Deliverable 9.18:
Implementation of ROUTES action plan third phase

Report of Task 7 on Interaction with Civil Society (ICS)

Short term and long-term public participation in RWM technical topics

Work Package ROUTES

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 847593.

Document information

Project Acronym	**EURAD**
Project Title	**European Joint Programme on Radioactive Waste Management**
Project Type	**European Joint Programme (EJP)**
EC grant agreement No.	**847593**
Project starting / end date	**1st June 2019 – 30 May 2024**
Work Package No.	**9**
Work Package Title	**Waste management routes in Europe from cradle to grave**
Work Package Acronym	**ROUTES**
Deliverable No.	**9.18**
Deliverable Title	**Implementation of ROUTES action plan third phase**
Lead Beneficiary	**IRSN [NTW]**
Contractual Delivery Date	**M47**
Actual Delivery Date	**M60**
Type	**Report**
Dissemination level	**Public**
Authors	**Michal Daniška (NTW), Malcolm de Butler (NTW), Jan Haverkamp (NTW), Niels Henrik Hooge (NTW), Johan Swahn (NTW), Colin Wales (NTW), Nadja Zeleznik (EIMV).**

To be cited as:

Zeleznik N., Swahn J., Daniška M., Haverkamp J., Hooge N.H., de Butler M, Wales C., (2024): Implementation of ROUTES action plan third phase. Final version as of 27.05.2024 of deliverable D9.18 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593.

Disclaimer

Acknowledgement

This document is a deliverable of the European Joint Programme on Radioactive Waste Management (EURAD). EURAD has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 847593.

Status of deliverable		
	By	Date
Delivered (Lead Beneficiary)	IRSN [NTW]	10.11.2023
Verified (WP Leader)	Francois Marsal (IRSN)	02.04.2024
Reviewed (Reviewers)	Frederic Bernier (FANC) Wilfried Pfingsten (PSI)	29.02.2024 18.03.2024
Delivered (reviewed)	IRSN [NTW]	27.03.2024 19.04.2024
Approved (PMO)	Elisabeth Salat (IRSN)	27.05.2024
Submitted to EC (Coordinator)	Andra (Coordination team)	27.05.2024

Executive Summary

The focus of the investigation by Task 7 members in the ROUTES Work Package (WP) revolves around public participation in technical aspects of Radioactive Waste Management (RWM), such as the development of Waste Acceptance Criteria (WAC), the management of challenging wastes and safety case development. The leading question driving this investigation is how to effectively organise and engage the public in these technical areas, which may not captivate general public's interest but remain crucial for research and development due to their inherent uncertainties. These topics could be also challenging for the civil society (CS) to grasp, requiring a solid background in technical and natural science.

In this context, the Task 7 members worked on enhancing CS's understanding through concrete, short term engagement with various stakeholder, in particular with CS members (including impacted citizens, and also NGOs), and also explored long-term engagement as a basic prerequisite for any RWM activity. In this deliverable D9.18, the results of the investigation are addressed following the established methodology from previous deliverables D9.16 and D9.17, using the approach described in D9.15. The report includes discussions on transparency and public participation concerning RWM implementation, providing an overview of legal frameworks, the position of regulators and analysis of societal expectations. It presents results from a questionnaire distributed to ROUTES participants and to the CS larger group. It also includes description of eight case studies from European countries highlighting public participation in recent RWM activities.

Based on the represented cases, general findings are deducted concerning the creation of a diverse information environment, ensuring CS's involvement in technical issues, understanding power dynamics, and defining the role of responsible WMOs in transparency and public participation. The deliverables also include an important chapter of the options for short- and long-term CS engagement in RWM activities.

In addition, the report evaluates outcomes from other ROUTES tasks are evaluated, with their potential for examination by Task 7 in year 5 of EURAD.

Table of content

List of figures

List of Tables

Glossary

ACCC - Aarhus Convention Compliance Committee

ARAO - Slovenian Agency for Radioactive Waste Management

ASN - French nuclear safety authority

BEPPER - Broad framework for Effective Public information and Participation in Environmental decision-making in Radioactive waste management.

CCNR: Canadian Coalition for Nuclear Responsibility

CERCLA - U.S. Comprehensive Environmental Response, Compensation, and Liability Act

COWAM - Community Waste Management

CoRWM – UK Government Advisory Committee on Radioactive Waste Management

CPs – UK local Community Partnerships

CS - Civil Society

CSO - Civil Society Organisation

DAD - Decide, Announce, Defend

DBD – Deep Borehole Disposal

DGR - Deep Geological Repository

DOE - U.S. Department Of Energy

EIA - Environmental Impact Assessment

EP&R - Emergency Preparedness and Response

EU - European Union

FSC – OECD-NEA Forum on Stakeholder Confidence

GD - Geological Disposal

GDF - Geological Disposal Facility

HLW - High Level Waste

IAEA - International Atomic Energy Agency

ICS - Interaction with Civil Society

ILW - Intermediate level waste

JAVYS - Slovakian Nuclear and Decommissioning Company

LTIM - Long-Term Institutional Management

LTS - Long-Term Stewardship

LILW - Low and Intermediate Level Waste

LLW - Low-level waste

NEA - OECD Nuclear Energy Agency

NEK - Krško Nuclear Power Plant

NGOs - Non-Governmental Organisations

NPP - Nuclear Power Plant

NWS – (Nuclear Waste Services Ltd) UK's waste Management Organisation

OECD - Organisation for Economic Cooperation and Development

ONR – UK Office for Nuclear Regulation

PP - Public Participation

R&D – Research and Development

RD&D - Research, Development & Demonstration

RCRA - U.S. Resource Conservation and Recovery Act

RE - Research Entity

RW - Radioactive Waste

RWM - Radioactive Waste Management

SEA - Strategic Environmental Assessment

SNF - Spent Nuclear Fuel

T&PP - Transparency and Public Participation

TSO - Technical Support Organisation

UMMT - Uranium Mine and Mill Tailings

WAC - Waste Acceptance Criteria

WMO - Waste Management Organisation

WP – Work Package (within ROUTES)

1. Introduction

Deliverable 9.18 “Implementation of ROUTES action plan third phase” is the third and last report based on the approach, described in the deliverable 9.15 “Scoping of ROUTES, Initial ICS Input and ICS Action Plan” [1], developed by the CS experts of Task 7 in the ROUTES WP. This approach foresees continuous follow up of the activities in ROUTES technical tasks (2-6 and 8) and further orientation on the specific topic identified as most interesting in the perspective of developing interactions between CS and EURAD partners along the course of the WP. Based on deliverable 9.15, the first report 9.16 “Implementation of ROUTES action plan first phase” [2], therefore focused on ethical and legal issues, good transparency and public concerns related to shared Radioactive Waste Management (RWM) solutions coming from several presented cases. The second contextual Deliverable 9.17 “Implementation of ROUTES action plan second phase” [3] focused on how the pillars of Aarhus convention and a broader understanding of transparency by Civil Society (CS) are transposed into Radioactive Waste Management (RWM) in different national contexts and what recommendations can be derived. This deliverable 9.17 also identified the topic of the EURAD year 4 investigation within Task 7, devoted to address public participation for technical topics like development of WAC, management of challenging wastes and safety case development. The leading question is how to organise and engage the public in these technical topics that might not be so interesting for general public but will still be subject of research and development because of their various uncertainties.

1.1 Updated ROUTES Task 7 action plan for year 2-4 for interaction with civil society (ICS)

Based on the outcomes of Task 7 from years 1 to 3, evolution of investigation in tasks 2-6 and 8 of the ROUTES WP, additional feedback from EURAD participants and interaction with the EURAD CS larger group, an action plan for Task 7 work with interaction with civil society for the years 2-4 of the project was developed [1] after the first year. It was amended after year 2 and 3 to adapt to the work in past years and is now amended for the work during year 4. The summary from all activities related to the action plan is:

1. In the frame of Task 2, “Identifying challenging wastes to be collaboratively tackled within EURAD”, the group of CS experts has identified the work as interesting, among others because there will be a description of inventories of challenging wastes for many countries. It may certainly be of interest to CS in those countries to be informed about this and about the on-going plans to manage and dispose of such wastes.
    - Members of Task 7 therefore work on understanding and communicating information about the inventories to the CS larger group and where applicable, also beyond into general civil society.
    - The CS experts’ group have studied and considered deliverable D9.4 "Overview of existing work on categorisation/classification of Radioactive Wastes (RWs) in participating states to assist communication on the categorisation and classification schemes provided by the participating countries**.**”
    - During EURAD year 3, the focus has been given on following the production of deliverable D9.5 “Overview of issues related to challenging wastes”.
    - During year 4, Task 7 members studied the final deliverable from Task 2, i.e., D9.6 “Common understanding of the practical issues on waste management routes”.
    - Method:
        - To follow the deliverable production, with a focus on the inventory descriptions,
        - To develop a summary that can be understandable by civil society,
        - To discuss it and bring feedback to ROUTES participants,
        - To report the findings in final deliverable D9.19 within Task 7.
2. In the frame of Task 3 on “Description and comparison of radwaste characterisation approaches” and Task 4 on “Identification of Waste Acceptance Criteria (WAC) used in EU

Member States for different disposal alternatives in order to inform development of WAC in countries without WAC/facilities", the group of CS experts primarily follows the work of the tasks to be able to assist in communicating the work to the larger CS group.

- Method:
  - To follow the deliverable production in a general way,
  - To develop short summaries that can be understandable by civil society,
  - To discuss the deliverables and bring feedback to ROUTES participants,
  - To report key findings in Task 7 deliverables, in particular in D9.19 within Task 7.

3. In the frame of Task 5, "RWM Solutions for small amounts of waste", the examination of how the conditions for CS involvement in Small Inventory Member States (SIMS) differ from CS involvement in Large Inventory Member States (LIMS) is an issue of interest under Task 7. The work has been commenced in smaller scale in year 2, but larger efforts were performed for years 3-4 with the aim to look at CS involvement in SIMS and in LIMS, search for commonalities and differences, factors with impact, like transparency levels (according to discussions in the BEPPER report produced by Nuclear Transparency Watch (NTW)[1]: information availability, quality and access, participation in decision-making, access to legal recourse, including CS resourcing).

   - Method:
     - Selection of several cases based on established criteria with examples from SIMS and LIMS,
     - Descriptive approach and lessons learnt from the cases,
     - Implement a survey with questionnaire with representatives from different groups (ROUTES participants, CS experts, larger CS group),
     - Discuss draft findings in the CS larger group and with EURAD participants,

   The result of the investigation is reported in deliverable 9.17 [3]. The core part of the deliverable is devoted to the implementation of a broader understanding of transparency and public participation (T&PP) in RWM. Starting with the description of what broader T&PP means for CS, the report presents the results of a short survey among the ROUTES participants and the larger CS group on T&PP issues in RWM. The small survey was performed with the aim to obtain positions on T&PP in different countries from different types of actors. Several national cases are described with a largely common structure for description and address the current situations regarding RWM transparency in different European countries, with advanced and early-stage programmes for large and small RW inventories. Based on lessons learned and findings from presented cases, more general recommendations are derived from national examples which are relevant also for other RWM situations.
   Important topics with ethical implications are the consideration of deep borehole repository technology in the CS larger group, as well as long-term interim storage. These topics were not investigated in the frame of ROUTES, but they are proposed for the future EURAD 2 WP proposal.

4. In the frame of Task 6, "Shared solutions in European countries", the work of Task 7 concentrated on the issue of understanding what "shared solutions" can mean as well as the public perception of transnational or shared nuclear facilities, particularly storage and repositories for nuclear waste, as a key issue with respect to CS involvement. This topic was a focus in EURAD year 2, as reported in the deliverable D9.16 [2]. The CS experts investigated how the understanding of the public perception of shared nuclear facilities between two or more MS differs from public perception of nuclear facilities within one

[1] https://www.nuclear-transparency-watch.eu/a-la-une/new-publication-bepper-report.html

Member State, if at all, and how a process of localisation of a shared nuclear facility, involving all the relevant stakeholders could be structured. The basic elements for considerations were discussed. Several examples of shared solutions were investigated, such as:

- the shared responsibility for RW from the Slovenian / Croatian Krško NPP,
- the export of depleted uranium for uncertain management in Russia,
- the Bohunice centre in Slovakia, established to treat the waste from the A1 NPP accident, but now rebuilt for treatment of larger quantities of RW including RW from foreign countries.

Based on investigation, an understanding of the concept of "shared solutions" and the public perception of such developments with a reference to the Aarhus convention have been drawn out with recommendations coming from the performed analysis.

5. In the frame of Task 8, "Evaluation of possible waste management solutions for Member States without WAC and with small inventories (SIMS)", the work of Task 7 concentrates on the issues regarding to CS aspects for related countries (SIMS). This might include the issues of inclusion of CS in the RW pathways selection in the countries with small inventories, many times without nuclear power plant inventory and therefore with less attention to waste management solutions for existing waste. Also, different aspects of predisposal RW management have been discussed from a CS perspective. In year 4, task 7 presented the possibilities and challenges of RWM in LIMS and SIMS supported by analyses with regard to interactions with CS, drawing on various exchanges between the CS experts and experts from RW management organisations, RW technical support organisations and RW research entities within ROUTES during particular workshop. The contribution for the IAEA conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability was presented [4].

The focus of the work of Task 7 during year 4, is on point 3 above, i.e., on Task 5 "RWM Solutions for small amounts of waste", and on point 5 above, i.e., on Task 8 "Evaluation of possible waste management solutions for Member States without WAC and with small inventories". It is devoted to questions raised during the exchanges with participants of those tasks, relates also to Task 2, 3 and 4, but is it also the direct interest of Task 7 members. Deliverable 9.18 is devoted to address public participation for technical topics in RWM, like the development of WAC, management of challenging wastes and safety case development. The leading question to which the investigation was focused is how to organise and engage the public in these technical topics that might not be so interesting for CS but will still be subject of research and development because of their various uncertainties. Such topics could be also difficult to understand by general civil society as they need a certain level of technical and natural science knowledge. The Task 7 team addressed the CS understanding of concrete, short term engagement with different actors, in particular with CS members, (including impacted citizens, and also NGOs), and also looked at the long-term engagement, as a basic agreed condition to be fulfilled for any RWM activity. The deliverable proposes a mechanism to involve the public based on a non-exhaustive overview of relevant public participation examples.

In this deliverable D9.18 "Implementation of ROUTES action plan third phase", the results of the investigation are provided, including comments, suggestions, questions, other observations collected in interaction with EURAD participants and the CS larger group. Additionally, the ongoing interactions and progress of activities during year 4 in relation to tasks 2-6 and the new task 8 are reported. The report also includes the Task 7 plan for activities in the last year of ROUTES.

1.2 Structure of the report

In this report, as described in Deliverable 9.15 and detailed in the section 1.1. of this very report, using cases, the involvement of the general public in technical issues is studied in order to understand better the power dynamics and the role of responsible WMOs for transparency and public participation.
After an introduction (section 1) and an overview of the legal framework associated to the societal requirements following its spirit (section 2), a questionnaire (section 3) provides qualitative results from EURAD participants belonging to the three colleges and including representatives of the Civil Society. Then (section 4) involvement of civil society in technical issues is reported within 8 national cases echoing the information from the section 3 and preparing the next section (section 5) where findings and lessons learned are given. Finally, the report includes an important chapter (section 6) to envision how the lessons learned can be implemented in the short- and long-term with a civil society sustainably engaged in RWM activities. To conclude a chapter is evaluating the interactions of the task 7 with the other tasks (section 7) and a last one provides a conclusion (section 8).

Deliverable 9.18 has the following structure:

- In section 1, the ICS action plan development is presented with main issues for the investigation of Task 7 in EURAD period and the focus of the present deliverable.
- In section 2, discussion on transparency and public participation in relation to RWM implementation is provided with an overview of legal frameworks, the position of regulators and an analysis of societal requirements.
- Section 3 provides information on the results from a questionnaire applied for the purpose of this study among the participants of ROUTES and the CS larger group. The questionnaire used for the survey, described in Section 3, is given in the Appendix, including the raw data received by participants in the survey from different countries.
- Section 4 delivers the case studies for eight countries with a description of public participation in recent RWM activities, including also technical issues where the public was participating and what lessons were learnt.
- Section 5 gives the findings on some issues like how to create a pluralistic information environment, how to assure CS participation in technical issues, what role do power relationships play and what is the position of responsible WMOs in transparency and public participation.
- Section 6 discusses options for short- and long-term CS engagement in RWM activities.
- In Section 7, the outcomes from other ROUTES tasks are evaluated, with a potential for examination by the Task 7 team in year 5.
- Section 8 provides concluding remarks and plans for further work.

2. Transparency & Public Participation in relation to RWM implementation

2.1 Overview from legal frameworks

Transparency and Public Participation (T&PP) in RWM has a basis in various legal documents such as international conventions, EU directives and other EU legislation, which subsequently are transposed into national legislation. In addition, other relevant documents are adopted by international organisations such as the IAEA and the OECD-NEA, which additional discussions of this concept, also related to RWM. Furthermore, CS organisations play a role in T&PP and developed related documents (the BEPPER report is an example of this, cf. below). The legal frame at different levels was already discussed in Deliverable 9.17 [3]. In the following, a brief summary with some additional explanations relevant to the topic in question is given with emphasis on short and long-term engagement with different actors, in particular CS members, (including affected citizens, and also NGOs) as a basic condition to be fulfilled for any RWM activity.

2.1.1 T&PP based on the Aarhus Convention

All EU member states and the EU itself are parties to the Aarhus Convention[2] that protects every person's right to live in an environment suitable for his or her health and well-being. The convention constitutes an environmental agreement as well as an agreement on government accountability, transparency and responsiveness. It is based on three pillars, granting the public rights and imposing on the parties to the Aarhus Convention obligations in regard to access to environmental information, public participation in decision-making affecting public health and/or the environment, and access to justice in environmental matters. Moreover, the Aarhus Convention is also forging a new process for public participation in the negotiation and implementation of international agreements.

The countries that are parties to the Aarhus Convention are obliged to implement it in their national legislation. However, in reality, the level of implementation varies considerably and there are a range of constraints and challenges to be addressed. The parties' implementation of the convention is under continual review. Central to this is the Aarhus Convention Compliance Committee (ACCC) that examines communications of alleged non-compliance by the parties, including those brought by individuals, NGOs, and other actors in the convention.

Some important parts of the Aarhus Convention:

- Art. 1 explains the **objective of Convention**, which is to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being. In order to do so, each party to the convention must guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of the convention.
- Art. 2. provides **legal definitions** of the relevant concepts, including a definition of the public concerned which in this context means the public affected or likely to be affected by, or having an interest in, the environmental decision-making. This includes NGOs that promote environmental protection and meet the necessary requirements under national law.
- Art. 3 defines several **general principles**, including an obligation for authorities to assist the public in enabling their rights under the Convention, an obligation to Parties to promote the principles of the Convention in international settings and agreements, and a prohibition of any form of harassment of citizens or NGOs executing their rights under the Convention.

[2] Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, 1998, https://unece.org/environment-policy/public-participation/aarhus-convention/text

- Art. 4 deals with **access to environmental information**, which should be made available to the public as soon as possible, unless there are valid grounds why it may be refused. However, these exemptions should be interpreted in a restrictive way.
- Art. 6 provides principles on **public participation in decisions on specific activities** and describes the envisaged procedure, the objects of the decision-making, timeframes, responsible authoritiy/-ies and other important issues. Annex I, which is not exhaustive, lists the related installations, among them also RWM facilities for the processing of irradiated nuclear fuel or HLW, for the final disposal of irradiated nuclear fuel, for the final disposal of RW and for the storage (planned for more than 10 years) of irradiated nuclear fuels or RW at a different site than the production site. Regarding public participation, it is noteworthy that the convention stresses the importance of early participation when all options are open, and the obligation for the authorities to take due account of the outcome of the public participation.
- Art. 7 deals with **public participation concerning plans, programmes and policies** related to the environment, following the general provisions in Art. 6.
- Art. 8 provides a similar requirement of **public participation during the preparation of executive regulations** and/or generally applicable **legally binding normative instruments**, also following the general provisions in Art.6.
- Art. 9 provides **access to justice** by among others ensuring that each party to the convention within the framework of its national legislation sees to it that any person who considers that his or her request for information has been ignored, wrongfully refused, inadequately answered, or otherwise not dealt with, has access to a review procedure before a court of law or another independent and impartial body established by law, or each affected party, including NGOs, whose right on public participation has been ignored, wrongfully refused or inadequately implemented, has access to court. It also obliges to create effective access to justice for affected citizens and NGOs in environmental matters in general.

