



Deliverable 1.6: Evaluation of ICS activities

Work Package 1

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Executive Summary

This deliverable presents the evaluation of the Interactions with Civil Society (ICS) activities within EURAD-2. In accordance with the perspective of the Aarhus Convention¹ that grounds the Civil Society (CS) participation, ICS activities are expected to produce fruitful interactions among the different categories of actors involved in EURAD, with a view to contribute to enhancing decisions on safety of Radioactive Waste Management (RWM). The deliverable presents the triple-wing model that is the model implemented to allow three types of CS groups (CS experts, CS larger group and CS actors outside EURAD) to have access, give their views and exchange with EURAD actors on research results. It precises the topics and research activities from EURAD-2 where Civil Society representatives have contributed and given their views. ICS were implemented within four Strategic Studies: ASTRA, FORSAFF, CLIMATE and OPTI and within EURAD in a global manner through the ICS workshops and the EURAD annual event. The CS experts have performed a reflexive evaluation on ICS activities implemented in EURAD-2. They evaluated through nine qualitative criteria how the ICS activities allowed (or not) “conditions for fruitful interactions” between institutional experts, researchers and CS representatives. In addition, a complementary collective assessment of ICS activities has been achieved during the ICS workshop n°2 held in January 2026.

The document finally provides a landscape of viewpoints of actors involved in EURAD-2 ICS activities as well as collective thinking and recommendations for future ICS activities. According to the results of the collective thinking during the ICS workshop n°2, the implementation of the ICS activities facilitates a transversal approach, organising exchanges on cross-cutting topics between a pluralistic set of actors in a framework providing a broader perspective (socio-technical). ICS also provides opportunities to discuss and share experiences from national situations with the implementation of innovative methodologies of dialogue. Nevertheless, participants pointed out some needs for improvements related to the difficulties of entering EURAD governance and topics (especially for newcomers). They also underlined the remaining resistance between CS representatives and EURAD actors even if there is a real improvement of mutual respect. There is a need to demonstrate the concrete impacts of ICS results and the way how they are integrated in the research outcomes. In the same perspective, there is also a need to improve the dissemination of ICS results inside EURAD and outside EURAD. The ICS workshops should notably give more time for “free” exchanges enabling CS members to frame more the discussions on CS larger group concerns and less on WPs needed outcomes. Four recommendations emerged from the discussions:

- Clarify the communication plan related to the third wing of ICS by defining a specific task within the Description of Work (WP PMO) and allocating a dedicated budget for dissemination events targeting broader audiences beyond EURAD.
- Broaden the range of publics involved by placing greater emphasis on public concerns, mobilising moral and ethical dimensions, organising tailored workshops, avoiding overly technocratic presentations, and ensuring sufficient time for dialogue and exchange on issues of public concern.
- Sustain the engagement and interest of Civil Society (CS) members already involved by ensuring continuous participation and information sharing, and by improving the structure and organisation of ICS workshops and related activities.
- Reinforce the dissemination of ICS results, notably through increased and more strategic use of social media.

The final section of the report provides a proposal to concretely implement these recommendations in the future ICS activities.

¹ Adopted on 25 June 1998, the Aarhus Convention is created to empower the role of citizens and Civil Society organisations in environmental matters and is founded on the principles of participative democracy. The text is available here: <https://unece.org/environment-policy/public-participation/aarhus-convention/text>.

Keywords

Interaction with Civil Society, qualitative evaluation, criteria for fruitful interactions, legitimacy, methodology, postural changes, personal unity, expertise function, meaning of the repository, territory, shared complexity, addressing the long term.

List of acronyms and abbreviations

ASNR	The French Nuclear Safety and Radiation Protection Authority
CS	Civil Society
EC	European Commission
EESC	European Economic and Social Committee
EU	European Union
EURAD	European Partnership on Radioactive Waste Management
EURAD-1	European joint programme on RWM (2019-2024). First set of European research programmes launched under EURAD.
EURAD-2	EURAD-2 European Partnership on RWM.(2024-2029). Second set of European research programmes launched under EURAD
HLW	High Level Waste
ICS	Interaction with Civil Society
JOPRAD	Towards a JOint Programming on RADioactive Waste Disposal), http://www.joprad.eu/about-joprad.html
KM	Knowledge Management
LIMS	Large Inventory Member States
MS	Member States
OECD/NEA	The Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD).
PEP	Pathway Evaluation Process
PMO	Project Management Office
RD&D	Research Demonstration and Development
RE	Research Entities
RWM	Radioactive Waste Management
SIMS	Small Inventory Member States
SITEX-II	Sustainable network for Independent Technical EXpertise of radioactive waste disposal - Interactions and Implementation, https://www.sitex.network/international-programme/
SotA	State of the Art
SRA	Strategic Research Agenda
SMR	Small Modular Reactor
T&PP	Transparency and Public Participation
TSO	Technical Safety Organisation
WM	Waste Management
WMO	Waste Management Organisation
WP	Work Package

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1. Introduction - Framework of ICS activities in EURAD-2

The goal of the present document *Deliverable 1.6: Evaluation of ICS activities* is to provide a mid-term evaluation on on-going activities linked to interaction with Civil Society (ICS) in EURAD-2. This evaluation is done by the experts from Civil Society (CS) on their own work, based on qualitative criteria. It constitutes an intermediary point, after one year and a half, corresponding to the near end of some research projects. Before starting the second wave and new projects, it will help identify positive elements to be reinforced in the implementation of future ICS activities, elements to be improved or changed and new elements to be introduced. This midterm evaluation will be completed by a final evaluation to be conducted at the end of EURAD-2 second wave, to compare both results and define final lessons to be learnt from involvement of Civil Society representatives in EURAD-2. The introduction of this document presents the framework of ICS activities in EURAD-2, and the triple wing model implemented for ensuring involvement of different kinds of publics into the research.

1.1 Objectives of the ICS model developed in EURAD-2

The EURAD-2 Partnership includes interactions with Civil Society based on a so-called “triple-wing” model. This model is an updated version of the double wing model that has been settled on and tested throughout SITEX II (2015-2017) and JOPRAD (2015-2017) projects. The “double wing” model was implemented in the first EURAD programme (2019-2024). Based on the feedback and recommendations formulated at the end of EURAD-1, the ICS model has been refined for EURAD-2 into a triple-wing model.

The triple wing model builds on some important basis:

- As foreseen by the Aarhus Convention and indicated in EURAD Vision and EURAD deployment plan², the sustainable presence and engagement of the public³ in EURAD is expected to reinforce the quality of the decision-making process in the context of Radioactive Waste Management (RWM) Research&Development (R&D), i.e. EURAD governance.
- It is also an opportunity for CS representatives to collect information of the EURAD outputs that will impact (directly or indirectly) decision-making processes in RWM at national level. As indicated in the EURAD vision, “*EURAD will generate and manage knowledge to support EU Member-States with their implementation of the Directive 2011/70/Euratom (Waste Directive), and more specifically with the development and implementation of their national R&D programmes for the safe long-term management (including disposal) of their full range of different types of radioactive waste*”⁴.
- For that purpose, close interactions between experts from Waste Management Organisations (WMOs), Technical Safety Organisations (TSOs), Research Entities (REs) and Civil Society are foreseen and will require innovative ways of collaborative work to foster the mutual understanding of key processes of RWM on the basis of research outcomes and uncertainty management.

The goal of the triple-wing model is to ensure that an appropriate framework of fruitful interactions can be built between technical partners and members of Civil Society on the complex dimensions of the

² The EURAD vision and EURAD deployment plan are two of the founding documents of EURAD. The EURAD vision document is available here: <https://www.ejp-eurad.eu/eurad-vision>. The EURAD deployment plan (2019-2024) is available here: <https://www.ejp-eurad.eu/publications/eurad-deployment-plan>

³ There are different types of publics involved in EURAD: representatives from Civil Society (European, national or local organisations, local representatives, individuals interested by the topic) and the third wing aims at involving the general public including students, citizens from local communities, etc.

⁴ The quotation is extracted from p.7 of EURAD vision that describe the objectives and rationale of the EURAD programme.

issues at stake in EURAD-2. That objective implies multiple processes over time, among which the capacity given to Civil Society participants in order for them to be comprehensively informed so that they can develop their own views on the R&D performed, also the capacity given to technical partners to assess the socio-technical complexity of issues at stake in the programme thanks to these interactions.

The triple wing model serves both the ambitions of actively involving CS members in research programmes and of offering dissemination. Both ambitions are crucial and complementary to improve the quality of the results by including the CS views and allow transparent information and a fair public participation in the perspective of the Aarhus Convention and EURAD Vision.

1.2 Three categories of CS participants in EURAD-2

The triple-wing model involves three categories of Civil Society (CS) participants. The Civil Society Larger⁵Group and the Civil Society Experts' Group are directly involved in the EURAD-2 programme. A third category of participants, referred to as the CS Third Wing, is engaged through dissemination events presenting the results of EURAD-2. The following figure 1 illustrates the functioning of the triple wing model in EURAD-2:

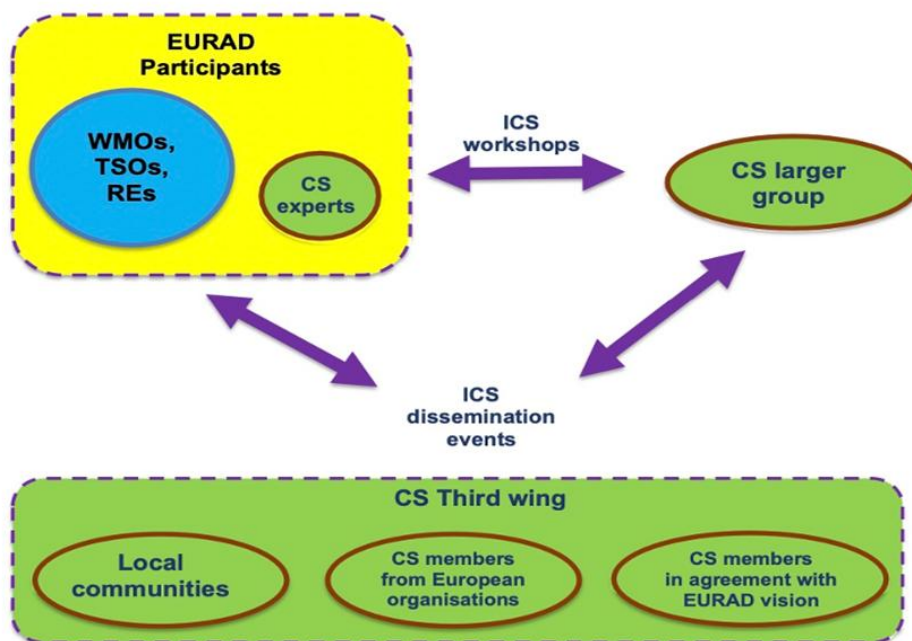


Figure 1 - Triple wing model of interactions with Civil Society in EURAD-2

The CS experts' group

The CS experts' group is an intermediary between the EURAD-2 participants as a whole and the other CS members (CS larger group and third wing). It is involved in a selected number of activities of EURAD-2: the CS experts group contribute to different Strategic Studies and follow up the technical activities of the programme. It regularly informs the CS larger group on the progress of the work.

⁵ In the description of Work of the EURAD-1 proposal, the term used was "CS group". In practice, it was decided to use the terms "CS larger group" to avoid any confusion with the CS experts' group. And the terminology remains the same for EURAD-2.

The term “CS expert” should be understood in the wider sense of “knowledgeable person” typically ranging from academics and non-institutional experts with a scientific background to people “spending significantly more time than the average population” on the issues raised by RWM. CS experts are not necessarily scientists but people who develop a capacity to enter technical or strategic issues and to express knowledgeable views in a refutable way (logical argumentation based on reliable data, etc.).

The CS experts are actively involved in EURAD-2 WPs. This is done through the channel of the European network Nuclear Transparency Watch (NTW)⁶, which is a partner in EURAD-2. The list of the members of the CS experts’ group is available in Appendix A.

The CS larger group

In EURAD-2, the CS larger group involves, on a voluntary basis, local, national and European representatives from the CS that have a specific interest in RWM. They have the opportunity to bring their views and exchange knowledge, information and ideas with EURAD-2 participants (WMOs, TSOs, REs) along the programme through the CS experts’ group. They are also informed on a regular basis and participate yearly to a workshop involving a panel of the different Colleges of EURAD-2 participants, the so-called “ICS workshops” and may, in accordance with the defined objectives of the ICS activities, be invited to participate in some other workshops and seminars organized by the EURAD-2 programme

A task of the Work Package 1, task 7 of EURAD-2, is dedicated to the coordination of the ICS activities including a specific subtask aiming at organising the constitution of the CS larger group. This subtask consisted in updating a list of criteria⁷ to identify the potential members of this group based on the work done in EURAD-1, as well as in elaborating a procedure to ensure the continuous involvement of various participants and views. The procedure aimed also at guaranteeing the commitment of the CS larger group members to participate all along the program in order to produce fruitful exchanges.

The CS larger group members were identified in March 2025. After a selection validated by the executive instance of EURAD-2: the EURAD Project Management Office (PMO) and the EURAD Bureau, a list of 21 members was stabilised. Then, after discussion with the European Commission, 3 members of the European Economic and Social Committee (EESC)⁸ were added to the group: one representative per EESC Colleges (trade unions, employers, NGOs). Finally, 3 observers⁹ were added to the group: one representative per type of EURAD-2 Colleges. Therefore, the group is composed of 27 members at the end (see Appendix B of this document to have the members list of the CS larger group).

CS members of the third wing

To improve the dissemination of EURAD's work results, it was decided at the end of EURAD-1 to develop the double wing model into a *triple wing model*, as a way to expand and diversify the pool of CS members involved in the dissemination process. One of the solutions that was suggested was to add a third wing to the double wing model, involving a broader spectrum of actors (not directly involved in EURAD-2 programme) including notably local communities and other actors who have had no or little

⁶ NTW is a European network that promotes a citizen watch on nuclear safety and transparency. The network was launched in 2013 and gathers 64 members coming from 21 countries. See the website: <http://www.nuclear-transparency-watch.eu/>

⁷ The list of criteria is available in Appendix E of the document.

⁸ The EESC members are representing the different views inside the EESC. They are financed by the EESC. They are diversifying the CS larger group views.

⁹ The observers are members from EURAD Colleges, observing the ICS activities and participating in the events. There are three of them: one representative per College. They do not necessarily participate in ICS activities in the WP but have an interest and/or competencies in public involvement.

experience with RWM. The involvement of the third wing is done during dissemination events that are organized according to the opportunities.

The benefit of the triple wing is that it embraces greater CS inclusivity and as a consequence is more representative of CS generally, although implementation poses some challenges. These challenges have to be overcome, not only by the CS experts, but also by EURAD's three Colleges, when they present and disseminate their findings, conclusions, and recommendations to the wider public. Some tools developed or/and tested during EURAD-1 (like PEP¹⁰ monitoring and PEP near-field tools) or EURAD-2 (PEP on climate change impacts, PEP on SMR) can be used to facilitate the discussions during specific events held to disseminate results and organize exchanges with the wider public.

In this perspective, discussions were organized with the European Economic and Social Committee (EESC), and a conference was held on October 17, 2024, called "Conference on Radioactive Waste Management: a Civil Society perspective"¹¹. It gave the opportunity to present to CS members of EESC the work previously done in EURAD and discuss the possibility of involving them in EURAD-2 activities. As a result, it was decided to invite three representatives of EESC to be part of the CS larger group (see above) and to organize a new event in 2026 where first results of EURAD-2 will be presented to the EESC audience.

Other dissemination events are planned to be organized with local communities and with students (CS experts have contacts in different universities that could facilitate the organization of such events). In fact, EURAD-2 members are welcome to suggest communities and CS actors that could be interested to be part of dissemination events. Such dissemination events are organized with the validation of PMO and EURAD-2 coordination.

It is important to remind here that the issue of the third wing is necessarily a complex issue. To some extent, one has to face a kind of double bind : on the one hand, an open-inclusive democratic process of public participation and engagement requires that the members and representatives of the Civil Society are diverse and possibly different over time (permutation) ; on the other hand, it is also a crucial stake of this kind of process to foster a certain continuity of public participation and engagement, which leads to keeping for a while the same participants so that they can grow in competence over time (permanence). Then the solution to this dilemma cannot be but a somewhat precarious balance between two conflicting requirements.

