forward a vision that assures that scientific excellence and ever developing scientific advances are integrated at any given time into the multigenerational implementation process.

This position paper presents the coordinated response from the RE College to the questions raised by the EURAD Bureau paper on the update of the EURAD SRA.

Overall EURADSCIENCE view on the EURAD SRA

To EURADSCIENCE, the EURAD SRA has the ambition to address the scientific and technical challenges that flow from Council Directive 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive wastes. Currently guided by the commonly shared vision between national Waste Management Organisations (WMOs), Technical Services Organisations (TSOs) and the scientific community (REs), and by the EURAD roadmap (updated in 2021 [link](#)), the EURAD SRA shall be directed to research areas of major relevance in the coming years based on an assessment of knowledge gaps. This assessment could integrate also perceived gaps from projects and actors outside current EURAD. EURAD SRA implementation itself (proposals for work packages, budgets and detailed planning) is outside the scope of this update process, and shall be left to a future deployment plan.

The ultimate End Users of the EURAD SRA are the EU Member-States and Associated States (i.e. Switzerland and UK) and society at large, including decision makers, for which a credible, societally acceptable response to the Council Directive must be given. In this respect, the EURAD SRA reflects the envelope of research that will drive future RD&D. It is recognized that the needs of different actors vary widely between national programmes. Moreover, the jointly identified needs that form the basis of the EURAD SRA should strike a balance between two different research timescales:

- (1) Topical questions that require near-term action;
- (2) Longer-term research that takes into account broader scientific-technical developments.

Those items where continued European cooperation is needed to make a step change for different national programme actors should be emphasized. In the joint update of the EURAD SRA by the three Colleges, the mission of EURADSCIENCE and the RE College is to assure scientific credibility, to consider the degree of scientific and technical maturity, and to ensure the maintenance of

competence and capability (including training the next generation of experts) in the various themes and domains of the EURAD Roadmap. EURADSCIENCE supports innovative thinking that could have a longer-term focus within the perspective of importance to the safety case (e.g., will disposal concepts 50 years from today be based on the same materials we are relying on now?).

EURAD should remain an EU flagship programme attractive to young researchers, showing that all actors share a commitment to arrive at safe waste management solutions, and employing exciting state-of-the-art methods, techniques and technologies that can inspire the scientific community.

Specific RE College answers to the Bureau questions

Question 1: Confirm timescales and scope of future SRA updates?

The RE College agrees with the proposed timing and stresses that the EURAD SRA update will need to be finished within the time frame of EURAD I.

For what concerns the input to the EURAD SRA, EURADSCIENCE will provide an updated version starting from the existing working document from the JOPRAD project, within the proposed timeframe. This document will serve as the basis for bringing RE interests into the update of the EURAD SRA, as well as for documenting and handling the different research priorities for EURADSCIENCE beyond EURAD I.

Question 2: Are there other SRAs or inputs that we need to consider?

The list of SRAs mentioned in the EURAD Bureau document should form the basis of the EURAD SRA update. However, we should also consider the SRA of the EU SHARE project (on decommissioning R&D priorities) in order to address the interface (overlap, common interests and interdependencies) between the decommissioning and waste management communities. We also believe there would be added value integrating the relevant inputs from the Social Sciences and Humanities (SSH) SHARE platform ([link](#)). Additionally, more topical inputs may also be gathered from other recent Euratom projects (e.g., MIND, THERAMIN, CHANCE, DISCO).

Question 3: Confirm position on preferred scope of EURAD SRA update (e.g., remain the same, or change to expand, or reduce to exclude, etc.)?

The EURAD SRA update should consider radioactive waste management “from cradle to grave”, focusing on scientific-technical aspects and guided by scientific excellence. This includes waste management strategies focusing on re-use and recycling, and aspects to be considered with regard to optimisation of eventual disposal.

Decommissioning technologies (in the sense of genuine engineering challenges) as such are out of scope.

For EURADSCIENCE, strategic studies with only implicit RD&D needs are possible (e.g., a holistic approach to waste acceptance criteria across all stages of waste management). Strategic studies could also be used to develop thinking on (embryonic) ideas for future RD&D, by the establishment

of dedicated working groups. Such an approach would foster the continuous interaction between different Colleges on potentially relevant topics (like, e.g., on digital twins).

Pure social science research for its own sake should be excluded, but EURADSCIENCE strongly subscribes to the position that realization and optimization of long-term waste management goes beyond a purely technical/technological approach and includes assessing social/societal implications and expectations.