In 2015, the Recommendations on Public Participation in Decision-Making developed under the Aarhus Convention were adopted with the aim to assist policymakers, legislators and public authorities in their daily work of engaging the public in decision–making processes[3]. The recommendations provide helpful guidance for engaging stakeholders in order to improve decision-making, planning and implementation of policies and programmes at all levels. They can also be followed in case of implementation of the ESPOO Convention[4].

2.1.2 Related EU directives

In 2003, the EU adopted two directives concerning the first and second pillar - mainly described in Articles 6 and 7 - of the Aarhus Convention. They were to be implemented in the member states' national law by 2005:

- Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information (the so-called EIA Directive [5]).
- Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC (the so-called SEA Directive [6]).

[3] Maastricht Recommendations on Promoting Effective Public Participation in Decision-making in Environmental Matters, 2015, https://unece.org/DAM/env/pp/Publications/2015/1514364_E_web.pdf

[4] Convention On Environmental Impact Assessment in a Transboundary Context, 1991, https://unece.org/DAM/env/eia/documents/legaltexts/Espoo_Convention_authentic_ENG.pdf

The obligations of EU institutions under the Aarhus Convention were legislated under Regulation 1367/2006/EC of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies (the so-called Aarhus Regulation [7].

In the Council Directive 2011/70/Euratom of 19 July 2011 establishing a community framework for the responsible and safe management of spent fuel and radioactive waste [8.] transparency is addressed in several points. First, the transparency is mentioned in recital 31 in the preamble of the Radioactive Waste Directive stating: *"Transparency should be provided by ensuring effective public information and opportunities for all stakeholders, including local authorities and the public, to participate in the decision-making processes in accordance with national and international obligations".* According to the directive, EU member states are required to include a description of their transparency governance in RWM in their national programmes and reports as required by the directive. The directive's article 10 has the following provisions on transparency:

"1. Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority informs the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, recognised in national legislation or international obligations.

2. Member States shall ensure that the public be given the necessary opportunities to participate effectively in the decision-making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations."

At the EU level, the ENSREG (European Nuclear Safety Regulators Group[5]) work on openness and transparency should also be mentioned. Its Guidance on Openness and Transparency for European Nuclear Safety Regulators[6] provides general guidance to regulators for ensuring openness and transparency in their communication activities. It is generic in nature, intended for the regulatory bodies (and not implementers of the activities) and may need to be adapted to the organisational structures of member states, taking into account the financial and personnel feasibilities of each regulator, and taking into account their obligations under international law, including the Aarhus Convention.

2.1.3 International organisations and T&PP

As a global organisation dealing with nuclear and radiation safety, the IAEA has developed many documents devoted to T&PP, responding to the needs of its members. These cover safety standards (fundamental, requirements and guides)[7] as well as other subjects[8]. The documents stress the

[5] https://www.ensreg.eu .

[6] Guidance on Openness and Transparency for European Nuclear Safety Regulators, 2019, https://www.ensreg.eu/sites/default/files/attachments/guidance_for_regulators_on_openness_and_transparency_0.pdf .

[7] Fundamental Safety Principles, IAEA Safety Standards Series No. SF-1, IAEA, Vienna (2006), IAEA, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), IAEA, Vienna (2016), Leadership and Management for Safety, IAEA Safety Standards Series No. GSR Part 2, IAEA, Vienna (2016), Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014), Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4 (Rev. 1), IAEA, Vienna (2016).

[8] Communication and Stakeholder Involvement in Radioactive Waste Disposal, IAEA Nuclear Energy Series No. NW-T-1.16, IAEA, 2022, Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities, Nuclear Energy Series No. NG-T-1.4, IAEA, Vienna, 2011.

importance of information provisions and consultation process with different parties (including the public)[9].

The IAEA General Safety Guide on Communication and Consultation with Interested Parties by the Regulatory Body[10] provides recommendations and guidance on how to comply with the safety requirements, indicating an international consensus that it is necessary to take the recommended measures (or equivalent alternative measures). Communication and consultation must be seen as strategic instruments that support the regulatory body in performing its functions by enabling it to make informed decisions and develop safety awareness among the interested parties, and thereby promoting safety culture. This will also lead to more effective communication by the regulatory body in a nuclear or radiological emergency.

T&PP is also a topic that is in investigated by the OECD Nuclear Energy Agency (NEA). In its Forum on Stakeholder Confidence (FSC), created in 2000, it promotes sharing of international experience in addressing the societal dimension of RWM. The FSC fosters learning about stakeholder dialogue and ways to develop shared confidence in RWM solutions. It has documented a wealth of experience throughout its topical sessions and studies, and particularly through national workshops and community visits. In the interactive workshops, FSC members and a broad representation of national and local stakeholders have contributed with their knowledge about how societal dialogues on RWM could be built and further developed, and deepened understanding of the issues that must be addressed. Summaries and proceedings are available online at www.oecd-nea.org/rwm/fsc/.

Most of the FSC work is devoted to an overview of different national approaches on T&PP and identification of the lessons learned. The synthesis report[11] offers a review of the major work developed in the past fifteen years by the FSC, presenting the key drivers of public trust in RWM based on an in-depth document analysis of FSC reports. It suggests that, in addition to technical requirements, societal concerns about risk and safety must be addressed in order for public trust and confidence to develop. For non-experts, feelings of control and familiarity are important in establishing a feeling of safety. The FSC points to a number of confidence factors that need to be promoted in RWM, such as openness, transparency, technical competence and procedural equity. When these factors are present in everyday practice, public trust can be built. In the report, these factors have been used to build a framework with key drivers for public trust in RWM. Three drivers are mentioned in this report:

- In RWM roles and structures, there should be **a firm national commitment combined with a clear and widely supported policy framework**. Trustworthy RWM institutions have to be the committed driver of the policy processes, allowing for enhanced citizen participation and empowerment.
- In the decision-making process, there should be **a fair balance between values that are sometimes competing and conflictual,** such as participation, transparency, flexibility and

[9] E.g., in GSR, part 1, requirement no. 36, communication and consultation with interested parties are prescribed. The regulatory body must promote the establishment of appropriate means of informing and consulting interested parties and the public about the possible radiation risks associated with facilities and activities, and about the processes and decisions of the regulatory body. Regarding Communication the regulatory body shall establish, either directly or through authorised parties, provision for effective mechanisms of communication, and it shall hold meetings to inform interested parties and the public and for informing the decision-making process.

[10] Communication and Consultation with Interested Parties by the Regulatory Body, IAEA Safety Standards Series No. GSG-6, IAEA, Vienna (2017).

[11] Joint Research Centre, Institute for Energy and Transport, Estorff, U., Ferraro, G., Brans, M., The OECD Nuclear Energy Agency's forum on stakeholder confidence, radioactive waste management and public participation: a synthesis of its learnings and guiding principles, Publications Office, 2015, https://data.europa.eu/doi/10.2790/176502 .

accountability. The process needs to facilitate (social) learning and allow for added value by the communities concerned.

- Moreover, the individuals and institutions involved in RWM must **demonstrate competence, transparency, and willingness to listen to and involve others**. Finally, local waste management facilities need to demonstrate robustness, flexibility, transparency and added value. Additionally, facilities should allow for **community oversight and stewardship.**

2.1.4 CS on T&PP

In 2014-2015, NTW worked on a project to investigate and document how effective transparency (i.e., public information and participation) in RWM could manifest itself. The result was the BEPPER report[12].

Besides the three pillars of transparency presented in the Aarhus Convention on access to public information, access to public participation, and access to justice, the BEPPER report sets out a fourth pillar with effective access to resources. It also goes further in establishing a multi-level system for evaluation of effective transparency in RWM with regards to the 4 pillars in question.

The report also discusses the key components of effective transparency needed in RWM: principles (e.g., building societal confidence, adopting a multi-generational perspective, considering public perceptions of safety and risk, taking into account energy policy), good practices (e.g., enhancing dialogue in pluralistic spaces, demystification and democratisation, adoption of new decision-making processes, establishing horizontal as well as vertical information exchanges, implementing and facilitating access to justice), plus components on innovation in resources and transparency assessment (e.g., make sure that CS has the resources to participate, create the conditions for CS access to expertise, engage experienced and widely trusted facilitators, develop libraries, compendia, websites of good practices, etc, and elaborate standards for transparency assessment).

2.1.5 Comments on the legal framework in practice and its challenges

As it is presented above, many requirements on T&PP are adopted at different levels, of which some need to be transposed into national legislation and others serving more like guidance for national RWM. All this provides a possibility for broader understanding of T&PP and to prepare a basis for good implementation of T&PP in RWM. International organisations, like the NEA, already defines T&PP much wider and NEA calls for an *"enhanced citizen participation and empowerment process which needs to facilitate (social) learning and allow for added value for the communities concerned, facilities should allow for community oversight and stewardship*[13]".

However, even with many good bases, challenges regarding T&PP are still experienced.

- **Transparency in general:**
  - International organisations like the IAEA and NEA do not have their own transparent T&PP policies in spite of many of their member-states being subjects to, among others, the Aarhus Convention, where they have to promote the use of its provisions in international frameworks and cooperation.
- **Access to information**:

[12] Broad framework for Effective Public Participation in Environmental decision-making in Radioactive waste management, 2015, https://www.nuclear-transparency-watch.eu/a-la-une/new-publication-bepper-report.html .

[13] Joint Research Centre, Institute for Energy and Transport, Estorff, U., Ferraro, G., Brans, M., The OECD Nuclear Energy Agency's forum on stakeholder confidence, radioactive waste management and public participation: a synthesis of its learnings and guiding principles, Publications Office, 2015, https://data.europa.eu/doi/10.2790/176502 .

- There is still little information publicly available on technical issues, or such data are very restricted in some countries,
- Sometimes too much unselected information is given with the result, if not implicit intention, of overburdening the stakeholders,
- A too high degree of confidentiality of commercial and industrial information is implemented – especially under the Aarhus Convention, where exemptions to access have to be given in a restrictive way –, where such confidentiality is ensured by law in order to protect legitimate economic interests.
- The status of certain nuclear-related institutions, like WMOs and state-owned utilities: these are obliged to provide access to information and public participation as defined by the Aarhus Convention, because they are providing public services under the oversight of a state authority.

- **PP is still limited to individual decisions of authorities**:
  - PP takes place only in cases when an EIA process is required in order to issue a permit decided by a responsible authority and therefore mainly limited to a once in a lifetime action for any RWM facility, like, e.g., a siting licence or siting together with a construction licence.
  - Other legal authorisations (e.g., operation licences, 10-year periodic safety reviews, licences for individual safety related activities, also licences for closure) do not always provide options for PP, even though they are required to do so[14].
  - Legal requirements and international guidelines are not the only obligations to define T&PP. E.g., Art. 5(6) in the Aarhus Convention: operators are encouraged to inform the public regularly; art. 6(5): encouragement of prospective applicants to enter into discussion with and provide information to the public concerned before applying for a permit.

2.2 National legal situations

In the following, an overview of national legal situations is provided with regards to the transparency and public participation and with focus on the national development in RWM. The overviews were provided by CS experts and larger CS group members', indicated in the subheading.

2.2.1 Belgium[15]

Belgium is a federal state, where most of governance is decentralised to the regional level[16]. Management of spent fuel and radioactive waste, however, is a Federal State responsibility, at least the part related to nuclear energy. That means that the legal and regulatory framework is organised on a federal level by the Council of Ministers, federal parliament, and royal decrees.

The Nuclear Safety Authority was established under *the Law of 15 April 1994 on the protection of the population and the environment against the dangers arising from ionising radiation and on the Federal Agency for Nuclear Control* (short: FANC law). Details are worked out in Royal Decrees, like the one from *20 July 2001 relating to the general regulations for the protection of the population, workers and the environment against the dangers arising from ionising radiation* (short: general regulations for radiation protection), which defines the licensing system, including that of radioactive waste management, basic standards, authorisation of discharge, etc., which was updated in 2020 to bring it in line with the Directive 2013/59/Euratom.

On transport, there is the *Royal Decree of 24 March 2009 regulating the import, transit and export of radioactive substances*.

[14] See for instance the general findings of the Aarhus Convention Compliance Committee for the 7th Meeting of Parties of the Convention in 2021, par. 63-64 on Periodic Safety Reviews

[15] Authors: Céline Parotte, Jan Haverkamp

[16] Most of this paragraph is retrieved from National Programme Committee, *National Programme for the Management of Spent Fuel and Radioactive Waste*, Brussels (2015): https://economie.fgov.be/sites/default/files/Files/Energy/National-programme-courtesy-translation.pdf .

The Euratom Nuclear Safety Directive 2009/71/Euratom was implemented with the *Royal Decree of 30 November 2011 on the safety requirements for nuclear facilities.* Radioactive waste management is furthermore addressed by *the Law of 2 August 2002 containing assent to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, signed in Vienna on 5 September 1997* (short: radioactive waste law).

The **operation of the waste management organisation (WMO) ONDRAF/NIRAS** was regulated in *the Royal Decree of 30 March 1981 concerning the establishment of the tasks and working modalities of the public institutions for the management of radioactive waste and fissile material*[17] which implements art. 179 of the Law of 8 August 1980 on Budgetary Proposals 1979-1980 that establishes ONDRAF/NIRAS. The Law, art. 179 also defines the regulation of **radioactive waste management costs**, with several additions in *Royal Decrees of 16 October 1991 on the regulations for the control and method of subsidising the Belgian Nuclear Research Centre and the National Radioelements Institute respectively and amending the statutes of this centre and institute*[18]*.*

Decommissioning and management of fissile materials irradiated in power plants is regulated in the *Law of 29 April 1999 on the organisation of the electricity market* and *Law of 11 April 2003 on the provisions created for the dismantling of nuclear power plants and the management of fissile materials irradiated in these power plants.*

For further details and a complete overview of legislation, we refer to chapter 4.2 of the National Programme for the Management of Spent Fuel and Radioactive Waste[19].

Costs of radioactive waste management by NIRAS are carried by the producers of radioactive waste or the Belgian State as owner of legacy wastes. For that, NIRAS has established funds for the long and for the medium long term. The funds from nuclear power stations for decommissioning and spent fuel management are managed by the special vehicle organisation Synatom[20].

The Law of 31 January 2003 concerning the gradual phase-out of nuclear energy for industrial electricity production[21] basically put a cap on the production of spent fuel and set deadlines for the closure of the nuclear power fleet of Belgium by 2025. This law was amended in 2013 and 2015 to allow 10-year lifetime extensions for the reactors Tihange 1, Doel 1 and Doel 2.

On 29 June 2023, the Belgian government agreed on 10-year lifetime extensions of the units Doel 4 and Tihange 3[22]. This agreement also caps the price for future nuclear waste management for the French operator of the Belgian nuclear fleet, Engie / Electrabel, at 15 billion euros, as well as gives the Belgian State a 50% share in the power stations, further reducing the risks for the operator, including financial legacy risks. Financial risks for waste decommissioning and waste management above the cap will be carried by the Belgian state[23].

Transparency in nuclear waste management[24] is based on Article 32 of the Constitution, that gives everyone the right to consult any administrative document and to obtain a copy of it, bar explicit exceptions.

---

17 https://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=1981033001&table_name=loi (French version).

18 WMO are responsible for the safety of their installation.

19 https://economie.fgov.be/sites/default/files/Files/Energy/National-programme-courtesy-translation.pdf .

20 For details, see: https://www.ondraf.be/financement (French version) .

21 https://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=2003013138&table_name=loi (French version).

22 https://www.reuters.com/business/energy/belgium-engie-agree-nuclear-reactor-extensions-2023-06-29/ .

23 https://www.greenpeace.org/belgium/nl/persbericht/53049/belastingbetaler-draait-op-voor-het-kernafval-bij-dit-akkoord-verliest-iedereen-behalve-engie/ (Dutch).

24 This part is based on paragraph 4.2.5 of the 2015 National Programme, https://economie.fgov.be/sites/default/files/Files/Energy/National-programme-courtesy-translation.pdf .

The Law of 9 June 1999 containing assent to the Convention on Environmental Impact Assessment in a Transboundary Context implements the **Espoo Convention** in Belgian law, establishing the obligation for (transboundary) environmental impact assessments including public participation.

The Law of 17 December 2002 containing assent to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters implements the rights and obligations under the **Aarhus Convention**.

The Law of 13 February 2006 on the assessment of the effects of certain plans and programmes on the environment and on public participation in respect of the drawing up of certain plans and programmes relating to the environment (**SEA Law** transposes Directive 2001/42/EC and Directive 2003/35/EC which amends Council Directives 85/337/EEC and 96/61/EC, and with that also implements the **Kiev Protocol** under the Espoo Convention. *The Law of 5 August 2006 on public access to environmental information* implements Directive 2003/4/EC, and with these remaining obligations under the Aarhus Convention.

The "medium term fund" from NIRAS is to cover also costs incurred in creating and maintaining the required societal support to ensure the integration of a disposal project into a local community, particularly costs related to the activities and projects of the local community which, through a participative process, ensures the continuity of societal support for the repository. Part of legal requirement for NIRAS is to establish and implement an information and communication programme covering all its activities.

The above-mentioned Law of 15 April 1994 (FANC Law) also requires FANC to distribute balanced and objective information about nuclear safety and radiation protection.

2.2.2 France[25]

There were 3 important steps in the establishment of the legal framework for RWM and T&PP in France that can be summarized in 3 steps which were described in the deliverable D9.17 [3]:

- Step 1
  - A law voted in 1991on the Long-Lived Radioactive Waste Management Law is the first to be debated by the French National Assembly regarding the nuclear programme[26].
  - A public enquiry in 1997 is the first public enquiry meant for the request of authorisation to install and operate a laboratory.
  - A debate in 2005, first national debate, took place preceding the discussion in the Parliament (2006 date given by the 1991 law).
  - Charter of Environment: T&PP March 2005.

- Step 2
  - A law voted in 2006 for the implementation of the National Radioactive Materials and Waste Management (PNGMDR) is confirmed and geological disposal is established as the reference solution [27].
  - A public enquiry in 2007 aimed to extend the authorisation to operate the Bure laboratory until 2030.
  - A debate in 2013, local and solely on the geological disposal project (called the "Cigéo" project).
- Step 3
  - A law voted in 2016, its main purpose is to define reversibility, to restore a timetable from 2006 that had become obsolete, and to introduce a pilot industrial phase before any industrial exploitation of the geological disposal[28].

[25] Author: Yves Lheureux

[26] https://www.legifrance.gouv.fr/loda/id/JORFTEXT000000356548

[27] https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000000240700

[28] https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000032932790/#:~:text=stockage%20r%C3%A9versible%20...-,LOI%20n%C2%B0%202016%2D1015%20du%2025%20juillet%202016%20pr%C3%A9cisant,activit%C3%A9%20%C3%A0%20vie%20longue%20(1)

- A public enquiry in 2019, the third national public debate on the PNGMDR. Held in 2019 it resulted in proposals from the Ministry of Ecological Transition in terms of governance (e.g., creation of a pluralistic instance for the PNGMDR).
- A debate in 2021, this public enquiry was completed dedicated to a request from ANDRA of a declaration of public utility (DUP) of the geological disposal project.

In fact, article L. 542-1-2[29] of the Environmental Code provides for the adoption every five years[30] of a National Radioactive Materials and Waste Management Plan (PNGMDR). The PNGMDR assesses the existing management methods for radioactive materials and waste, lists the foreseeable needs for storage facilities and specifies the capacities required for these facilities and the storage periods.

At international level a "Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management" has been established within the framework of the IAEA and was approved by France on 22 February 2000 (came into effect in 2001). This convention commits the 69 contracting states to establish a system for the safe and sustainable management of radioactive waste and spent fuel. Peer reviews are organised every three years on the basis of a compliance report produced by each Member State[31].

At European level, this Plan refers to the Council Directive 2011/70/Euratom establishing a community framework for the responsible and safe management of spent fuel and waste.

At national level, RWM is defined by the Environment Code and Law no. 2006-739 of 28 June 2006 on the sustainable management of radioactive of radioactive materials and waste. It deals with the definition of a policy for RWM, improving transparency and democratic control, as well as well as financing and economic support. It specifies that RWM must comply with the following fundamental principles[32]:

- protection of human health and the environment.
- prevention or limitation of the burdens to be borne by future generations.
- the "polluter pays" principle, which prevails in prevails in environmental law.

In France, public information and participation in the decisional process is defined in the Article 7 of the Charter of the Environment: "All persons have the right, under the conditions and limits defined by law, to have access to information relating to the environment held by public authorities and to participate in the elaboration of public decisions having an impact on the environment."

Other legislation can relate to RWM in France such as the legislation on energy policy[33] and in the law 2006-686 of 13 June 2006 on nuclear transparency and safety which is notably establishing an independent nuclear safety authority, providing the framework for local information commissions (CLI) and the High Committee for Transparency and Committee for Transparency and Information on Nuclear Safety (HCTISN) responsible for debate at national level. Finally, the French Public Health Code can also relate to RWM. In general, the legislative framework for the management of radioactive materials and waste is set out in various decrees and orders issued by the government.