1.3 ICS activities in EURAD-2

One objective of EURAD-2 is to allow interactions between WMOs, TSOs, REs and CS. Such interactions aim at improving mutual understanding of how and to what extent R&D activities on RWM make sense and contribute to improving decisions. The ICS activities in EURAD-2 contribute to developing ideas, propositions and methodologies on how to interact with Civil Society on scientific and technical results, how to deal with uncertainties, and how to involve Civil Society in order to promote mutual benefit of available knowledge. The third wing also ensures a better dissemination of the EURAD-2 results, which presupposes facilitating a better understanding of knowledge in future broad public discussions on the national RWM programs (see 1.2).

¹⁰ The PEP (Pathway Evaluation Process) is a tool of dialogue (designed as a serious game) developed under the frame of the SITEX-II project and SITEX.network that enable multi-actors' discussions in the field of Radioactive Waste Management. EURAD Lunch and Learn Session on PEP methodology: <https://www.ejp-eurad.eu/news/recording-ii-pluralistic-tool-dialogue-rwm-pathway-evaluation-process-pep>

¹¹ The programme, documents and recording of the conference are available here: <https://www.eesc.europa.eu/en/agenda/our-events/events/conference-radioactive-waste-management-civil-society-perspective>.

CS members (CS experts and CS larger group members¹²) involved in EURAD-2 have no mandate and represent themselves. They have specific concern on RWM safety, will express views on what matters to them but are not research partners as the other EURAD partners. The structure of their interaction in the different activities of the first wave of EURAD-2 (through the implementation of the triple wing model presented above) are summarized in Figure 2 below:

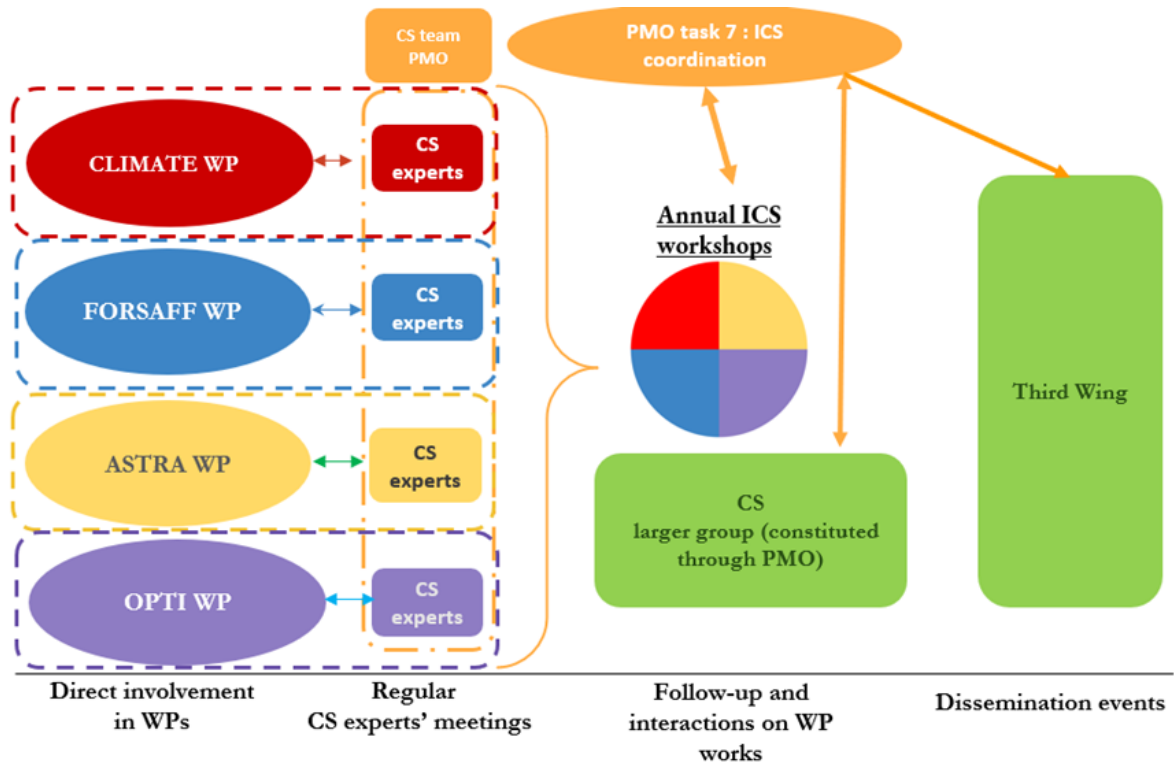


Figure 2 - Structure of ICS activities in EURAD-2¹³

The CLIMATE Work Package is dealing with impacts of climate change on Radioactive Waste Management facilities and processes.

The FORSAFF Work Package is exploring the waste management issues to be taken into account if types of Small Modular Reactors (SMRs) and if SMRs are implemented for electricity generation or other purposes. It is identifying the potential impacts on RWM and differences with larger reactors' RW implementation.

The ASTRA Work Package performs analysis of readiness, feasibility and challenges of alternative RWM solutions needed by many countries, in particular SIMS, but also larger programmes due to new requests accruing in national programmes to safely manage and dispose of their waste.

The OPTI Work Package focuses on the questions related to optimisation of the High-Level Waste Management processes and deep geological repository implementation and addresses the questions like *What does it mean for the different types of actors?* and *What are the issues linked to optimisation?*

¹² The EESC representatives and the College observers have a different status: they represent their organisations.

¹³ The description of the different WP of EURAD-2 is available here: <https://www.ejp-eurad.eu/implementation>.

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The description of the ICS activities in the different WP is detailed in section 3 of this report.

For ICS activities, hybrid events are organised whenever possible. A “star-ranking system” has been implemented to define in advance the level of hybridisation of each meeting. Each session is therefore assigned a specific number of stars reflecting its hybrid format:

- 0 star - the session will have no online attendance (technical visit for instance),
- 1 star - the online participants will be able to listen only,
- 2 stars - the online participants will be able to participate via a chat,
- 3 stars - the online participants will be able to ask oral questions.

Thanks to ICS activities, this system is now applicable to all Consortium activities.

2. Methodology of ICS evaluation

This document provides a mid-term evaluation of the ICS activities through a heuristic¹⁴ method on the different events or processes that occurred within the contexts of Strategic Studies and ICS workshops.

This evaluation does not consist in a global theoretical review of the triple-wing model but is set in grounded theory¹⁵ that aims at drawing general conclusions stemming from empirical field surveys. Indeed, this “methodologically dynamic”¹⁶ framework, which provides ways to navigate through the situations rather than being a complete methodology, was considered very appropriate to this evaluation process. It was elaborated and tested during the EURAD-1 programme. It was thought of as an embedded process, by the constitution of an evaluation framework adapted to the objectives of fruitful interactions¹⁷. And it then aimed at gradually evaluating the events from the inside, with a reflexive approach that helps reaching conclusions on the events at stake, thus enriching the global framework and on the evaluating model itself.

By doing so, conclusions are reflexive, and the embedded evaluation proved to better specify the conceptual and epistemic/ethical frameworks in this iterative process. The evaluations of these events are based on a set of nine criteria that were developed with a view to try and grasp the context, the content and the relevance, the importance and the impact of the ICS, under the framing concept of fruitful interactions. These criteria aim at making explicit the values and meanings coming into play in the background of such interactions. This section presents the evaluation grid based on these nine criteria and the methodology implemented in EURAD-2 as a complementary process to reinforce the quality of the evaluation and the production of recommendations for future ICS activities.

2.1 Presentation of the evaluation grid

2.1.1 Conception and history¹⁸

ICS activities were an innovative component of the EURAD-1 programme that involved an active participation and collaboration between technical partners and Civil Society members. As those interactions constituted a set of experimental processes, it was foreseen in the preparation of the EURAD-1 programme to implement a dedicated evaluation of this ICS process along the programme. In this perspective, the first task of this evaluation process was to make explicit the values and meanings coming into play in the background of such interactions. This process finally led to the development of a method aimed at assessing the fruitfulness of the interactions with Civil Society.

As developed in previous deliverables¹⁹, fruitful interactions require a pluralistic and co-framing approach for communities of organizations and of individuals, as mutual trust conditions. It can be constituted at different levels and concerns a plurality of actors of RWM such as regulators, operators, experts, researchers, Civil Society, end-users, etc, as individuals and institutions. As detailed in the deliverable D1.14 from EURAD PMO task 8.3, fruitful interactions aim at creating and maintaining

¹⁴ A heuristic method proceeds by successive steps, gradually eliminating alternatives and retaining only a limited set of solutions that converge toward the optimal one.

¹⁵ Glaser B., & Strauss, A. (1967): *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine

¹⁶ Ibid.

¹⁷ see EURAD-1 deliverable: Geisler-Roblin A., Lavelle S. (2022): *Mid-term evaluation of the ICS activities and experimental model of interaction between EURAD participants and Civil Society*. Final version as of 10.10.2022 of deliverable D1.14: <https://www.ejp-eurad.eu/publications/eurad-d114-mid-term-evaluation-ics-activities-and-experimental-model-interaction>

¹⁸ see EURAD-1 deliverable: Geisler-Roblin A., Fontaine G., Lavelle S., Dewoghélaère J. (2024): *Evaluation of the ICS activities and experimental model of interaction between EURAD participants and Civil Society*. Final version as of 25.07.2024 of deliverable D1.16: <https://www.ejp-eurad.eu/publications/eurad-d116-evaluation-experimental-model-interactions-between-eurad-participants-and>

¹⁹ see Geisler-Roblin A., Fontaine G., Mraz G., Dewoghélaère J., de Butler M. (2024): *Integrated review of the ICS activities in EURAD*. Final version as of 30.05.2024 of deliverable D1.15: <https://www.ejp-eurad.eu/publications/eurad-d115-integrated-review-ics-activities-eurad>

relations between a plurality of actors, with the capacity to conduct a variety of inquiries (scientific, moral, social) and to address the complexity of Radioactive Waste Management. It could be defined as all forms of interactive communication (mainly face-to-face) that not only enrich the knowledge and change the opinions of the participants, but also highlight ideas, give adequate suggestions or propose new solutions in the field of RWM, the goals and objectives in EURAD and the national programmes in the context of the priorities for Civil Society."

This method, finalised in a 2021 workshop, takes the form of a grid, composed of nine criteria or indicators, which unfold the important process conditions necessary for fruitful interactions in such complex issues as RWM. These nine criteria can overlap, for the main goal is not to try to be exhaustive, but more to shed light on the same complex reality from different interesting points of view.

During the first years of EURAD-1, the ICS methodological team identified several general concepts that should appear in any evaluation grid. These concepts were:

- Representations of the society
- Conditions of interplay
- Ordering of the world
- Stances towards uncertainty
- Visions of the future and links to the past

Starting from this list of five major concepts, a series of semi-directive interviews was organised to gather the views of a selected panel of 25 EURAD members (half from CS experts or CS larger group, the other half from the three Colleges). The analysis of these interviews led to the identification of several key topics that were linked to the five concepts presented. Among all these identified subjects, the methodological team selected nine of them that were considered as the most relevant and that could unite the whole list of topics. These nine key topics were associated with a short and longer description of what was supposed to be evaluated. These elements were the basis of discussion of a workshop, dedicated to the elaboration of the evaluation grid. The outcomes of this workshop indicated that the chosen subjects for EURAD were a good path towards fruitful interactions. This process led to the current nine-criteria grid that is used in this deliverable.

2.1.2 Presentation of criteria

Fruitful interactions have to be evaluated upon considering the conditions for their existence and their implementation. The nine conditions proposed form a continuity of related subjects that can sometimes overlap partly, and they combine several perspectives that shed light on different viewpoints on the same complex reality. Here, the nine criteria are presented associated with a strong hypothesis and a concise statement²⁰.

Criterion 1 - Legitimacy: Fruitful interactions necessitate legitimate processes in which all actors can go through a dialog on the same footing. An interaction is fruitful if there is no permanent or recurrent questioning as to the legitimacy of the actors taking part in the cooperative process or research, on the ground that they are not trained or competent enough, or that they belong to an institution or an organisation that is supporting other different positions.

Criterion 2 - Methodology: Fruitful interactions require that a community is able to conduct a variety of inquiries (scientific, moral, social). An interaction is fruitful if the inquiries or researches are conducted by a variety of actors, are not restricted in an exclusive manner to a single type of research (e.g.: scientific inquiry) and can open up to some other types of research (e.g.: moral and social inquiry) that are concerned not only with facts or models, but with values and norms.

²⁰ The more detailed statement and description of the understanding of the criteria can be found in deliverable D1.14, available here: <https://www.ejp-eurad.eu/publications/eurad-d114-mid-term-evaluation-ics-activities-and-experimental-model-interaction>.

Criterion 3 - **Postural changes**: Fruitful interactions depend on the capacity of all actors to encompass others' views and to enlarge their initial perspective. An interaction is fruitful if, along the cooperative process or research, it can be shown that the actors are not keeping to their initial position without any reservation and are then capable of modifying their own perspective by taking into consideration the contributions of the other actors.

Criterion 4 - **Personal unity**: Fruitful interactions require from an actor that he or she takes into account the different dimensions of him/herself. An interaction is fruitful if the actors does not view themselves or are not viewed by the other actors as individuals that are exclusively defined by their official or professional function or activity (e.g.: he or she is an expert of radionuclides working for the WMO; he or she is an activist from an environmental association) and can then articulate several aspects of his/her personality or his/her social role (e.g.: a worker, a professional, a citizen, a parent...).

Criterion 5 - **Expertise function**: Fruitful interactions require a pluralistic expertise that therefore cannot be reduced to a sole scientific process. An interaction is fruitful if the expertise is pluralistic in the sense that it is not only scientific, but also moral, legal, environmental or social, and subsequently, in the sense that it is not only special, but also general regarding the capacity of linking up the various aspects and dimensions of a complex problem.

Criterion 6 - **Meaning of the repository**: Fruitful interactions include exchanges on the meaning of the existence of repository in the concrete life of people. An interaction is fruitful if the examination of a problem and the exchanges between the actors that it entails can, beyond the sole technical aspects of the building and the monitoring/maintaining of a wastes repository, address the crucial issues of its (social, ecological, existential, cultural...) meaning for/in the life of the people.

Criterion 7 - **Territory**: Fruitful interactions must take into account the deep impact of RWM and of a geological disposal on the meaning people give to their life in a territory. An interaction is fruitful if it is admitted by the actors that, far from being a neutral installation, a repository has a deep impact on the meaning that people give to a territory and then to the life they can experience on it (e.g.: modification of landscape, traffic and transportation of materials, security and safety measures, vulnerability to climate change, additional investments or direct compensations to improve their well-being...).

Criterion 8 - **Shared complexity**: Fruitful interactions necessitate addressing the complexity of the issues (technical and non-technical) linked with RWM. An interaction is fruitful if the actors are able to address the various aspects and dimensions of a complex problem (e.g.: scientific, legal, moral, environmental, social...) and are also able to share this understanding of the complexity so that it finally constitutes a common ground or background.

Criterion 9 - **Addressing the long term**: Fruitful interactions cannot be meaningfully achieved without an intergenerational perspective, given the extreme timescales. An interaction is fruitful if, despite the urgent achievements or decisions that need to be made in the RWM in the present, it never neglects the core stakes of the long-term management, justice and responsibility towards future generations.

2.1.3 Evaluation grid through indicators

The protocol of evaluation for the different events and processes is practically grounded on a scattering method, which grid is given here (see table 1 below). For each condition for fruitful interactions, some precise indicators (3 or 4) enable certain knowledge for the evaluation. This non-exhaustive grid of qualitative indicators was established as a preparation tool in order to build the different evaluations.

