SITEX.Network

Updating the SITEX.Network

Report on the Social Science & Citizen Science Strategic Research Agenda (SS-CS-SRA) onRadioactive Waste Management Safety

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I. Context of the Inquiry

The SITEX.Network Strategic Research Agenda (SRA) [1] in its technical part includes a set of research themes which are supported by several communities of scientists, experts and specialists. Acknowledging the complexity and socio-technical dimension of Radioactive Waste Management Safety, this SRA also includes areas of research and complex topics that involves both the inclusion of Citizen science and Social Sciences. This SRA was elaborated at the end of 2016, in the framework of the SITEX II EU research project (EURATOM). The diagram encapsulating the research areas of Social Science and Citizen Science is presented in Annex 1.

The JOPRAD R&D Project (2015-2017) and the EURAD research platform (started in 2019) have taken up some elements of the SITEX SRA and, in particular, some dimensions of Citizens Science and, to a less extent, of Social Science. The SITEX.Network has also developed several activities and trainings involving the participation of Civil Society. It has also performed framing activities on complex topics such as the governance of radioactive waste management (SITEX.Network Topical day 2019, Ljubljana, Slovenia).

In this perspective, the SITEX.Network has now identified the need for an update of the Social Science and Citizen Science Strategic Research Agenda in RWM [2] to be performed in the course of 2021 with objectives to:

- identify possible topics in Social Science and Citizen Science which are link to various phases of RWM,
- prioritize the identified topics for the importance, urgency and relevance,
- develop SRA for Social and Citizen Science to be adopted by SITEX.Network and would be integrated in SITEX.Network Strategic Research Agenda.

The focus of analysis will be High-Level Waste and Spent Fuel Management, although the RWM in general will be also addressed. All other basic and related topics, like energy policy, roles and responsibilities, transparency, …, will be also addressed.

Dr. Sylvain Lavelle has been appointed by the SITEX.Network in order to provide some scientific and methodological support to the preparation of an updated version of the SITEX. Network SS-CS-SRA.

A preparatory meeting has been held on February 11th 2021 with Nadja Zeleznik and Gilles Hériard-Dubreuil (members of the SITEX.Network), together with Sylvain Lavelle and Honorine Rey (supporting consultant to the organisation of the Topical Day) to develop the detailed plan for SS-CS-SRA.

- Identification of experts to be involved in SRA
- Topical day to exchange the key issues and potential topics for SRA (with experts)
- Development of draft SRA with identification of possible topics and prioritization
- Workshop to discussion priorities, gaps, … for SRA (with SITEX.Network members, also others)
- Development of SRA for Social Science and Citizen science for RWM

In this perspective, it is foreseen to organize a SITEX.Network working session on April 16th 2021 as a first step, in order to gather views of Experts, Civil Society members and Social Scientists in this perspective on the topics.

This document provides some methodological proposal for this working session and for further development of the SRA in SITEX by an Updating of the SITEX.Network Social Science & Citizen Science Strategic Research Agenda (SS-CS-SRA) on Radioactive Waste Management Safety**.**

II. Themes, method and organization of the inquiry

As part of the exchange on challenges in RWM the working session on SITEX SS-CS-SRA will be organized and will be structured in 3 sessions, one for each of the following topics:

(1) Conditions for closure,

(2) Intergenerational governance,

(3) Safety culture.

All the sessions will be structured the same way: there will first be a set of three presentations given by one SITEX expert, one CS member, and one social scientist; then a quick analysis by Sylvain Lavelle on what have been presented; a discussion on the topic within small groups; a plenary discussion integrating the feedback from the small groups' discussions.

The objective of the working session is to give the opportunity to some institutional, citizen and scientific actors to propose different views and interpretations of the conditions, stakes and questions as related to three key topics for the RWM. This opportunity of driving a multi-stakeholders common inquiry on these key topics is facilitated by the use of a specific grid of analysis that can help displace the more usual views and interpretations of them.

The three themes of the SRA (intergenerational governance, conditions for closure and safety culture) have been chosen for several reasons : firstly, they are reputed for being some important and almost classical topics of the RWM which many studies and comments have been produced about; secondly, they give the opportunity to show on this basis to what extent a different grid of analysis can modify the scope of the usual views and interpretations in taking into consideration the other potential meanings of the data and the options at stake. These key topics can be briefly described as follows:

- Intergenerational governance

Geological disposal facilities will be operated during decades, i.e., for several generations. Furthermore, the involvement of different stakeholders in the governance of such facilities is requested by the Aarhus Convention. Tools have to be elaborated to implement such an intergenerational governance, which deals with technical and social issues.

- The conditions for closure

Geological disposal facilities are designed to be passively safe after closure. Moving from active to passive safety is a paramount step in the facility lifecycle, which should be carefully prepared as it makes the process less reversible and it impacts the post-closure passive safety on the very long term. Thus, there is a need to further study the technical and social conditions for a gradual or full closure, in which the pluralist expertise of the safety case documenting the operational phase monitoring will undoubtedly play a key role, together with other socio-political issues regarding the ongoing RWM context.

- Safety culture

"Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plants safety issuesreceive the attention warranted by their significance." (INSAG 4)

"The discussion extends to Safety Culture in all concerned, because the highest level of safety is achieved only when everyone is dedicated to the common goal." (INSAG 4)

- Examine the conditions and means for ensuring that safety culture related to Geological Disposal is given proper attention along the foreseen intergenerational long-term stakeholders' interactions (internal and external to safety operation), along its lifecycle;
- identify how "societal" safety culture can be integrated in an "operational" one. Engage experimental stakeholders' interaction on complex boundary issues that entail actual GD safety dimensions (e.g. the question of reversibility).

The agenda of the Topical Day (April 2021) was envisioned as follows:

9:30 Introduction by Delphine Pellegrini, IRSN, President of SITEX.Network

9:40 Presentation by Sylvain Lavelle, ICAM/EHESS

9:45 **Session 1 – Conditions for closure**

- SITEX: Camille Espivent, IRSN
- CS: Colin Wales, Cumbria Trust
- SOCIAL SCIENCE: Julien Dewoghelaere, Mutadis

10:15 Analysis by Sylvain Lavelle

10:30 Small groups discussion

11:15 Plenary discussion and feedback from the small groups

12:00 Break

13:00 **Session 2 – Intergenerational governance**

- SITEX: Nadja Zeleznik, EIMV
- CS: Niels Henrik Hooge, NOAH/NTW
- SOCIAL SCIENCE: Céline Parotte, University of Liège

13:30 Analysis by Sylvain Lavelle

13:45 Small groups discussion

14:30 Plenary discussion and feedback from the small groups

15:15 Break

15:30 **Session 3 – Safety culture**

- SITEX: Frédéric Bernier, FANC
- CS: Yves Marignac, Negawatt
- SOCIAL SCIENCE: Gilles Hériard Dubreuil, Mutadis

16:00 Analysis by Sylvain Lavelle

16:15 Small groups discussion

17:00 Plenary discussion and feedback from the small groups

17:45 Conclusions by Valery Detilleux, BelV, Vice-President of SITEX.Network

18:00 End of the working session

III. Critical questions and concepts for the evolution of the SRA

We based our study on the exact transcription of the various debates during the SITEX's Topical Day among the three groups (G1, G2 and G3). On this basis, that amounts to about 85 pages, we selected 10 pages from the debates (see Appendix 2) that reflect the main positions (opinions, options, or questions) as expressed by the participants. We then translated these positions into a set of questions and key-concepts (safety, process, culture, implementation….) and that are likely to be of use for the framing of the Strategic Research Agenda (SRA). The critical questions and concepts for the evolution of the SS-SC Strategic Research Agenda were identified on the basis of a qualitative analytic and synthetic approach.