[29] https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000032043711

[30] It should be noted that, the review period for the PNGMDR has been extended from three to five years under Article 16 of Law 2020-1525 of 7 December 2020 on the acceleration and simplification of public action. Reasons, advantages and flaws for this change can be found in this report: https://www.assemblee-nationale.fr/dyn/15/rapports/ots/l15b5144_rapport-information#_Toc256000006.

[31] https://www.asn.fr/tout-sur-l-asn/relations-internationales/les-conventions-internationales.

[32] file:///Users/ntw/Downloads/PNGMDR%202016-2018.pdf

[33] The law no. 2015-992 of 17 august 2015 on the energy transition for green growth considers different energy policy scenarios. French WMO's National Inventory includes some of these scenarios in its 2015 edition and assesses their impact on radioactive waste production.

As for radioactive waste that does not have a definitive management method, the PNGMDR determines the objectives to be achieved, it organises in this respect the implementation of research and studies on the management of radioactive materials and waste by setting deadlines for the implementation of new management methods, the creation of facilities or the modification of existing facilities following three lines (reducing waste, waste treatment and storage, deep disposal)[34].

The PNGMDR, which is drawn up by a dedicated multi-disciplinary working group, receives input from the WMO, the Regulator Authority, the TSO, the OPECST[35], the HCTISN, and from local public notably though ANCCLI.

The fourth edition[36] of the PNGMDR (2016-2018)[37] reported that exchanges were organised to promote transparency and consultation involving representatives from civil society and environmental NGOs to define the RWM policy such as ACRO (Association pour le contrôle de la radioactivité de l'Ouest), Robin des Bois, GSIEN (Groupement de scientifiques pour l'information sur on nuclear energy), WISE-Paris (World information service on energy), Greenpeace and France Nature Environnement (FNE).

In 2019, the fifth edition of the PNGMDR (2022-2026) was the subject of a wide-ranging public debate (23 meetings)[38]. Despite the very sensitive nature of the subject and its highly divisive nature, the meetings were usually held in a respectful atmosphere, conducive to argued and contradictory exchanges. The debate was dense and rich in information, not only on the issues relating to the technical questions of the plan (classification of radioactive substances as materials or waste, fate of very low-level waste from dismantling operations, storage capacities for spent fuel, management of final waste, etc.) but also on cross-cutting themes such as health and environmental impacts, transport safety and security, territorial impacts, etc.

Beyond the persistence of opposing and clear-cut opinions, notably on the use of nuclear energy and the Cigéo deep geological storage project, the participants placed ethics through the question of the legacy to future generations, governance, and citizen mobilisation at the heart of their concerns.

The rights to "live in a balanced environment that respects health" and to "participate in the elaboration of public decisions that have an impact on the environment" have found a very strong resonance as it appeared that there is a need to rethink the link between civil society and those institutional, economic, associative or expert actors who are involved in the management of radioactive waste and materials, and more broadly in the choices of French energy policy.

The main recommendations of the PNGMDR as well as the milestones and deadlines in terms of radioactive materials and waste management are included in the form of prescriptions in a decree and a ministerial order on which the ASN issues a formal opinion. In order to provide the public with full information, the studies drawn up under the PNGMDR have been made available online since the 2013-2015 edition.[39]

---

[34] file:///Users/ntw/Downloads/PNGMDR%202016-2018.pdf

[35] National Evaluation Commission of the Parliamentary Office for Scientific and Technological Options.

[36] First edition (2007-2009), second edition (2010-2012) and third edition (2013-2015): https://www.asn.fr/espace-professionnels/installations-nucleaires/le-plan-national-de-gestion-des-matieres-et-dechets-radioactifs.

[37] file:///Users/ntw/Downloads/PNGMDR%202016-2018.pdf

[38] In the area of transparency and democratic control, the Environment Code confirms the role of the Commission Nationale d'Évaluation (National Assessment Commission), which is responsible for assessing research into the management of radioactive materials and waste. It also provides for the regular organisation of debates by the HCTISN (High Committee for the transparency and information on nuclear security.

[39] The historical and legal aspects around RWM with respect to Safety understood as Common are elaborated further in this study: https://www.nuclear-transparency-watch.eu/wp-content/uploads/2024/03/Nuclear-safety-and-the-Common.pdf

2.2.3 Slovakia[40]

The core of the Slovak legislation related to the RWM consists of:

1. the Atomic Act (No. 541/2004 Coll as amended) focusing on "peaceful use of nuclear energy"; nuclear safety and security; transportation of radioactive material; emergency preparedness and planning; authorization processes for nuclear installations and activities[41].
2. the Radiation Protection Act (No. 87/2018 Coll as amended)[42][43].
3. the National Nuclear Fund Act (No. 308/2018 Coll as amended) focusing on ensuring funding of activities related to the national program for the management of SNF and RW; accumulation and administration of financial resources earmarked for the back-end stage of "the peaceful use of nuclear energy"[44].
4. the EIA Act (No. 24/2006 Coll as amended) focusing on environmental impact assessment of strategies, policies and projects before the start of the respective authorization or adoption process[45].

In terms of transparency and public participation in RWM, three additional general (i.e. not primarily focusing on the RWM) acts are relevant:

1. the Freedom of Information Act (No. 211/2000 Coll as amended) which focuses on the public right on access to information held by a liable entity. Among others, the act defines the right to access to environmental information which explicitly covers also information about RW.
2. the Administrative Code (No. 71/1967 Coll as amended) which regulates the course of administrative proceedings (decision-making processes), including the potential appeal procedures, and participation in such processes, unless a special law provides otherwise. The procedures related to EIA, RWM and nuclear installations follow the Administrative Code in general up to deviations required by the EIA Act or the Atomic Act (as *lex specialis*).
3. the Construction and Spatial planning Act (No. 50/1976 Coll as amended) which applies also to the construction of nuclear installations (in combination with the Atomic Act). New Construction and Spatial planning Acts[46] are to take effect from 1st April 2024.

Although there were some minor positive changes during previous years, Slovakia is, in general, far from a positive model in terms of T&PP in RWM. The new construction and spatial planning legislation (adopted in April 2022, in effect from 1st April 2024) and two amendments of the EIA Act (adopted in December 2022 and May 2023, respectively) have been heavily criticised by environmentalists[47]. One of the reasons was severe negative impacts on public participation and non-compliance with the Aarhus convention. The President vetoed both amendments of the EIA Act for similar reasons[48] (among others). Both presidential veto's were overridden by the parliament. These legislative changes and strong support for them across the political spectrum indicate that the Aarhus convention and its three pillars

[40] Author: Michal Daniska

[41] https://faolex.fao.org/docs/pdf/slo79782e.pdf

[42] https://www.uro.sk/en/files/ZZ_2018_87_20230415.pdf

[43] https://www.oecd-nea.org/upload/docs/application/pdf/2020-04/slovak_republic_2020_en.pdf

[44] https://www.njf.sk/wp-content/uploads/2020/10/308_2018_EN.pdf

[45] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC183193/

[46] Act No. 200/2022 and 201/2022 Coll. as amended.

[47] See e.g. statement of the Council of Slovak Environmentalists on the December 2022 amendment (available online at http://ochranari.sk/nesuhlasime-s-novelou-zakona-eia) and https://domov.sme.sk/c/23181578/organizacie-vyzyvaju-parlament-aby-odmietol-zakon-suvisiaci-so-stavebnou-reformou.html on the May 2023 amendment

[48] See e.g. the press release https://www.prezident.sk/article/prezidentka-vratila-do-parlamentu-dalsie-dva-zakony/ and the official justification of the vetos from January and May 2023 available at https://www.prezident.sk/upload-files/24043.docx and https://www.prezident.sk/upload-files/35579.docx, respectively

are not respected as a minimal framework in public participation and transparency and negative developments in public participation and transparency at least in the near future can be expected.

Public participation in various types of administrative and authorization processes (including RWM) is guaranteed by the Administrative code, unless the supervising authority proves that no rights or interests of the person can be affected in the procedure. The EIA Act states that a public participant of an EIA process holds automatically also the position of a participant in the subsequent administrative and authorization processes. Although, *de iure,* the public has the right to participate in most cases, de facto the effectiveness of the participation is limited. Effectiveness of public participation and access to information in RWM suffers from short procedural deadlines, lack of information provided online in electronic form (physical inspection of printed files is often required), lack of resources, no real opportunity of consultations with independent experts and so on. Due to these reasons, even if the public (including municipalities) participates in a RWM related EIA process, it usually does not actively participate in the subsequent authorization processes. As a result, the engagement of the general public happens in practice during the EIA process. However, public participation in the RWM related EIA processes is often formal, since the public mostly has to rely completely on information provided by the project proposer.

An example of the information asymmetry between the project proposer on one side and the public on the other side can be demonstrated in the project of the second RW incinerator in Jaslovské Bohunice. During the corresponding EIA process in 2018-2019, JAVYS, the state-owned WMO and the project proposer, claimed that the construction of a second RW incineration plant was needed in order to have sufficient capacity for the expected approx. 50% increase in production of the Slovak combustible RW. This justification had a strong effect on the position of the affected municipalities and the public in the EIA process. However, the current data show that the incineration of Slovak RW decreased more than twofold (from approx. 80-85 t/y to below 40 t/y) while the volume of the incinerated foreign RW increased from approx. 45-55 t/y (2015-2019) to 231.68 t in 2022[49].

There is minimal or no effort from the main actors to encourage the public to participate in a more active way. For example, during drafting the update of the National programme for RW and SNF management in 2021-2022 input from the public (citizens, municipalities, NGOs) was not actively sought, only actors from nuclear industry, government and authorization bodies were originally invited. Only after an official request, one civil association was granted an invitation to participate.

The EIA and construction legislation changes adopted in December 2022 and May 2023 have been criticised for the following reasons (among others)[50]:

- These changes were adopted by the parliament without any public participation within a few days or even hours after proposals were presented (non-compliance with the article 8 of the Aarhus convention).
- Partial exclusion of the public from participation in the final building approval procedure.
- In many cases (not all) abolishment of the right to appeal in the EIA process (non-compliance with the articles 6 and 9 of the Aarhus convention).
- Removal of the expert judgement as an obligatory and integral part of the EIA process.
- The public, municipalities and affected authorities will no longer have the right to comment on the EIA scoping.

[49] See the EURAD deliverable 9.16 for further details and references. Monthly reports on RW incineration in Jaslovské Bohunice since May 2022 are available at https://www.javys.sk/sk/informacny-servis/informacie-pre-verejnost/prehlad-spracovanych-rao-spalovanim

[50] See e.g. the comments of the Ministry of environment on the December 2022 amendment (available at https://www.slov-lex.sk/legislativne-procesy/-/SK/dokumenty/LP-2022-456 in the submission report), the objections of the Council of Slovak Environmentalists (available at http://ochranari.sk/nesuhlasime-s-novelou-zakona-eia), the official justification of the presidential vetos (see links above) and analysis of the May 2023 amendment by VIA IURIS (available upon request)

- Comments or statements sent after the (short) deadlines will no longer be accepted, irrespective of its validity. The severity of this change will be higher especially in case of complex projects, e.g., in the nuclear industry.

Another example of a legislative change with a negative impact on public participation is the 2021 amendment of the Atomic Act[51], which led to indefinite extension of validity of the 2016 Environmental Impact Statement (EIS) for the new NPP in Jaslovské Bohunice even though it is not going to be constructed in the near future (10, 15 or maybe 20 years). Without this change the EIS would have expired in May 2023. In this way, the future population has been deprived of the opportunity to participate effectively in the decision-making process on the basis of the most up-to-date knowledge, at a time when the construction of the nuclear power plant will really become relevant, and after important changes have taken place in the project (e.g. choice of design and constructor).

Transparency in RWM suffered significantly from the fact that JAVYS, a state-owned RWM monopolist in Slovakia, claimed not to be a liable entity according to the Freedom of Information Act (FOIA) and refused to provide information requested by the public on the basis of FOIA. The amendment of the FOIA in 2022[52] made JAVYS a liable entity, which, however, has not been tested in practice yet. Furthermore, since May 2022 JAVYS has been publishing monthly data about RW incineration on its website[53], which was requested by the public in the EIA process for the capacity increase of the RW treatment centre in Jaslovské Bohunice and subsequently transposed as a condition into the corresponding EIS[54].

Another improvement is that after the amendment from September 2021[55] the Atomic Act no longer allows for classification of documents as confidential due to banking secrecy, postal secrecy, or telecommunications secrecy. This legislative change is a direct result of Aarhus Convention Compliance Committee decision VI/8i.

Active public participation and public pressure led to the prohibition of concluding new contracts for foreign RW incineration in Slovakia by law since 2022[56].

2.2.4 Slovenia[57]

This summary report on transparency is based on the third national report[58] on implementation of the EU Radioactive Waste Directive and a response from the regulatory authority on related questions[59]. The “transparency principle” is prescribed in Slovenian atomic act ZVISJV-1[60] where it is stated *"Data on radioactivity in the environment, on the exposure of individuals from the population and on the procedures and activities of state bodies, providers of mandatory state economic public services and of*

[51] Act no. 363/2021 Coll. amending the Atomic Act
[52] Act no. 428/2022 Coll. amending the Freedom of Information Act
[53] https://www.javys.sk/sk/informacny-servis/informacie-pre-verejnost/prehlad-spracovanych-rao-spalovanim
[54] condition 14.b. of the EIS no. 417/2021-1.7/zg (available online at https://www.enviroportal.sk/eia/dokument/323308)
[55] Act no. 363/2021 Coll. amending the Atomic Act
[56] Act. no 388/2021 Coll.
[57] Author: Nadja Zeleznik
[58] Tretje slovensko poročilo o izvajanju Direktive Sveta 2011/70/Euratom o varnosti ravnanja z izrabljenim gorivom in varnosti ravnanja z radioaktivnimi odpadki, URSJV, 2021, https://podatki.gov.si/dataset/porocila-evropski-komisiji-po-direktivi-o-varnem-ravnanju-z-radioaktivnimi-odpadki .
[59] Questions to regulatory authority SNSA: Which information about RWM are available for public? How?,In particular, which documents are available for public in case of establishment of new RWM facility (e.g. repository)? Can you mention some? Are SNSA decisions about RWM activities/facilities (like permits for particular RWM facility) publicly available? Please explain. How is public participation in decision making process organised for RWM facilities? What is the role of SNSA in this process? How is SNSA involved in the process of issuing of (integral) permits for RWM activities and facilities? Answers from SNSA, June 2023.
[60] http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7385 .

holders of authorizations relating to radiation protection and nuclear safety are public." Further, it is also specified that "*Data on eligibility, implementation and types of radiation activities, use of radiation sources, radiation protection measures, data related to the nuclear and radiation safety of nuclear and radiation facilities, data on the handling of spent fuel and radioactive waste, and data on the results of radioactivity monitoring are public and must be accessible to practitioners of radiation activities, workers, patients or other persons who are irradiated for medical purposes, and the general public."* The access to this information is governed by the Public Information Access Act[61] and regulates the procedure that enables anyone to freely access and reuse public information held by state authorities, local community authorities, public agencies, public funds and other entities under public law.

The Slovenian Nuclear Safety Administration (SNSA – URSJV) must, according to ZVISJV-1, lead the preparation of an annual report on protection against ionising radiation and nuclear safety including the management of radioactive waste and spent fuel from all sources in detail. This should be accepted by the government, sent to the National Assembly for information and then published in electronic form on the URSJV website with access for everybody. URSJV uses various other methods to inform the general public and workers about the work in its field:

- Websites (with structured information) in Slovenian and English - information is regularly updated.
- Publication of "Sevalnih novic" in Slovenian and English (News from Nuclear Slovenia) - several times a year.
- Press conferences.
- Legislative initiatives, when draft legislation is published on the government's website for the purpose of public discussion.
- Informing neighbouring countries through bilateral and quadrilateral meetings.
- Regular annual meetings with non-governmental organisations with a status of representing the public interest regarding environmental protection.

The legislation does not stipulate that URSJV must publish the permits issued regarding nuclear activities, so only some permits have been fully published so far (for example, the permit to change the limits of current discharges from the NEK). In addition, from 2000 on, URSJV updates the list of all approved changes to the NPP Krško at the web address: https://www.gov.si/zbirke/seznami/nek/.

There is no similar list about the changes in other facilities. The access to the permits is then possible according to the Public Information Access Act. At the beginning of 2013, the URSJV also introduced the practice of publishing all important documents on special issues in which it expects increased public interest: http://www.ursjv.gov.si/si/info/posamezne_zadeve/.

ZVISJV-1 contains provisions on the information that are not public. However, information about radiation in the environment is also considered to be environmental information and is accessible under the provisions of the Environmental Protection Act[62] which implements the requirements of the Aarhus Convention. The ARAO and Krško NPP provide information about the radioactive waste amounts and management on their website. Regular press releases about radiation and nuclear safety and radioactive waste and spent fuel management are given by the URSJV, the ARAO and Krško NPP.

Public participation in decision-making on facilities for the RWM is determined by the Environmental Protection Act and stipulates public participation in the comprehensive Environmental Impact Assessment procedure and in the Environmental Impact Assessment procedure. If, in the case of the intended intervention, it turns out that it will have cross-border impacts, it is also necessary to involve the public of that member state. Environmental consent is issued by the competent ministry on the basis of a report on environmental impacts, which must be publicly disclosed. The environmental impact report

[61] http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO3336 .
[62] http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1545 .

includes radiation and nuclear safety issues. Non-governmental organisations that represent the interests of the public regarding environmental protection can actively participate in the administrative process of issuing an environmental consent for nuclear facilities, including facilities for RWM. Project documentation for the facility is available to the public on the website of the responsible ministry and in the local community where the facility is to be built. The time and place of a public hearing is announced in the media. The interested public can participate with comments and proposals which have to be taken into due account in the final document. In case there is no environmental impact procedure, there is no public participation foreseen.

2.2.5 Sweden[63]

The Swedish governance system for RWM is managed through four legislations. The Nuclear Activities Act from 1983 that is currently proposed to be modernised is a special legislation for safe construction and operation of nuclear facilities, including those involved in RWM[64]. The Environmental Code from 1998 regulates licensing and operations of all activities that can cause harm to humans and the environment, i.e., all nuclear facilities including RWM facilities[65]. The Radiation Protection Act that was modernised in 2018 is more specifically oriented towards protecting humans and the environment from all threats from both ionising and non-ionising radiation, including from RWM[66]. The act also governs EP&R. The Financial Act that was modernised in 2006 regulates the financing of future costs for RWM and decommissioning of nuclear facilities by a system of fees paid into a nuclear waste fund[67]. Finally, the access to information of public documents is regulated in the Swedish constitution from the early 19th century with the latest version of legislation from 1949.

The complexity of the legislation has had considerable influence on RWM in Sweden and is influencing current decision-making to a large extent. Below some issues are problematised that may be of general interest also in other countries.

The conflict between general and specialised legislation.

The present Swedish nuclear legislation was originally developed in the early 1980s. The Nuclear Activities Act was implemented by the Swedish Nuclear Power Inspectorate (SKI) and the Radiation Protection Act by the Swedish Radiation Protection Institute (SSI). SKI was primarily staffed by nuclear engineers and had relatively close links to the nuclear industry, especially in the field of RWM. SSI had more staff with a background in the natural sciences and less links with the industry.

SKI naturally saw the Nuclear Activities Act as its own legislation as the primary one to be used when regulating nuclear facilities. In the consultation processes for the planned repository for spent nuclear fuel SSI had much more critical views on many issues but was, by SKI, mainly seen as an advisory (little) sister organisation on RWM issues.

---

63 Author: Johan Swahn

64 Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-19843-om-karnteknisk-verksamhet_sfs-1984-3 . An older translation into English is available here: https://www.stralsakerhetsmyndigheten.se/en/enactments/acts-and-ordinances . The Nuclear Activities Act is under review and a modernised version will likely be introduced to parliament in the upcoming years.

65 Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/miljobalk-1998808_sfs-1998-808 . More information can be found here: https://www.naturvardsverket.se/en/laws-and-regulations/the-swedish-environmental-code/ . An English translation can be found here: https://www.government.se/legal-documents/2000/08/ds-200061 .

66 Available at: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/stralskyddslag-2018396_sfs-2018-396/ .

67 Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2006647-om-finansiering-av-karntekniska_sfs-2006-647 .