Conditions for fruitful interactions	Indicators for applying the criteria on events and processes
Legitimacy	<p>Recognition -or not- of legitimacy (from one to another, by speech and statutes)</p> <p>Legitimacy affirmation -or not- (from someone for him/herself, affirmation or revendication)</p> <p>Symmetry/di-symmetry of actors (right to speak, time of speaking, right to take the floor, to frame the debates, inclusivity, ...)</p>
Methodology	<p>Cooperative research, co-construction of interpretations and scenarios (contextualized cases)</p> <p>Degree of critical pluralism: Taking into account the variety of rationalities (scientific, moral and social views together)</p> <p>Consideration of safety case and safety assessment as dialectic places/dialogues</p> <p>Highlighting the specificity of long-term knowledge and management</p>
Postural changes	<p>Consideration of political and organizational tools for changes (Pathway Evaluation Process, special events, associations, commons, ...)</p> <p>Taking into account the role of socio-technical imaginaries (background assumptions: ontological, cosmological, epistemological, ethical, ...)</p> <p>Changes in the opening and acceptance of other types of rationalities (not only scientific)</p>
Personal unity	<p>Personal dissonance/consonance with the institutional discourses/roles</p> <p>Personal expression markers: "off the record", I/we, self-censorship, ...</p> <p>Importance of professional and personal life shift: professional status and activity, socio-environmental activism, consciousness raising, ...</p>
Expertise function	<p>Role and cooperation with non-experts, non-scientific experts and counter-experts: co-expertise</p> <p>Evolution of the expertise function along the processes, recognition of this evolution by experts themselves</p> <p>Consideration of pluralistic dialogue and institutional integration for better apprehension of complexity</p>
Meaning of the repository	<p>Integration of plurality of meanings beyond the efficiency of technical concepts</p> <p>Appropriation of the site of repository by the population: activities and projects in addition to RWM</p> <p>Considering the significance of intergenerational safety</p> <p>Flexibility of the sociotechnical processes (retrievability, reversibility, recoverability, ...)</p>
Territory	<p>Integration of the repository into landscapes and territory life</p>

	<p>Reference to local problematics, questionings and claims</p> <p>Recognition of legitimacy of local consensus and dissensus</p> <p>Scopes of the territory. Role of multiple organizations and scale: local, regional, European, associations, ...</p>
Shared complexity	<p>Multinational and intergenerational perspectives</p> <p>Considering institutions as dynamic structures towards apprehension of complexity</p> <p>Contribution and relevance of scientific expertise to safety issues. Development of safety culture.</p>
Addressing the long term	<p>Considerations about intergenerational governance and interactions (more than education) - creating a long-term stewardship culture.</p> <p>Flexibility of the sociotechnical processes (retrievability, reversibility, recoverability, ...)</p> <p>Articulation of timescales (past, present, future) at the levels of reflection and actions.</p>

Table 1 - Grid of indicators for assessing criteria of fruitful interactions.

2.2 Feedback on the quality of the process during the EURAD-2 ICS workshop n°2

In addition to the methodology of evaluation that was used and validated in EURAD-1, the ICS coordination team²¹ decided to collect views on the ICS process from the CS larger group members and EURAD-2 members. This is why, during the second ICS workshop held in Liege on 26-27 January 2026, two sessions dedicated to the evaluation of the ICS activities were organised and contributed to the feedback's quality.

The goal of the first session was to gather an initial set of ideas and comments on what the ICS has brought to the participants present so far. Three questions were asked: Why are you involved in this process? What do you expect from it? How did it enrich your knowledge, ideas for development and intentions for action? The aim was to constitute a first landscape of participants' opinions after one year and a half, and to compare the results to a final evaluation to be done at the end of the EURAD-2. Five groups were composed of either CS representatives (CS experts, CS larger group members, researchers of Liege University) or EURAD-2 members (WMO, TSO, RE involved in ICS activities) in order to collect visions from two types of actors and analyse communalities and differences. The groups were either online or in person groups (no hybrid groups). The list of the groups is available on Appendix C.

The goal of the second session was to collect inputs from the participants related to ICS activities, in order to improve these interaction activities and increase the number of engaged and involved European Civil Society actors in the future. The discussion was organised under the format of a world café. The participants, divided in three pluralistic groups (CS representatives and EURAD representatives), discussed successively three questions:

- 1 - What has your involvement in EURAD brought you so far? How has your participation in EURAD developed your personal and your organizational vision and intentions regarding Radioactive Waste Management?
- 2 - What was positive (to be reinforced) and what could be improved?
- 3 - More specifically, how could this programme reach and involve a larger public/audience among the EU Member States?

²¹ The composition of the team is available in Appendix A.

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Three facilitators collected the answers to the questions. All the groups (see Appendix D) worked on the same question at the same time. For each question, each group worked with a different facilitator. For the second and third questions, the facilitators explained to the groups the results of the discussion with the previous groups (five minutes) and discussed the new question (fifteen minutes).

The results of these two sessions are detailed in the content of section 4 of this document presenting the recommendations for the future. It has to be precise that a small number of participants were involved, and it has no statistical meaning. They are qualitative results helping to improve the process.

3. Results of ICS evaluation at the end of first wave

NTW was responsible for the interactions with Civil Society within four Strategic Studies: ASTRA, a WP about alternative strategies for RWM; FORSAFF, about SMRs and waste; CLIMATE, about the impacts of climate change on RWM and OPTI, about optimisation of RWM and repositories. Pluralistic seminars or workshops were organised within these four WPs: the fruitfulness of the interactions with Civil Society is evaluated through the organisation and the content of these events and is based on the nine criteria aforementioned.

This deliverable also offers the opportunity to evaluate these interactions at a more general level within the programme. These more general assessments are conducted through the major global events involving CS, i.e. the two ICS workshops and the EURAD-2 annual event.

3.1 Results in Strategic Studies

3.1.1 Alternatives RWM strategies (ASTRA)

The interactions with Civil Society in ASTRA are achieved through a dedicated task (Task 6) that contributes to the work processes organized by other tasks. The work achieved by other tasks is thus not being directly framed by CS members, but it is in constant dialogue with CS perspective, enabling a certain level of openness of the topics tackled and contributing to a stronger **legitimacy** of the WP outcomes and of the interactions with CS. Enabling participation of Civil Society assures structured interactions between actors and helps to foster mutual understanding and trust about how the RWM is selected and implemented. In ASTRA, mutual understanding is not only in between the Colleges WMO, TSO, RE and CS, but also in between participants from the same Colleges but coming from different countries with different RWM programmes and at different programme phases.

As a key topic addressed in the WP with CS participation, SIMS but also some LIMS, often do not have sufficient resources for RWM, particularly for challenging waste streams. CS is interested in the transparent and safe management of all types of RW, including legacy wastes. Transparency, Civil Society (CS) participation in decision-making processes, and the development of a shared culture of safety and security are also essential in predisposal management issues.

Developing intergenerational stewardship models is one topic of interest for CS. The main legal and ethical principle to be applied during the long-term engagement of CS is the precautionary principle. One of the management models that has attracted considerable interest is rolling stewardship, which is an intergenerational management concept requiring monitoring and maintenance of RW for, in theory, an indefinite period, with responsibility being passed on from one generation to the next, preserving all necessary information and ensuring resources for the next generation. Such a stewardship process could last at least until a final safe solution is found which would no longer require constant care, cost and memory. This directly contributes to the objective of **addressing the long term**.

A second type of topics on which interactions with Civil Society had the possibility to focus on is related to the different deep borehole disposal (DBD) concepts that have been proposed, raising many different opinions from CS actors. No strong consensus opinion can be seen so far, perhaps because these concepts have never been studied in detail by CS until now. Another reason may be that the DBD concepts connect to many complex topics of RWM. Two main issues can so far be identified as being important for CS: safety demonstration, and retrievability. These two topics were considered as structuring elements in the task 4 workshops, underlining the **shared complexity** at stake with this subject of DBD, thus needing a broader vision on articulated **expertises**.

There is a need for a more developed and sophisticated discussion with and within CS about the importance of safety and security aspects and for a comparison of retrievability aspects when discussing the pros and cons of DBD and deep geological repositories for RWM. This is especially important as possible lower costs and easier siting of deep boreholes may drive DBD development forward in the coming years, while many substantial topics still have not been tackled in enough depth by CS.

Finally, the topics related to long-term interim storage as the option used in most European countries were therefore a key focus of Civil Society in ASTRA. In fact, interim storage facilities were not designed for long-term operation, the risk will be increased by effects of ageing and due to outdated designs. From an ethical perspective, long-term storage exceeding the container and/or interim storage facility design lifetime, puts pressure on future generations and violates the polluter-pays principle. To provide solutions for time-related problems such as this, the development of an intergenerational stewardship culture is needed, giving a possible perspective related to the **meaning of a repository** programme.

From the perspective of **legitimacy**, ASTRA is a work package that clearly brings together the positions and levels the playing field of the governing organizations, scientists and CS representatives. This is because in the individual tasks of ASTRA there are known and shared opinions for development: long-term storage and temporary sites should be clearly regulated and carefully monitored (Task 3); DBD is a somewhat promising but unused technology that needs more further research (Task 4); alternatives to SIMS suggest cooperation and shared solutions between them and assistance from LIMS for better management (Task 5). In addition to these continuous dialogues, the organization of a pluralistic workshop headed by CS actors is another sign of legitimacy towards interactions with Civil Society. The evaluation based on the criteria is summed up in the following table (Table 2).

Criteria - conditions for fruitful interactions	Elements for evaluation - ASTRA
Legitimacy	<ul style="list-style-type: none"> Active presence of CS actors in each of the technical topics Contribution to the framing of questions and of some activities Possibilities to organize written outcomes and a workshop with autonomy
Methodology	<ul style="list-style-type: none"> Continuous dialogue building mutual trust. Sharing large perspectives and past experiences related to technical topics
Postural changes	<ul style="list-style-type: none"> Orienting the technical topics towards a shared framework of safety assessment and uncertainty management
Personal unity	<ul style="list-style-type: none"> Ability to consider alternatives strategies in a transversal manner
Expertise function	<ul style="list-style-type: none"> Enriching the perimeter of structural questions and elements to take into account for building alternative strategies Increasing the perspectives for reaching deeper outcomes
Meaning of the repository	<ul style="list-style-type: none"> Highlighting key strategic issues such as midterm saturation or certain vulnerabilities
Territory	<ul style="list-style-type: none"> Underlining the stewardship function as a core aspect
Shared complexity	<ul style="list-style-type: none"> Enabling different perspectives to be discussed together via tailored processes
Addressing the long term	<ul style="list-style-type: none"> Building a set of concepts for long term stewardship

Table 2 - Evaluation of the ICS within the ASTRA WP

3.1.2 Waste Management for Small Modular Reactors and future fuels (FORSAFF)

The FORSAFF WP aims at tackling one of the biggest challenges in the possible deployment of SMRs: the management of spent fuel and radioactive waste generated by their operation and decommissioning. This challenge involves not only disposal but includes pre-disposal issues and the possible reprocessing of spent fuels as well. There are a large variety of designs, technologies, and potential applications for SMRs which will have profound effects on Waste Management strategies and technical pre-disposal

and disposal solutions. This WP aimed at considering these questions and the possible impacts on the decision-making processes for incorporating these reactors into energy production networks. Socio-technical aspects were part of these considerations and were explored mainly through a dedicated Task.

Task 6 “Stakeholder Engagement” aimed at identifying stakeholder perceptions and concerns related to SMR Waste Management and developing recommendations for transparent information exchange and dialogue including improving communication with the public. Within this task, subtask 6.2 “Multiparty dialogue seminars and associated results” was dedicated to the organisation of two seminars engaging Task 6 participants, Civil Society, and the 3 EURAD-2 Colleges, devoted to the identified topics resulting from other tasks on waste generation, Waste Management and policy and regulatory framework.

Two seminars were held in April and December 2025, respectively in France and Estonia, enabling fruitful interactions between Civil Society and other stakeholders. These interactions are evaluated here through the nine aforementioned criteria (see table 3 below).

The two FORSAFF seminars were a successful opportunity to discuss the SMR and waste issues in a socio-technical way. The framework helped build fair exchanges on various topics, beyond technical ones.

The two seminars hosted dialogues between all actors that were on the same footing, helping establish the **legitimacy** of all the actors taking part in the process: CS played a central and visible role in both seminars. Indeed, CS representatives were notably responsible for organising and facilitating one PEP session during each seminar, which ensured the active inclusion of Civil Society perspectives in the discussions. Moreover, during Seminar 2, CS actors also presented their views in response to the Estonian national programme, contributing to the dialogue on the country's emerging nuclear and SMR strategy.

The topic addressed in the working package was highly linked with industrial complex challenges, and therefore the discussions during the seminars integrated multiple forms of rationality, including, economic considerations, industrial and technological constraints, regulatory frameworks or social and societal dimensions. This pluralistic **methodological** approach helped to structure discussions across different stakeholder perspectives and expertise domains.

The PEP sessions organised during each seminar were very positively received by participants. Several participants explicitly noted that the exercise opened new perspectives on socio-technical dimensions of Waste Management and SMR, beyond the purely technical aspects that were expected to be the centre of discussions, leading to **postural changes** on some topics.

Even if there were no strong patterns that seemed to emerge regarding "**personal unity**", participants frequently drew on examples and experiences from their own national contexts, such as Slovenia and Finland. These contributions were not always expressed strictly from their institutional roles, but often from a citizen or local perspective.

The discussions that occurred during the two seminars strongly emphasised the need for **pluralistic expertise** dialogue and institutional integration in order to better address the complexity of SMR-related Waste Management. Participants highlighted the importance of structured interactions between different actors (national authorities and regulators, Waste Management Organisations, SMR developers and industrial actors, local communities and Civil Society organisations, etc.) Discussions extended beyond waste management itself to include related issues such as liabilities, responsibilities, financing mechanisms, and governance issues.

The question of the **meaning of the repository** was addressed primarily through discussions on possible changes to waste inventories, Waste Acceptance Criteria (WAC), and repository design resulting from potential SMR deployment. Participants emphasised the importance of early coordination between key actors (waste managers, regulators, SMR developers, etc.) regarding the repository design to avoid late-stage adaptations of the concepts. However, the exchanges went beyond repository-specific issues, touching on broader issues linked to the possible emergence of SMRs.

The working package itself was not directly focused on **territorial** issues, except for the specific focus on SIMS. Nevertheless, SMR deployment inherently raises strong territorial questions, particularly regarding siting decisions, questions that were addressed during the seminars. During the PEP sessions, discussions frequently referred to real or hypothetical locations, illustrating the importance of territorial considerations in SMR and waste related issues. The second seminar had a particularly strong territorial grounding, as presentations from the Estonian Ministry of Climate (host of the seminar) and other actors involved in the Estonian SMR programme provided concrete insights into national decision-making processes. These presentations really anchored the discussions to concrete territorial issues.

The issue of safety culture and the need for a multigenerational perspective emerged as a central theme. The seminar discussions highlighted the importance of long-term, structured stakeholder engagement embedded within organisational practices to address the **complexity** of the process: "Stakeholder engagement should be structured, long-term, and embedded in organisational safety culture, not limited to formal hearings. Trust should be understood as an outcome of a credible process rather than a precondition." (Seminar 2 minutes)

Many discussions focused on **long-term** governance challenges, particularly regarding liabilities, responsibilities, or financial issues associated with new nuclear ecosystems. Participants emphasised that SMR programmes are still at an early stage, which creates an opportunity to anticipate long-term issues more effectively and to learn from past experience by avoiding repeating "mistakes" observed in the development of conventional nuclear reactors. Participants stressed the importance of anticipating the entire lifetime of potential SMRs and their associated waste. This implies planning across all relevant timescales, from deployment to waste management and post-closure. The evaluation based on the criteria is summed up in the following table (Table 3).

Criteria - conditions for fruitful interactions	Elements for evaluation - FORSAFF
Legitimacy	<ul style="list-style-type: none"> CS played a central role in both seminars, notably through the organisation and facilitation of a PEP session in each event. During Seminar 2, CS also contributed by presenting their views in response to the Estonian national programme.
Methodology	<ul style="list-style-type: none"> The discussions addressed a highly industrial topic (and incorporated multiple rationalities: economic, industrial, regulatory, and societal).
Postural changes	<ul style="list-style-type: none"> The PEP sessions were very positively received. Some actors stated that it helped open perspectives on socio-technical aspects beyond purely technical considerations.
Personal unity	<ul style="list-style-type: none"> Participants occasionally drew on examples from their national contexts, sometimes speaking beyond their strict institutional roles and bringing broader citizen perspectives.
Expertise function	<ul style="list-style-type: none"> Strong emphasis on the importance of a pluralistic dialogue and institutional coordination to address the complexity of SMR-related Waste Management, including issues of waste streams, liabilities, responsibilities, and financing.
Meaning of the repository	<ul style="list-style-type: none"> Discussions addressed potential impacts of SMRs on waste inventories, WAC, and repository design, highlighting the need for earlier coordination between actors to avoid late-stage adaptations.
Territory	<ul style="list-style-type: none"> Although the WP is not territorially focused, SMR deployment raises territorial concerns (e.g. siting) and led to many territorial discussions. Seminar 2 was strongly grounded in the Estonian context, with presentations from national actors.