The researcher in his study paid special attention to (a) the problematic nature and degree of one issue (b) the originality and novelty of the views on one issue (c) the reiteration of the questions, remarks and comments relating to one issue in several parts and from several participants in the debates. The main research effort was then to gather several questions, remarks and comments under the banner of one concept (eg: process, safety…) and then to dispatch all of them into a range of several key concepts.

I. Conditions for closure

1. Process

- Questions on the process

- Is the closure the end of a process, or is it the start of another process ?
- Is information collected until the closure, or after the closure ?
- To what extent this information produced by the technical actors can be used by the civil society ?
- What are the characteristics of a pluralistic monitoring if it combines institutional and non-institutional groups ?

- Concept of a process

  A process, as opposed to a state, is taken to be a dynamic change or evolution that can pass through several stages (ignition, development, shift…), but that is not necessarily linear. A process is often viewed in the casual management approach as something that is a start and will come to an end, while it can be that it has actually no term. This means that a process, when it supposedly comes to an end, is actually the start of something new, namely another process. A process can then be viewed as a chain of sequences that are characterized in terms of a constant renewal of its conditions of achievement, both institutional and non-institutional (relations, information…).

2. Safety

- Questions on the safety

- What are the differences between passive safety and active safety for the radioactive wastes organisations and for the civil society ?
- Does a long term safety culture requires an active safety, as opposed to a passive safety ?
- Is the possibility of an evolution of the closure plan a condition of safety for all actors, the experts as well as the members of the civil society ?
- Is it possible to demonstrate the safety of a closure plan, including the remaining uncertainties that can also be demonstrated to be addressed ?

- Concept of the safety

Safety is usually differentiated from security and designates the condition of being free from harm or risk, which is essentially the same as the primary definition of security. Security is the quality or state of being free from danger, but it can be also the measures taken to guard against espionage or sabotage, crime, attack or escape. The important point is the issue of safety is one aspect of the interaction between actors who come along with their own frame and questions. Moreover, if safety is conceived of as an exercize of management of uncertainty, then it raises some essential and existential questions that are inherent to the human condition, such as irreversibility, plurality and uncertainty.

3. Trust

- Questions on the trust

- Should we make a difference between trust and confidence in order to qualify the interactions of actors ?
- What are the key trust factors : reversibility, retrievability, transparency …., and if trust is based on education, is mistrust caused by ignorance ?
- Should trust be extended not only to relate to the content of the decision making, but also the process framing the decision making ?
- Does trust in the interactions requires developing an institutional framework ?
- Or is it just one aspect of an interaction that also requires a quality of exchange (understanding, respect…) between the actors ?
- Should trust implies for the actors to reach a consensus, or can it remain alive in spite of the dissensus, or the conflict ?

- Concept of the trust

Trust refers to a certain mindset, mainly in inter-personal relations, and is associated with a form of reliance, although it implies for an act not to be betrayed (different from disappointed), despite the risk of it to be so. For instance, you can rely on your car to go

to work in the morning, but if it breaks down, you can feel disappointed, but you can hardly feel betrayed by your car. Trust can be grounded on some rational elements, but it is also driven by an emotional force that praises an optimistic expectation about the behaviour of the trustee from the point of view of the trustor. It can be asked what the conditions of trust are or can be, whether their are rational or not, institutional or not.

II. Inter-generational governance

1. Continuity

- Questions on the continuity

- What are the long term prospects that can be impacted by the multi-fold transitions (economy, ecology, technology…) ?
- Is the idea of a rolling stewardship an important possible option to be further explored in details ?
- Is it necessary and sufficient to change the legal framework at national or international level ?
- And if so, do we need to change the legal framework in the perspective of inter-generational governance ?
- How to maintain the continuity of the meaning of a geological repository through the generations ?

- Concept of the continuity

Continuity implies that, despite the possible disruptions, there is a resilience of the material, organizational and institutional process that enables the transfer over time to future generations. This transfer as far as continuity is concerned is not only about means (technical, financial…), it is also about capacities, skills and possibly, virtues. The continuity of a process can be understood in the context of societal and environmental transitions and of their impacts on more specific processes, such as that of RWM. It can also be understood in terms of a shared governance among various actors, like in the rolling stewardship option. But it is also about the continuity of the meaning that, like in any form of heritage, must be appropriated and very probably, renewed by the heirs of the situation.

2. Implementation

- Questions on the implementation

- What are the conditions for things or datas to be transferred through generations ?
- What are the concrete scenarios of inter-generational processes as far as equality, sustainability and responsibility are concerned ?

- Is a constraining operational framework a necessary and useful guiding tool for the implementation of a geological disposal ?
- To what extent a framework can leave room for a more flexible approach if it happens that the future is not fully predictible ?
- To what extent the inter-generational process can be flexible if the technical trajectory is bounded by a certain inertia (choices, costs…) ?

- Concept of the implementation

Implementation is about the translation of some guiding principles of action (eg : equality, sustainability, responsibility…) into an actual achievement of a socio-technical project – that is also socio-ethical in this respect. But if a long term inter-generational process is required to be more or less flexible, then the implementation itself must also be. This means that there is a kind of dialectic between : (a) the constraints of a plan oriented to an objective that makes the process more operational. (b) the possibilities of adaptation to an evolving context that makes the process more relevant.

3. Rationality

- Questions on the rationality

- What is a 'rational' and a 'non-rational' (or 'not-only-rational') understanding of the relations between generations ?
- How can these two approaches can be distinguished and combined in a more encompassing understanding of the issues at stake ?
- What is the room for conflict in the interactions, and should the discussions be oriented to a consensus ?
- Can an interaction between experts and civil society members be fruitful and nevertheless give some room to conflicts ?