When the Environmental Code came into force in 1998 the Nuclear Activities Act was changed so that all decisions taken by SKI on nuclear facilities should use the decision-making criteria from the code as a basis for decisions. In the licensing process for the repository for spent fuel repository it became clear in the Environmental Court review process that both SKI and the Swedish Radiation Safety Authority (SSM) – created in 2008 by joining SKI and SSI – had made no judicial changes in its decision-making processes to take into account the changes required by the criteria in the Environmental Code. The most important criteria ignored are the precautionary principle and that all vital knowledge for a licence has to be shown at the time of the licensing process and cannot be referred to in a process post-licensing. There is, according to the Environmental Code, only one decision for a licence before construction according to the Environmental Code. This is different from the Nuclear Activities Act that allows stepwise decision-making to allow construction, then pilot operation, and finally operation. This has allowed SSM to see that "preconditions exist for long-term safety" as an acceptable condition for an early licence decision according to the Environmental Code, while waiting for the development of more knowledge about uncertainties until a later state, i.e., about the long-term integrity of the copper canister[68].

The risk of conflict in nuclear decision-making was seen by the government and an attempt was made in 2011 to put the Nuclear Activities Act and the Radiation Protection Act into the Environmental Code[69]. The proposal was not seen as to be in the interest of the SSM or the nuclear industry and finally ended up in a drawer at the Ministry of Environment.

Issues with access to information and openness for public entities

Sweden has a very good access to public information legislation and implementation. It is possible for anyone to get access to all documents in the public sphere, i.e., the government, regional and local communities, and state agencies. There are only some possibilities to deny access, the most common being in relation to a foreign entity, security concerns and commercial secrecy. This means that almost everything that SSM works with should be possible to access upon request. Denied requests due to secrecy can be appealed in the court system.

In order to facilitate this, each public entity has a diary of records (*diarium*). Each issue under consideration has a separate numbered file in the diary and each document is filed as a post. It is possible to get a list of all new posts in the diary and thereby follow new occurrences happenings in the whole diary. Knowing the file number in the diary, a request can be made of a list of all posts in the file and an issue can be followed. If the file number is not known, it is usually easily found upon a request to the personnel managing the *diarium*.

In principle all documents (files, e-mails, SMS messages, notes after a phone call) that have an influence on an issue under consideration or could be of public interest should be filed as a post. In practice the employers at a public entity, such as SSM, have the possibility for practical reasons to consider much of the documentation as "working documents" and not file them until a decision is taken. In principle all communication with an outside party cannot be considered to be part of a work process. This means that SSM is quite restricted in what communication with the nuclear industry that can be left out of the diary of records.

[68] See, for example, the SSM opinion to the Environmental Court on June 29, 2016: https://www.mkg.se/uploads/SSM_Consultation_response_on_the_licence_application_160629.pdf .

[69] See: https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2011/03/sou-201118/ .

As it is up to the personnel at a public entity to decide what to register it is important that there is value base of integrity and openness. In the Swedish nuclear regulatory system openness has varied with time as shown in the following examples.

Example 1. In the consultation process for the repository for spent nuclear fuel started from around 2000, the nuclear waste company SKB had regular meetings with SKI and SSI in two processes called SSA (System and Safety Analysis) and PLU (site investigation). SKB would write the minutes from the meetings, and they would be sent for "approval" to the regulatory bodies. MKG, the Swedish NGO Office for Nuclear Waste Review, was started in 2005 when financing from the nuclear waste fund for the participation of environmental organisations in the consultation process became available. One way of understanding the ongoing process was to ask for the minutes of the SSA and PLU meetings. When asked, SKB being a private company with no reason to provide the minutes to outside parties, referred to SKI. It soon became clear that SKI did not register the meeting minutes, even though they were with an outside industry actor. This was clearly wrong and even more wrong was the refusal to provide the minutes to MKG. Luckily there was a third and public actor at the meetings, and as SSI meticulously entered the minutes in their diary of records it was no problem for MKG to get access to them. SKI soon changed its policy to come in compliance with the law.

Example 2. The licence application for a repository for spent nuclear fuel at the Forsmark NPP was submitted in March 2011 by the nuclear waste company SKB. During the licensing process for the repository, the regulator SSM was an important party in the licensing review carried out under the auspices of the Land- and Environmental Court according to the Environmental code. In parallel and in coordination with the court review SSM also carried out the review according to the Nuclear Activities Act. Until 2015, the review in both the court and the regulator dealt with the question of the completeness of the application.

During the spring of 2016 the parties taking part in the licensing process according to the Environment Code, including SSM, had to make their first statement to the court on whether they supported a licence or not. In an important statement, SSM said that its position was that there were conditions and prerequisites for the repository to have long-term safety. SSM stated that there were some outstanding issues regarding the long-term integrity of the copper canister, but when taken together with the other barriers in the KBS concept (bentonite clay buffer, granite host rock) safety should be able to be guaranteed[70].

At this time, it was not known that during the spring of 2016 there was a controversy within SSM about the knowledge available about how the copper canister would withstand degradation processes in the long term. The regulator's corrosion expert who had been deeply involved in this issue for a number of years was against SSM giving approval in the statement to the court. This was only discovered in the autumn of 2017 during the final main meeting of the Land and Environmental Court ending the court's proceedings before giving an opinion on the repository licence to the government.

What happened is that meeting minutes from the SSM review process were leaked to the media[71]. These minutes were by SSM seen as internal work documents that were not to be available to the public. The minutes showed both the controversy with the SSM corrosion expert and also that there was

[70] See footnote 60.

[71] "Strålsäkerhetsmyndigheten mörkade risker med slutförvaret", K. Lundell, *Sveriges Natur*, October 23, 2017, https://www.sverigesnatur.org/aktuellt/stralsakerhetsmyndigheten-morkade-risker-med-slutforvaret and "Dokumentet avslöjar: Så allvarliga är rískerna", K. Lundell, *Sveriges Natur*, October 11, 2017, https://www.sverigesnatur.org/aktuellt/dokument-avslojar-riskerna-ar-allvarliga .

scenario work within the regulator that shown copper canister problems that could result in radiation doses from the repository above the regulatory limit.

The Swedish legislation for access to information states that information that is of interest to the general public should be released. It would appear clear that the minutes from the SSM internal meetings during the licence review are of such interest. It would be very useful for historically understanding the review process to have access to the minutes. So far SSM have not added the minutes to the public domain, but hopefully this can be the case sometime in the future.

Example 3. The question of how much of the internal work of a public entity, such as SSM, can be regarded as "working documents" and not available in an access to information procedure, is not always clear-cut. However, when communicating with an outside entity such as the nuclear industry, it is clear that basically all information should be registered and available for outside scrutiny. As shown in example 1, the old nuclear regulator SKI did not at all follow the law in this regard. When the new regulator SSM was formed from SKI and SSI in 2008 the question of openness and integrity was in focus from the leadership from the start. The way that the flow of information, both internal and external, was registered in the *diarium* was almost exemplary. In addition, SSM was one of the first public entities to employ a digital web-based *diarium* that made it possible to follow the work of the regulator in detail.

Staff at SSM that were open to broad consultation processes and supporters of openness were able to work in a new way. But, with time, openness subsided. This can to a large extent be linked to the recruitment of new staff at leadership levels that were worried about being too open when there were difficult decisions to be made or when there were complicated interactions with the industry.

Today, SSM has removed the electronic *diarium*. When there are intense interactions with industry, i.e., when developing reporting to the IAEA or the EU, the communications with the industry are not registered in the *diarium* and all that is registered is the end product, perhaps in a version that is put out for broader consultation. This way of having a "working document" interaction with the nuclear industry has no support in the access to information legislation.

The big problem: Lack of access to information from the implementer

Having given these three examples of regulatory openness issues, the *really big problem* with access to information in the Swedish nuclear governance system is the lack of access to information from the implementer, the nuclear waste company SKB. The access to information legislation gives no right at all to access from a private company. This means for example that all the research carried out by SKB is secret and the company can reveal only results that are beneficial to its cause. Any experiment producing results that are not in agreement with the basic assumptions of the safety case, i.e., regarding the long-term integrity of the copper canister, can just be put in a drawer and never revealed.

In combination with the legal obligation that the industry has all responsibility and resources for research on RWM, this is a very big problem for the transparency of the governance of Swedish RWM.

In relation to the jurisprudence under the Aarhus Convention concerning access to information from private entities that fulfil a public service under control of a public authority (see chapter 5, par. 5.4), it is highly questionable that this position concerning information from WMO SKB can be legally maintained.

Safeguarding the integrity of the regulator

It is essential for nuclear safety that a nuclear regulator is independent of the industry it regulates and watches over. Sweden is one of the countries in the world with the least corruption. Still, it is always important to keep a high guard against the risk of capture of the nuclear regulator by nuclear interests.

In Sweden, it is generally understood that the RWM department of the Swedish Nuclear Power Inspectorate (SKI) worked very closely together with the nuclear waste company SKB in the 1990s. A review of SKI by the Swedish National Audit Office in 1995 was very critical of this[72]. At the time, no action was taken to change this, largely because it was anticipated that the licence application for the repository for spent nuclear fuel was forthcoming and it would be bad to disturb the regulator before this happened.

In reality the application did not come until 2011. By this time the problem of regulatory capture had decreased by joining SKI with the Swedish radiation Protection Institute (SSI), which had a much larger distance to the industry. A lot of work was put into making the new Swedish Radiation Safety Authority (SSM) into a nuclear regulator with high integrity and openness. As noted above this led to big changes. But 15 years later the alliance with the industry is much stronger again.

2.2.6 United-Kingdom[73]

The UK the legal structure for the governance of RWM is a devolved matter with UK laws being the responsibility of the devolved governments (England, Scotland, Wales and Northern Ireland). Legislation and regulations[74] concerning Radioactive Substances, their storage, transportation, and final disposal are either similar or identical with only Scotland having its own policy[75] concerning HLW, where operators will be required to demonstrate waste retrievability. No such option for HLW exists in law for the other devolved nations.

Post Brexit, the UK is no longer a party to EURATOM Treaty. This has exposed a number of gaps in RWM policy. Most notably, the withdrawal of the UK from the ECURIE[76] early warning system on the transboundary notification of radiological releases. More generally, CoRWM have issued advise[77] and recommendations as to how post BREXIT, UK policy concerning RWM could be guided and strengthened.

The law concerning Transparency and the public's right to know is the Freedom of Information Act 2000 (FOI)[78]. More specifically, sections 39 and 74 dealing with Environmental Information and compliance with the Aarhus Convention to which the UK is a signatory. Historically, requests to previous WMO constructs for information concerning the management of RW and final disposal were not always provided and when they were, either redacted in full or in part even when security was not at issue. Requests since 2018 have been met in full by the existing WMO (Nuclear Waste Services Ltd)[79].

There is no principle in UK law for the public to participate in decision making on RWM policy or proposed policy changes. The mechanism for government to understand the views of the public is by way of concerned citizens and groups responding to consultations. The latest RWM consultation[80] on a policy change to RWM for the reclassification of 1000's of drums of Plutonium contaminated waste currently classified as ILW and destined for geological disposal are now proposed to be reclassified as LLW for near surface disposal. The consultation was issued in March 2023. - As at November 2023 no consultation analysis has been forthcoming. This is at variance with the Aarhus Convention where Article

---

72 Kärnavfallsprogrammet - Producentansvar och statlig tillsyn - Riksrevisionsverket rapport RRV 1995:22, https://www.mkg.se/sites/default/files/old/uploads/Bil_1_RRV_95-22_Karnavfallsprogrammet.pdf .

73 Author: Colin Wales

74 https://www.legislation.gov.uk/ukpga/1993/12/contents

75 https://www.gov.scot/publications/higher-activity-waste-implementation-strategy

76 https://en.wikipedia.org/wiki/European_Community_Urgent_Radiological_Information_Exchange

77 https://assets.publishing.service.gov.uk/media/5ae0ea4040f0b60a9a985c3c/3381_Impact_on_Radioactive_Waste_Management_from_the_UKs_Withdrawal_from_the_EU_and_the_Euratom_Treaty_CoRWM.pdf

78 https://www.legislation.gov.uk/ukpga/2000/36/contents

79 https://www.gov.uk/government/organisations/nuclear-waste-services

80 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139242/part_I_policy_proposals_managing_radioactive_substances_and_nuclear_decommissioning.pdf

6 [4][81] states that "each party shall provide or early public participation when all the options are open, and effective public participation can take place". In any event where policy is implemented or changed by government contrary to the results of a consultation process a deliberative process cannot be said to have occurred. – This is counterproductive to engendering trust in any multi-actor participatory decision-making process.

At a local level, public participation exists in the form of various stakeholder groups, e.g., The West Cumbria Sites Stakeholder Group[82]. Such groups can be a good sounding board for the RWM industry but are seen by many locally as no more than "talking shops" with no power to influence decision making policy on RWM. Some local NGOs concerned with the safe management and disposal of RW are not represented.

After two previous failed siting processes (discussed in section 4) the new law concerning final disposal of RW for England and Wales is set out in the "Working with Communities" 2018 legislation[83] and provides for Community Partnerships (CPs) to be set up and funded by the WMO, NWS Ltd. This was implemented without consultation and missed a valuable opportunity to engage both CS and NGO's more widely as to what "good" might look like in the context of a deliberative process and in full compliance with the Aarhus Convention, The current law prescribes that only one person from any area where a CP could be set up is needed to initiate the process of setting up a CP but that crucially the "Principle Local Authority" (The highest tier of local government) must agree to participate in the CP. Without that participation a CP cannot be formed. The legislation provides for funding of £1M/year to be distributed to each CP for the benefit of local projects and a "promise" of significant additional investment should a community decide to site a GDF. This has been described by many concerned NGOs as little more than "Pork Barrel Politics"[84].

On a positive note (November 2023): the ONR will place transparency at the heart of its stakeholder engagement policy. In shaping policy account has been given to being: Supportive, Fair, Accountable and Open minded, The ONR will provide "easy to access, understandable information on what they do" to all interested stakeholders. This new policy[85] while welcomed and as at end October 2023 has yet to be implemented.

2.3 Societal requirements

Some past research on the societal aspects of RWM had focused on the ethical issues, as shown by the COWAM project that distinguished three main long-term stakes: responsibility, justice, democracy[86]. The societal requirements are centred in ROUTES on the possibility for the civil society and its various social profiles (citizens, associations, novices, amateurs…) to be involved in the process of scientific research as led by experts on some specific problems. Then several questions can be raised as to the nature, the scope and the impact of the civil society's involvement as well as to the societal requirements that are associated with it.

The first point relates to the involvement of the civil society in the scientific work of the research led by the experts on some specific technical case studies. One can wonder in the multiple issues examined within the ROUTES project which aspects of the research processes the civil society's members or

[81] https://assets.publishing.service.gov.uk/media/5ae0ea4040f0b60a9a985c3c/3381_Impact_on_Radioactive_Waste_Management_from_the_UKs_Withdrawal_from_the_EU_and_the_Euratom_Treaty_CoRWM.pdf

[82] https://wcssg.co.uk/

[83] https://assets.publishing.service.gov.uk/media/5c1a4be3e5274a46897da06a/Implementing_Geological_Disposal_-_Working_with_Communities.pdf

[84] https://www.investopedia.com/ask/answers/050615/where-did-phrase-pork-barrel-come.asp

[85] https://www.onr.org.uk/consultations/2022/openness-and-transparency/draft-policy-for-openness-and-transparency.pdf

[86] COWAM II Report. See Sylvain Lavelle, Caroline Schieber, Thierry Schneider (2013) Ethics and Governance of Nuclear Technology. The Case of the Long-Term Management of Radioactive Wastes, in Doridot and alii, *Ethical Governance of Emerging Technologies Development*, IGI, New York

representatives are entitled to participate in. This is in fact a methodological problem that pops up in the normal course of any 'cooperative research' by and through which experts and citizens give themselves the opportunity to achieve a common inquiry. To some extent, it can also turn out to be a political problem if it is not clearly stated that the public has some legitimacy to have a say in the research agenda of the experts. In any case, it must be further defined which aspect of the scientific research as achieved by the experts can be discussed or challenged in such a way that the public can have an impact on it (procedural or substantial).

Most of the time, it is suggested that the intervention of the civil society locates at the level of the framing of the research problem sometimes at that of the research hypothesis, so that the various options in the decision-making process are still open. These aspects of the scientific method are justifiably viewed as some strategic stages that shape the rest of the research process (protocols, empirical tests, analysis of results, synthesis and conclusion). It can be said that, for some reasons that are mainly a lack of skills and a lack of time, the public from civil society usually trusts the professional abilities of the experts in their actual research work. Nevertheless, the members of civil society mainly require from the researchers that (a) they are open to interactions, discussions and sharing with the public (b) they will take into account relevant remarks and suggestions of the public (c) they will accept to change their view if a contribution from the public is taken to be valuable or innovative.

The second point relates to the governance of research and innovation, and more precisely to the quality of interactions between scientific experts and civil society. It can be interesting and useful for the sake of the ROUTES project to consider the gradual nature of the processes and of the Experts-Civil Society interactions they allow for. Several tools have been proposed to characterise the degree of dialogue and democracy of a policy, among which is the interesting track of a dialogical gradient and a democratic gradient. They can be supplemented by a gradient of the commons which indicates the degree of sharing and cooperation in the interaction relationship between expertise and society.

Non-dialogical (with or without common code)			'Practical' Dialogue (concertation)			'Theoretical' Dialogue (discussion)		
Disagreement	Dispute	Contradictory Discussion	Directed Interview	Negotiation	Deliberation	Debate	Controversy	Inquiry

Table 1 – Gradient of dialogue

Non-democratic (absence of participation)		'Weak' Democracy (symbolic cooperation)			'Strong' Democracy (citizen power)		
Manipulation	Education	Information	Consultation	Implication	Partnership	Delegation	Citizen Control

Table 2 - Gradient of democracy

Non-common (no sharing, no cooperation)	Syntony (mutual agreement)	Synergy (cooperative work)	Symbiosis (daily life)

Conflict of interests	Difference of views	Understanding of others	Sharing of positions	Coordination	Cooperation	Community of existence	Friendliness

Table 3 - Gradient of the common

Thus, in the gradual approach, dialogue is distributed according to a 'gradient of dialogue' (see table 1) which goes from non-dialogical to "practical" and "theoretical" dialogue, or if one prefers this wording, from dispute to investigation.[87] We can add the 'gradient of democracy' (see table 2) which highlights the degree of participation of citizens in power, moving from non-democratic to 'weak' and then 'strong' democracy, i.e. from manipulation to citizen control[88]. Finally, these models can be supplemented by a 'gradient of the common' (see table 3) which indicates, beyond discussion and participation, the degree of sharing and cooperation of the various actors, from the non-common to syntony, synergy and symbiosis.[89] All these criteria (dialogue, democracy, common) make it possible to give an overview of the degree of inclusion (or inclusiveness) in the work of any common inquiry (or cooperative research) as led by the experts and the civil society members (see Table 4).

The basic idea in the scaling of dialogue, democracy and commonality is that the notion of 'fruitful interaction' as elaborated in the investigation on the societal requirements is not aimed at providing a sort of binary grid of assessment ('It is fruitful' *versus* 'It is not fruitful'). It rather suggests a 'gradient of interaction' on the basis of which one can produce a more gradual assessment of the performance of the interactive processes. Now the general framework can be refined in order to specify which requirements Experts-Civil society interactions must meet in order to be qualified as 'fruitful' interactions[90]. The development of fruitful interactions in the context of a scientific research program and of a civil society's engagement requires appropriate and innovative methods and processes. The overall perspective of achieving fruitful interactions is the main landscape in which this dialogue takes place, while the ultimate purpose of such interactions lies in the structuring value of enhancing safety.

All the criteria for fruitful experts-citizens interactions to be achieved have been jointly elaborated on the basis of a series of interviews of multiple RWM actors. They then offer an encompassing view on the main requests and expectations that condition the quality, the involvement and the significance of those interactions for the various actors. This implies that it is not sufficient to simply organize a set of meetings and debates on the issues of RWM in different parts of Europe. This option is often suggested in the classical deliberative or participatory approaches that are mainly focused of the formal procedures of interaction. In addition to these formal/procedural requirements, it is rather expected by the actors for those interactions to be fruitful that they address in a more substantial way the actual stakes that are suggested by the key-criteria (see Table 4: legitimacy, methodology, postural changes…). In other words, the use of these criteria could be summed up in the following more straightforward way: 'it is always interesting to discuss together about the research and innovation processes in RWM; but if the criteria-correlated stakes are not addressed as a condition for an expert-civil society interaction, then we are not so interested in taking part in it'.

87 CORROYER, G. (2016) Le dialogisme avant le dialogue, S. Lavelle, Lefevre Rémi, Legris Martine, *Critiques du dialogue* Lille, Presses Universitaires du Septentrion.

88 Arnstein, S. (1969) A ladder of citizen participation, *Journal of the American Institute of Planners*, vol. 35, n°4.

89 Lavelle, S. (2021) Les communs à l'épreuve du Système, D. Bourcier et alii, *Dynamiques du Commun*, Paris, Editions de la Sorbonne.