Shared complexity	<ul style="list-style-type: none"> • Safety culture and multigenerational perspectives were central themes. Stakeholder engagement was seen as needing to be structured, long-term, and embedded in organisational practices.
Addressing the long term	<ul style="list-style-type: none"> • Discussions emphasised long-term governance issues linked to SMR ecosystems, particularly liabilities, responsibilities, and finance. • Participants stressed the need to anticipate the full lifetime of SMRs and associated waste and to avoid repeating “mistakes” observed in conventional nuclear programmes (learning from the Past).

Table 3 - Evaluation of the ICS within the FORSAFF WP

3.1.3 Impact of climate change on nuclear Waste Management (CLIMATE)

The Work Package 11 CLIMATE is a Strategic Study that analyses the impact of climate change on Radioactive Waste Management (RWM), aiming at identifying knowledge gaps and providing recommendations for future research. The study considers climate change impacts on radioactive Waste Management facilities (surface, near-surface and deep geological disposal, including related surface facilities), all types of waste (low-level waste, low and intermediate level waste, and high-level waste) across a large variety of sites/disposal facilities in Europe during construction, operation and post-closure phases. This WP combines the views and experiences of RWM actors across a large range of European climate types, taking into account a variety of **territories** facing the same types of risks.

The main goal of Task 5 was to coordinate the interaction between CLIMATE actors with CS representatives on socio-technical challenges and associated uncertainties, identify stakeholder views related to impacts of climate change on nuclear Waste Management, foster an efficient collaboration between WP partners, and develop recommendations for transparent information exchange and dialogue with Civil Society. To achieve these goals, Task 5, led by Civil Society actors considered as **legitimate** implemented an interaction process based on two annual pluralistic workshops (with EURAD partners, end-users, Civil Society experts, and other stakeholders) using innovative participation methodologies and discussing socio-technical challenges, sharing knowledge on climate changes impacts and exploring the needs for future research on transparency and public participation and the means for publics and CS representatives to be part of future research activities related to climate.

More precisely, the objectives of the workshops were to bring a landscape of viewpoints by confronting views based on keynotes paper prepared by different types of actors. Then, Task 5 established elements of a shared vision about climate change impact on RWM, establishing priorities on key topics, and building as much as possible a mutual understanding on roles for all actors and views on climate change relationship with RWM. Task 5 also developed a tool of dialogue enabling to pluralistically discuss the identified key topics (PEP extension). This PEP tool was tested during the second workshop and was considered as a vanguard innovation of **methodology** for addressing such issues at the intersection between radioactive Waste Management and climate change. Finally, all along the process, Task 5 collected insights from Civil Society to develop recommendations on how to tackle challenges on these key topics in the future research and how to ensure transparency and public participation in RWM related to climate change.

The first workshop, held in Fontainebleau on 26–27 March 2025, was organized in order to advance discussions with a plurality of partners about how climate change affects RWM over various timescales. It was hosted by the Ecole des Mines de Paris. The event brought together around 40 participants from multiple stakeholder groups, including WMOs, TSOs, REs, and representatives from Civil Society. The central aim was to explore the interface between evolving climate conditions and the safety, design, regulation, and long-term governance of radioactive waste facilities, including surface, near surface, and geological repositories.

The workshop built on previous efforts of methodology under EURAD-1 while taking a broader and more inclusive approach in EURAD-2. In this phase Civil Society actors and research actors contributed altogether throughout the workshop to pluralistic reflections on climate-driven risks and adaptation strategies. In this sense, the event acted both as a technical exchange and as a participatory forum where scientific, regulatory, and societal perspectives could interact.

The format of the workshop included one technical visit, a general introduction, the presentation of the four keynote papers via plenary presentations, and working group discussions structured around six guiding questions, followed by conclusive plenary exchanges. The technical visit was organized at the CEREEP laboratory (CNRS-ENS), which hosts a numerous set of environmental simulators dedicated to experimentation in geomorphology and ecology, which includes some experiments tackling erosion issues of RWM surface facilities in altered climates. During the following exchanges, the themes addressed included the reliability of climate models, the application of time-series versus scenario-based approaches, cross-border issues in climate projections, the role of hydrogeology and biosphere in modelling, and the need to integrate cumulative and cascading effects of climate phenomena.

Central to the discussions was the topic of the articulation of several different timeframes. Participants repeatedly emphasized that the short-, mid-, and long-term temporal scales—ranging from generational horizons (e.g., 25 years) to projections over 300 years and beyond—need to be clearly defined and differentiated when assessing climate impacts. Specific emphasis was placed on near-term effects on surface and near-surface facilities, and on longer-term risks such as glaciation, permafrost, sea-level rise, and extreme precipitation. These exchanges contributed to collectively **address long-term issues** linked to the intersection of Radioactive Waste Management and climate change. The question of whether current repository design assumptions fully integrate future climate scenarios was raised, along with the implications for safety cases, regulatory thresholds, and public communication.

Another key dimension of the event was the interdisciplinary examination of uncertainty. While climate modelling continues to improve, participants acknowledged the difficulty in deriving precise, long-term forecasts for use in site-specific safety assessments. Instead, the workshop emphasized the value of combining "what-if" scenarios with established time-series methods, highlighting the importance of transparency in uncertainty communication and the importance of considering several modes of **expertise functions**.

The scope of the discussions also touched on institutional and strategic questions about **shared complexity**, such as the articulation of research partners and regulators with climate science, the limits of existing regulatory frameworks, and the potential for developing shared European standards on climate adaptation in RWM. Moreover, the societal dimension was repeatedly invoked, including the need to define clear roles for Civil Society in scenario development and risk governance. The main preparation step needed for this workshop was the elaboration of 4 documents "Keynote Papers" from 4 kinds of partners: WMOs, TSOs, REs and Civil Society, in accordance with the 3+1 methodology elaborated for interactions with Civil Society. These documents enabled the whole WP to stir up interactions about the possible views of the different Colleges and contributed afterwards to underline the **postural changes**.

The second workshop, held on 28–29 January 2026, was organized at the University of Liège in Belgium to advance discussions on how climate change affects radioactive Waste Management over various timescales. The event brought together around 32 participants from multiple stakeholder groups, including WMO, TSO, research entities, and representatives from Civil Society. The central aim was to continue the pluralistic discussions started during the first workshop trying to establish a shared vision on climate change impacts in RWM. Participants continued to pluralistically explore the interface between evolving climate conditions and the safety, design, regulation, and long-term governance of radioactive waste facilities, including surface, near surface, and geological repositories. In this sense, the event acted both as a technical exchange and as a participatory forum where scientific, regulatory, and societal perspectives could interact.

The format of the workshop included a technical visit of HADES underground laboratory, at the SCK-CEN site in Mol (Belgium). There, 225 metres below ground in the Boom clay, scientists have been conducting research into the geological disposal of long-lived and/or high-level waste for 40 years. The technical visit of the underground research laboratory greatly contributed to sharing a representation of a disposal and thus a certain visual **meaning to the possibility of a repository**. After the visit, the workshop started with an interactive session: the participants tested the PEP tool of dialogue dedicated to climate change impacts on radioactive waste facilities and processes. This tool was elaborated as an extension of the PEP tool developed by the SITEX.Network. It enabled participants to frame the discussions by elaborating their own scenarios based on a set of events cards and evaluation cards aiming at orienting the discussion on specific questions they wanted to ask to others. The PEP on climate change impacts allowed the participants to mix issues related to RWM and climate change impacts. Together, they tried to solve complex problems linked to the scenarios. After this session, a debriefing session was held: the participants enjoyed the PEP tool and underlined the powerful insights it can bring, notably regarding how it can contribute to a possible **personal unity** while considering the interaction of topics of Radioactive Waste Management and climate change, but also discussed ways to improve the tool. Then, a discussion was organised where participants shared views on public participation in processes on climate change. Finally, before the conclusion of the workshop, a prospective session dedicated to gather recommendations for future research helped deepen and reflect on the interactions and results developed during the CLIMATE WP.

The evaluation of ICS in CLIMATE through the nine aforementioned criteria are synthesized in the table 4 below:

Criteria - conditions for fruitful interactions	Elements for evaluation - CLIMATE
Legitimacy	<ul style="list-style-type: none"> • Task being framed and led by Civil Society actors, with the active contribution of all kinds of actors
Methodology	<ul style="list-style-type: none"> • The clear methodology of stating Keynote Papers helped the WP participants to stir up their activities in other tasks. • The PEP methodology was underlined as innovative
Postural changes	<ul style="list-style-type: none"> • The exercise of Keynote papers elaboration led the different partners to overtake their initial statements in order to build shared elements of vision
Personal unity	<ul style="list-style-type: none"> • The PEP extension tool enables participants to personally address certain kind of scenarios rooted in their experience
Expertise function	<ul style="list-style-type: none"> • The crucial importance of having a wide span of expertises was underlined, as the issues are at the intersection of two different scientific worlds: Radioactive Waste Management and climate change impacts
Meaning of the repository	<ul style="list-style-type: none"> • Technical visits aiming at sharing possible concrete meaning of repositories
Territory	<ul style="list-style-type: none"> • Variety of territories taken into account in the WP topic: different climates represented
Shared complexity	<ul style="list-style-type: none"> • The pluralistic workshop enabled different kinds of partners to share their views. • It also enabled the participants to frame fruitful pathways for continuing to overcome disciplinary silos
Addressing the long term	<ul style="list-style-type: none"> • Structuring exchanges about the variety of timeframes to take into account

Table 4 - Evaluation of the ICS within the CLIMATE WP

3.1.4 High Level Waste repository optimisation including closure (OPTI)

The OPTI WP aims at tackling questions and issues related to optimisation of high-level waste repositories. Indeed, optimisation will be in focus of advanced programmes as first repositories enter in construction / operation periods. The need for optimization is justified by the long running character of repository projects and thus by expected changing boundary conditions (e.g. new waste types), evolution of technology and/or the adaptations of processes due to operational experiences. As optimisation is a process that shall involve all stakeholders of a RWM programme, Civil Society included, one of the main objective of OPTI was to develop a mutual understanding about the views of the different actors on optimisation (e.g. what are the main drivers for optimization, at that point in the program is optimization needed, recommended or forbidden? What main key challenges are seen for optimization?).

Task 3 “Mutual understanding” aimed at building a mutual understanding of optimization approaches for waste disposal facilities and their management in RWM programmes and safety cases. Within this task, subtask 3.1 “Workshop to build mutual understanding” was dedicated to the organisation of two workshops to share the different views of optimization between the different actors and to build mutual understanding of these views. The goal of these workshops was to reach a mutual understanding (and possibly a consensus) between the actors about what optimization for an HLW/SF GDF means in principle.

Those two workshops were held in January and June 2025, respectively in the Netherlands and Czech Republic, and hosted fruitful interactions between all actors.

Overall, OPTI appears as a WP in which Civil Society was relatively well integrated, both institutionally and within the workshop discussions. The two workshops provided spaces for meaningful interaction between CS and other stakeholder groups, enabling relatively productive exchanges. However, the experience also revealed structural tensions in the framing of the WP, particularly between actors favouring broader socio-technical discussions and those expecting a more narrowly technical approach to optimisation.

CS was formally integrated in the governance of the WP and involved in all WP lead discussions. Two “mutual understanding” workshops were organised in which CS participated on an equal footing with other stakeholder groups. These exchanges resulted in two deliverables where CS perspectives are integrated alongside those of other actors. The WP leader (WMO) actively participated in the two ICS workshops, demonstrating that these exchanges were considered relevant for the WP's objectives. However, the **legitimacy** of CS involvement was occasionally challenged by some participants. For these actors, the OPTI WP should have focused more strictly on technical optimisation issues and less on broader governance perspectives. In this view, CS was sometimes perceived as hindering technical progress or diverting discussions away from the “core technical work.” These tensions reflected a structural ambiguity in the framing of OPTI, between the objective of opening broader socio-technical discussions and the expectation of producing strictly technical work. This tension became particularly visible during the second workshop, where disagreements emerged regarding the scope and orientation of the discussions.

Social perspectives were explicitly integrated into the discussions through the participation of CS, whose contributions were treated at the same level as those of other actors during the workshops and in the resulting deliverables, whose **methodology** was to list different actors' views. Safety and the safety case were central reference points throughout the discussions, sometimes leading to misunderstandings between actors on these topics. The workshops also included discussions on very long-term issues, particularly concerning knowledge preservation and intergenerational transmission. However, the discussions on repository closure did not fully address the post-closure phase. A key outcome was the recognition of a diversity of rationalities informing optimisation. The deliverables identify several drivers for optimisation, including long-term safety, operational and conventional safety, radiological protection, robustness, costs and affordability, sustainability, environmental impacts, societal impacts, and local community impacts. Optimisation was also framed as operating within

"prevailing circumstances," such as scientific limits, national programme constraints, safety requirements, societal and ethical limits, economic constraints, and technical and industrial constraints.

The workshops led to a "consensus view" of optimisation, recognising that optimisation processes must take into account multiple rationalities and contextual constraints. However, it probably does not represent a true **postural change**, since most participants already acknowledged the importance of these different dimensions. The main outcome may therefore be the explicit articulation and formalisation of this shared understanding, rather than a change of positions.

No strong tensions or alignments were observed between participants' **personal** views and their institutional roles. However, some discussions became sensitive when one WMO representative felt personally targeted by what they interpreted as criticism of their institutional role regarding safety management.

The two workshops were explicitly designed as dialogue spaces between the "3+1 Colleges", aiming to collectively explore the meaning and implementation of optimisation in Radioactive Waste Management. This format reflected a form of pluralistic understanding of **expertise**, combining technical expertise, institutional experience, and societal perspectives. The participation of the WP leader in both ICS workshops also contributed to opening discussions with actors beyond the immediate expert community.

The workshops primarily focused on developing a shared understanding of optimisation, rather than directly addressing the **meaning of repositories** themselves. Nevertheless, discussions touched upon several key socio-technical aspects of repository management, including reversibility, long-term safety considerations, and the need to move beyond purely technical definitions of optimisation. The exchanges focused more on how repositories should be managed and governed than on the conceptual meaning of the repository itself.

The OPTI WP was not explicitly framed around territorial governance issues, and the discussions remained largely conceptual and programmatic. However, participants frequently referred to their own national programmes and experiences, particularly from Sweden and Finland. These references occasionally grounded the discussions during the workshops in concrete institutional contexts, although territorial dimensions were not a central focus of the WP.

The workshops aimed to collectively define the concept of optimisation, leading to the recognition that optimisation should be understood as a dynamic process evolving throughout the different phases of a Waste Management programme. This perspective is reflected in the WP deliverables, in which the notion of safety culture was also mentioned several times as a key element in managing the **complexity** of radioactive waste. Overall, the discussions promoted a holistic approach to a highly complex socio-technical issue.

Long-term and intergenerational governance issues were discussed during the workshops. These themes were mainly introduced by CS participants but were eventually incorporated into the workshop outputs and deliverables. The evaluation based on the criteria is summed up in the following table (Table 5).

Criteria - conditions for fruitful interactions	Elements for evaluation - OPTI
Legitimacy	<ul style="list-style-type: none"> CS was formally integrated in WP lead and decisions, and reciprocally WP leader participated actively in both ICS workshops. Two mutual-understanding workshops placed CS on equal footing with other actors, though some participants challenged this legitimacy, arguing OPTI should remain more technical.
Methodology	<ul style="list-style-type: none"> Social perspectives were integrated alongside technical views. Discussions centred on safety and safety cases. There were

	<p>also discussions on the very long-term, however closure discussions were not linked with post-closure issues.</p> <ul style="list-style-type: none"> The diverse optimisation drivers (safety, protection, costs, sustainability, societal impacts, etc.) and prevailing circumstances (technical, economic, regulatory, societal) reflect the diversity of rationalities.
Postural changes	<ul style="list-style-type: none"> A "consensus view" of optimisation emerged, recognising multiple rationalities and contextual constraints, though this likely formalised existing views rather than producing major postural change.
Personal unity	<ul style="list-style-type: none"> No major tensions between personal and institutional roles, though some discussions escalated when a WMO representative perceived discussions on institutional safety responsibilities as personal criticism.
Expertise function	<ul style="list-style-type: none"> The workshops were designed as dialogue spaces between the "3+1 Colleges", promoting pluralistic expertise. Participation of the WP leader to ICS workshops helped broaden exchanges with actors beyond the core expert community.
Meaning of the repository	<ul style="list-style-type: none"> Discussions focused on optimisation processes rather than the meaning of repositories themselves, but still addressed governance aspects such as reversibility, long-term safety, and the need to move beyond purely technical perspectives.
Territory	<ul style="list-style-type: none"> OPTI was not territorially framed and discussions remained conceptual, though participants frequently referred to national programmes (notably Sweden and Finland).
Shared complexity	<ul style="list-style-type: none"> Optimisation was framed as a dynamic process evolving throughout the programme phases. Safety culture and holistic approaches were emphasised in dealing with complex RWM issues. See deliverables for more details.
Addressing the long term	<ul style="list-style-type: none"> Long-term and intergenerational governance issues were discussed, largely introduced by CS and later integrated into the deliverables.