- Concept of the rationality

Rationality is a norm of validity of knowledge and actions, speeches and judgments which functions as a criterion of demarcation of points of view whose authors expect them to be given a legitimacy. It is common to contrast the rational with the irrational (eg: the opposition between science and superstition), or to distinguish the rational and the reasonable (eg: the distinction between science and wisdom). But often, what is taken to be irrational is in fact the expression of another type of rationality (eg : why should I care for future generations ?). There are distinct types of rationality, overlapping the field of 'theoretical' rationality (knowledge, science, belief) and the field of 'practical' rationality (action, morality, desire). The notion of conflict of rationalities suggests that the satisfaction of an end in one sphere of rationality is made impossible by the satisfaction of another end in another sphere of rationality (eg : experiments on human brains in science, blamed by basic morality).

III. Safety culture

1. Culture

- Questions on the culture

- What are the definitions of a safety culture ?
- Is it about a weak sense of culture, like in the « corporate culture », or a strong sense of culture, with all the connotations of meaning, tradition, transmission, etc ?
- How it is applied within different organisations (WMO, TSO, RE)?
- Why the implementation of the safety culture in some organisation is not still addressed on the proper level ?
- To what extent a safety culture is or can be translated into a material and social design ?

- Concept of the culture

  Culture as opposed to nature gathers all the changes in the form or the substance that are the product of the human work either on the matter, the body or the mind. A culture is also a set of social or individual habits that functions more or less uncousciously as a framework for the thought and for the conduct of actors who belong to a network of humans and non-humans. The concept of culture can be taken in the weak sense, like in the 'corporate culture', or in the strong sense, like in the 'native culture'. It then implies that a culture is also concerned with the concepts of meaning, including all the symbolic aspects of it, and with thoses of tradition, reproduction, transmission or transfer from one generation to other generations.

2. Expertise

- Questions on the expertise

- How to warrant the independence of expertise, and can this be achieved through the criteria of competency, honesty and freedom of speech ?
- Is it relevant to make the difference between experts on the basis of their independence or of their belonging or not to an institution ?
- Is a safety culture mainly about the rules of communication, or rather about access to information ?
- How to make people change their usual frame as a condition for them to change their views and judgments ?

- Concept of the expertise

  Expertise designates a specific field of competence or skill that enables someone to make a highly relevant assessment of an issue or a position as well as of the questions and the

answers that relates to it. The question of the quality of expertise can be understood in an epistemic sense which emphasizes the validity, the precision, the rigour and the objectivity of a research or a study. But it can also be understood in an ethical sense which emphasizes the integrity, the honesty and the freedom os speech of an expert, sometimes a synonym of independence. It seems that the independence of experts is a complex issue, and it could be that the problem should rather be conceived of in terms of the difference between insitutional and non-institutional expertise, then raising the issue of conflicts of interest. But it can also be asked if there is also a « citizen expertise », and if so, whether it could be concerned with any conflicts of interest.

3. Common

- Questions on the common

- Is a safety culture should rather be said a shared culture ?
- Can we reach an agreement on the meaning of the words and then produce a common language ?
- Or is it fruitful for the sake of the process to let the variety of meanings open ?
- Is it realistic to expect that the interactions between different categories of actors are performed on an equality basis ?

- Concept of the common

Commonality is the property of being common, of having in common, but also of doing or living in common, including the linguistic, material, social and spiritual aspects of the exchange (communication, organization, property, habit, experience…). It is certainly necessary to share a common ground, including at the conceptual level, but it is not always possible to make it fully explicit for all the actors. One can emphasize the degrees or the scales of commonality, from the co-production of knowledge to the co-production of shared living conditions. It is one thing to produce knowledge, will, taste or skill which at the start are heterogeneous, or to be in agreement or in tune with the others ; but it is another thing to work together in a functional organization (factory, office), and live together (family, village, town).

IV. Transversal framing grid and link to the critical questions and concepts

The critical questions and concepts were framed on the basis of a transversal grid that could help feeding the reflection on the Social sciences & Citizens sciences Strategic Research Agenda. The framing grid was aimed at helping the analysis of the topics by displacing the views and the interpretations of them through a set of driving themes that all raises the issue of thesignificance(s) of a socio-technical project.

The themes are the following: the person, the society, the meaning, the complexity, the inquiry and the common.

- **Person**: a human person is not reduced to the function that (s)he exercises within an organization, because (s)he actually has several social roles which are articulated with each other in a way that is more or less harmonious. It is therefore necessary to wonder to what extent the interaction process allows all the actors present to go beyond the framework of their functional representations.

- **Society**: a society is not a simple given, it is a dynamic construction which cannot be based on the sole criterion of the "representativeness" of the actors, which is only thematic, and notstatistical. Civil society has many facets, which take the form of a public in the sense of Dewey,which is organized (or self-organized) in order to grow in competence, but also: in vigilance, in confidence, in motivation, in power, etc.

- **Meaning**: a human being can live in a world, but he cannot live in a management device. The existence of a world implies a symbolic framework based on memory and narrative, and the challenge, especially for functional and operational organizations, entirely geared towardsa performance objective, is to find what is likely to create meaning. We can also wonder about the capacity of these interactions to touch the deep dimensions, ontological or cosmological in nature, of the representations of each actor.

- **Complexity**: complexity is the theoretical limit of intelligent understanding of the world, it also calls for a practical capacity to take charge with a view to decision and action. Confidenceplays a major role in the ability of a social system to cope with the complexity of processes.

- **Inquiry**: the conduct of an investigation is distinguished according to a canon or a characteristic style by a certain combination of criteria (hypothesis, basis, protocol ...). In a regime of open criticism, it is a question of determining more precisely what democracy does to the method, that is to say what the inclusion of the public can change in the rule and use of a method of inquiry, particularly in the cooperative investigation oriented towards a common production (or co-production).

- **Common**: the Common is a principle of cooperation and sharing that is embodied in the Commons, these groups of actors engaged in the management of a resource according to certain rules of ownership and governance. Common policies pose, each in their own way,

thequestion of the degree of integration of a Common System between actors of society, the state and the market who think and act according to different logics.

One can develop a little bit further the background assumptions of the inquiry aimed at improving the SS-CS Strategic Research Agenda in SITEX.

A socio-technical device is not just a useful innovation, it is also an effective means in order to directly or indirectly shapen the world which the people live in (and will live in…) sometimes for decades or for centuries. It can be said that the conditions for a meaningful life in a certain world are essential to the success of a socio-technical disposal, for if one can live as a human being in a well-ordered world (a 'cosmos'), one cannot live properly into a 'monitoring and management device'. This raises the point of the conditions for the existence, the action and the common to be meaningful for the actors, as well as of the variety of options to be opened for the arrangement of the actors' life in such or such kind of world. In this respect, the scope of the possible worlds is to be evaluated as a set of desirable worlds in order to question the way of life that the actors are ready to lead in a world that remains shapened by technology.