90 EURAD Deliverable 1.14 : Mid-term evaluation of the ICS activities and experimental model of interaction between EURAD participants and Civil Society.

Legitimacy. Fruitful interactions necessitate processes where all actors can dialog on the same footing.
Methodology. Fruitful interactions require that a community is able to carry a variety of inquiries (scientific, moral, social).
Postural changes. Fruitful interactions depend on the capacity of all actors to encompass others' views and to enlarge their initial perspective.
Personal unity. For fruitful interactions, one needs to take into account the different dimensions of him/herself.
Expertise function. Fruitful interactions require a pluralistic expertise that therefore cannot be reduced to a sole scientific process.
Meaning of the repository. Fruitful interactions include exchanges on the meaning of the existence of repository in the concrete life of people.
Territory. A geological disposal has a deep impact on the meaning people give to living in a territory. Fruitful interactions must integrate this impact in the discussions.
Shared complexity. Having fruitful interactions necessitate to address the complexity of the issues (technical and non-technical) linked to geological disposal.
Addressing the long term. Fruitful interactions cannot be meaningfully achieved without an intergenerational perspective, given the extreme timescales.

Table 4 - Criteria for scientific experts and Civil society fruitful interactions

If we attempt to sketch out in a more applied way the overall picture of what fruitful expert-civil society interactions would actually imply, one could emphasize the following points and conditions:

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.
2) An interaction is fruitful if the inquiries or research 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.
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.
4) An interaction is fruitful if the actors do 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 on radionuclides 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…).
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.
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.
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…).

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.
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 long-term management, justice and responsibility towards future generations.

3. Questionnaire for ROUTES members and CS larger group

3.1 Presentation of questionnaire and participants

In the frame of EURAD, the Civil Society (CS) experts involved in ROUTES Task 7 dedicated to the Interaction with Civil Society (ICS) have elaborated a questionnaire to collect the opinions of ROUTES participants from the 3 colleges (Technical Support Organisations, Waste Management Organisations, Research Entities), plus the views of the CS members involved in EURAD.

The methodology associated with this questionnaire is qualitative and not quantitative, therefore it has no statistical value, the analysis of the results was done trying to embrace every point of view in a harmonised and fair way. When some opinions were not similar – which was quite rare – the choice was to prioritise the opinion of the most developed answer.

In fact, representatives of different types of institutions participated, but the summaries from the responses do not provide an agreed opinion or position to the answers. The collection outlines the basic ideas and suggestions from those involved in the questionnaire and the potential different views or (dis)agreements on the reactions are not traced. It is emphasized that regulatory authorities are not involved in EURAD and that their position is not presented in responses. Their views could be traced only via TSOs as they form actors fulfilling regulatory function.

The objective of the questionnaire was to *"obtain information on how public participation is organised for different Radioactive Waste Management (RWM) activities, from development of facilities to smaller technical activities, like preparation of Waste Acceptance Criteria (WAC) or safety report and their upgrades."* [91]

The questionnaire was structured in 10 questions on the engagement of the public in RWM for prescribed (link with EIA process) and not prescribed activities, different technical reports, if there is any support available (also in case on no interest). If there is long term CS engagement in place, and mechanisms for evaluation of effectiveness. The questionnaire is detailed in the appendix A with the raw results given by countries. All answers have been anonymised and used only for the purpose of the ROUTES Task 7 deliverable.

The questionnaire includes some socio-demographic data (name, gender, type of actor (WMO, TSO, RE, CS), organisation, country) and several questions related to national RW facilities and provisions in the Aarhus convention.

In total, 30 participants of ROUTES and/or members of CS involved in EURAD (i.e., CS experts and members of the CS larger group) have filled in the Task 7's questionnaire in the frame of the development of deliverable D9.18. Among those, there were members from the three EURAD colleges: WMOs, TSOs and REs and from NGOs representing the Civil Society. Participants from all the ROUTES Tasks (35 organisations from 21 countries) answered the questionnaire.

The methodology associated to this questionnaire is qualitative and not quantitative, therefore it has no statistical value but provide more perceived understanding of the situation in individual country by different actors. The options for answers were closed and open ended: closed-ended questions had a limited set of possible answers, open-ended questions allowed for a free-form answer. The participants in the research are nor a representative sample and therefore results have limited value The analysis of the results was done trying to embrace every point of views in a harmonized and fair way. The intention was to obtain the opinion regarding T&PP in different countries assessed by different actors.

[91] See appendix A

Out of the 30 answers given:

- 9 answers came from the WMOs (30%).
- 4 answers came from the TSOs (13%).
- 6 answers came from the REs (20%).
- 11 answers came from the CSOs (37%).

In terms of geographic representation:

- 15 answers came from Western European countries (50%).
- 15 answers came from Eastern European countries (50%).

Here below in the figure is detailed the diversity of countries answering:

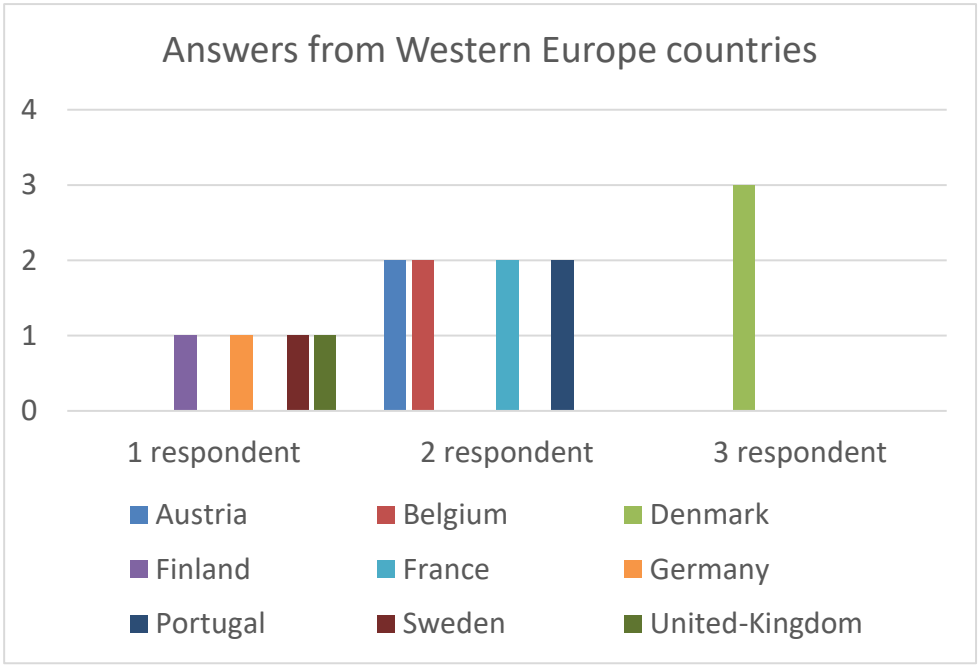

Figure 1 – Answers among 9 countries from Western Europe

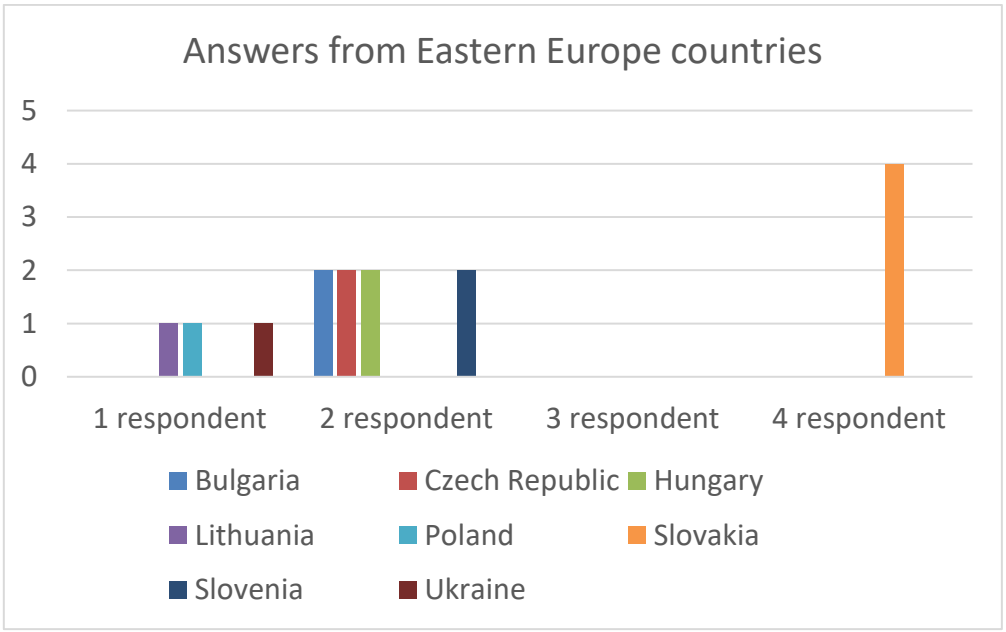

Figure 2 - Answers among 8 countries from Eastern Europe

3.2 Analysis of the results

The results are summarised for each question and presented in a way that provides all different received positions and views. Again, in the appendix A, the raw results are provided by country and those results are not meant to have any statistical value but rather to be a qualitative indication of possible assessments given on Transparency & Public Participation.

Therefore, the following is a shortened and harmonised version of the results of a questionnaire on how public engagement in radioactive waste management (RWM) is organised in each country. Please note that the information provided has been condensed per European region and may not capture all nuances or details of each country's engagement processes. The number of answers per country is diverse and therefore does not have any representative value. Furthermore, countries for which there are no statements do not necessarily fulfil or not fulfil the statement.

- **Engagement of the public in RWM**

Aarhus Convention regulations for access to information, access to public participation and access to justice are correctly implemented in some of the western European countries such as Austria, Denmark, France, Germany, Sweden or the United Kingdom while for others such as Finland or Portugal it is more problematic.

Different entities dedicated to public engagement exist among those countries such as an Advisory Board including Civil Society organisations in Austria, public partnerships in Belgian local municipalities, national and regional contact forums in Denmark, a National Commission for Public Debates in France, a Federal Office for the Safety of Nuclear Waste Management in Germany or stakeholder engagement group in the United-Kingdom.

If public hearings and EIAs are widespread in western European countries, limited engagement was reported from authorities and stakeholders in some cases as well as resource constraints (Finland and Portugal).

Aarhus Convention regulations for access to information and access to public participation are correctly implemented in some of the eastern European countries such as Lithuania, Poland, Slovenia or Ukraine, while for others such as Bulgaria, Czech Republic, Hungary or Slovakia it is more problematic.

Different legal framework dedicated to public engagement exist among those countries such as laws for public participation in Czech Republic, requirements for public authorities to provide information to the public in Lithuania, regulations for public information and participation in decision-making regarding radioactive waste management as well as an Atomic Law ensuring access to information in Poland or an Environmental Protection Law guiding public engagement in Slovenia.

If public hearings and EIAs are widespread in eastern European countries, it was reported some lack of information and transparency in some cases (Bulgaria, Slovakia) as well as limits in public participation (Czech Republic, Hungary, Slovakia).

- **Engagement of the public for prescribed RWM activities such as EIA**

The EIA and SEA directives, and the Espoo Convention and its Kiev Protocol legally require EIA and SEA procedures in the countries of the European Union as well as in the United-Kingdom and other signatory parties to the Espoo Convention. Their requirements are to be translated in the national legislation. However, if the questionnaire reported such assessments, the level of implementation can see to be differing in more western and more eastern situated countries.

In fact, EIA procedures can be conflicting with other laws such as the environmental laws like for instance in Finland.

Also, in some cases public comments and municipality concerns are not adequately addressed in these procedures.

In western European countries it was reported that the need for more effective public participation (Austria), the fact that Civil Society inputs are not sufficiently considered (Finland) or that the public is not even aware of radioactive waste activities (Portugal).

In eastern European countries it was reported that the information is disseminated at local and national levels and a participation of the public takes place with hearings or consultations – regulated by the Atomic Law in Poland for instance – and offering the possibility to provide comments – such as in Slovenia. Moreover, in Bulgaria there are other impact procedures while in Slovenia breaches of the Aarhus Convention and EU Acquis Communautaire were observed. Finally, there are no veto rights in Hungary and the procedures are "campaign-like" in Lithuania.

- **Non-prescribed forms of public participation**

In western European countries local representatives, partnerships or forums have been reported supporting public participation in Austria, in Belgium, in Denmark and in the United Kingdom as well as events in Finland and Germany for instance, to enhance public engagement. However, in Portugal non-prescribed forms of public participation have been reported to be lacking.

In eastern European countries non-prescribed forms of public participation are not homogeneous and can vary from case to case even within a country such as in Slovenia. They can be information events or working groups such as in the Czech Republic, they can be public hearings, approved documentation and opportunities for evaluation and clarification in Hungary, public participation in administrative procedures, site selection, and relicensing processes in Slovakia or permits to citizen inquiries and public councils in Ukraine. Furthermore, in Lithuania for instance, non-prescribed forms of public participation are existing thanks to various NGOs and civil movements. Finally, in Poland the public was not involved in the safety report preparation for their National Radioactive Waste Repository.

- **Engagement and national programme for the management of spent fuel and radioactive waste development.**

In some western European countries like Belgium and Germany, as was already noted above, it was reported that Austria uses the SEA, that Denmark uses its national contact forum, that Finland only relies on EIAs, while France uses the inputs from its National Commission for Public Debate and from public consultations despite a limited involvement of the public. Portugal foresees an annual report on the inventory of radioactive waste from the WMO to the regulatory body, but clarity is lacking from the government on the future of the sector. Sweden considered the inputs submitted in the frame of the geological disposal facility licence application and the report approved by the Land and Environmental Court as part of granting the licence. Finally, for the United Kingdom, where 70% of the spent fuel and radioactive legacy waste is stored at Sellafield, a recent denial of NGO representatives in joining the Stakeholders Group was reported.

In eastern European countries it was reported that some information is given, and that there is a possibility to engage at various levels at least for comments even if they are not certain to be considered. In Bulgaria the information was reported to be disseminated to the public by the media and by government sites, while in the Czech Republic the WMO informs mayors of affected municipalities and comments are possible through regional representatives or through the Parliament. In Hungary there is a local-level engagement for radioactive waste, in Lithuania participation is practically excluded despite the requirements in the national program, in Poland a SEA is conducted for the draft of the National Plan as well as EIAs, social consultations and opinions from competent authorities for concrete projects. In Slovakia also a SEA is conducted for the national programme, but public participation is not actively sought, and it is necessary to request invitations to participate while comments and suggestions are collected through an online portal along public hearings held at least once a month. In Slovenia, it is possible for the public to send comments, but it is needed to actively seek information and NGOs were not involved in 2015 while some institutions ignore the procedure. Finally, in Ukraine the draft national programs are posted on relevant department websites, public comments shall be considered, and the projects can be discussed at public councils.

- **Methods used to engage in smaller technical activities.**

In the assessed western European countries, the public is not directly engaged in smaller technical activities such as for Waste Acceptance Criteria (WAC), however some alternatives for participation such as public enquiries, written hearings, satisfaction surveys or public consultations on technical issues do exist in countries such as Belgium, Finland, France or Sweden.

In Austria recommendations may be presented by an "Advisory Board", in Denmark smaller technical activities can be discussed with local stakeholders of the planned siting process for disposal facility and in Portugal technical procedures do exist, but they are not established as WAC yet.

In the responding eastern European countries, the public is not directly engaged in smaller technical activities either, however some information does exist in some countries. In Bulgaria general this concerns non-technical and summary information for specific procedures in radioactive waste management, whereas in Lithuania limited and uncertain information is available on waste effluents, high-level waste (HLW), and other nuclear power plant (NPP) waste. In Slovakia safety reports including chapters on WAC are made available during the licensing process while public comments can be provided, and in Ukraine small technical activities are considered upon request from citizens or at public councils.

Overall, the provided answers indicate varying levels of public engagement and methods used for smaller technical activities like the development of Waste Acceptance Criteria (WAC) and their changes. Some countries have specific processes, consultations, or public inquiries in place, while others have limited, or no explicit methods mentioned for public involvement.

- **Support available for the engagement of the public and lessons learned.**

In the responding western European countries, some support for the engagement of the public in most countries does exist, however there are some exceptions. In Finland and Portugal there is no support for public engagement as well as in the United Kingdom even though future provisions are expected for expert scientific advice, while in Sweden, where local communities and environmental NGOs received support from the nuclear waste fund and government budget, the funding for NGOs is discontinued in early 2023 and restrictions apply to community funding.

In Austria, an Advisory Board and the WMO share information on their websites, a public opinion study is conducted on radioactive waste disposal and public events are organised for information sharing. In Belgium the King Baudouin Foundation supports social debate, there is experience in public involvement in LLW disposal procedures and public partnerships benefit from a shared fund with WMO. In Denmark an independent expert panel accepts questions on radioactive waste management, in France the reviews of the TSO are made public, technical dialogues with the Civil Society are conducted since 2012 aiming at increasing its technical skills in the objective to actively participate in public decision-making and various tools are used for public involvement such as consultation websites, meetings and conferences. In Germany the Federal institutions' websites are available in sign language as well as in "simple language".

For the lessons learned, it was found in Denmark that a future focus on engaging the public in the siting process would be beneficial, and in France it was found useful to have consultation roadmaps, issue presentations and produce opinion summary reports.

In the assessed eastern European countries, some support for the engagement of the public in most countries does exist, even if it can be limited. However, there are some exceptions. In Hungary and Slovenia there is no support for public engagement while in Lithuania if university professionals work on public engagement, activities may be influenced by their relationship with governmental nuclear facilities. If in Slovakia if local partnerships receive resources, reports, and document access, there is only limited support available for specific projects related to repositories.

In Bulgaria non-technical reports and information materials are available for public engagement and media coverage, and social events are effective support measures. In the Czech Republic the WMO

publishes reports, uses websites and social networks, and organises educational courses and summer schools. In Poland regular bulletins, reports, and meetings are used to provide information and address concerns, open days and meetings with local authorities are also organised to explain activities.

For the lessons learned, it was found that Finnish excursions and discussions influenced opinions on the planned repository as well as in the Czech Republic interaction with young people and educational programs. In Slovakia, an open dialogue and an early public inclusion was considered crucial and finally in Ukraine the preparation and dissemination of public-friendly information and organisation of public hearings were found necessary.

- **Actions against public's lack of interest**

In the assessed western European countries, there are various actions to overcome the public's lack of interest, however it is apparently not the case in Finland or in Portugal unless it is required by law. In Austria, despite an anti-nuclear sentiment, efforts are being made to involve the public in decision-making on radioactive waste management, in Belgium a public inquiry was conducted, and plans are underway to repeat it for a broader public acceptance. In Denmark public interest has been institutionalised through green NGOs and citizen groups, therefore open house events are well-attended. In France online debates and tailored information initiatives show interest while formal public consultation only involves a limited amount of stakeholders. In Germany official information events receive significant interest, in Sweden resourcing local communities and NGOs has increased public interest and finally in the United Kingdom there is a limited public awareness currently but some plans to raise it along with updates from Community Partnerships are foreseen.

In the responding eastern European countries, there aren't many actions taken to address low public interest and if the public, such as state-funded NGOs or local communities, is engaging, it is generally only during public hearings like in Hungary or with "campaign-like" events like in Lithuania or in Poland. Moreover, where there are no real opportunities or requirements for the public to participate (like in Bulgaria or in Ukraine), it appears that the public authorities sometimes even prefer a minimal engagement of the public (like in Slovak Republic).

- **Long-term Civil Society engagement and tiredness.**

In the responding western European countries, for long-term Civil Society engagement the situation is not homogenous. Where in a country like Austria it does exist and tiredness is not observed, in another country like Portugal no Civil-Society engagement is observed at all. Long-term engagement is existing through partnerships with the local community such as in France, Belgium or in Denmark, but some challenges exist related to the involvement of a balanced and renewing representation of the civil society due to the lengthy decision-making processes. In fact, if Sweden managed engagement over a long time through resourcing environmental NGOs, it was reported that more could be done in the United Kingdom and that in Finland the civil society shows tiredness and frustration with little interest in participation.

In the assessed eastern European countries, long-term civil society engagement is not homogenous. In Poland it does exist, though small, and tiredness is not observed. In Ukraine no special requirements for civil-society engagement were reported. In the Czech Republic the civil society has been active and engaged with the authorities for over 20 years in some areas through events or inquiries and in Lithuania the intensity and effectiveness vary depending on political conditions, but no tiredness was observed. In Bulgaria it was reported that some barriers to participation exist and that to avoid tiredness a selective engagement would be recommended, in Slovenia long-term engagement is not defined and there is a limited engagement from civil society apart from one environmental NGO, and finally in Slovakia participation is limited in the long-term, and often only dedicated to public hearings because of the difficult conditions leading to tiredness and burnout.