Table 5 - Evaluation of the ICS within the OPTI WP

3.2 Results at a general level

3.2.1 ICS Workshops 1 & 2

NTW acted as the organiser of the workshops, providing the framework for **legitimacy** within which the discussions took place. The organisational design of the events aimed to guarantee equal footing among participants. This structure contributed to creating an inclusive dialogue environment, where Civil Society actors and technical experts could participate in the discussions on comparable terms.

The workshops brought together a diverse Civil Society Larger Group (CSLG), including representatives of local communities, national and transnational NGOs, scientists and researchers from various disciplines, and institutional representatives. In addition to the CSLG, technical members of the EURAD-2 programme participated in the discussions, further enriching the **methodology** to explore a range of perspectives. This diversity generated multiple lines of inquiry and rationalities, reflecting the complexity of radioactive waste governance. The workshops used participatory formats such as PEP sessions and World Café discussions, which helped to facilitate dialogue between different stakeholder groups, encourage a variety of viewpoints, allow participants to express their perspectives through different formats and interaction modes. However, participants also highlighted the relatively low level of public attention to Radioactive Waste Management issues. While limited public engagement may sometimes facilitate early policy processes, it can also create challenges in democratic contexts,

particularly in relation to siting processes for storage and disposal facilities. This observation reinforced the importance of strengthening communication and participation mechanisms with Civil Society.

Several CSLG members indicated that the workshops did not fundamentally **change** their existing positions, particularly regarding the importance of transparency and public participation. However, they noted that the exchanges reinforced these views and strengthened their relevance in the broader discussions. Within the PEP sessions, participants also reported that sharing perspectives with other stakeholders sometimes led to more informed, nuanced, or adjusted views on specific issues.

Although participants attended the workshops as representatives of specific institutions or stakeholder groups (e.g. WMO, TSO, universities, local communities), many discussions were conducted from the **personal** perspective of ordinary citizens from their respective countries. Several participants explicitly emphasised that citizens should have access to information on Radioactive Waste Management and opportunities to participate in decision-making processes that affect their living environment, health, and the well-being of future generations.

One of the main objectives of the ICS workshops was to create meaningful interactions between the diverse profiles present in the CSLG and the technical partners involved in the programme. This objective reflects the idea that addressing radioactive waste governance requires a **pluralistic conception of expertise**, combining technical knowledge and societal perspectives. By design, the workshops were structured to foster such pluralistic exchanges, and this objective was largely achieved during the discussions.

The workshops led to several discussions on the broader implications and **meanings of geological repositories**. Participants addressed the repository not only as a technical infrastructure but also as a socio-technical and political project, raising questions related to relationships with local communities, governance frameworks, safety considerations, long-term management issues and their economic implications, and ecological, moral and ethical perspectives.

The ICS workshops were not designed as **territorially** focused events, in the sense that they were not dedicated to discussing a specific local project or site. Nevertheless, territorial dimensions played a significant role in the discussions, through the representation of participants from different countries and governance contexts within the CSLG, efforts to establish connections between the workshops and the host country or city, or the design of the PEP materials and World Café questions, which encouraged participants to reflect on territorial and local implications. As a result, territorial perspectives were indirectly but consistently present throughout the exchanges.

The issue of **complexity** is intrinsic to the ICS process, which explicitly aims to address the socio-technical nature of RWM. The design of the workshops and the role of NTW within EURAD-2 were therefore structured around this complexity perspective. However, some participants noted that the structure of the workshops, particularly the second one, remained too closely aligned with the thematic "silos" of the EURAD programme: a stronger transversal perspective or a step back from EURAD structure might have facilitated better discussions on cross-cutting issues.

The workshops included numerous discussions on **long-term** governance and management challenges, which are central to RWM. Particular attention was given to the concept of long-term or rolling stewardship, understood as a framework for maintaining oversight, knowledge, and responsibility across extended timescales. Several participants stressed the importance of developing long-term strategies to strengthen societal knowledge about energy and Waste Management. Increasing awareness and education on these topics from an early stage could support more informed public debate and decision-making on Radioactive Waste Management in the future.

Overall, the ICS workshops successfully created a pluralistic dialogue space bringing together Civil Society and technical experts to explore the socio-technical complexity of radioactive Waste Management. While the discussions effectively highlighted issues such as long-term stewardship, governance, and societal perspectives, some participants noted the need for more transversal

exchanges beyond programme silos to fully capture these cross-cutting challenges. The evaluation based on the criteria is summed up in the following table (Table 6).

Criteria - conditions for fruitful interactions	Elements for evaluation - ICS workshops
Legitimacy	<ul style="list-style-type: none"> • NTW organiser of the events: framework guaranteeing equal footing of all participants/interventions.
Methodology	<ul style="list-style-type: none"> • Diversity in the CSLG (local communities, national/transnational NGOs, scientists and researchers in various fields, institutional representative people, etc.) + participation of EURAD-2 technical members, leading to a variety of inquiries and rationalities. • PEP sessions + word café during both workshops, ensuring a variety of points of views and different ways to express it.
Postural changes	<ul style="list-style-type: none"> • Participants from CSLG stated that the two workshops did not change their vision but reinforced it (especially the need for transparency and public participation) • PEP sessions: sharing perspectives between member that lead to shifts in specific perspectives.
Personal unity	<ul style="list-style-type: none"> • Even if participants represented their own institution / type of institution (WMO, TSO, university, local community, etc.) most of the discussions were held “in the shoes of ordinary citizens from their countries”
Expertise function	<ul style="list-style-type: none"> • Creating a link between the very diverse profiles in the CSLG and technical partners is one of the main objectives of the ICS WS, rooted in the importance of having a pluralistic expertise function. By design, this criterion was fulfilled.
Meaning of the repository	<ul style="list-style-type: none"> • Many discussions about broader perspectives on the repositories and the link with local communities, concrete political and governance aspects, safety, long-term issues, economics, moral and ethical perspectives, etc.
Territory	<ul style="list-style-type: none"> • ICS WS are not framed as territorial events in the sense that they are not designed to discuss a specific territory. However, a strong importance is given to the concrete local and national impacts, through the representation of a diversity of countries and scales of concern in the CSLG, the will to create a link between the WS and the hosting country/city, and the design of the PEP material and the world café questions that help bringing territorial views.
Shared complexity	<ul style="list-style-type: none"> • Complexity is by essence the core of the ICS. All processes in the WS and in NTW participation are thought through this prism (socio-technical issues). • However, it was stated several times that the structures of the workshops (especially the 2nd one) were too close to the “silo” structure of EURAD. A step back would have been needed to enhance discussions on transversal topics.
Addressing the long term	<ul style="list-style-type: none"> • Many discussions on the long-term and the long-term management, especially through long-term/rolling stewardship

Table 6 – Evaluation of the ICS workshops process

3.2.2 EURAD annual event

During the EURAD-2 annual event n°1 in Bologna (Italy) in September 2025, one of the four parallel breakout sessions was dedicated to the interactions with Civil Society. The aim of this session was to open altogether the “black boxes” of what is meant by dissemination, Civil Society, engagement and to identify what perspectives on these topics could be either fruitful or short-visioned. The ambition was also to build the next steps together in EURAD-2 by discussing what innovation can be brought to CS interactions, taking into account the existing actors and methods. The session also gave the opportunity to discuss how Work Packages could be better embedded with the perspective of Interactions with Civil Society.

The session was divided into two parts: a plenary introduction where three speakers presented current best practices and concrete examples on Civil Society contribution to radioactive Waste Management in different contexts and notably in the research field. The goal was to put everyone at the same level of information before the ideation part. First, a representative from the French nuclear safety and radiation protection authority (ASNR) presented two processes engaging Civil Society in the long-term in France: the technical dialogue on Radioactive Waste Management and mapping tools and serious game to prepare territories for post-accident management. Then, a representative from the European Economic and Social Committee (EESC) gave elements on EESC consultation on Radioactive Waste Management and presented main outcomes of this consultation that have been synthesized in an opinion paper. Finally, a representative from NTW presented an overview of the activities aiming at implementing interactions between EURAD researchers and Civil Society members.

These presentations regarding CS interactions occurring in EURAD and in other situations were structurally important in order to highlight the **legitimacy** of different types of interactions with Civil Society about Radioactive Waste Management and similar topics.

For the ideation session, the participants were divided into small groups and invited to answer three questions using the World Café method. All the groups worked on the same question at the same time (20 minutes per question). The **methodology** enabled all of the different types of voices to be heard as legitimate, in a dynamic and ideas-stirring momentum. For each question, the groups had to move to another table, and the facilitator presented the work done by the previous group before starting to work on a new question. The three questions were the following: What does it mean to disseminate results to different publics? What could be adequate networks in Civil Society and in scientific communities for fruitful interactions? & How to bridge these networks? How can we foster a sustainable engagement of the different kinds of publics in R&D activities and particularly for future EURAD activities? The objective of these questions was to make some **postural changes** possible, through the content of the discussion and of course through the exercise of having these topics being discussed between different kinds of partners, from Civil Society and technical ones.

The outcome of these exchanges underlined the importance of building a diversity of **expertise** in order to understand and cope with the **shared complexity** at stake in the RWM topics. The first question led to several insights for more mutual trust between actors, in a general objective for raising interest on the shared goal of safety demonstration. The answers to the second question tackled aspects more linked to the heterogeneity of networks and communities that can be concerned by these topics, including the **territorial** level. The third question raised several points regarding the possible contribution of Civil Society actors to the framing of research question, enabling them to be engaged in a mutual dialogue about the **meaning of the repository**. These discussions also raised the issue about funding sustainable dialogues aiming for better quality of decision making as a central element for **addressing the long-term** decision-making.

A graphic representation of the results is presented in the figure 3 below.

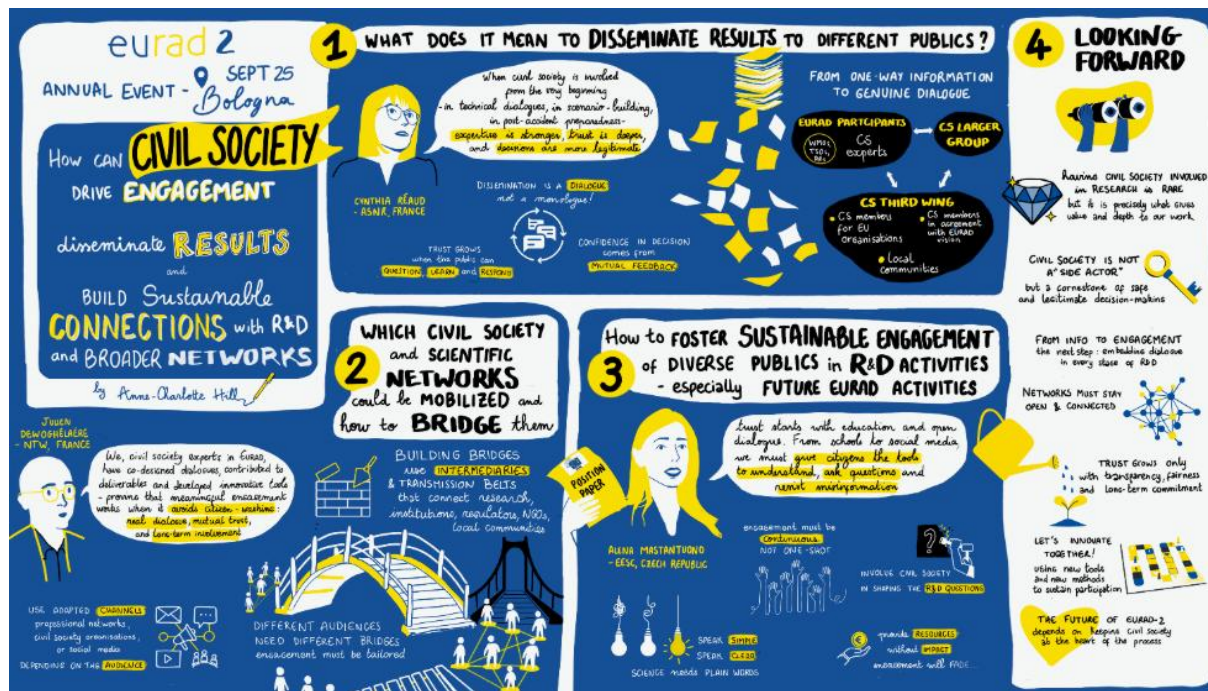


Figure 3 - Graphic representation of the CS session's results in EURAD-2 annual event.

The evaluation based on the criteria is summed up in the following table (Table 7).

Criteria - conditions for fruitful interactions	Elements for evaluation - CS session in EURAD-2 annual event
Legitimacy	<ul style="list-style-type: none"> • Having CS experts organizing a breakout session at EURAD annual event • Three different kinds of sets of interactions with Civil Society being presented by CS actors themselves. • Having an adapted methodology for putting all kind of actors on the same footing
Methodology	<ul style="list-style-type: none"> • World Café dynamizing the exchanges and enabling brainstorming. • Giving direct feedback to interactions with Civil Society by all actors that were present
Postural changes	<ul style="list-style-type: none"> • Changing the perspective of interacting with Civil Society: from dissemination to in-depth engagement • World Café enabling direct meetings of different profiles
Personal unity	<ul style="list-style-type: none"> • Testimonies such as the three ones from presentations, sharing personal perspective. • Integrating all dimensions of interacting with Civil Society in the questions for world café
Expertise function	<ul style="list-style-type: none"> • Valorising the different kinds of expertise for a shared goal of safety demonstration • Underlining the possible added value of social sciences expertise
Meaning of the repository	<ul style="list-style-type: none"> • Contributing to the definition of R&D questions aims • Anticipating the future interactions for such major and complex projects

Territory	<ul style="list-style-type: none"> Integrating the territorial dimensions among the questions of interactions with Civil Society
Shared complexity	<ul style="list-style-type: none"> Underlining the shared dynamism of uncertainty management Dialogue and innovative interactions as mechanisms to apprehend complexity
Addressing the long term	<ul style="list-style-type: none"> Preparing the decision-making processes to cope with long term aspects

Table 7 - Evaluation of CS session during the EURAD-2 annual event

4. Landscape of viewpoints and recommendations for the future

Based on the results of Liège workshop (second ICS workshop in EURAD-2), this section presents views of actors (CS larger group members and EURAD partners participating in ICS activities) on the current ICS activities and recommendations to be implemented in the future research activities in order to improve the quality of CS involvement process and the fruitfulness of the interactions between researchers and Civil Society.

4.1 Views of actors on ICS activities after one year and a half

This section presents a first landscape of viewpoints regarding ICS activities in EURAD-2. It is based on the answers of the three questions asked to the participants of the ICS evaluation session during the second ICS workshop (see section 2.2, above) aiming at collecting CS views and EURAD partners views in a separate manner. It also integrates elements of answers to the questions 1 and 2 of the world cafe session (section 2.2, above) enabling to present some elements of collective thinking on ICS.