Question 4: Confirm position and potential future support towards knowledge management activities in joint programming (how do we want to manage knowledge management activities in the SRA)?

EURADSCIENCE confirms its support of knowledge management (KM) activities in joint programming as outlined in our previous position paper [#1 [link](#)]. The RE College vision confirms the EURAD Roadmap as the basis for both the SRA and future KM activities.

EURADSCIENCE emphasizes the specific role and long-standing expertise of REs in KM activities, both in knowledge transfer and in attracting and training the next generation of experts entering the field. Transferring knowledge from generation to generation goes hand in hand with the generation of new knowledge through R&D activities.

Although education activities (university courses) as such are out of scope of EURAD, many REs are involved in such activities through their close link with universities. In addition, the EURAD Community (WMOs, TSOs and REs) could serve to provide experts and internship positions, and link with other networks active in education like the European Nuclear Education Network. The EURAD School of Radioactive Waste Management should be used as the entry point to build such activities.

Question 5: Confirm position on governance and inclusivity arrangements for the EURAD SRA update (e.g., remain the same as before, establish consensus view between College organisations, or suggest a change)?

Within EURAD I, a working governance structure and workflows have been established. To assure inclusivity in the update of its own SRA, EURADSCIENCE will consult not only with the mandated actors within the RE College, but also with the broader research community (whether they are active as RE or LTP in EURAD, or not). EURADSCIENCE believes the views and scientific expertise of this wider community should be considered in the EURAD SRA update.

Question 6: Civil Society Organisations can bring in their views via the SITEX SRA, and Waste Producers can bring in their views via the PREDIS SRA. Do you agree to this?

EURADSCIENCE agrees and underlines that constructive dialogue between existing communities and networks should be fostered to optimize the work. It is remarked that while SITEX is directly linked to EURAD, the Waste Generator community (e.g., through Nugenia/SNETP) is only indirectly linked through PREDIS. In view of a future RWM Joint Programme, the link between the Waste Generator community and EURAD could be strengthened.

However, a future RWM Joint Programme where everything and everyone is joined together, might become very complex. The governance of such Programme should be carefully planned.

Question 7: Confirm position on goals of the EURAD SRA update?

EURADSCIENCE broadly supports the existing EURAD SRA, and considers that only a minor update is needed.

EURADSCIENCE considers that the updated EURAD SRA must be useful for defining future projects. The EURAD SRA needs to be based on the current scientific-technical maturity and knowledge, structured to be in line with the EURAD Roadmap, and sufficiently stable over a period of (e.g.) 10 years, enabling a long-term vision.

EURADSCIENCE considers that prioritisation of future projects should be based on continuous interaction between all categories of actors within the future RWM Joint Programme. To this end, EURADSCIENCE proposes to set up a joint Exchange Forum between the Colleges that could be organized associated to the EURAD Annual Event. Establishment of priorities and project details should be part of the future deployment plan (and outside the scope of the EURAD SRA update process), giving flexibility to the actual projects to be deployed and capability to respond to both immediate and longer-term needs as agreed by the actors.

Question 8: Confirm preferences and ideas on the overall process to update the EURAD SRA?

EURADSCIENCE considers that only a minor update to the EURAD SRA is required, but does not support a “ranking” within the EURAD SRA. Based on the experience so far, ranking seems to reflect the immediate needs of different actors and is subject to more rapid changes compared to the EURAD SRA itself. Prioritization should therefore be part of the future deployment plan (this could feature in the aforementioned future Exchange Forums).

In addition, EURADSCIENCE notes that the ranking in the current EURAD SRA was not an important driver to initiate new projects during the 2nd wave project development process in EURAD I. This highlights that there are other important drivers on decision making, possibly because of the difficulty in obtaining consensus on any ranking (owing to national programmes being at different stages of implementation and considering different disposal concepts).

EURADSCIENCE reiterates that the evaluation of topics for the EURAD SRA should consider scientific-technical maturity as per the Roadmap.

We also refer back to our general view as expressed in the beginning of the position paper.

Question 9: Confirm preferences and ideas on the type of documentation needed?

The EURAD SRA should be linked to the Roadmap, should reflect the maturity of knowledge, and should have a similar format to the current version of the SRA.

EURADSCIENCE considers that the SRA should not include a detailed ranking of the different topics (see Q8).