- **Mechanism to evaluate the effectiveness of public participation.**

In most of the responding western European countries, there aren't any mechanisms in place to evaluate the effectiveness of public participation (Belgium, Finland, Germany, Portugal, Sweden and the United Kingdom) even if in some countries such mechanisms do exist (Austria, Denmark and France).

In Austria it is foreseen to include Key Performance Indicators (KPIs) in the revised National Programme for Radioactive Waste Management to evaluate transparency and public participation. The Advisory Board will develop additional KPIs for monitoring progress. In Denmark feedback are received through contact forums and a more structured evaluation of Open House events is considered while an online evaluation is underdevelopment. Finally, in France questions, meetings and attendees are reported on while a qualitative evaluation is done based on participant opinions.

In the assessed eastern European countries, there aren't any mechanisms in place to evaluate the effectiveness of public participation apart from Ukraine where even if no established procedures exist, evaluations may occur. However, some monitoring of positive/negative perception through articles and surveys (Czech Republic), metrics like participation numbers and questions asked (Bulgaria) or feedback collection and reporting for local partnerships (Slovakia) can be found.

- **Additional comments or observations**

For the analysed western European countries, it was specified that engagement should be more precisely defined distinguishing different levels of involvement. The Danish model could serve as an example for other small member states as collaboration between civil society and organisations is important there while lessons learned from the previous site selection process in Germany can be found valuable.

However, civil society is still not adequately heard or prepared relying mainly on nuclear engineers in countries like Finland or Portugal where resources and information are needed for a greater public engagement.

For the eastern European countries, it was specified that conducting surveys, polls, and referendums can enhance public participation but more intervention and pressure from the European Commission are needed. In fact, there are some concerns about rushed processes and inadequate implementation of technical design and investigations for new nuclear units and repositories. Finally, being able to sanction national authorities and not mandating local authorities' approval may be effective.

4. Case studies

Together eight case studies have been investigated in order to analyse public participation and engagement in RWM activities in different countries across Europe: Belgium, France, Greenland, Slovakia, Slovenia, Switzerland, Sweden and the United-Kingdom. The selected countries represent variety of situations, like LIMS, SIMS, no nuclear power plants, examples from western and eastern Europe. Attention was given to the current or latest project related to RWM development in the country while addressing also PP in general sense but also in technical activities.

As described in the introduction, the studies of the following national cases are meant to echo the qualitative inputs provided by the representatives of the different EURAD colleges – including civil society members – in order to deepen the understanding on how civil society is included or not in a dialogue for technical issues in RWM across Europe. The authors of those studies are mainly EURAD civil society members (Civil Society experts or Civil Society Larger Group members)[92].

4.1 Belgium: "From local partnerships for LILW depositories to a national PP procedure for HLW"[93]

In the 1990s, the Belgian government prepared for surface storage of low- and mid-level radioactive waste. After a voluntary more or less hosting competition between three municipalities, two neighbouring municipalities with a nuclear history are chosen as options: Dessel and Mol. In order to facilitate the preparation, in the municipality of Dessel, the association STOLA was started in 1999, where the WMO ONDRAF-NIRAS cooperates with local inhabitants to decide on the location for a surface storage. After Dessel is chosen as location, STOLA is transformed into STORA (the Study and Interaction Group Radioactive Waste), which continues to follow the storage project and informs citizens of Dessel also about other nuclear developments.

In 2000, a similar group was started in the municipality of Mol, MONA (Mols Consultation Nuclear Waste). Although Dessel is chosen as the final site, the recommendations of MONA are incorporated in the project and MONA remains an important partner for ONDRAF-NIRAS concerning the low- and mid-level waste storage in Dessel.[94]

Both groups, STORA and MONA, consist of the WMO ONDRAF-NIRAS, researchers and interested citizens[95]. The latter in many cases have a background in one of the nuclear institutes of SCK-CEN.

In 2004, the Belgian Energy Ministry committed to a radioactive waste plan, also incorporating high-level and long-lived wastes. This was to be worked out by the Waste Management Organisation (WMO) ONDRAF-NIRAS. A Strategic Environmental Assessment under the Law of 2006, in line with the EU SEA Directive and the Espoo Convention Kiev Protocol, was carried out between 2006 and 2010. This was flanked by a societal consultation, involving expert and stakeholder dialogues and a citizens' forum[96]. In 2011, ONDRAF-NIRAS adopted a Waste Plan, calling for a decision in principle for deep geological disposal in poorly indurated clay.

---

[92] Only for the case of Switzerland, Marcos Buser was asked by task 7 to provide inputs due to his knowledge of the national situation of RWM and due to his participation to discussion on the meaning of Rolling Stewardship in the frame of a Nuclear Transparency Watch working group.

[93] Author: Céline Parotte and Jan Haverkamp.

[94] NIRAS official website, "Partnerschappen STORA en MONA", accessed June5, 2023. https://www.niras.be/partnerschappen-stora-en-mona

[95] https://www.monavzw.be/node/27

[96] See the figure below for an overview - Parotte, Céline, et Pierre Delvenne. « Taming uncertainty: towards a new governance approach for nuclear waste management in Belgium ». Technology Analysis & Strategic Management, 2015, 1-13. https://doi.org/10.1080/09537325.2015.1044429 .

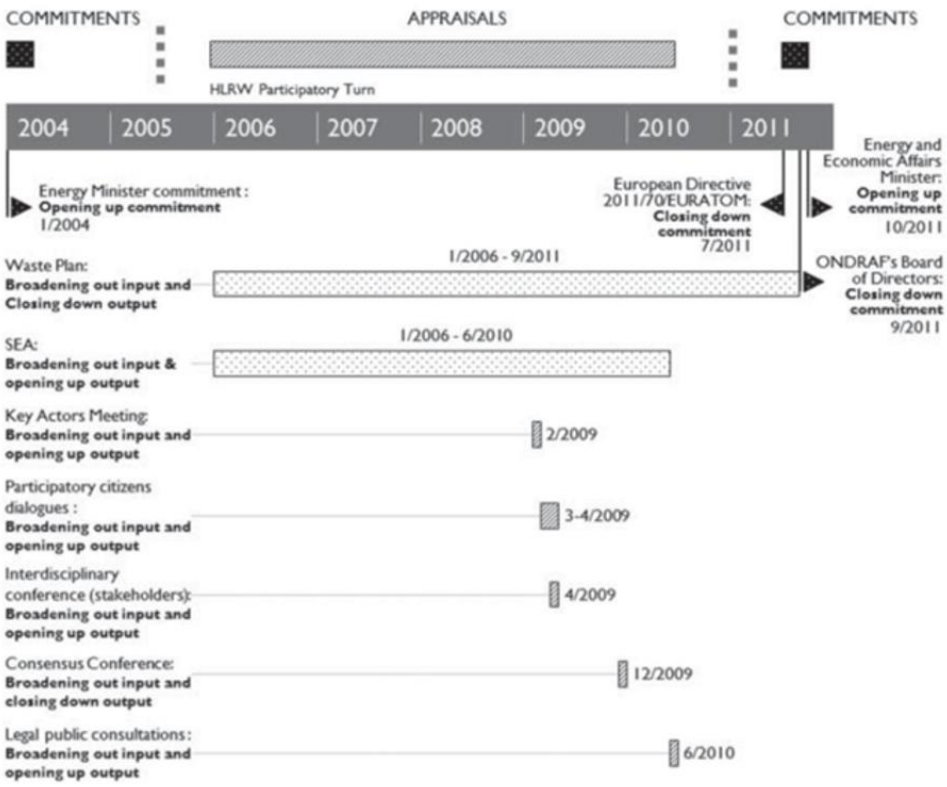

Figure 3 – Processes of appraisals and commitments in the Belgium governance of HLRW from its 'participatory turn'[97]

For the implementation of the 2011 Euratom Waste Directive (2011/70/Euratom), ONDRAF-NIRAS was asked to work out a national programme. This was presented in 2015. In 2016, the Federal government followed the proposal of ONDRAF-NIRAS to investigate the options for deep geological disposal[98], but not its choice of clay and wants a more open approach concerning potential host-rock.[99] Greenpeace

[97] Parotte, Céline, et Pierre Delvenne. « Taming uncertainty: towards a new governance approach for nuclear waste management in Belgium ». Technology Analysis & Strategic Management, 2015, 1-13. https://doi.org/10.1080/09537325.2015.1044429 .

[98] No decisions were taken at that time. More details in the joint convention Belgium report 2022 : belgium-jc-rapport-be-2020-public.pdf (iaea.org)

[99] Disposal of category B&C waste.
For over 40 years, SCK-CEN and ONDRAF/NIRAS have been studying geological disposal in poorly indurated clay as a solution for the long-term management of high-level waste and low- and intermediate-level waste, long-lived (HLW/LILW-LL or category B&C waste or B&C waste). In line with international practice, ONDRAF/NIRAS plans its geological disposal facility – or repository – for category B&C waste and its implementation in a cautious, stepwise process, punctuated by the submission of key documents to the government and/or authorities such as the SAFIR2 documents submitted in 2001 and the Waste Plan submitted in 2011. In 2013, ONDRAF/NIRAS drafted a state-of-the-art report called the "RD&D Plan" in order to compile in a concise way the most recent outcomes and achievements, as well as future RD&D priorities. The RD&D programme on geological disposal of B&C waste in poorly indurated clay has been conducted so far with very encouraging outcomes. In 2019-2020, ONDRAF/NIRAS produced a roadmap of the programme for geological disposal of the B&C waste. In line with the reference scenario of obtaining a licence in 2050 it describes the broad lines of actions needed in the time frame 2021-2050. Exact timings will depend on different milestones that typically coincide with decisions that need to be taken by the government. ONDRAF/NIRAS proposed the

Belgium then concluded that this decision is based on a "plan" that only consists of a description of the situation until 2014 and files a complaint to the Council of State.[100] In 2018, the Federal Ministry of Energy asked ONDRAF-NIRAS to update the SEA from 2009. This includes a public inquiry during the first COVID-19 lock-down from April to June 2020. Greenpeace submits its viewpoints in this procedure and demands a restart of the planning procedure.[101]

In April 2022, the Federal Government agreed on a draft Royal Decree and Draft Law regarding the national policy for the long-term management of HLW, requiring ONDRAF-NIRAS to sound out neighbouring and other interested countries about the possibility of developing shared disposal facilities", and "to organise a participatory process and public debate".[102]

A set-up for a governance structure was suggested by Meyermans, Cools and Bergmans,[103] and worked out in a paper by Bergmans, Fallon, Cörvers and Parotte[104]. This approach proposes a flexible and stepwise approach, with a high level of transparency, a clear link between participation and decision making, clear monitoring and control, and a robust financing basis.

This paper, working out the results from a survey of 242 respondents, including 'citizens' and 'scientific experts', underlined 5 key points for governance. Governance should be:

1. Flexible and stepwise
2. Practicing transparency
3. Being clear about the link between participation and decision-making
4. Ensuring monitoring and control
5. Providing robust financing

---

basis of a national policy for B&C waste to its supervising authority in May 2015; this proposal was based on the technical solution recommended in the Waste Plan, namely geological disposal in poorly-indurated clay on a single site. In November 2016, ONDRAF/NIRAS was entrusted by its supervising authority to adapt its proposal according to the following principles: • to be established on the basis of a geological disposal in Belgium, without any precision regarding the host rock type; • to develop the decisional stepwise process which will lead to the final choice of the disposal site, each stage of such a process being properly documented; • to frame the development of the geological disposal solution in an integrative manner which means that the engineered barriers, the host rock and its geological environment contribute together to the overall safety; • to ensure that the choice of the future site will be based not only on scientific criteria but also on societal and economic aspects. On this basis, ONDRAF/NIRAS has submitted an adapted policy proposal for geological disposal on the Belgian territory in June 2018, conform the legal procedure for national policy decisions, as defined in the law of June 3, 2014, transposing the EC Directive 2011/70/Euratom. This policy proposal is subject of a strategic environmental assessment procedure (2019 - 2020) with consultation of institutional actors and of the public. The consultation period was from April 2020 till June 2020. On the basis of the outcomes of the procedure ONDRAF/NIRAS has submitted its adapted policy proposal to the Federal Government in September 2020.

[100] Sertyn Pascal, "Greenpeace schiet Belgisch kernafvalplan af.", De Standaard, https://www.standaard.be/cnt/dmf20170816_03020684, online article accessed on June 5, 2023.

[101] Greenpeace, "Opmerkingen op het ontwerpplan van Niras", https://www.greenpeace.org/static/planet4-belgium-stateless/2020/05/afa28a7a-2020_may_nuclear_report_nl.pdf, accessed on June 5, 2023.

[102] Ministerraad, "national beleidsmaatregel inzake langetermijnbeheer van hoogradioactief en/of langlevend afval", 1 april 2022, https://news.belgium.be/nl/nationale-beleidsmaatregel-inzake-langetermijnbeheer-van-hoogradioactief-enof-langlevend-afval, accessed on June 5, 2023.

[103] Meyermans et al. 2019, "monitoring in geological disposal and public participation. A stakeholder guide", https://repository.uantwerpen.be/docman/irua/178a14/modern2020__d5_2_final_stakeholder_guide_en_web_.pdf .

[104] Bergmans, Anne, Catherine Fallon, et Céline Parotte. Do You Care About High-Level Radioactive Waste and Spent Nuclear Fuel? Opportunities for Co-Constructing an Appropriate Governance-Ecosystem in Belgium. Springer Fachmedien Wiesbaden, 2023, https://link.springer.com/chapter/10.1007/978-3-658-40496-3_4 .

The paper furthermore proposes to build a long-term governance process based on 'Caring', based on the following premisses:

- long-term RWM is and will remain a socio-technical challenge.
- a long-term management solution is and will remain experimental by nature.
- a transparent and democratic way of addressing this challenge.
- considering Belgian HLW and SNF as matters of care.

4.2 France: "CLIs and the ANCCLI: citizen bodies legally embedded designed to ensure T&PP"[105]

In application of a circular from the Prime Minister dated 15 December 1981, local information commissions were set up in the 1980s around most nuclear installations, at the initiative of the General Councils.[106]

The Transparency and Nuclear Safety Act (TSN) of 13 June 2006 reinforced the existence of CLIs (Local Information Committees - can be referred as CLI, CLIs or even CLIn) by giving them legislative status. Article 22 provides for the creation of a CLI for each basic nuclear facility (a CLI may be common to several nearby facilities). It defines the mission of the CLIs as a general mission of monitoring, informing and consulting on nuclear safety, radiation protection and the impact of nuclear activities on people and the environment with regard to the site's installations.

The subjects dealt with do not concern the security of the site (malicious acts, secret defence events, etc.), nor aspects relating to industrial secrets.

The law confirms that the creation of the CLI is the responsibility of the President of the Departmental Council and lists the different categories of members who make up the CLI: representatives of elected representatives of the area concerned, representatives of environmental protection associations, representatives of representative employee trade unions and qualified personalities. Representatives of the State, the ASN (Nuclear Safety Authority), the Regional Health Agency and the operator participate in the CLI's work in an advisory capacity.

The CLI is chaired by the President of the Departmental Council or by an elected official of the department whom he/she designates for this purpose. The CLI receives the information necessary for its mission from the operator, the ASN, IRSN as TSO and other government departments. It may commission expert reports or measurements on the facility's environmental emissions. CLI members are invited, with the agreement of the operators, to participate in ASN inspections. The CLIs are funded by the local authorities and the ASN.

The law on energy transition for green growth, passed on 28 August 2015, has expanded the missions of CLIs. For example, it is now necessary to organise at least one public meeting per year and to include representatives of neighbouring countries for facilities located on borders.

The framework for the operation of the CLIs is specified by the implementing decree n°2019-190 of 14 March 2019 codifying the provisions applicable to basic nuclear installations, the transport of radioactive substances and transparency in nuclear matters, in section 12, provides for the methods of organisation of CLIs.

Birth of the ANCCLI

[105] Author: Anne-Laure Maclot

[106] The General Council, now called the Departmental Council, is a local authority at the departmental administrative level, responsible for certain compulsory competences, including social assistance, the management of departmental roads and the construction and maintenance of colleges.

Created on 5 September 2000, the ANCCLI, the National Association of Local Information Committees and Commissions, federates the experiences and expectations of the 35 CLIs and brings their voices to national and international bodies.

One of the essential missions of the CLI is to relay information to the general public and thus enable citizens to form their own opinions on the subject of nuclear energy.

The ANCCLI is composed of a General Assembly. Each of the 35 CLIs has appointed representatives to the ANCCLI, so that the federation has a representative character, as provided for in Article R125-74 of the Environmental Code. ANCCLI has a Board of Directors (32 members: 8 per college) as well as a Bureau for its management.[107]

The ANCCLI relies on its permanent groups (Safety, Radioactive Waste and Materials, Post-Accident, Dismantling, Health) to stimulate the interest and reflection of CLI members. It aims to create the conditions for a democratic debate by ensuring that information is monitored. It is a force for proposals and sheds light on the debate on the challenges of nuclear activities.

The ANCCLI also has the support of a group of scientific experts, composed of eminent experts (hydrologist, oncologist, epidemiologist, etc.), who help the ANCCLI and the CLIs in their daily missions.

Involvement of civil society

The involvement of civil society is real through the traditional activities of the CLI and the participation of CLI members. In some cases, it is possible to involve civil society in a broader way (during public meetings, during educational activities with school children, during working groups to which non-members of the CLI are invited to discuss concrete cases).

Civil society mobilisation works well through small group actions, but repeated over time, with follow-up.

Ideally, risk awareness in the form of a risk culture should also be disseminated by involving the population in crisis exercises.

Focus on CLIs of Bure

The Cigéo deep geological radioactive waste disposal project is being developed by the public body ANDRA (French WMO, independent from producers), which is in charge of proposing the final disposal concept, managing the siting process and implementing it as a long-term solution. Created in 1979, the agency is supervised by three Ministers: the Ministers for Ecology, Industry and Research. The regulatory body (Authorite de Sûreté Nucléaire – ASN) and its technical support organisation (Institut de radioprotection et de sûreté nucléaire – IRSN) supervise and give final authorisation for the disposal facility. In France, these bodies are commonly referred to as the 'nuclear policemen'. The Cigéo facility is being paid for by the main waste producers (EDF, Orano and the Centre de l'Energie Atomique – CEA) who have ultimate responsibility for providing a safe solution for their waste. This radioactive waste disposal process is being monitored and assessed by several national and local bodies. The CNE2 (Commission Nationale d'Evaluation) was formed to assess the progress made in research into the management of radioactive materials and waste on an annual basis. This assessment results in an annual report produced for the French Parliament, which is submitted to OPECST (Office parlementaire d'évaluation des choix scientifiques et technologiques), which has been following up on the nuclear waste process since 1990.[108]

The independent administrative authority, the National Commission for the Public Debate (CNDP), created in 2002, has given an opinion on the program for the information and the involvement of the stakeholders of the project since France decided to select the geological repository (Cigéo) as the main solution for nuclear waste management in 2006 about which they organised a national public debate on

[107] Download the list of members here: https://www.anccli.org/wp-content/uploads/2023/07/Liste-CA-et-Bureau.pdf

[108] https://www.cne2.fr/ .

in 2013. At the local level, public stakeholders can get involved in the disposal process by participating in the Local Information Committee (CLIS de Bure) in the municipality of Bure, where Cigéo will be constructed. When it comes to citizen involvement, it is most interesting for us to focus here on the Local Information Committee (CLIS) in Bure, established in 1994. The main role and mission of the CLIS is to keep the general public informed about the Cigéo disposal project and the accompanying long-term decision-making process. In spite of this somewhat restricted role, some CLIS members have, over the last few years, become experts on the matter and now actively challenge certain aspects of the disposal process. They also raise new technical questions and order new assessments of the disposal concept. In short, while the main role of the CLIS is to be neutral rather than influencing the decision-making process directly, we can conclude that this role is being fulfilled with a proactive twist. The dedicated members of the CLIS insist on a diversity of information sources and on the availability of counter-expertise about the Cigéo project. One outcome of this is that they have succeeded in receiving financial support for additional counter-expertise on the geothermal energy potential of the surrounding underground environment, since, in the French case, this energy potential would make the region unsuitable for deep waste disposal. Besides the CLIS's substantial contributions in the form of counter-expertise and additional control, they also insist on more transparency and coherency. Another important value stressed by this local citizen organisation is independency. As such, some members of the CLIS of Bure consulted during one of the Modern2020 'home engagement meetings' are of the opinion that "monitoring in geological disposal should fall under the responsibility of and be carried out by an independent institution which has the freedom to detect and monitor even the most unexpected events in geological disposal".[109]

Technical dialogue on Cigéo aiming at civil society to increase its technical skills to actively participate in public decision is regularly taking place now organised by civil society (the ANCCLI and the CLIs de Bure) and expert bodies (IRSN)[110] as a continuation of the initiatives to open up to civil society on high-level and long-lived intermediate-level waste (HLLILW) organised since 2012, in particular the technical dialogue during the appraisal of the Cigéo Safety Options Document (SOD) in 2016 and 2017.