4.1.1 Collected views of CS

During the ICS workshop n°2, several reasons to be involved in the ICS process were identified for CS actors. They are summarized in table 8 below:

Reasons to be involved	Quotations from CS participants
Collecting information on RWM issues and European research programmes	<p><i>"First year in EURAD. To understand how EURAD is in the EU issues. To learn how NGOs, institutions, and actors interact with each other's"</i></p> <p><i>"I have been very interested in the topic for a long time"</i></p>
Give a voice to Civil Society in research programmes as a social duty	<p><i>"It is a social duty, part of my citizenship"</i></p> <p><i>"To give voice to Civil Society, to offer my perspective as a Civil Society representative"</i></p> <p><i>"To help counter-balance non-transparency, information biases, and pressures on hosting communities"</i></p> <p><i>"I'm a green activist with many battles; I'm professionally involved as a medical physicist; I was a politician and I care about the problems of society"</i></p> <p><i>"Recalling the importance of publics: lay knowledge matters as well"</i></p>
Importance of sharing and improving knowledge by exchanging ideas	<p><i>"I also have expectation for the CS involvement, knowledge improvement in EURAD; Civil Society interaction should be a process that continues"</i></p> <p><i>"Sharing up to date nuclear knowledge".</i></p> <p><i>"Exchanging ideas"</i></p> <p><i>"I have been involved in nuclear waste issues for an environmental NGO for over 20 years. I find it important to interact with all different actors to discuss important issues."</i></p>
Possibility to develop networking in RWM field at European level	<p><i>"Networking"</i></p> <p><i>"To build professional contacts"</i></p> <p><i>"International/European collaboration within the CS and with other actors is important and the ICS activities in EURAD facilitate this".</i></p>

Importance of thinking socio-technical issues	<p><i>“Social scientist working on SMR, on socio-technical issues. RWM deals with interactions with Civil Society. Linked issues”.</i></p> <p><i>“Favor learning by doing implementing the double wing model. Personal duty: importance of thinking socio-technical in one word”</i></p> <p><i>“I am involved in this process both as a researcher and a citizen: PhD in philosophy of science regarding post-accidental issues. I was trained as a nuclear engineer but left the technical side to focus on political / social issues as they are very critical to me”.</i></p>
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Table 8 - Reasons for CS participants to be involved in ICS activities

Main outcomes are that it is important for CS representatives that Civil Society could raise its voice in research programmes; Their involvement in EURAD-2 is also a way to collect information on RWM issues and EU research, to develop networking and to address the complexity of the RWM (meaning considering the technical issues intertwined with societal issues). The CS representatives also expressed some expectations regarding the ICS activities. They are gathered in table 9 below:

Expectations regarding ICS	Quotations from CS participants
Continue allowing CS representatives contributing to research results (enlarge the number of research WP involved) and governance of EURAD (CS comments should be taken into account notably) , participating to achieve a common goal(science reinforcing safety)	<p><i>“CS involvement both in terms of knowledge and process”</i></p> <p><i>“Collaboration of all actors to achieve a common goal. Humanity has this problem; we need to be transparent and participatory about it”.</i></p> <p><i>“Helps to focus activities on what actually can have real impact”</i></p> <p><i>“To facilitate CS participation, to show it how it can participate”</i></p> <p><i>“What we can provide to technical experts is valuable (not only on non-technical issues)”</i></p>
Bringing different views with no discrimination, to facilitate the participation of CS	<p><i>“Discussions with very different perspectives can be voiced. No discrimination on such or such actors”</i></p> <p><i>“Spreading information about the situation regarding public vs. nuclear industry in Eastern Europe to experts in Western Europe and EU bodies”</i></p>
Bringing effective outcomes in terms of socio-technical knowledge	<p><i>“Socio-technical knowledge coming out of it”.</i></p> <p><i>“Seeing how socio-technical remain divided, or can connect together”</i></p> <p><i>“And to be able to make inputs from my long experience working with nuclear waste issues for an environmental NGO, both on technical and non-technical issues”.</i></p> <p><i>“Deepening the level of discussion of nuclear waste issues”</i></p> <p><i>“Now even technical people have “CS” considerations”</i></p>
Having regular information, possibility to learn in a safe place, receiving feedback from different countries and learn from people involved in the field for a long time	<p><i>“To better inform Civil Society”</i></p> <p><i>“I have no clear expectations, but maybe I expect more concrete solutions and results for RWM”</i></p>

	<p><i>“Possibility for the Civil Society to learn, with no domination”</i></p> <p><i>“Interesting to see what has changed. In the different years, things have changed a lot on CS presence in the room. Now it is possible to have fruitful exchanges. Turbulences in the rooms are less likely to happen now than years before”</i></p> <p><i>“Regular updates about current European practices and challenges”.</i></p> <p><i>“I expect to learn more about nuclear waste issues”</i></p> <p><i>“Getting an overview about the situation in other countries”</i></p> <p><i>“Every EURAD event is a learning experience, and the value of each event depends on the organisational structure, the presentations and the inputs from the participants and the dialogue and discussions. But for me, each event adds some value”</i></p> <p><i>“Interesting to have a sort of historical perspective from participants who have been involved in the field for long”</i></p>
Involve more type of publics	<i>“Involve the general public”</i>

Table 9 - Expectations of CS participants for ICS activities

The CS representatives expect to find a safe place when they can express their views and be involved in a fair way (be considered as legitimate actors and have their views taken into account in the perspective of the Aarhus Convention). They also want to have the possibility to consider the research topics in a socio-technical perspective and expect to receive regular information and feedback from other countries and from the EURAD programme as a whole that could help them in their national context (to follow and participate in RWM national processes) but also at European level. They would like to see more types of publics involved in EURAD.

Finally, the ICS workshop was the opportunity to collect opinions of CS participants on what they gained by being involved in the process (see table 10 below). The ICS already met some of their expectations but there is still work to be achieved and notably regarding the involvement of more types of publics from European societies, representing the third wing of ICS model:

Benefit to participate to ICS activities	Quotations from CS participants
Receive information, gain knowledge on concrete cases, exchanges on different views and constructive confrontation of different ways of thinking, be able to influence the RWM development by providing inputs	<p><i>“I gained a lot of knowledge”.</i></p> <p><i>“I learned from many local and practical examples, interesting cases. I saw different ideas and ways of looking at different problems from different ways of looking at the same problem. I realized that it’s important to be patient, open and tolerant”.</i></p> <p><i>“I gain a lot of experience and diversity of thinking”.</i></p> <p><i>“Not passive safety, but active safety. Another kind of institution that can deal with institutional risk. Ability to maintain the know-how, the knowledge: I learned a lot”</i></p> <p><i>“I have learned a lot from the EURAD ICS activities, and I hopefully have also been able to influence European RWM</i></p>

	<p><i>development by providing my own insights from my experience as an NGO working with nuclear waste issues”</i></p> <p><i>“To see the point of view of other countries, how things are done there, what is different, what is interesting and could be replicated in France”</i></p>
Develop a flexible participatory framework	<i>“We need to develop a participatory framework to be flexible and to withstand political and geopolitical shocks”</i>
Develop thinking on topics that need to be discussed and that are not necessarily discussed otherwise	<i>“Some scenarios are not so well thought about: fragility of institutions... Risk of institutional collapse Necessary of autonomy of RWM in case of collapse”</i>
Make the distinction between EU level and specific national situation	<i>“Thanks to EURAD, making the distinction between EU level and specific national situation”</i>
Identify new members interested in the topic and develop a continuous dialog between them	<i>“Identifying new members, no matter what their position may be. Not so many people, small world, hard to get new members and to keep them in the long run”.</i>

Table 10 - Benefit of ICS activities for CS participants

4.1.2 Collected views of other EURAD-2 actors

A panel of EURAD-2 actors (3 WMO, 2 TSO, 1 RE and 1 representative of PMO) participated in the evaluation session, enabling to also set a landscape of their reasons to be involved in the ICS process, their expectations and the benefits they have to participate in such a process. It is intended to compare this landscape achieved at the end of the first wave to the evaluation to be completed at the end of EURAD-2.

The main reasons to be involved in the process for the EURAD-2 actors that participated to the evaluation session are summarized in table 11 below:

Reasons to be involved	Quotations from EURAD-2 participants
Discover new knowledge and new approaches/inputs about RWM issues	<p><i>“If I were to be involved, I would be interested to know what is new in the area. Keen on having new knowledge, new approach. For instance, what does the new generation think about RWM? Discover differences”.</i></p> <p><i>“CS being 4th College in OPTI, wanting to hear different views and opinions, to see how it can have an input to the WP”</i></p>
Develop interactions with CS, collecting ideas on how to implement it in a national context	<p><i>“Because in my institution we have a huge wish to develop CS interactions in the frame of Waste Management, and discovered this through EURAD and now convinced it is a necessity, also because all of the money spent is public money”</i></p> <p><i>“Because company and government decided to develop a site selection process, and we need to build the best CS engagement process”</i></p>

	<i>“My responsibility as a WMO representative is to answer the questions which are asked. It does make my job slightly easier to hear the questions as early as possible”.</i>
Importance of sharing knowledge by exchanging ideas,	<i>“Sharing of knowledge taking into account the differences of education”</i>
Importance of thinking socio-technical issues	<i>“To search for socio-technical solutions, to prioritize them and to think about different views”.</i>

Table 11 - Reasons for EURAD-2 actors to be involved in ICS activities

It is interesting to see and important to note that the will to share knowledge and to think about socio-technical issues is a mutual concern of the CS representatives and EURAD-2 actors. In addition, the collection of new ideas is also a common reason for both actors but obviously the type of knowledge expected is not the same for the CS representatives and EURAD-2 actors, as each type of actors wants to have information from the others. Finally, it is also important to note the desire of EURAD-2 actors to gather knowledge about innovative processes for implementation in their national contexts - for instance, interactions of Civil Society being a necessity in the siting process. It will be important to assess at the end of EURAD-2 how some ICS results were implemented or intended to be implemented in national processes to improve transparency and involvement of the public.

The EURAD-2 actors also expressed some expectations regarding ICS activities gathered in table 12 below:

Expectations regarding ICS	Quotations from EURAD-2 participants
Listening to others and learning approaches of CS involvement in different countries, collecting complementary views	<i>“I expect to learn possible approaches and how the countries are developing the processes”</i> <i>“What I expect is to identify different possible approaches to be recommended in RWM and also to see how positions can be changed after listening to the others. You can see that the actors’ situation is being refined and reshaped”.</i> <i>“To get questions outside FEP lists”</i>
Thinking collectively at EU level on questions, issues and solutions linked to CS involvement that cannot be solved at national level	<i>“How can we use the EU frame to reach things we cannot solve by ourselves, then to solve them altogether? How can the EU help to achieve goals that are indeed beyond capabilities or Member States (MS)?”</i> <i>“If I were to be involved, to listen to the others. Not to learn, because I need to check, but yes keeping track of what is going on, seeing the argumentation, and following how others are doing”.</i>
Discussing in a pluralistic context to be able to build better decisions at national and international levels	<i>“CS could be understood and supported to find rational approaches for these issues. In order to build better decisions at national and international levels, it is important that CS supports this approach”.</i>
Collecting socio-technical inputs and see how they can be included in the frame of EURAD results	<i>“2 expectations: Input to OPTI and understand a bit more how less technical topics, or socio-technical topics can be included and combined in the frame of EURAD”</i>

Play a role in term of transparency	<i>“TRANSPARENCY: My experience showed me that when working with operators in confidence, transparency could be considered as a real powerful advantage. But difficult to reach”.</i>
Address issues that are specific to national contexts, apprehend the diversity of what is called Civil Society	<i>“We are talking about CS as a homogeneous group, but this is not the case. In Hungary for instance, we have groups involved in communities. We should address the different groups, and frame different mechanisms for that”.</i>

Table 12 - Expectations of EURAD-2 participants for ICS activities

The expectations are linked to either enrich the EURAD results with complementary views and a socio-technical perspective, or discuss issues linked to CS involvement in RWM and identify adapted solutions at national and European level. Participants would like to address more issues that are specific to national contexts in this perspective. It is to be noted that playing a role in terms of transparency is also important for some EURAD-2 researchers and that there is a need to address national situations.

Finally, the ICS workshop was an opportunity to collect opinions of EURAD-2 participants on what they gained by being involved in the process. They are summarized in table 13 below:

Benefit to participate to ICS activities	Quotations from EURAD-2 participants
Collecting views from different backgrounds, collecting feedback of good and bad examples, enrichment of knowledge	<i>“Gave different views of actors, from different backgrounds” “It is always enriching to hear viewpoints from different disciplines and groups” “Bad example at local scale: as soon a decision was being made, local partnerships stopped directly. When thinking about further processes, creating issues”. “Reformulate the question: how will it enrich your knowledge”</i>
Collecting and testing pluralistic methodologies to moderate discussions	<i>“Very practical way: workshop gave ideas to design meetings and workshops in OPTI WP and how to moderate discussion, including small games.” “Social science and citizen science is a new topic for me: personal development point. Spirit of curiosity needed. Openness of dialogue”.</i>
Open new perspectives by learning from each other and avoid working in silos	<i>“What I learned from past years: I had to manage an internship lady about SSH, topics about values and biases that could influence R&D projects. It opened a big door in my brain. Makes me look for example at the second wave proposals in a different manner: some persons only bring topics they know about and work in silos. If we can learn from each other, in the partnership spirit, that is an added value. How to put the outcomes of CS deeper in EURAD: let’s focus now on that. And valorise the methods developed”.</i>
Necessity to share information	<i>“This question relates mostly to implementors, need for change. Appropriate amount of information needs to be shared. This kind of workshop is going in that direction”</i>

Table 13 - Benefit of ICS activities for EURAD-2 participants

It is enlightened to note that the benefits are considered in both ways for EURAD-2 participants: necessity on their part to share information with the public but also a way to enrich their knowledge by collecting views from different disciplines and concerned actors, and by testing pluralistic methodologies that could help them organise exchanges with Civil Society in the future. The importance of avoiding working in silos (without exchanges between the different WPs) by addressing topics in a transversal way with Civil Society is also an added value for EURAD-2 participants.

4.1.3 Collective thinking on the EURAD joint programme and ICS activities

The World Café session at the end of Liège ICS workshop's second day provided results enabling to present a collective perspective (shared by CS representatives and EURAD-2 actors) on benefits to be involved in EURAD (as a joint programme) for both development of personal and organisational vision regarding Radioactive Waste Management. Participants also identified positive aspects of ICS activities and points to be improved.

These collective thoughts are gathered in table 14 below. The table is establishing a parallel between the identified benefits to be involved in the EURAD joint programme, the positive aspects of ICS activities and the aspects to be improved.