The problem in the logic of security is it tends to eliminate hazards, but if everything is made wholly secured, then there is no room left for human life (!) - and for all the things that make this life human : innovation, adventure, etc. The issue of security is also at stake in the actors' interactions, but it must be situated by considering the inertia of their framework in the interpretation of situations and their reluctance to make it change. The actors who do not want to change their framework are in a way 'stuck' in a form of unconcern (security = *sine cura* : without concern) that enables them to keep their life safe in their relation to the world. Thus, as long as a person is not 'affected' by the course of events, he or she can carry on in an 'elegant conversation' and have tea…which is no longer possible if a person is straightly impacted by an event, a project and its consequences. Hence the importance to explore the extent to which the actors are 'affected' by the problems and are then in a position of changing their frames. Basically, the stake is to change the scope of possibilities in a way that goes much further than the range of operational opportunities and constraints. There is a much more 'existential' stake in the capacity for the scenarios of the future to keep the individual and social hope (as Rorty would say) alive among the community of citizens – othewise, we shift to catastrophism…

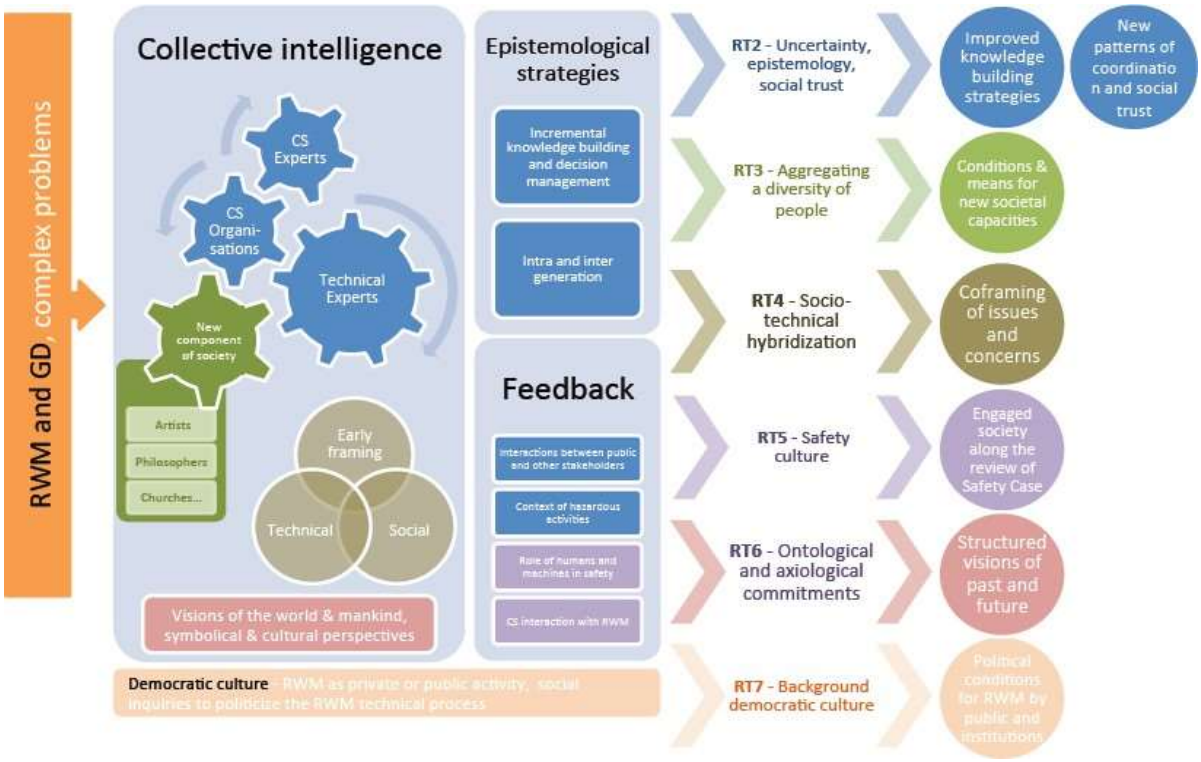
As suggested in the transversal framing grid, an individual as a person is not defined by one single social role - for instance, her or his professional function within an organisation, but in virtue of her or his multiple roles, for she or he is also a citizen, a parent, a friend, and not only an expert. It is then imporant to consider the ability of the actors to come out of their social role and their professionnal identity in order to embrace broader perspectives on the issues at stake. It is thus a question of touching the deeper layers, the background assumptions that grounds the actors' positions and that relates to their basic commitments in terms of worldviews and of life habits (ontological, axiological, cosmological, ideological…aspects). The hermeneutic stance (*refective-interpretive*) to oneself echoes that to be experienced in the relations to the other (*ego* and *alter ego*) and requires a certain type of device to favor the breaking up of the actors' mental, cultural and social frames.

In addition, the scope of the actors' interplay as far as mutual listening and understanding

are concerned includes more broadly both material and non-material (symbolic) aspects. However this requires that the CS actors rooted in a territory and attached to a certain 'lifeworld' (Husserl) are not labelled 'irrational' by the others, while their views are reduced by the so-called 'rational' actors (scientific, engeneering or legal perspective) to an issue of 'risk analysis'. This is the problem of the conditions for one category of actors to access the world and life that determines meaningful aspects of the actors who belongs to another category (eg : experts / citizens). But this is also the problem of the self-listening and self-understanding of the actors, of their ability to open up and then to consider with a new look their own role, status, identity and trajectory. This expression further calls, if translated into the dynamic language of a process of exploration, the formation of a community of inquiry (Dewey) in order to re-establish for that person a continuum of meaning and experience.

Appendices

Appendix 1 - The Social Science and Citizen Science Dimensions of the SITEX/Network SRA



In the framework of the development of this SRA, SITEX-II WP1 ("Programming R&D") organizations fulfilling an expertise function have engaged interactions with SITEX-II WP4 Task1 ("CS interacting with R&D"). The following work has been achieved by WP4:

a. Review of former SITEX deliverable D3.1 (R&D orientations for TSO) [7];
b. Review of the possible SRA topics built in step 1 of the SRA methodology (see §5.1);
c. Review of the draft SRA established 6 months after the start of the project (T0 +6,milestone M1.1).

The conclusions of these review activities were presented and discussed by WP4 with representatives of the CS during the first WP5 ("Integration and dissemination of project results") SITEX-II workshop and during one WP4 meeting. These conclusions, which will be documented in the SITEX-II deliverable D4.1, are summarized hereafter.

○ CONSIDERATION OF SOCIAL AND CITIZEN SCIENCES IN FUTURE RESEARCH PROJECTS AND ACTIVITIES

Past and current work on radioactive waste management strategies (including the geological

disposal of radioactive waste) are mainly focused on scientific and technical issues. Nowadays, the complexity of some radioactive waste management issues raises and more specifically the societal dimensions (social, political, ethical, ontological) of those decision-making processes. In several programmes, the CS finds itself largely outside the process of drafting and of implementing the radioactive waste management strategies, while implementers and public authorities struggled to involve society at the latest stages of technical decision-making when almost all options are predetermined, yielding to a limited embedding of social and technical issues. Actually, addressing the complexity of radioactive waste management issues entails involving both:

d. "**Social science**" to address properly social/societal dimensions that are attached to the whole long-term picture of radioactive waste management and more specifically to geological disposal, and,

e. **"Citizen science"** meaning here involving directly people (amateur or non-professional scientists) in the production of trustworthy and reliable scientific knowledge that is required for RWM.