The TSO's expectation is to take into account the concerns and questions of civil society to bolster its expertise while the CSO expectation is to enable civil society to form its own opinion on nuclear safety and radiation protection issues and thus actively participate in public decision-making.

In 2023, a new process of dialogue has started with the goal to experiment a joint work between civil society and IRSN on the basis of a co-constructed scenario (accident scenario in the operational phase of the repository or scenario of changes in the post-closure phase of the repository) with a view to a shared assessment of the associated safety issues.

Different types of participation were foreseen for the civil society from a general and continuous participation to a punctual and specific participation. In fact, 3 groups were established to consider 3 different themes during 3 different period:

1. Basic data retained for the Cigéo safety assessment: site, inventories of radioactive waste intended for disposal, disposal components, etc. (April 2024).
2. Evaluation safety in the operating phase (autumn 2024).
3. Evaluation safety in the post-closure phase (mid-2025)[111].

[109] Source Bergmans stakeholders guide: http://www.modern2020.eu/ .
[110] https://www.anccli.org/2023/06/23/dialogue-technique-dac-cigeo-2/
[111] https://www.nuclear-transparency-watch.eu/documentation/rwm-interactions-with-civil-society-on-technical-topics.html

4.3 Greenland: "National elections as referenda on uranium mining"[112]

There are no NPPs or research reactors in Greenland or any plans to establish a nuclear power program. However, because of the prospect of large-scale uranium mining, RW as well as other potentially environmentally harmful and public health-related impacts from possible uranium mine projects have dominated Greenlandic politics for more than a decade.

The Greenlandic case clearly demonstrates that if the political and administrative decision-making in the mining sector, in this case primarily in regard to uranium mining, does not include involvement of CS, opposition from the public is not likely to go away, but might increase significantly. In Greenland, this has turned into a major and even dominating political issue and sometimes transformed general and local elections into referenda on uranium mining[113].

This development started in 2013, when Greenland's parliament, Inatsisartut, abolished its zero-tolerance policy for uranium mining, which until then had lasted a quarter of a century. The rationale was that exploitation of Greenland's mineral resources and particularly uranium mining was the quickest way to economic self-sufficiency and full independence from Denmark. The decision was linked to the Rare-Earth Element (REE) and uranium mine project at Kvanefjeld (in Greenlandic: Kuannersuit) in Southern Greenland, owned by the Australian company *Energy Transition Minerals, ETM* (formerly known as *Greenland Minerals Ltd.*), which potentially constitutes the biggest industrial project in the history of the Danish Kingdom. According to ETM, in addition to containing the second biggest uranium[114] and by far the largest thorium deposits, the Ilimaussaq-complex in Kommune Kujalleq, of which Kvanefjeld is a part, possesses the second largest deposits of REEs in the world[115].

In her inaugural address, the new Prime Minister promised a consultative referendum in Southern Greenland on the Kvanefjeld project, a promise that was repeated in the last speech she held in Inatsisartut in 2014, the day before a new general election was called. The promise was never fulfilled, although then the government party Siumut stayed in power for the next eight years. Not least as a consequence of the broken promise, public confidence in the decision-making process diminished. In 2014, an opinion poll showed that only one out of ten Greenlanders thought that public participation in this process was satisfactory[116] and continuously, there has been a majority of the population in favour of a referendum on uranium mining[117]. Furthermore, positions on the mining project and uranium mining in general have been a determining factor in the formation of five government coalitions since 2013[118]. After a general election and municipality elections in 2021 – widely known as "the Kvanefjeld elections"

---

[112] Author: Niels Henrik Hooge

[113] For a broader and more detailed description of this process, see: Zeleznik N., Swahn J., Haverkamp J., Hooge N.H., Rey H., de Butler M, Daniska M., Wales C., Konvalinkova H., Jacquet B., Harms R. (2022): Implementation of ROUTES action plan second phase. Final version as of 22/ 08/2023 of deliverable D9.17 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593.This description is to a large degree based on the case study on Greenland in this deliverable.

[114] GMEL Company Presentation, Symposium Investor Roadshow, Slide 5, April 2014, https://www.slideshare.net/SymposiumEvents/greenland-minerals-and-energy-company-presentation-symposium-investor-roadshow-april-2014.

[115] The mine, which would be the world's second largest open pit uranium mine, is located on top of a mountain, six hundred metres above sea-level, only six kilometres from Narsaq, a town of approximately 1,500 inhabitants in Southern Greenland. The licence area is also situated near the Kujataa UNESCO World Heritage Site, one of Greenland's three world heritage sites.

[116] Sermitsiaq: Måling: Selvstyret overhører befolkningen, 3. oktober 2014: Måling: Selvstyret overhører befolkningen, Sermitsiaq.AG, https://sermitsiaq.ag/kl/node/172032 .

[117] E.g. see: Sermitsiaq: Flertal af borgere ønsker folkeafstemning om uran, 24. juni 2016: Flertal af borgere ønsker folkeafstemning om uran, Sermitsiaq.AG https://sermitsiaq.ag/node/188587

[118] New government coalitions were established in 2013, 2014, 2016, 2018 and 2021.

– a new government was installed that made good on its promise to reinstate the uranium ban which entered into force the same year.

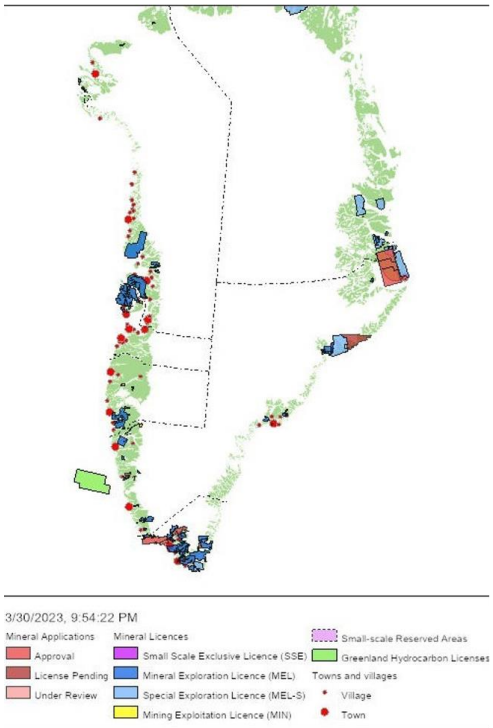

Figure 4 – Greenland Minerals and Petroleum License Map[119]

What has exacerbated the problem of lack of T&PP over the years is that Greenland is not party to the Aarhus Convention and although EIAs are mandatory for large-scale mining projects[120], this does not pertain to SEAs for mineral exploration areas. This means that few areas in principle are excluded from being licensed and also that the public is not informed in advance on what areas could be designated[121]. Consequently, in addition to more than thirty small-scales licences. There are now more than 100 active large-scale mining projects (prospecting, exploration and exploitation) in Greenland[122], covering thousands of square kilometres, and almost all related to surface mining projects, often at high altitude[123]. It is clear that T&PP in Greenland would benefit by ratification of the Aarhus Convention and an interpretation of the Espoo Convention, which has been ratified by Greenland, that more consistently

119 Source: Government of Greenland, Mineral Resources Authority, March 2023.

120 The Greenlandic Mineral Resources Act requires that mining companies prepare an EIA in connection with the development of any proposed mineral project. The Act also stipulates that an exploitation licence for a proposed project will only be granted if the project's EIA is accepted by the authorities. The purpose of the EIA is to identify, predict and communicate the potential environmental impacts of the planned mining project in all of its phases - construction, operations, closure and post-closure. The assessment should also identify mitigation measures designed to eliminate or minimise negative environmental effects, such measures, as far as possible, being incorporated into the project design.

121 For more information on Greenland's legislation in this field, see Ellen Margrethe Basse, Juridisk responsum om den gældende grønlandske lovgivning vurderet i lyset af Århuskonventionen, Juridisk Institut, Business and Social Sciences, Aarhus Universitet (June 2014).

122 Government of Greenland, Ministry of Mineral Resources and Justice, Minex No. 55, Mineral Exploration Newsletter, 2023, ny minex 1 2023.indd (nuna-law.com), https://www.nuna-law.com/wp-content/uploads/2023/02/Minex-55-internet_ver-1.pdf .

123 Among others, the lack of transparency enabled one of the former governments to open up for oil exploitation in the world's biggest national park in Northeastern Greenland. And since January 2021 a mining project in Eastern Greenland, where a Canadian company plans to exploit 12.8 million tons ore annually, has been under development. The entire exploration area is located in Greenland's National Park.

involve neighbouring countries in the EIAs. Finally, in regard to large-scale mining projects, it could be argued that local communities should have the right to free prior and informed consent, including a right to say no to mining projects[124].

4.4 Slovakia: "Public participation in the national programme update and engagement of municipalities"[125]

According to §6 sec. 5 j) of the National Nuclear Fund Act[126] the national program for the management of SNF and RW includes "*a system of informing the public about the management of SNF and RW and the procedure for engagement of the public in the decision-making process related to the back-end stage of the peaceful use of nuclear energy in the Slovak Republic*".

The list of objectives of the national policy in force for the management of SNF and RW (adopted in 2015) includes "*an objective decision-making process*", the description of which states: "*A transparent decision-making process based on evidence and its appropriate documentation is one of the principles of the Slovak policy for the decommissioning of nuclear installations and the management of RW and SNF. The basic tool for objectifying the decision-making process in the Slovak Republic is transparency, the process of environmental impact assessment (EIA), informing and engaging the public in the decision-making in accordance with the applicable legal regulations.*"

In 2021 the process of drafting an update of the national policy and programme for RW and SNF management started. Supervised by the National nuclear fund (NNF), the process did not envisage participation of the public and municipalities; such entities were not actively sought by NNF and encouraged by NNF to participate. A single public entity, the civic association Chceme zdravú krajinu (CHZK), was granted invitation to participate in the process only after it filed an official request based on the right to participate guaranteed by the Aarhus convention. However, setup of the working groups (e.g. timing of meetings) and the delay in joining the process did not effectively allow for public participation in the draft preparation before the commenting procedure. All participants, including the single public entity, could comment on the pre-final draft (output of working groups) from January to February 2022. Some of the proposals of CHZK were accepted, notably conducting a survey of radioactive contamination (and eventual rehabilitation) of the Manivier waterway channel was incorporated into the list of objectives of the programme. After the commenting procedure ended in February 2022, an updated draft was released in June 2022. However, the SEA process started with a delay in May 2023, after the draft was further updated, including e.g., recommendations of the Artemis mission which took place in February 2023. The announcement about the start of the SEA process was published on the webpage of the Ministry of Environment[127]. The announcement misinformed the public that it had only 15 days after publication to react. CHZK found out the ongoing SEA only on the deadline (15th) day and therefore was able to send only a short and inadequate reaction. The municipalities and public from the regions around nuclear facilities were directly notified only after 3 weeks. This notification again misinformed the public that it had only 15 days after publication on the webpage of the Ministry of Environment (which ended 8 days ago) to react.[128] Scope commenting took place during a 10-day period

[124] For further information, see: Position Paper by NOAH Friends of the Earth Denmark, SustainableEnergy and Grup de Cientifics i Tècnics per un Futur No Nuclear / Group of Scientists and Engineers for a Non-Nuclear Future on a Proposal for a Greenland Parliament Act to Ban Uranium Prospecting, Exploration and Exploitation, 31 July 2021, https://www.noah.dk/sites/default/files/inline-files/Position%20paper%20on%20uranium%20bill%202021-07-31.pdf

[125] Author: Michal Daniska

[126] Act no. 308/2018 Coll. as amended

[127] https://www.enviroportal.sk/sk/eia/detail/vnutrostatny-program-nakladania-s-vyhoretym-jadrovym-palivom-radioakti

[128] According to the EIA Act (no. 24/2006 Coll. as amended) the deadline for the public is the 15th day since publication on the website of the Ministry of Environment and the affected municipalities. The municipalities usually publish the announcements with delay, which postpones the deadline for the public.

in August, i. e. during summer holidays when capacities of the public and municipalities are reduced, and the reaction time usually is much longer. The municipalities from regions proposed for location of the deep geological repository (DGR) were not even denoted as "affected municipalities", (they were not addressed at all), although the final decision on the location of DGR is to be done by 2030, i.e., during the period of validity of the updated national policy and programme for RW and SNF management. All of the above demonstrate significant obstacles in effective participation of the public and municipalities.

Local partnerships experience

There are “citizen information committees" (občianska informačná komisia - OIK) in both the Slovak nuclear regions (Jaslovské Bohunice[129] and Mochovce[130]). OIK has no legal binding (is not required by law). Officially it is a special committee of the respective regional association of municipalities (ZMO). Its members consist of a predefined number of mayors nominated by ZMO and representatives of operators of nuclear facilities in the region. The official objective is to reduce the information gap between the municipalities and public on one side and the nuclear industry on the other side, e.g., by information proactively provided by the operators of the nuclear facilities, by providing answers and explanations to questions and topics related to the nuclear industry raised by the OIK members or by physical inspection of the nuclear installations[131]. The OIK statute does not mention the possibility for non-members to directly ask questions. The minutes of the meetings, questions raised, and answers or information provided are not published online and the OIK web page informs mostly about “business trips” to foreign nuclear regions.

Since 2019, during the ongoing EIA process for capacity increase of the RW treatment centre in Jaslovské Bohunice and discussion about foreign RW treatment, mainly incineration, at this facility, JAVYS has started to provide financial donations (up to 10 000 € per municipality per year) to 9 villages around the Jaslovské Bohunice NPP which hold the status "affected municipality" in the EIA process. The granted amount has strongly correlated with the position of the respective municipality to the capacity increase and foreign RW treatment, especially incineration, in Jaslovské Bohunice. For example, Veľké Kostoľany, the loudest opponent of the foreign RW incineration, was ultimately knocked out of the donation scheme and received 0 € in 2022 while remaining 8 municipalities received 10 000 € each. In 2019 Veľké Kostoľany were given 0 € as well, Žlkovce and Ratkovce, which also disapproved the capacity increase, were given 2 500 €, while the remaining 6 approving municipalities received 10 000 € each[132].

According to §12 sec. 1. f) of the National Nuclear Fund Act (in effect since 2019), the NNF resources can be used (among others) also for "reasonable" costs for engagement of the public in decision-making processes related to site search, geological survey, preparation, design, construction, commissioning, operation and closure of RW or SNF repositories and for "reasonable" costs for communication with the public (in relation to projects of the RW and SNF repositories only). However, the author is not aware of any application of this provision in practice. There is no real support of any kind available for engagement of the public in relation to nuclear facilities other than RW or SNF repositories.

4.5 Slovenia: “LILW repository site selection”[133]

Based on the lessons learned in the past failed site selection process for a LILW repository in Slovenia that took place between 1986 and 1993, the competent WMO ARAO[134] adopted together with the other

[129] https://www.oik.sk/

[130] https://www.zdruzeniemochovce.sk/oik-mochovce/

[131] see the OIK statutes available at https://www.oik.sk/oik-bohunice/statut/ and https://www.zdruzeniemochovce.sk/oik-mochovce/statut-oik/

[132] see EURAD deliverable 9.16 for further details and references.

[133] Author: Nadja Zeleznik

[134] Agencija za Radioaktivne odpadke/Agency for Radioactive Waste Management

responsible authorities (especially the Ministry of Environment and Spatial Planning) a much broader public participation process, supported by the Programme for drawing up a national location plan for low and medium-level radioactive waste disposal site in 2004[135]. Local partnerships (LPs) were established in the local communities in the Posavje region – e.g., in the municipalities Krško and Brežice – which were selected from 8 volunteered local communities in the siting process. The LPs served as an organisational frame for all activities during site characterisation and confirmation of potential sites with engagement of local population and also established a platform for cooperation and to some extent also for decision making of local stakeholders. The LPs were designed and proposed by ARAO to the local municipalities as an agreement signed by the director of ARAO and mayors to establish a kind of coordinating body for information dissemination, communication and involvement of local citizens in the site selection process with the aim to find a locally acceptable site for LILW repository. The name and the idea for LPs was transposed from the Belgian approach based on the established contacts between ARAO and founder of LPs (sociology professor at the University of Antwerp), but the structures, the status, the organisation and the mode of operation considered the characteristics and expectations of the individual local communities. Therefore, in two local municipalities Krško and Brežice two different LPs were established, providing the basis for public information and participation as well as a mode for consultations and verification, additional independent studies and other activities defined within these structures. Although the LPs were formally working according to agreements between ARAO and each of the communities, they provide a framework for participation and cooperation of all people - citizens in the site selection process.

The general scheme, given in Figure 5, foresees the establishment of local partnerships through a steering committee nominated by the municipality council, which has the role to coordinate and to facilitate the participation and involvement of citizens. To involve as many people as possible, different tools can be chosen such as organising different committees, working groups, presentations, round tables, workshops or any other appropriate way to involve locals. During the establishment of the local partnership, a clear programme, defining the purpose of the local partnership, principles, goals, participants, functioning, information accessibility, decision making, funding and time frames, has to be prepared and accepted by all partners. Funds were allocated to each of the LPs, for their functioning (administration and committees functioning), information to the public, site visits and any other activities that were organised by decision of the steering committee (app. €96,000/year). Additionally, there were also funds for independent expert opinions and studies that would be requested by LPs (app. €42.000/year). In addition, also each community received 233.118 € yearly for limited land use during field investigations based on the governmental decree with the compensation for approved site in value of 6 million € per year until closure of repository operation[136].

[135] http://www.pisrs.si/Pis.web/pregledPredpisa?id=DRUG2157 .

[136] Decree on the criteria for determining the compensation rate due to the restricted use of areas and intervention measures in nuclear facility areas, 2014, http://pisrs.si/Pis.web/pregledPredpisa?id=URED6353 .

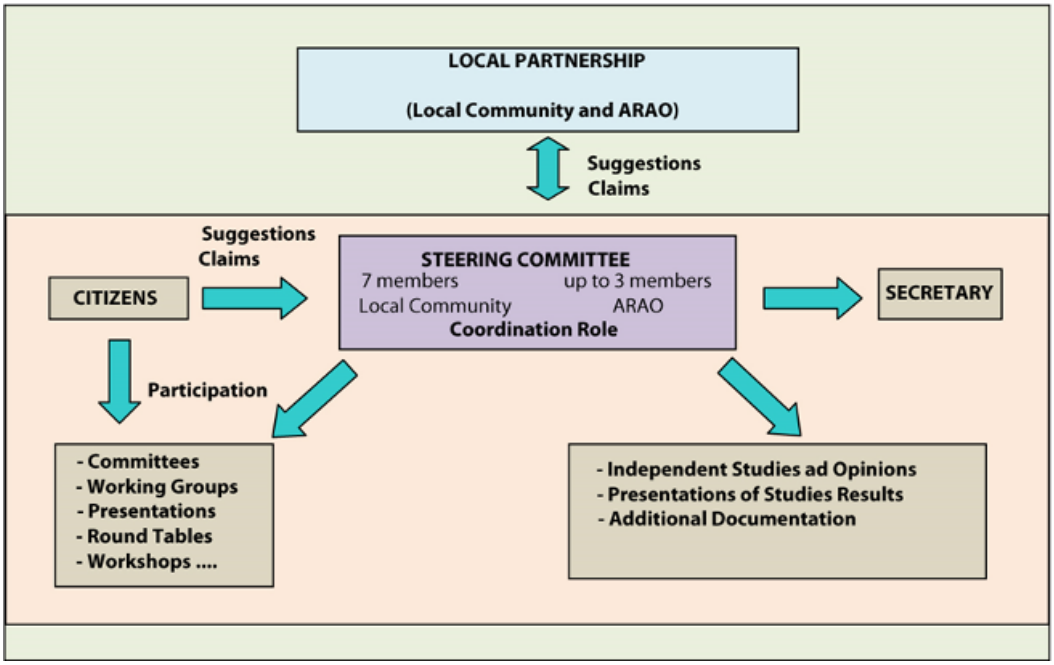

Figure 5 - General scheme of local partnership in Slovenia

The LPs had a formal role in the administrative procedures like preparation of the national spatial plan for LILW repository, the environmental assessment process, etc., where public participation is prescribed according to the Slovene legislation. In other issues related to site selection, the LPs functioned in an informal way, where participants discussed about field investigations, design solutions for LILW repository, safety aspects of repository and development of safety report (including WAC), potential environmental impacts, development possibilities due to compensation for the limited land use, societal and health issues and all other aspects that were relevant or interesting for the specific local community. The LPs were also obliged to organise broader discussions and form working groups, inform the public, hold round tables in communities, and involve independent expert opinions for some issues if they decided so. The work of LPs was public, and therefore the minutes, invitations and documents were published on the web page or in the locally usual way. Yearly they also reported to the municipality councils about activities and use of resources.