Benefits to be involved in the EURAD joint programme	Positive aspects of ICS activities to be continued and reinforced	Aspects of ICS activities to be improved
<p>Better coordination of research activities:</p> <ul style="list-style-type: none"> - EURAD ways of working are better than old programmes: framework programmes avoid working in silo without connection with other research WPs. - Shared Strategic Research Agenda (SRA): Merging topics: predisposal + disposal, better way to apprehend complex topics linked to RWM, - Allow comparative international updates (national situations, types of waste: nuclear power plant, medicine, etc.) 	<p>Transversal approach of ICS activities:</p> <ul style="list-style-type: none"> - ICS activities allow to create connections between topics and link between RWM and other broad issues: Climate change impacts, optimisation, etc. - ICS activities allow to gather different fields, positions and do comparisons between different situations 	<p>Difficulties for entering EURAD and research topics:</p> <ul style="list-style-type: none"> - EURAD should involve CS in R&D projects and not only in Strategic Studies - It is difficult (especially for newcomers) to enter the administrative structure of EURAD (acronyms, governance, structuration of WPs) - More cross-cutting issues should be identified and followed by ICS, harmonisation is recommended around cross-cutting issues and not around WPs
<p>Development of a research community on RWM:</p> <ul style="list-style-type: none"> - Development of an EU network with representation of different countries, Colleges and types of actors is added value for all participants 	<p>Pluralistic exchanges provide a broader perspective:</p> <ul style="list-style-type: none"> - ICS activities provide an opportunity to have exchanges inside and outside Europe and to discuss shared solutions - ICS framework provides a bigger picture for accountability of all actors - in their diversity they share a same objective of 	<p>Remaining defiance and integration of ICS results:</p> <ul style="list-style-type: none"> - There is a real improvement of mutual respect between actors (EURAD representatives and CS ones), but a long way remains (misunderstanding, resistance in exchanges on some topics from both ways still remains)

<p>- EURAD do a systematic integration of stakeholder's involvement and provide a large overview, good examples for other programmes (notably Nuclear Energy Agency – OECD/NEA)</p>	<p>common good: problems have to be managed in a collective way</p> <p>- ICS activities change visions of actors in several ways: narratives change, confidence of actors after each ICS workshop is growing, better understanding of work done by researchers for CS, better integration of complexity and socio-technical issues for EURAD actors</p> <p>- Pluralistic exchanges allow better knowledge and understanding of other actors</p>	<p>- Do EURAD care about the ICS results? It is necessary to have more feedback from the EURAD Colleges on ICS results and to develop closer links with EURAD-2 bodies (bureau, PMO). There is a need to implement ICS conclusions and recommendations more efficiently.</p> <p>- Involving broader disciplines in the field could also help improving the pluralistic process: more sociologists for instance, ICS could use the support of universities to bring these new people</p>
<p>Innovative involvement of CS in research programmes:</p> <p>- In the perspective of transparency and public participation (T&PP), EURAD allows CS involvement in research at EU level based on the Aarhus Convention and the RWM Directive (notably art.10)</p> <p>- The involvement of CS compared to other projects brings a new work for WMO, TSO and RE but exchange with CS and get challenged by public on results is an added value for research (improve quality of results)</p> <p>- EURAD is funded by public money, it implies that the public is involved in the process and has access to results</p>	<p>Positive outcomes of CS involvement in EURAD</p> <p>At a generic level:</p> <p>- It is important to maintain exchanges between CS representatives and EURAD researchers in a continuous way, and to always have more transparency and more parties/stakeholders involved: transparency brings accountability and quality</p> <p>- The involvement of CS plays a role in a practical way for improving EURAD governance's improvement, even if it is still difficult</p>	<p>Aspects of CS involvement to be improved in EURAD</p> <p>At a generic level:</p> <p>- Be careful of progressive decay of CS involvement, CS fatigue (needed repetition of boundary conditions related to public's involvement, lack of influence, pessimism)</p> <p>- The diversity of CS actors involved should be reinforced: enlarge the CS larger group with inclusion of teachers and sociologists/humanitarians notably, multiply third wing events</p> <p>- Be careful not to divide the publics with the wings: all are CS representatives and should be considered as the same level</p>
	<p>Regarding structuring ICS workshops and activities:</p> <p>- ICS provide interesting tools and methodologies (notably PEP games)</p> <p>- ICS put efforts into organising regular face to face meetings and in developing practical hybrid tools for participants who cannot attend in person.</p>	<p>Regarding structuration of ICS workshops and activities:</p> <p>- ICS workshops organisation could be revised: Send technical documents in advance, collect answers to questions needed for deliverables and milestones by emails and during in person meeting: discuss precise issues and give more time for interaction (Q&A sessions at the beginning and then long sessions of exchanges within the group: "what do you want to talk about?")</p>

		<ul style="list-style-type: none"> - ICS workshops should avoid organisations in silo (WP per WP without doing bridges between WPs) and develop more transversal discussions - ICS workshops should avoid technocratic presentations with acronyms (Acronyms should be explicit each time) - It is important to make the way to get in and out the CS larger group more flexible
<p>Development of knowledge management and dissemination of results:</p> <ul style="list-style-type: none"> - One added value of a joint research platform like EURAD is to gather and maintain knowledge over time -It is also to develop dissemination of results amongst researchers and the public 	<p>Broader perspective offered by ICS activities:</p> <ul style="list-style-type: none"> - The ICS framework allows looking at R&D projects from other angles, including KM and guidance development - It offers a way to provide complementary results (socio-technical perspective) - The ICS are a way to bridge amongst research topics, to organise transversal discussions avoiding a silos perspective 	<p>Improving dissemination of ICS results and provide more feedback to CS members:</p> <ul style="list-style-type: none"> - ICS results are not disseminated well enough, a better integration and sharing of knowledge (public outcome) is recommended - EURAD should enable more feedback to CS members in order to reveal the concrete changes linked to ICS results: EURAD-2 bodies should take outcomes into account and respond to them
<p>Root projects in territories:</p> <ul style="list-style-type: none"> - EURAD provides an opportunity to connect research results with national programmes and to develop exchanges between actors 	<p>Territory as a main criterion for fruitful ICS activities:</p> <ul style="list-style-type: none"> - ICS activities enable discussions about national cases and examples from different countries 	<p>Develop more narratives shared and rooted in territories:</p> <ul style="list-style-type: none"> - Some ICS discussions are framed “above” territory, at EU level or in a too generic perspective - ICS should take more into account the diversity of national situations - ICS should also always clarify and inquire more about: Who is concerned? Who is taking care? ICS should develop places where all these differences can be expressed and linked back to territories

Table 14 - Collective thinking on EURAD joint programme and ICS activities

According to the results of the collective thinking during the ICS workshop n°2, EURAD provides a framework enabling a better coordination of research activities, the development of a **research community** in RWM that include CS in an innovative way. The joint programme also allows better knowledge management over time, improves the dissemination of research outcomes, and a more efficient sharing of national experiences. In parallel, the implementation of the ICS activities facilitates the transversal approach, organising exchanges on cross-cutting topics between a pluralistic set of actors in a framework providing a broader perspective (socio-technical). ICS also provides opportunities to discuss and share experiences from national situations with the implementation of

innovative methodologies of dialogue (notably the deployment of the PEP games and implementation of hybrid tools). Nevertheless, participants pointed out some needs for improvements related to the difficulties of entering EURAD governance and topics (especially for newcomers). They also underlined the remaining defiance between CS representatives and EURAD actors even if there is a real improvement of mutual respect. There is a need to demonstrate the concrete impacts of ICS results and the way they are integrated in the research outcomes. In the same perspective, there is also a necessity to improve the dissemination of ICS results inside EURAD (collection of feedbacks from the Colleges and EURAD instances, giving more regular information on ICS outcomes to CS members) and outside EURAD (develop the third wing involvement events and increase the diversity of CS actors involved, including teachers, social scientists, local opinion leaders, etc.). The ICS workshops should give more time for free exchanges enabling CS members to frame more the discussions on CS larger group concerns and less on WPs needed outcomes. Finally, the ICS exchanges should take more into account the diversity of national situations with more discussions on such and less topics “above” territory.

4.2 Recommendations for the ICS in the future

After having built the collective views and the identified aspects of ICS to be improved, the participants of the ICS workshop were invited to provide recommendations for improving ICS and notably enlarge and diversify the publics involved. These recommendations are presented in section 4.2.1. Based on all these elements, the CS experts elaborated a proposal for implementing these recommendations in future ICS activities and provided additional recommendations.

4.2.1 Recommendations from ICS workshop n°2

The elements of recommendations gathered during the ICS workshop are listed below in main topics:

Recommendation n°1: clarify the communication plan related to the third wing of ICS and describe a specific task in the description of work (WP PMO) with a dedicated budget for dissemination events towards larger publics outside EURAD

It was stated that the implementation and improvements of the ICS process are strongly dependent on budget and time constraints (like other research projects in EURAD). These constraints limit the number of third wing involvement events that could be organised. Strategic Studies for instance lasting only two years are a short period to develop and deepen interactions between research actors and Civil Society representatives on complex topics. Organising involvement events with a larger audience outside EURAD necessitates to plan it in the description of work of future EURAD activities. It also allocates a specific budget for it: organising specific ICS dissemination events implies to involve CS experts but also EURAD actors (persons/month) and a budget is needed for the practical organisation.

- The EESC could support the organisation of such events. Until now, one third wing event was organised in October 2024 in EESC to present the EURAD joint programme to EESC representatives. A second one is planned in Dublin as a side event to the second EURAD-2 annual event.
- The CS larger group members could also help transmit knowledge to the third wing, identify potential interested communities and make the links with them to organise the third wing involvement events.
- A communication and dissemination plan has to be defined and implemented.

Recommendation n°2: enlarge the stakeholders involved by emphasising public concerns through professional risk communication, mobilizing ethical, socio-cultural and financial dimensions, organising tailored made workshops for involvement in decision making, avoiding technocratic presentations and focusing on time for exchanging on publics concerns

RWM is a complex system of interconnected and interdependent issues and problems, difficult to apprehend by the lay audience. It is not automatically attractive and even worse: waste has

a negative connotation in public opinion (for instance, in EESC, waste does not interest the members so much). It is always difficult to design a participatory process enabling to reach a lay audience. Nevertheless, transparency, energy issues and safety of RWM is a common concern for everyone: how to engage people who are interested, then? How to enlarge the CS network involved in EURAD? Presenting EURAD work and discussing research results is very much dependent on the targeted audience. There is a need to adapt to the different types of publics. Based on Sarah Pralle's work²², they are basic elements to take into account. First, it is important to translate administrative and scientific terms by thinking about user-friendly terms (not acronyms or explaining each of them when it is necessary to use them). Secondly, it is necessary to emphasize public concerns by providing not only information but also a framework enabling the participants to raise their own concerns, a free space of dialogue and conditions to say what they think towards involving them in a decision-making process. The presentations should focus on concrete and local impacts, even on R&D topics and the facilitation should mobilize ethical, socio-cultural and financial dimensions in the debate. In addition to these preliminary considerations, other suggestions were made:

- Involving broader disciplines in the RWM field could also help improving the pluralistic process: more sociologists for instance, ICS could use the support of universities to bring these new people
- A broader CS network could focus on knowledge (even if there are disagreements): spread knowledge to engage. To make people interested not by making things too simple but create opportunity and appropriate framework for their involvement in decision making
- There is a need to be transparent in the interaction, not to be afraid of controversies and present remaining uncertainties where they exist
- Organise tailored made workshops, meaning WS adapted to the needs of each country or communities to be reached. For instance, the citizens of SIMS are not concerned by the same issues as those of LIMS: when you deal with RWM issues, national contexts are important
- There is a need to show examples of successful involvement of publics as a reason to join the ICS process (show to NGOs that they can have an impact)

Recommendation n°3: maintaining a continuous participation and information of already involved CS members by improving the structure of ICS workshops and activities

Expanding the circle of stakeholders involved is an important move but the ICS process should be careful to avoid progressive decay of CS involvement and CS fatigue. In order to maintain the attendance and interest of CS members already involved in EURAD-2, it is necessary to revise elements of ICS activities.

- First, ICS activities should not be focused only on once-a-year WS, but they should be considered as an on-going process (regular information and exchanges on EURAD-2, news on WPs even if there are no new ICS activities implemented in the WPs).
- Then, it is important to better root the ICS outcomes in EURAD-2 results: it is necessary to make ICS results more visible and effective. What are the concrete results? What is the feedback from the EURAD-2 Colleges on the ICS results? How the EURAD-2 bodies have taken into account (or not) the ICS recommendations. To maintain the interest of the CS members, it is crucial to show that their contribution and time spent in EURAD-2 have a concrete impact.

²² Sarah Pralle is an associate professor of political science at the Maxwell School at Syracuse University. Her research focuses on the politics that affect public policy processes, particularly in the area of environmental policy. Notably see, Pralle S. (2006): *Branching Out, Digging In: Environmental Advocacy and Agenda Setting*, Georgetown University Press. Link: <https://www.maxwell.syr.edu/research/campbell-public-affairs-institute/publications/article/branching-out-digging-in-environmental-advocacy-and-agenda-setting>

- It is also important to make the way to get in and out of the CS larger group more flexible. It would be easier to ensure an active participation and more persons involved. Regarding the process structure of the ICS workshops, it will be more constructive to separate WP presentations (and the need for a CS contribution in the WP) from the other CS concerns. ICS workshops organisation could be revised: Send technical documents in advance, collect answers to questions needed for deliverables and milestones by emails. Thereafter, during in person meeting to discuss precise issues and give more time for interaction (Q&A sessions at the beginning and then long session of exchanges with the group regarding involvement of the CS in decision-making on specific RWM cases)
- ICS workshops should avoid organisations in silo (WP per WP without doing bridges between the WPs) and develop more transversal discussions by identifying relevant cross-cutting topics that could be guiding elements for continuous discussions in the different ICS workshops.
- ICS workshops should also avoid technocratic presentations with acronyms
- ICS presentations are too general and should have more concrete examples, as foundations for more discussions. Some ICS discussions are framed “above” territory, at EU level or in a too generic perspective. ICS should take more into account the diversity of national situations and do a link with territory.
- ICS should also always clarify and inquire more about: Who is concerned? Who is taking care? ICS should develop places where all these differences can be expressed and linked back to territories
- ICS activities should continue the development of innovative tools and methodologies: PEP dynamism: what-if discussions, hybrid tools, etc.

Recommendation n°4 The dissemination of ICS results should be reinforced, notably by the use of social media and other digital tools:

It was stated during the discussions that ICS results are not well enough disseminated, a better integration and sharing of knowledge (public outcome) is recommended.

- EURAD should also enable more feedback to CS members in order to see the concrete changes linked to ICS results: EURAD-2 bodies should take the outcomes and recommendations into account and respond to them.
- In addition, some considerations have been made to social media: CS members should be able to share information and views to the media, by making impressive and interactive videos talking about future, next generations on YouTube, Instagram, Spotify etc.
- Update the existing tools and web-based platform to allow stakeholders seeing how situations evolve with regulatory framework.
- Be careful when developing communication programmes or engaging people in communication: there is a need to ensure the work related to dissemination of information is actually done.

4.2.2 Proposal for implementing recommendations

Based on these recommendations, the CS experts elaborated a proposal for implementing recommendations in the near future.

Regarding the enlargement of the CS audience, the ICS activities are sufficiently mature to feed the knowledge and to implement participation of the wider civil societies of the member states in RWM decision-making. This means that the EURAD program already has a long enough history and available results to actively turn to transferring knowledge to European citizens. **This should go through the concrete implementation of the ICS third wing.** With the existing budget, several events could be implemented with the support of the CS larger group members and the EESC. In 2026, two

dissemination events are planned: one linked with the ASTRA workshop in May (it will involve Slovenian students) and one linked with the EURAD annual event in September: it will be co-organised with EESC in Dublin.

The beginning of a strategic risk communication process for RWM with the third wing can be laid by creating a scientifically accessible and attractive to different generations documentary about the EURAD programme up to date. Since we have long lived in the civilization of images, especially videos nowadays, it is necessary to have a creative documentary in which the narrative starts from the world heritage of radioactive waste, moves to more specifics about the European situations in individual countries, and continues with the efforts of participating organizations since the beginning of the EURAD programme. Such documentary should be sufficiently long and detailed so as not to underestimate in any way the attention of citizens who cannot take the time to review the written documents on the EURAD website but wish to immerse themselves in the complex system of RWM so as to obtain enough basic knowledge on the objectives and their implementation in the EURAD program WPs. In this way, without wasting too much time navigating the large volume of scientific work, new third wing Civil Society representatives will be able to join in future discussions at ISC involvement events. **This necessitates coordination of the work done by ICS activities and the work done by the Knowledge Management of EURAD-2, as well as professionals in creating documentary videos with already available resources in EURAD, without additional field filming which would unnecessarily increase the cost and delay the final result.**

According to some of the conclusions from fruitful interactions in the ICS activities, two interrelated necessary conditions for Civil Society arise, requiring additions/changes to the educational systems of Member States. The first necessary condition is the need to realize the deep interconnectedness and interdependence of the processes of energy creation and waste/emissions creation and their global impact on the entire planet and all of humanity. The second necessary condition is the responsibility to increase the attention of citizens about the complex system of RWM, which the EURAD programme is trying to arrange, organize, and develop. This second condition comes from the lack of a visible connection between the complex matter of RWM and the everyday life of citizens, which connection, however, actually exists, but is not discussed publicly, nor is it embedded in any way in the education they receive. **ICS activities could try to connect with universities and organise PEP events to let students apprehend the complexity of the topics**, like it was done in France during the French public debate of 2025-2026 on the National Plan on Management of Radioactive Materials and Waste (PNGMDR). The ICS activities could work with the training programme and mobility programme to expand the audience and include elements related to these socio-technical dimensions. This approach to development in citizen education corresponds to both the main ambitions of the ICS triple-wing model of actively involving CS members in research programmes and of offering dissemination of knowledge. A specific recommendation for the development of ICS in the future is the communication of the CS experts and the CS larger group with pupils, students, and local stakeholders of the third wing, starting discussions about their specific situations and deliberating the development of work packages in EURAD for the management of their local, national and regional problems in RWM.

Finally, all the considerations related to the structuration of the ICS workshops and ICS activities should be taken into account. Concretely, the CS experts will engage discussions with the EURAD instances to see how the criteria for entering and getting out of the CS larger group could be more flexible. Based on the charter for fruitful interactions developed at the end of EURAD-1²³ work could be started with the CS members and the PMO in order to update the criteria for selecting CS larger group members and for the involvement of CS members in EURAD.