The integration of Social and Citizen Science aspects should be considered in any new research projects or horizontal activities that will be launched in the future based on this SRA. Such possible Social and Citizen Science aspects were identified by WP4 and are synthetized hereunder.

f. Sharing R&D knowledge: the purpose of this research is to develop an interaction framework of institutional researchers with Civil Society Organisations (at local, national and EU levels) and Civil Society Experts for exchanging, interpreting and evaluating information along technical research activities, notably on Deep GeologicalRepository (goals, methodology, preliminary results, final results).
g. Uncertainty, epistemology and social trust along RWM and geological disposal implementation: this research topic will investigate the implementation of epistemological strategies such as "procedural rationality" (involving incremental knowledge building and decision management) and "distributed rationality" mobilizing societal capacities within each generation and along successive generations. This research area could also encompass a historical review of the interactions between the stakeholders including the public, in the context of different kinds of hazardous activities (including nuclear and other risks).
h. Aggregating a diversity of people, unfold capacities of collective intelligence along RWM and geological disposal implementation: the purpose of this research is to determine the conditions and means for incorporating new components of society as active stakeholders and potential contributors to the collective intelligence and creativity in order to address the complex issue of radioactive waste management and geological disposal implementation.
i. Socio-technical hybridization of geological disposal implementation strategies: the aim is to examine the conditions and means for enabling the fabric of mixed problematic that hybridize technical and social perspectives and the matching of values in the early framing of the problems.

j. Safety culture in the context of geological disposal: the objective is to investigate the conditions and means for developing interactions between various categories of stakeholders into the context of reviewing the safety of RWM strategies and geological disposal.
k. Ontological and axiological commitments of geological disposal stakeholders: the research aims at identifying the main paradigms or reference frames of the radioactive waste management stakeholders and societal actors. Then, the potential need, scope, use and role for "ontological diplomacy" processes for the actors to come up with an agreement could be identified.
l. Background democratic culture of geological disposal implementation: this research aims at identifying the political conditions for RWM to be addressed by and the various concerned categories of stakeholders.

The expertise function will check with CS representatives which of these Social and Citizen Science aspects could be relevant and how to integrate them to the technical aspects that have to be investigated. This will result in "holistic" projects or activities, in which both technical and societal aspects will be investigated in an integrated manner, using specific interdisciplinary methodologies and involving CS participation. Examples of topics that could give rise to such "holistic" projects or activities were given in main topic7 in section 6.

All WP1 partners fulfilling an expertise function recognize the importance of considering these social and citizen science aspects in future research projects or activities developed based on this SRA. Depending on their mandate, as well as their expertise and resources, some organizations fulfilling an expertise function could directly participate in these social and citizen sciences aspects.

○ OTHER ASPECTS CONSIDERED IN THE DEVELOPMENT OF THE SRA

In addition to what is presented in section 8.1, the following input of WP4.1 has been considered in the SRA.

- WP4.1 stressed that the SRA should include, beside R&D on geological disposal, R&D on possible alternative management options. WP1 agrees that the SITEX network could consider R&D issues related to management options other than geological disposal, if relevant to several national programmes. However, this first version of the SRA is specifically focused on disposal in underground facilities.
- WP4.1 stressed that the challenging issues should be identified as such in the present SRA. This has been done in section 7, though not exhaustively.

WP4.1 stressed that exchanges on fundamental principles for evaluating the safety cases should be strengthened in the SRA. This point was also raised by SITEX-II WP2 ("Developing a joint review framework"). Within the framework of the first step of the SRA development methodology, a cross check was made between the possible SRA topics and the Safety topics identified within the former SITEX project. Several topics on important safety principles were added and those for which there is a common interest are notably gathered in main topics 6 and 7 of the SRA.

Appendix 2 - A selection of contributions from the SITEX II- SRA Topical Day's Verbatim (April 2021)

All the positions expressed by the participants in the debates are public, but they remain personal, hence the decision to name the participants by some letters (A, B, C…) in the transcriptions.

1. Conditions for closure (G1, G2, G3)

G1

A : For some experts, it is a good thing that the closure is postponed to future generations, for the conditions for closure is a transfer to the future generations is a low assignment and shifting responsibility - nuclear waste could be also a resource which could be used maybe in future. There is an amount of trust that is necessary for the process to develop.

B : trust should be extended not only to relate to the content of the decision making, but also the process framing the decision making. how this trust manifests itself in choices that are guaranteed by possibly an institutional framework that only does not exist here now because of the long timeframes, but also in the future. Well, I think that the concept of trust should perhaps be structured in another way and possibly also considering the legal ramifications.

C : trust is one of the conditions for closure, but this trust is strongly linked to what could happen after the closure and to the means that will be put in place after closure. But there is actually after this closure different vision :
- on the regulatory point of view, it is no more necessary to do monitoring after that, it has been demonstrated that the closure has been realised as foreseen in the safety case, because then the safety can rest on passive safety.
- on the Civil Society' point of view, that is not sufficient to gain trust for Civil Society and that they will have more long term monitoring to have some confidence in the effective performance of the repository. Now, it could be a discussion about how long and which type of monitoring on the regulating point of view, intrusive monitoring will not be acceptable. Because then if we have as if we have increased monitoring, this means that actually the repository is not close and it could also jeopardise the safety.

D : there is a contradiction between the idea of surveillance and the idea of a passive safety. 300 years of institutional surveillance : I guess a fence with a sort of small house and somebody inside, what does it mean exactly?

E : passive safety is probably not straight forward for everybody and especially for the Civil Society. The reason of passive safety is the fact that the contextual uncertainties are very high when we are considering a long period of time. And so it's why we say as regulator that for long periods of time we can not rest on human. And so it's why we need to have passive safety. This doesn't mean that there are no opportunity to make some active things like long term monitoring if there is a wish from the Civil Society. But the safety is not to rest on that.

B : So options should probably be kept open in the shape of reversibility in the decision making process. And obviously, retrievability for the radioactive waste and the institutional frameworks should be, if possible, and be kept in place in order to reverse these decisions and from Civil Society makes you a passive safety is in itself perhaps not as important as the system surrounding passive safety for as I said,

that it might work, but only until it doesn't. But if there's no reversibility, I think it will be difficult to uphold trust in the system in general.

E : to relieve society for the burden to manage the waste. That's the main objective of closure at some point. If the post closure provisions such as monitoring, such as control, things like that, if such things are necessary to build trust, that for me, in my opinion, it would just say that the closure, we are not ready for closure, safety cannot be reached to a certain extent if things are left open. Reversibility can be easily understood as a condition for trust. But then it depends on the conditions. Limits to reversibility and the limits should be attached to the time of closure.

D : the concept of passive safety is not in line with the concept of safety culture. And it is, in my view, contradictory, because if we have safety, why is it that we want to have passive safety, we are in a safety state or not in a safety state. If you say disposal, it means you cannot anymore think of retrieval.

C : First of all, is that closure is considered from the beginning of the process and it's very important at the time of the licence application to have already a clear plan on how we will close the disposal and to demonstrate with the elements that we have that it's possible to close. And that is closure will allow to ensure that the safety of the of the disposal. Of course, this doesn't mean that's what we planned at the licence application will not evolve with time and that improvement can be done, but at least one solution to close and guaranteed the safe disposal has to exist for the licence application. And then the plan for closure, as I say, can evolve with the spirit to improve safety and optimisation of safety. And one condition for the regulator to close the repository will be that. The safety demonstration has to be complete at the time of closure, if not we can not start the closure. So this means that except the last step, which is the closure of the installation and demonstrating that it has been realised properly, according to the safety case, so except this step, everything has to be demonstrated, the long term safety has to be demonstrated. And it is also required to demonstrate that all remaining uncertainties can be managed at long term. So this is what is required by the regulator. And after the closure, once we demonstrate that the repository has been closed as foreseen in the safety case, for the regulator, we can stop the licence. So this is the position of the regulator. So now we can understand that there is a wish to continue monitoring after the end of the licence. It could be a social show and we are not opposed with that. If society would like to continue that and the monitoring to try to maintain the memory of the site, we are, of course, not opposed to that because it's a Civil Society shows. And then about the possibility to retreat waste. So it's clear that once the disposal, the installation is close, it's more difficult to do it. But I think that it's never impossible to retrieve waste. It's a problem of resources, of cost and also of additional risk, because there's also some risk to retrieve the waste, just mining engineering, but also the exposure of the people that will have to retrieve the waste. And so such a decision should always be based on the balance between the benefits for the society to treat the waste and the consequence of it, of course. And of course, we trust of all the stakeholders and this is the issue, of course, is very complicated and it's why it is important to discuss early with Civil Society to agree on these conditions.

G2

H : The transparency issue came back again and how we can, you know, trust independent experts on the challenges of the closure. It's important to see the whole closure process in the big picture as she explained the operational safety and the state of closure and the closure of safety. Monitoring was another important thing when we talk about final disposal of radioactive waste is like how to communicate it to the next generations and also, you know, the safety issues that come with it.

I : pluralistic monitoring. And it means that from in my mouth, pluralistic is from institutional and non institutional groups. The laws as so the government has also to say where are the rules and the responsibilities. And it means that if it's said that it should be a pluralistic monitoring, it means that the different groups should have money, should have time, should have the training and so and so to do so. It should be a real share of roles and thus of responsibility. Sometimes we would rather go for 40 or 50

generation, that is about 1000 year, because scientifically this is or globally the duration of the thermal phase. And during that phase, there are lots of things that occur. Well, why not ? To me, we will see. But to me, lots of transient phenomena will occur during the first decades.
- where : surface monitoring of the different radionuclide may be concentrated in the different compartments like the vegetation, the water, the and so on, or that to be in there in capability of monitoring what occurs down in the on the ground and related to the different components of the disposal or within one system, it would mean that we are able to look at or to to monitor what occurs with some hundreds of millions of rocks between both
- when : At the beginning there are lots of challenges and then the challenges are less and less important to go to an equilibrium state. And it is technically, to me, one way to decide on the duration of the usefulness of the monitoring from the underground, um, level.
- what : to have a fair dialogue, fair decision making process, and we are everyone have every one of these groups well, to establish a fair governance of the of the conditions for closure. And it's the only way to me also to reach trust, trust from the Civil Society to the institution, also the inverse. The memory is a technical memory and memory of the decisions that have been made during all the operational phase and afterwards after the closure.

J : I might select this distinction between this trust and confidence. It is a bit difficult, because at least in Finnish language, they are translated exactly just as a single word because it makes much easier, this kind of understanding if you have translation in your own language It's a real really bad failure for the repository if something happened during the first thousand years

K : The first one is that is the closure really the end of the process or is it something the beginning of something new? Are we going to monitor what kind of data are we going to collect and why that?

I : I do not want that it is a new thing because I want that we all together learn about progressive closure of disposal, learn about technically how it works, really in practice, but also how to have such pluralistic governance altogether. To me, there should be a test phases and also we have to learn all along the operational phase. So, has not to be in a new world just to know what is afterwards. So it's a continuity.

L : on the on how we can learn the society about progressive closure or elements. Also we can learn and have a topic on pluralistic governance.

H : memory. I would really love to learn more about that part when we talk about the closure, because I think it will be important to have a long term thinking, not just in in the scientific word, but also to somehow teach and raise awareness of the society and the and the politicians. That is it's a long term process. And it's not just the problem that we have to solve in the next 10 years, but it's yeah, it has to be an active memory of the people.

M : what would we do with the data that will be collected with the monitoring after the closure? So I think the way we interpret that that it used to be collected through the monitoring is also an interesting subject to investigate

M : Closure is I think most people said it's not just a moment in time. It's really the end of a whole process. And it's a moment where trust is the most important, because if something was not properly done before or if there are a mistrust between the parties, you won't close that repository. because if I put my feet into the shoes of an astronaut or when I will when I will sit in to a rocket, if I expect a lot of trust in the engineers and that if we look at them before I put on start.

K : Trust can also be like I recognise that they are adversaries and we won't agree at all, forever and ever. So it's also you can disagree with people and at the same time respect them and trust them for what they bring on the table.

N : This is a mutual trust in how the technical experts and the radwaste organisation can trust the Civil Society and the opposite. Also, we always put the problem in terms of a one way relationship, you know, the trust of the Civil Society to the institutions.

G3

O : the question of the closure is very far from today. And it's not easy, for example, for some members of the local committee or the CLIs. It's not easy to think about this period, because first, some of them don't want that there is a geological disposal. So they don't want to think of the closure because it would not be the case.

P : the main moves should be education in the context of how can we improve the education of Civil Society and by doing so, increase the confidence of Civil Society.

P : mistrust is largely been based upon ignorance insofar as the Civil Society used in any field environment or in a community where there is the prospect for siting investigations, tend to be sceptical, along part sceptical of the WMO proposals, but scepticism, it's largely, the mistrust, is largely founded on the fact that on the fact of ignorance

Q : 3 points : education, trust, participation.

R :
- this idea of preparation for closure. I think that it's this idea that the closure start from now, we could say, and this idea of preparation process, well, that's what you will see, that everything is there is not a specific order.
- and so I think that the idea of to make hypothesis, design a hypothesis or well, all the hypotheses around this question of closure to make them explicit and to have this idea of it's important to make them explicit today because in 10 or 20 or 100 years, people will need this in order to understand or to interpret the things
- there are some questions that I'm quite sure that we cannot propose or will answer if we use scientific frame.