The information provided to the CS larger group members will be raised between the different ICS workshops. The future ICS workshops will be organised differently and no more in WP sessions. Transversal topics linking the WPs with what is relevant for CS actors will be identified to structure

²³ The text of the charter is available in Appendix F. It was discussed during the last ICS workshop (n°6) of EURAD-1 on 10-11 April 2024.

further discussions: there are already some emerging topics linked to intergenerational stewardship culture and shared safety culture for instance. More time for discussions will be implemented and sessions dedicated to presentations by CS larger group members will be organised. Links should be made with the EURAD topics and WP, but it will be the opportunity to have more concrete cases discussed. Online sessions before the in-person ICS workshop could also be organised to discuss more specific issues linked to the WPs. It will be open to members interested to contribute to specific topics like white papers, etc. Otherwise, CS larger group members will be informed of the updates before the ICS workshop and will be able to contribute by emails in advance.

Since RWM implies potential risks to societies for vast periods into the future, as well as actual risks in the context of the heated international political situation (wars and terrorism) and the climate change reality today, it also requires a complex and sophisticated interdisciplinary approach to risk management and risk communication with the civil societies by involving them in decision making.

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Appendix A. List of the CS experts - EURAD-2 first wave

The CS experts' group is composed of 12 members coming from Austria, Bulgaria, Denmark, Estonia, France, Slovakia, Sweden, United Kingdom. They are split in the different WPs where ICS activities are organized. For each WP, two CS experts are leading the ICS activities and are the contact persons for administrative matters. An ICS coordinator and a coordination team is in charge of organising exchanges with CS larger group and EURAD-2 instances and to coordinate the work between the different WPs.

The list of CS experts involved in EURAD-2 is the following:

ICS Coordination team

- **Alexis Geisler-Roblin**, France (ICS coordinator, PMO Task 7 co-leader, co-leader, co leader-of ICS activities for CLIMATE WP, co-leader of ICS activities for ASTRA)
- **Julien Dewoghelaere**, France (PMO Task 7 co-leader, co leader-of ICS activities for CLIMATE WP)
- **Gauthier Fontaine**, France (co-leader of ICS activities for OPTI WP)
- **Niels Henrik Hooge**, Denmark (co-leader of ICS activities for FORSAFF WP)
- **Gabriele Mraz**, Austria (co-leader of ICS activities for ASTRA WP)
- **Johan Swahn**, Sweden (co-leader of ICS activities for OPTI WP)
- **Madis Vasser**, Estonia (co-leader of ICS activities for FORSAFF WP)

CS experts involved in EURAD-2 WP

- Michal Daniska, Slovakia
- Malcolm de Butler, France
- Julien Dewoghelaere, France
- Gauthier Fontaine, France
- Alexis Geisler-Roblin, France
- Niels Henrik Hooge, Denmark
- Petar Kardilov, Bulgaria
- Sylvain Lavelle, France
- Gabriele Mraz, Austria
- Johan Swahn, Sweden
- Madis Vasser, Estonia
- Colin Wales, United Kingdom

Appendix B. Members' list of the CS larger group

Legend: **In Bold**: Members that participated to EURAD-1

Cell in Green: Local Stakeholder

21 Members having responded to the call and validated by the selection procedure

NAME and Forename	Organisations	Country
ALBUM Kjersti	Naturvernforbundet (Friends of the Earth Norway), member of NNS reference group of Norwegian nuclear decommissioning (NND)	Norway
CRNKOVIC Mario	Green Team	Bosnia
FAUGIERES Laetitia	CLIS (Local information and monitoring committee for the Bure laboratory)	France
GIANNI Alessandro	Greenpeace Italy	Italy
GORCHAKOV Dmitry	Bellona Environmental Transparency Centre	Lithuania
HASE Toshio	University of Ghent	Belgium/Japan
KÓBOR, Dr. Jozsef	NTW, Pécs Green Circle, former local elected representative (Pécs City council)	Hungary
LHEUREUX Yves	ANCCLI	France
MIHOK Peter	CEPTA (Centre for Sustainable Alternatives)	Slovakia
NJAA Oskar	Bellona Environmental Transparency Centre Norway	Norway
OUTRAM Richard	UK/Ireland Nuclear Free Local Authorities	United Kingdom/Ireland
PANOVICS Attila	Pécs Green Circle	Hungary
PAROTTE Céline	University of Liege, Spiral Research Centre	Belgium
SIMEONOVA Albena	FEA (Foundation for Environment and Agriculture)	Bulgaria
STRAETER Oliver	DAEF (Deutsche Arbeitsgemeinschaft Endlagerforschung)	Germany
STRANDBERG Marek	science department at Postimees (daily newspaper)	Estonia
von HIRSCHHAUSEN Christian	TU Berlin (Berlin university of technology)	Germany
WIMMERS Alexander	TU Berlin (Berlin university of technology)	Germany
ZIMMERL Raphael	network Cities for a Nuclear Free Europe (CNFE)	Austria
LAUWEN Geert	STORA	Belgium
VAN ISEGHEM Pierre	MONA	Belgium

3 members of the European Economic and Social Committee (EESC):

NAME and Forename	Organisations	Country
CHARRY Philippe	EESC (trade unions representative)	France
MASTANTUONO Alena	EESC (employers' representative)	Czech Republic
TIAINEN Simo	EESC (NGOs representative)	Finland

3 Observers from the 3 EURAD Colleges:

NAME and Forename	Organisations	Country
PRIERO SERRANO Nuria	ENRESA (WMO College)	Spain
REAUD Cynthia	ASNR (TSO College)	France
ZIEFLE Geza	BGR (RE College)	Germany

Appendix C. Groups for evaluation in ICS workshop n°2 - day 1

Group 1 (in person, with EURAD representatives)		
Geisler-Roblin	Alexis	NTW
Debayle	Christophe	ASNR
Herold	Philipp	BGE
Ivanov	Ivan	TUS
Ormai	Peter	PURAM (EURAD" PMO)
Prieto Serrano	Nuria	Enresa
Zeleznik	Nadja	EIMV

Group 2 (in person, with CS representatives)		
Lavelle	Sylvain	Science Norms Democracy Sorbonne University
Mihók	Peter	CEPTA (Centre for Sustainable Alternatives)
Parotte	Céline	University of Liège, Spiral Research Centre
Sabbe	Mathias	University of Liège, Spiral Research Centre
Tiainen	Simo	EESC
Wales	Colin	NTW and Cumbria Trust

Group 3 (in person, with CS representatives)		
Kardzhilov	Petar	Nuclear Transparency Watch
Charry	Philippe	EESC
de Butler	Malcolm	NTW
Gorchakov	Dmitrii	Bellona Environmental Transparency Centre
Kobor ,Dr.	Jozsef	NTW, Pécs Green Circle, Pécs City Council

Group 4 (online, with CS representatives)		
Fontaine	Gauthier	NTW
Daniška	Michal	NTW
Faugières	Laetitia	CLIS de Bure
Hooge	Niels Henrik	Nuclear Transparency Watch
Swahn	Johan	NTW/MKG

Group 5 (online, with EURAD representatives)		
Dewoghélaëre	Julien	NTW
Vuorio	Marja	COVRA

More persons were registered online for Group 5 but at the end of the day, only Marja Vuori was able to attend and contribute to the ICS evaluation work.

Appendix D. Groups for world cafe in ICS workshop n°2 - day 2

3 facilitators of the world cafe: Alexis Geisler-Roblin, Gauthier Fontaine, Julien Dewoghelaere

Group 1 (in person, pluralistic group)		
Charry	Philippe	EESC
Debayle	Christophe	ASNR
Fallon	Catherine	University of Liège
Gorchakov	Dmitrii	Bellona Environmental Transparency Centre

Group 2 (in person, pluralistic group)		
Ivanov	Ivan	TUS
Kardzhilov	Petar	Nuclear Transparency Watch
Kobor Dr.	Jozsef	NTW, Pécs Green circle, Pécs City Council
Lavelle	Sylvain	Science Norms Democracy Sorbonne University
Mihók	Peter	CEPTA (Centre for Sustainable Alternatives)
Parotte	Céline	University of Liège, Spiral Research Centre

Group 3 (in person, pluralistic group)		
Ormai	Peter	PURAM (EURAD" PMO)
Sabbe	Mathias	Liège University, Spiral Research Centre
Tiainen	Simo	EESC
Wales	Colin	NTW and Cumbria Trust
Zeleznik	Nadja	EIMV

Appendix E. List of criteria for selecting CS larger group members

Several categories of participants

In order to compose the CS Larger Group, 2 categories are envisioned to represent different types of actors and organisations from Civil Society concerned by Radioactive Waste Management:

- European and national associations,
- local stakeholders (individuals and representatives of local communities having an interest in RWM, partnerships, local associations).

The constitution of the group will seek an equilibrium between the two categories (although it will depend on their availability). According to the available resources, 21 persons in total will be invited to physically attend the Interactions with Civil Society (ICS) workshops.

Coverage

To represent different views on Radioactive Waste Management, the CS Larger Group will seek the inclusion of:

- members of European countries with less and more advanced RWM programmes,
- citizens from Western and Eastern Europe countries,
- people with various interests in different fields related to RWM (health, environment, science, energy...),
- persons of diversified genders and generations.

In order to have a good balance of representation, the CS larger group will not include more than 2 persons from the same organisation and 3 persons from the same country. Nevertheless, the final composition of the CS Larger Group will eventually depend on the availability of the invited potential members.

Criteria of eligibility

To be part of the CS Larger Group, the interested actors will have to fulfil the following prerequisites:

- standing past or present engagement in the follow-up of RWM activities with potential exceptions for youth,
- Experience and/or Interest in the field of RWM,
- personal commitment to participate in the whole EURAD ICS activities, meaning to participate at least at one workshop per year during 5 years,
- being supportive with the EURAD Vision and commit to contribute constructively to the exchanges that will take place in EURAD, respecting the goals of EURAD,
- fluent English speaking and writing.

Appendix F. Charter for fruitful interactions

I- Context

A- Until now, in EURAD 1, a charter of commitment.

In order to ensure fruitful discussions in mutual respect, it was suggested to elaborate terms of reference that will be agreed by all the participants in the MODATS Task 2.5 workshops. These terms of reference establish a set of prerequisites to attend the workshops, notably based on elements of the procedure for establishing the group of CS representatives involved in EURAD that have been validated by the EURAD PMO and Bureau.

1- The participants in the MODATS workshops will have to support the EURAD vision hereunder and commit to contribute constructively to the exchanges that will take place in EURAD, respecting the goals of EURAD described hereunder:

2- The participants in the MODATS workshops recognize that the objective of the workshops is to foster a common understanding of the different viewpoints among the different categories of actors on the management of uncertainties associated with the different dimensions of monitoring of geological disposals of radioactive waste and how it relates to safety.

3- It is not intended to reach a consensus. Rather, the discussions during the seminar will seek to allow for a nuanced understanding of the issues at stake and a better understanding of the arguments of the various participants, without prejudice to their position with regard to a particular option.

4- The seminar will promote the clarification of the implicit elements leading each actor to establish his choices and preferences, while creating a climate of mutual listening and respect for the views of each participant. The discussion will be based on a freedom of expression of views. The plurality of categories of participants, or at least a plurality of views, experiences and professional profiles, is therefore desirable to foster an in-depth discussion that takes into account a wide range of issues.

5- The animation of the workshops will require pluralistic and transparent governance, i.e. the organisation of the seminar and the facilitation of the discussions will be done by a pluralistic team gathering representatives of different categories of actors (WMO, TSO, RE and CS).

6- The participants agree to the non-diffusion of the elements presented and discussed during the workshops without the explicit agreement of the task 2.5 coordination team.

B- EURAD vision:

“A step change in European collaboration towards safe Radioactive Waste Management (RWM), including disposal, through the development of a robust and sustained science, technology and knowledge management programme that supports timely implementation of RWM activities and serves to foster mutual understanding and trust between Joint Programme participants”.

C- EURAD goals:

- *“Support Member-States in developing and implementing their national RD&D programmes for the safe long-term management of their full range of different types of radioactive waste through participation in the RWM Joint Programme.*
- *Develop and consolidate existing knowledge for the safe start of operation of the first geological disposal facilities for spent fuel, high-level waste, and other long-lived radioactive waste, and supporting optimization linked with the stepwise implementation of geological disposal.*
- *Enhance knowledge management and transfer between organisations, Member States and generations.”*

II - Objectives of the charter for fruitful interactions

Having a document able to answer these questions:

- What framework of interaction shall be put into place in order to apply the Aarhus convention in scientific research programmes such as EURAD?
- What are the conditions of engagement in a pluralistic dialogue, in order to aim fruitful interactions?

III - Content of the charter for fruitful interactions

Interactions with Civil Society in EURAD or similar programmes shall be grounded on the following points:

1/ CS participants are involved in EURAD in the perspective of the UNECE Aarhus Convention which reinforces the requirements of public access to information and participation in decision-making. Civil Society (CS) participants have specific concern on RWM safety, they shall not be considered as research partners.

2/ Such interactions in program research rely on articulated expertise: Triple wing model.

3/ Such interactions with Civil Society contribute to Shared culture for Safety and Security, as a shared, dynamic, reflexive and active realization of the best safety methods and standards. This culture is an assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear safety issues receive the attention warranted by their significance.

4/ Such interaction contributes to the Intergenerational Stewardship Culture, as a conscious attitude from organizations and individuals regarding the continuous temporal responsibility brought up by RWM, and thus an attitude of vigilance in uncertainties enabling an appropriate governance.

5/ Such interactions contribute to a dynamism of Fruitful Interactions, which can be evaluated by non-exhaustive criteria such as: legitimacy, methodology, postural changes, personal unity, expertise function, meaning of the repository, territory, shared complexity addressing the long term.

IV - Reformulation of the criteria for fruitful interactions evaluation

Reformulation of the criteria for Fruitful interactions evaluation

Legitimacy, methodology, postural changes, personal unity, expertise function, meaning of the repository, territory, shared complexity addressing the long term.

Criterion 1: An interaction is fruitful if there is no permanent or recurrent questioning as to the legitimacy of the actors taking part in the cooperative process or research, on the ground that they are not trained or competent enough, or that they belong to an institution or an organization that is supporting other different positions.

Criterion 2: An interaction is fruitful if the inquiries or researches are conducted by a variety of actors, are not restricted in an exclusive manner to a single type of research (e.g. : scientific inquiry) and can open up to some other types of research (e.g. : moral and social inquiry) that are concerned not only with facts or models, but with values and norms.

Criterion 3: An interaction is fruitful if, along the cooperative process or research, it can be shown that the actors are not keeping to their initial position without any reservation and are then capable of modifying their own perspective by taking into consideration the contributions of the other actors.

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Criterion 4: An interaction is fruitful if the actors does not view themselves or are not viewed by the other actors as individuals that are exclusively defined by their official or professional function or activity (e.g. : he or she is an expert of radio-nuclides working for the wastes agency ; he or she is an activist from an environmental association) and can then articulate several aspects of his/her personality or his/her social role (e.g. : a worker, a professional, a citizen, a parent...).

Criterion 5: An interaction is fruitful if the expertise is pluralistic in the sense that it is not only scientific, but also moral, legal, environmental or social, and subsequently, in the sense that it is not only special, but also general as regards the capacity of linking up the various aspects and dimensions of a complex problem.

Criterion 6: An interaction is fruitful if the examination of a problem and the exchanges between the actors that it entails can, beyond the sole technical aspects of the building, the monitoring or the maintaining a wastes repository, address the crucial issue of its (existential, cultural...) meaning for/in the life of the people.

Criterion 7: An interaction is fruitful if it is admitted by the actors that, far from being a neutral installation, a repository has a deep impact on the meaning that the people give to a territory and then to the life they can experience on it (e.g. : modification of landscape, traffic and transportation of materials, security and safety measures...).

Criterion 8: An interaction is fruitful if the actors are able to address the various aspects and dimensions of a complex problem (e.g.: scientific, legal, moral, environmental, social...) and are also able to share this understanding of the complexity so that it finally constitutes a common ground or background.

Criterion 9: An interaction is fruitful if, despite the urging achievements or decisions that need to be made in the RWM in the present, it never neglects the core stakes of the long-term management, justice and responsibility towards future generations.