2. Inter-generational governance (G1, G2, G3)

G1

F : what's the most durable thing in our civilisation and our culture ; values concerning nuclear waste, what it does to us emotionally, like science and talking about emotions.

D : The film is not the same, a continuous process is in fact totally discontinued reframing. It goes together with the idea of complexity, of bringing emotional aspect calculating risk will not be enough. The rationality of risk calculation is only one aspect of life that when you receive something, you need to have completely the meaning of something.

A : a resource for future generations, too. And this is a little bit ignored. Totally. I mean, in this we have fusion energy and always in 30 years. But maybe we need additional new energies in the future. Generations need more energy than we at moment can think about.

B : A comprehensive and well-developed ethical framework for the long term decision making.

E : I wonder how we can do it is the because in my opinion, what is lasting, it's myths and books, those are two main things that I can think of that really come across generations. And I'm wondering what's needed to go from these objectives to give a wider frame to reductive management to what how to make it last, because that's there's no point of having a very wide approach if the next generation just forgets about it.

G : experimental nature of the process very disturbing because it is experimental by nature to some extent. But it can be because there's no room for failure. the way we need to think of what we transfer in terms of decision and responsibility to those two categories of future generation is completely different. be in a situation where they could take a decision that we can't take or that we are not ready to take, which is precisely to renounce some kind of reversibility and go from this active to more passive situation. further making decisions that would further enable them to make decisions.

D : how to create the condition for continued or renewed meaning with the successive generation. what is the meaning for a newcomer in the game? New generation. what is a human being? What is a human being in the planet? Cosmology. What is the world what is my vision of the world? I mean, to take my benefit short term and then to go away? Uneasy with the idea of that there is no room for failure. Well, have you seen that a process, a human process can succeed to something if it has no room for failure?

A : the framing is continuous. Passive safety shouldn't be there because future generations, you cannot expect that they at the same educational level, different political situations. And so they shouldn't care after. A certain time, because maybe you cannot guarantee that that our technology will continue and. You are able to deal with difficult problems.

F : responsibility. And that made me think of even just like a day, a day like sort of a military service type day where everybody has to be informed about what's going on. it's really important to encourage conflicting viewpoints in order to have the conversation evolve and continue.

G2

L : Why should I care? That's what Sylvain was talking about. So it's also it's deeper, again, going into something that technically may be less explainable. Like you say, technical people have a blue profile, like doctors have a blue profile because they have no emotions to cut your leg off, for example. But people

from the social science, they would, let's say, have empathy for digging a hole in the ground. So this is something like I cannot touch it because I but I find that interested could be for a SRA maybe so let's say rational and irrational understanding of the problematics. Which also brings us to what Celine said then. Let's keep it talk open and let be complex. It's all right to be complex as long as we as we cooperate.

H : they all discussed the role of the individual. And what I wrote down to myself after Celine's presentation that the rational-emotional distinction for me, it was also about the the welfare of the of the of the people or the self. So for me, it's also really interesting how, you know, politicians and Nadja also discuss this, like how politicians think in a really short time frame and how we can change that and how we can reflect on their short term thinking and maybe somehow, you know, change their view on these topics as well. the future of the ethical questions, but I think it's a very slippery, slippery road, like what is ethical in one country is not a considered ethical in another or like what we consider ethical now might not be ethical in two hundred years.

I : lots of transitions, economical transition, ecology, economy, technology also are changing. We are like a like with a big break with the artificial intelligence and so on and the IC and so on. we have also to elaborate on the international governance of radioactive waste disposal in that global frame. That is to really include some prospective view. It is typically a process where we cannot say, well, today all is clean and all is fixed and all will be like that during one century and more and no, no way. So it has to be progressive. It has to be it's a kind of an experiment that science. I would say more than that, it's alive and it's or what we've said, they have to be interaction between the different stakeholders. They have to be requestioning all the time based on techniques but also, and I loved that, techniques and emotion and human beings. And that's very important to me. Techniques plus the emotions and the human parts of the things. And it goes also to the ethics that all the speakers talked about. And to be maybe a little bit not really happy and not really funny, we have also to imagine that it could be future with well, generation that could be, I don't know how to say that, in less capacity, in less with less money. So we have to prepare technically the things. But we had to prepare, and that would be my last word, to prepare that intergenerational governance.

I : I really do not need a framework, you know, when I mean a freeze because I freeze, which freezes because when I see that, uh, project of geological disposal will open in 2048, for example, I does not make sense to me. And so really to leave the things open, it's to me the only way to proceed in having a pluralistic governance. If it's fixed, it means that the generation and who, and some people have fixed something and to me it's just not possible or not is, not the way we have to do.

G3

S : we need to better understand the concepts, concepts and also methods and also tools to build the future. the question of tension in the framing, because we have to move from one topic to another, whether, for instance, let's be emotional, but also, we have also to accept experimental steps because the future has to be better and we have to be modest and step by step and to assure the status of experimental steps. But also. That's sort of time you would like to be quick, but it is urgent to be slow. So there is a balance at each step, there is a balance and it's a way of thinking,

Q : the importance of process. So in the process, this process is usually defined in the legal settings, in the national international first, but then national legal settings. So and the details then are very depending on the national understanding of this. So whatever the governance will be in the future, there should be a kind of idea about a process which should take place. This process should start now because it should be in a way framed but still flexible enough to allow for the changes, for going back, for going forward and so on. So this is why we always talk about the process, like rolling stewardship.

3. Safety culture (G1, G2, G3)

G1

E : safety culture for me, it's very much about doubting all the time, making never accepting assumptions without knowing what's behind them. And I really think that this is an attitude that really everyone should have even in I mean, even in personal life. So it's really I don't see it. I don't feel like it's a concept that belongs more to the public, more to the safety authority or whatever.

A : You need somehow if you are institutional, then you are somehow paid. You should be with your organisation's mind a bit, but for instance, if you are on a national research institute and then you are in principle independent, if you have to, to get your money from contracts, then you are no longer independent.

D : We are talking of the trust between the mutual trust in the system and here. There is a distinction between the trust in the individuals. Is one individual trustworthy, for instance? And there is an acknowledgement that sometimes they are context, which is difficult for individual to be trustworthy. That's why they are questions are very interesting. What is the reaction if somebody sees that he's using a procedure which is not adapted to the situation? It's not easy when you are an operator and you are committed to use a procedure and you realise the procedure is not adopted, it necessitate courage, it necessitates that your institution will backup you otherwise.

G : There are three criteria that could be used to try to characterise the trust that anyone could put in this or that experts, I would say competency, honesty and freedom of speech. those criteria should have should apply to any kind of expert, which I. I would recognise as a citizen, as reliable, trustworthy and relevant in the process. When it comes to safety culture, I mean, I've heard things about communication and so on, I mean, there I would be very clear that what we need is I mean, I use the word transparency, but I hate it. I really very much prefer to talk about access to information. I know that there is a need for some translation for people who want to get to some understanding of what is at stake. But when you when you talk about transparency, you put the responsibility of translating in the hands of those who have the information. And I think this is plain wrong. I mean, you need free access to information and then everyone can relate on every kind of experts to make the translation. doubting. On one hand, I very much agree. On the other end, I mean, the whole point of the SRA is to come to a point where you don't doubt anymore.

B : it is almost every time impossible to get the second opinion from an institutionalised expert, we have to go to the not institutionalised experts. And in my personal experience, they are very often also independent because they don't have the ties that obligate them to have certain opinions and also they have the courage to speak their mind. So to me, as a representative of the Civil Society, it is very important that the non-institutional experts are available to talk to the Civil Society.

F : And so the non-institutional expert is often someone that's more available and is more is has more liberty to say what to answer questions or to be frank about things. I also wanted to just say, going back to talking about safety culture and saying that I just was thinking about what you said and the safety culture is the framework. But after there's also the application so you can be on board with a framework and then not know how the application is going to go.

C : as experts to the regulator, I have always the right to express myself as an individual so I can express my opinion, of course, this ask for some courage to do that but I have the possibility to do that. Now, if I, I, uh, personally, I give my opinion to my hierarchy and of course, if hierarchy doesn't would like to follow my opinion is the right of my hierarchy to do so. But in this case have not to ask me to defend that

externally.

G : experts can have different views. I would rather say views than opinion because an expertise is precisely not an opinion in the in the common sense. So they might have different views, but there is an internal process and at the end there is one view or one combination of views that prevails as the view of the institute. safety culture is obviously not a given. And it's not something that should be put on the shoulders of the of the institutional safety experts. I think that that is the wrong way to maintain and increase a safety culture in society. So that brings me back to the rule of non-institutional experts.

G2

M : What are people working on possible steams. And it, they are not, it's not that easy for people to accept that this kind of critical opinions and they are quite often, it appears to supported it. They are not handled in a proper way. So instead of i taking care of making a careful analysis of this kind of notes, the more money people reassess the explaining that they don't care, it's not that important. It's a that and I think that's a bad safety culture. So in a good safety culture, you react in the way that that if you have an observation and claim whatever they are, others who take it seriously and do some facts against it, not just opinions, but that's maybe everything I want to say.

H : To raise this issue and to talk about this issue, because sometimes we as we all mentioned, sometimes we wear different hats for different reasons.

K : So it's to me that the first question that the Sitex members should have, it's more what are the values behind the safety case as it exists now? And being able to describe the values that you carry on in your safety case, then could be a starting point to discuss about with people, about different principle and the way they carry on may be in a different way. We are talking about the engineer's baby. And for most of them, they are working on safety case since decades. Even there is no sites decided yet, at least in Belgium, which means that again when I suggest to flip around the figure presented earlier, it's far, far from to be an easy question. It means that the safety case, it's already prepared. I can see without the site. So somehow it's very difficult for people to local one, the affected one to understand the, beyond the languages problem, the safety case issues and what there is behind it.

L : And then and you both really think that you have a deep understanding of the safety culture and that you have the safety culture. And I find it very confronting to actually how do you evaluate the depths of the set of the safety culture? So maybe it's a point to investigate, like maybe just the vision of how do we want it to be like together, because we can live together with the with a totally different idea. And it's fine. So it's like two different cultures and we have to live together. So the vision might be different.

N : You can have a very weak sense of the word culture or very strong sense, I mean, it seems to me that. This is rather the strong sense that should be put forward in in those studies and on the Radioactive waste management, especially if we care for the long term issues. You don't have the same framework, you will not get the same meaning to a fact or value. So this is also in the safety culture, a common understanding and a common interpretation of values and also of facts, of data and so on.

I : And during that time, as I know what's going on somewhere and as usual, they are no really complete agreements on those definitions, even in the in the technical worlds. I mean, OK. So to me, it's very important. What Maryna said it's important to have a common ground, but not to merge them all.

N : material translation of a set of rules, principles and values and so on. For instance, if you take the example of the requirement on reversibility or returnability, I mean, there is a material translation of this requirement. So I mean, the technical concept will not be the same concerning the repository, whether you take this into account or not. I mean, the requirements of reversibility, for instance, it does change the technical concept and then the implementation. So, I mean. When you when you discuss the meaning

of words, I mean, it is interesting only. Because it has consequences in the material translation of the requirements,

I : let's design a research project where we can live all together at a meta level those safety culture things, meaning that we can have a research project on, for example, conditions for closure, and we would also address with that safety culture. But for me, the technical side, I need concrete things. I need to apply that to a practical thing.

G3

Q : the safety culture. It's an extremely important concept. And in the end, it is it is usually the case in many important things, it's not very precisely defined. Why the implementation of the safety culture in the some organisation is not still on the proper level. Through the Civil Society has another perception of meaning of safety culture, and they exposed several issues which are written in different documents, but they seek much broader, much broader. And I think that is very important, that these broader views are then also addressed. The safety culture in the future should be also broader and make it more possible to be implemented in this core, meaning broaden but still to all the actors should address at least this small the core the core understanding of the safety culture.

T : because they are some recommendation by agency in the in about safety, culture, assessment, methodology, etc.. And I also was thinking, for example, how much difference safety culture between the Radioactive waste management if we compare it with safety culture, which is applied for nuclear power plants, if we can transfer some experience or use some of the same methodology in some aspects to apply the safety culture in the Radioactive waste management in general, and then surely it has to be applied for single institution.

P : there is it means different things to different people, and we know this anyway from you know, there is only so much of a common theme that we can take from corporate safety, culture and societal safety culture as they mean two different things. We need to be speaking with one language. And while that that should be possible, we should be able to work towards the position of that. So my sort of recommendation, if it means anything, will be to us as the various institutional actors in different European states, what their understanding of a particular meaning is and then draw it all together. To see if we can establish a common language to which Civil Society can understand and all the all the other actors involved.

S : I would prefer to speak about a shared culture rather than the safety culture in the very sense of it. It's a question that I was if I my question was how safety culture approach was applied to this kind of technical dialogue. For me, it was a shared culture rather than the safety culture.

U : we have different definition and we have a different exception of the notion of safety culture. Maybe one way could be to speak about cultural aspects of safety, which could include civil society or other issues. So it will be a broader and coming through to other concerns regarding of different institutions or actors. I say maybe that the safety culture is sometimes a managerial concept, a very normative, and sometimes it's difficult to include other definition and having a more comprehensive approach of safety. So maybe having a different using it could be useful to use a different notion as to thinking about the cultural aspects of safety, which could include organisational issue, national regular regulation, the national regulation. That's also civil concerns. And yeah, having more and more details, factors and aspects, because it's a very large issue, it's the factors which can affect safety.