Although the LPs were involved in many processes and invited to participate in the coordination meetings at the responsible ministry for site selection, it must be mentioned that the decision-making power stayed with the local municipality council and other bodies of local autonomy, while the LPs have an advisory role. However, it was recognized also by all involved that no one would disregard the LPs position.

The formal duration of the LPs was determined by the duration of the siting process – they ended with the confirmation of the location for the LILW repository (Feb 2006 - March 2010) – a fact that local and NGO members of LPs were not satisfied with. Also, in Krško the LP the working programme stated that the duration of the LP is not limited to site selection phase and that its functioning would continue afterwards.

After the adoption of the Governmental Decree on the Detailed Plan of National Importance for the Low and Intermediate Level Radioactive Waste Repository on the location Vrbina, municipality Krško[137] ARAO continued with the development of project documentation, including the draft safety report. This work progressed very slowly and the EIA process for a LILW repository at Vrbina in the municipality of Krško started officially in March 2018 only when the first documents were published at the ARSO

[137] http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED5417 .

website. Within the EIA process, the documents including the EIA report have been open to the public and submitted to a public hearing to prepare environmental consent. The latter was the entrance point for the construction licence issued by the Ministry of the Environment and Spatial planning. The public hearing was performed in summer 2020 and received suggestions and comments that were responded to in October 2020. Several NGOs with a special status participated with comments and also the nearest local communes in the Krško Municipality, Spodnji Stari Grad. They expect that in the body that will supervise the LILW repository establishment also three members appointed by Spodnji Stari Grad will participate with the right to control all documentation, measurements and operations. In parallel, also a transboundary environmental impact assessment process according to the ESPOO convention started in which the Republics of Austria and Croatia were participating; Hungary and Italy decided that they do not raise any questions. The environmental consent was issued in June 2021[138], and the construction licence was issued in 2022 but it is not legally binding yet due to a complaint from a neighbouring company to the site (as in March 2023).

The established LPs in Slovenia had provided a good environment for access to information, public participation and engagement in international projects (like CIP, CARL, …) to exchange the views with similar communities. LPs also organised visits to the existing RWM facilities and communities. The access to the resources was secured and was managed mostly by the steering committee of LPs (entirely in LP Brežice, and to a lesser extent in LP Krško, where the mayor and council decided on the use of financial resources). Also resources for independent expert opinions were provided, with some good use to investigate: assumptions about the presence of radioactive waste in closed mine Dečno selo with analysis of samples, occurrence of cancer in municipality Brežice compared to the rest of Slovenia, measurements of specific radionuclides in food samples harvested on the area of municipality Brežice and environmental radioactivity measurements, legal aspect and regulatory restrictions, types of compensation and other financial incentives for local communities with nuclear facilities,assessment of LILW repository impact on local community developmental potential. Also, some elements of PP in the decision-making process have been noticed, however the formal decision making stayed within the formal representatives of municipality (community authorities and services, mayor and council).

Perhaps the weakest point of LPs was deliberate ceasing all activities immediately after the site was selected in the Krško municipality, called Vrbina site. Both LPs stopped to exist, the funding was not provided further. Although several voices were raised from citizens, in particular from the nearest village to the confirmed site Vrbina, about the promise of LP continuation (in case of LP Krško even written in documents), everything was stopped. The decision was in agreement with the mayor and the council, and the ARAO. The LP Brežice wanted also to continue and even proposed the reorganisation of two LPs in one new, rearranged to the selected site, but there was no will and no activities further. Another weak point was a very strong competition between neighbouring communities Krško and Brežice due to the high promised compensation for the selected site (paid in principle until repository closure, therefore for approximately 50 years in value of approximately 6 million € per year). Almost all the compensation was allocated to the selected municipality, and there were a lot of political actions behind the scenes who would be first to accept the repository in order to get most of the compensation. These will also impact any new nuclear siting in the region. The trust was seriously damaged, and some stakeholders had the feeling that they had been brought around (in the municipality and between municipalities). Any new process would need first to address those points[139].

[138] https://www.gov.si/assets/seznami/evidenca-oseb-ki-so-izdelale-porocilo-o-vplivih-na-okolje-in-pravnomocnih-okoljevarstvenih-soglasij/114_erico.pdf

[139] The contribution has been developed based on N. Železnik, (2015), Repository site selection experience in Slovenia: local partnership development and implementation, IAEA TM on Learning from International experiences of stakeholder involvement in RWM, 4-8 May, 2015 IAEA Vienna, Austria.

4.6 Sweden: "Implementing all Aarhus pillars"[140]

In section 2.2 there is a short description of the Swedish legislation for the governance of nuclear activities. There is a long tradition of access to information from public entities – but not from private entities like the implementor SKB. With the Environmental Code of 1998 the two pillars of access to public participation and access to justice in environmental decision-making of the Aarhus convention were implemented.

The Environmental Code stipulates that there has to be a consultation process for the development of the environmental impact statements that has to be a part of the licence application. National, regional and local public authorities, local affected persons and environmental NGOs are to be invited for consultation. A description of the process and how issues that were raised have been taken into due account has to be part of the licence application. A part of the access to justice is that the description of the consultation process has to be approved by the Land and Environmental Court as part of the licence.

Another part of the access to justice is that it is possible for local and regional authorities as well as local affected persons and environmental NGOs to appeal a licence decision by the court.

In an effort to improve the consultation process for the repository for spent nuclear fuel that started in 2002, the government changed the Nuclear Financial Act so that local communities involved could get resources from the Nuclear Waste Fund for participation. This resourcing was in 2005 extended to environmental NGOs. The funding allowed local communities to build up competence and to use independent expertise in order to constructively take part in both the consultation process and the review of the licence application.

The funding has been seen as a success and the government in the summer of 2022 put forward a plan to extend the funding into the future. However, the new conservative government that was elected in the autumn of 2022 has instead decided to remove the funding for environmental NGOs and the structure for future funding of local communities is uncertain.

Since the 1980s there has also been an independent scientific advisory component to the government on radioactive waste issues. From 1992 forwards the Swedish Council for Nuclear Waste has been this body and the council was given a special role during the consultation process for the repository for spent nuclear fuel. In addition to the formal consultation done by the nuclear waste company SKB the council created forums for discussion of issues seen as being of special importance by the actors taking part in the consultation. Unfortunately, the council was discontinued at the end of 2022 after working under different affiliations for almost 40 years, and the web page was removed in the spring of 2023[141].

Finally, there is a special access to justice possibility in the Environmental Code. The local community has the possibility to veto a repository for radioactive waste. In the licensing process for the repository for spent nuclear fuel the Environmental Court in January 2018 sent in an opinion to the government on the permissibility of the application. Östhammar community is where the Forsmark NPP is situated where the repository is to be sited. Before the court opinion was submitted, the community was planning a referendum on the question of whether to approve the repository. However, the court did not recommend that the government approve the licence application unless a number of issues regarding the long-term integrity of the copper canister had been resolved. This made the Östhammar community stop the referendum.

Before the government took the decision to approve the repository in January 2022, Östhammar community had decided not to use the veto, but without having a referendum.

---

[140] Author: Johan Swahn

[141] In an act of "civil disobedience" MKG (Swedish NGP Office for Nuclear waste Review) has resurrected the web page and it can now be found again at https://www.karnavfallsradet.mkg.se or http://kärnavfallsrådet.se .

4.7 Switzerland: "EKRA: a pluralistic participation body"[142]

The concept of EKRA (Commission on Disposal Concepts for Radioactive Waste Repositories) was developed between 1999 and 2001 by a Commission of seven independent scientists on behalf of the Ministry of Energy and Environment. The commission was chaired by Walter Wildi, geologist, Professor at University of Geneva.

One of the most important innovations concerned the monitoring of the facility during operation and after closure. It concerned both the deep geological repository for high-level waste and that for low- and intermediate-level waste.

For this purpose, the EKRA Commission proposed a division of the deep geological repository into two facilities: the main repository was to accommodate the majority of the radioactive waste and be gradually closed as loading progressed. The small repository, called pilot repository, should hold a representative fraction of waste (e.g. 1-2% of the inventory) and be systematically monitored from the start of emplacement operations. The duration of monitoring should go far out beyond the closure of the main facility. However, a specific closure date of the pilot facility was not mentioned. This was to be determined by the generations concerned.

The main repository and the pilot repository should be hydraulically separated from each other in the host rock area. This resulted in the fact that no common access (e.g. shaft) was provided.

The new Nuclear Energy Act of 2003, which was under parliamentary discussion at the time, took up practically all of EKRA's recommendations. It was the first time in Switzerland that the monitoring of a repository for radioactive wastes was legally embedded.

However, interpretations by regulators occurred after the law was introduced (especially Guideline G07 of the Federal Nuclear Safety Inspectorate: FNSI). They concerned contentious issues regarding governance, in particular the question of who should run the pilot-repository. According to the FSNI, the implementer should also operate the pilot plant.

This also affected the access to the two repositories, which is now accessed through a common shaft.

According to the author, many of the issues raised by EKRA were represented more or less at the same time by the Monitoring and Surveillance Committee (Comité de suivi) of the Mont-Terri Research Laboratory. This Committee was led by an EKRA member.

Transparency was demanded at all levels, including the publication of results. Publication and open access to all data: article 39 and possibly article 40 in the Swiss nuclear power act (Kernenergiegesetz) could perhaps be interpreted as a version of rolling stewardship: SR 732.1 - Kernenergiegesetz vom 21. März 2003 (KEG) (admin.ch)[143].

4.8 United Kingdom: "GDF and T&PP"[144]

After two previous failed attempts to site a Geological Nuclear Waste Repository (GDF) in the UK, the first one in the 1990's being rejected on Planning grounds due to scientific uncertainties and the lack of technical understanding as explained by the then Minister for the Environment in 1997[145]. The previous processes offered very limited opportunities for T&PP. Policy was based on the "Decide Announce and Defend" (DAD) siting model.

---

[142] Author: Marcos Buser

[143] At that time rolling stewardship was not defined in RWM. Here the correct text in German: https://www.fedlex.admin.ch/eli/cc/2004/723/de#art_39 and the English version is available here: SR 732.1 - Nuclear Energy Act of 21 March 2003 (... | Fedlex (admin.ch)

[144] Author: Colin Wales

[145] 17th March 1997 Minister of States Reasons for rejecting the NIREX Planning appeal. https://www.wiseinternational.org/nuclear-monitor/471/uk-waste-nirex-plans-rejected .

A second process based on "volunteerism" and labelled "MRWS" (Managing Radioactive Waste Safely) was carried out between 2008-2013. The MRWS was a 6-stage process, in which Expressions of Interest (EoI's) from local councils had to be received before the process could begin. These came from the two Local Authorities, surrounding Sellafield. Copeland and Allerdale councils who submitted their EoI's with Cumbria County Council who were the principal local authority responsible for planning Cumbria obtained an agreement from the government that it too would have to agree should the process proceed to stage 4 concerning "desk-based studies". Locally elected councillors were for the first time being involved with deliberations concerning the potential siting of a GDF as were other locally affected bodies such as the Lake District National Park Authority, the local Farmers Union and the Cumbria Tourist Board, with members of the public sometimes being invited to attend MRWS meetings to voice their concerns. However, some Freedom of Information Requests made by members of the public to the Nuclear Decommissioning Authority were effectively denied by receiving completely redacted answers. Consultation results were also subsequently found to have been manipulated and this was highlighted in the local press at the time. A short 3-page overview of the process is referenced below[146]. In order to proceed to stage 4 all three councils had to agree the process should continue. On Jan 30th, 2013, Cumbria County Council terminated the MRWS process together with its reasons for doing so[147]. Notably, the process also saw the emergence of local opposition groups though internet platforms.

The will to interact with local people seems to exist but mechanisms to allow meaningful interactions with civil society on technical matters throughout the process of GDF implementation are limited and controlled by the WMO NWS notably, the Community Partnerships (CPs) who are directly funded by NWS. The concern here is that members of the CPs drawn from the community who are democratically elected do not possess the necessary scientific and technical skills to meaningfully review and critique knowledge gained from past and current research. The following paragraph gives a woeful account of what can happen when conflicting scientific and technical matters arise when "Industry Capture" is prevalent in academia.

No opportunity currently exists for NGOs to fund independent access to scientific advice. The current legislation provides that resources can be made available for the CPs to obtain advice from members of Scientific Royal Societies. This should be welcome but previous examples of this have resulted in "conflicts of interest" as many members of these scientific societies have been, will be or are currently contracted to NWS and the Nuclear Decommissioning Authority (NDA). Sadly, one example led to a Scottish Court Case in which a previous member of the Royal Society (Emeritus Professor of Geology and Geophysics) was the subject of an act of professional deformation by a Royal Society Member. A retraction subsequently followed with costs being awarded in favour of the Emeritus Professor[148].

Given the Working with Communities legislation directs that a "community vote" will have to be taken to decide whether to proceed with GDF or not, it is incumbent on all CPs to ensure communities are educated for no other reason than an "informed" community is more likely than not to make an informed decision. In an ethical context, this generation is being asked to act as "proxies" when deciding on the level of risk (however small) to be tolerated by future generations.

Previous failed attempts have relied more on propaganda than discussing with and educating civil society as to intergenerational risks, what burdens they pose both in the construction, operational and post closure phases and, crucially, how such identified risks can be mitigated. e.g., with monitoring through deploying citizen science to collect background radiation readings as with IRSN's "Open Radiation" Platform[149] or with rolling stewardship. The current EURAD WP "MODATS" is uniquely

[146] Short overview of MRWS process https://democracy.allerdale.gov.uk/documents/s81498/ .

[147] Cumbria County Council termination of the MRWS process Council rejects nuclear waste storage plan | E&T Magazine (theiet.org) .

[148] Summary of Legal Case bought by Emeritus Professor David Smythe and outcomes, http://www.eastkentagainstfracking.org.uk/wp-content/uploads/2015/07/David-Smythe-final.pdf .

[149] Open Radiation Platform https://www.openradiation.org/en .

positioned to draw upon its knowledge by providing data for 4D modelling to visualise how a generic GDF might evolve over time. Moreover, as and when live data is available it could be used to construct "Digital Twin"[150] models to reflect the inventory to be disposed of. Clearly innovative solutions could exist to better inform CS understanding.

The current process has learned from the different failed attempts in past decades. While improvements concerning T&PP have been made, they have been incremental in nature.

Since local government reorganisation affected many communities close to Sellafield (20 Km) which fell under the executive remit of Cumbria County Council who were the Principal Local Authority now find themselves in the new Westmorland and Furness Principle local Authority who cannot participate in the siting process. Many of these communities now feel powerless as they are excluded from any participation and decision-making processes.

Funding could be made available to provide a truly independent and citizen representative platform which would enable community education and scrutiny of decisions.

[150] Digital Twins EU PREDIS Project, https://predis-h2020.eu/digital-twins-in-radioactive-waste-management/ .

5. General findings from the case studies

In this chapter, we bring together some general issues that appear from the different case studies in chapters 2 and 4. These findings are not conclusions, rather meant to gain more understanding of back-laying dynamics in the role of civil society in radioactive waste decision procedures and research and highlighting some of the better practices.

5.1 How to create a pluralistic information environment?

The Aarhus Convention is based on the notion that public access to information, public participation and access to justice support the quality of environmental protection, i.e. that transparency enhances the quality of decisions concerning the environment. The basis for this is that decision makers in a transparent environment will have access to a pluralist stream of information, instead of being locked in potentially erroneous limited information bubbles.

The described cases give an interesting insight into factors that determine whether research and decisions on radioactive waste issues can benefit from such a pluralist information environment.

In a majority of the described cases, there is a strong dependence on information from project promoters, i.e. the Waste Management Organisations (WMOs). This runs the risk of a one-direction flow of information – from the WMOs to the public – in order to convince the public, rather than benefiting from a multi-directional flow of information that can help optimise the quality of choices and decisions.

We can see this very clearly in the above-described case of Slovakia, where a structure was built in which the WMO informs the citizens information committees (OIKs), which consists of mayors and operators of nuclear facilities. These are then, in turn, expected to inform the public, without there being a mechanism in which members of the public can ask questions or discuss viewpoints with the WMOs on a regular basis. This pattern can be recognised in other Central European countries like the Czech Republic, Hungary, Romania, Bulgaria, but also in the described case in the UK. Here we see that reorganisations in the regional governance structure have cut out large nearby areas from decision and information processes, concentrating communication on an area that is economically strongly bound to the nuclear industry and effectively cutting out more contrarian voices in the process.

Some countries have tried to establish mechanisms that foster a more multi-directional information flow.

The Netherlands, for example, as described in deliverable 9.17, installed a from the nuclear industry independent “quartermaster” in order to investigate how public participation in radioactive waste decisions should be shaped. As a follow-up, another independent institute was tasked with investigating the issue deeper. Both interacted with a wide spectrum of stakeholders. But this was still on invitation only, and not open to the wider public.

In Sweden, already in a relatively early stage, the Swedish Council for Nuclear Waste (MKG), and the more grassroots oriented MILKAS, were set up to function as a two-way clearinghouse between citizens and NGOs on one hand and the nuclear and governance communities on the other. These bodies not only facilitated information streams towards the public, but they also supported the public in passing its viewpoints towards the WMO SKB, the nuclear regulator SSM and different governance structures. But, more than that, by fulfilling this spider-in-the-web function, they also built up a high level of expertise that enabled them, and the civil society stakeholders they represented, to play an active part in technical debates. They were funded from the radioactive waste funds and hence for long-term engagement not depending on uncertain finances depending on the winds of public interests. Together with Sweden’s high level of government transparency, this model is widely seen as best practice in creating a pluralist information environment. However, in an unexpected turn of events, the new more conservative Swedish government axed all funding in 2022 and MKG and MILKAS had to be closed down.

Another example of best practice we can find in France, where the establishment of Local Information Committees or CLIs secured not only information streams from the nuclear industry and governance structures towards the public, but also the other way around. The independent basis of CLIs, as well as

their access to independent expertise, guarantees to a certain extent that also critical voices and viewpoints can be heard. Although there is still a substantial body of the public that with some reason distrusts communication over CLIs (for instance some of the protest movements against the deep geological waste site Cigéo in Bure), the active stance of the CLI of Bure has made fundamental changes in the research agenda around Cigéo.

In both the Swedish and French case, we see that the three pillars of the Aarhus Convention, access to information, public participation and access to justice, together with what Nuclear Transparency Watch identified in its 2015 BEPPER report[151] as the fourth pillar of effective transparency, access to expertise, have been secured. This has enabled civil society to bring forward people that can effectively translate concerns and constructive criticism into viewpoints that can play a relevant role in research and decision making.

In Belgium, we see that the French model was in some form copied. However, the STOLA/STORA and MONA committees around Dessel and Mol also counted the WMO, the (not explicitly independent) TSO SCK-CEN and researchers among their members. Many of the citizens in these committees also had some background in SCK-CEN, a large employer in the region. We see for that reason a considerably less pluralist information environment and far more criticism from outside.

Something similar we can observe in Slovenia, where initially local partnerships were set up in the search for a location for a LILW storage, along the line of the French CLI model. However, these were cancelled as soon as the repository site was chosen, destroying what could have grown out to become a very constructive pluralist information environment.

5.2 Civil Society participation in technical issues

Within the ROUTES programme, there is a large commitment to have civil society participate also in technical discussions. The questionnaire shows that the level of involvement of civil society on the technical level is still highly dissatisfactory. This is also acknowledged by many of the civil society experts involved in ROUTES. The level of involvement needed for such interactions is high, and has to have a long-time continuity, whereas we see civil society participants easily tiring out. Our hypothesis is that the lack of commitment of civil society participants in the European level discourse on technical issues within ROUTES finds its basis on national levels.

In some of the above-described cases, we see that there are good experiences with involvement of civil society in technical debates. In France, the CLIs have enabled civil society to develop experts that participate on the highest level in research and review of technical issues – be it in the development of the ASN white book on tritium or the construction of the PNTL Pacific Grebe for plutonium transports or through the technical dialogue around the “Cigéo” project carried out with the IRSN. The MKG played a pivotal role in the assessment of the copper corrosion issue and other technical issues for the Swedish radioactive waste programme. In Denmark, the organisation NOAH helped finding a way out for options for small inventory countries. In Germany, the current programme for finding a solution for final disposal opened up to civil society the possibility to give input in technical discussions. In Switzerland, we see the intention to involve civil society in the assessment of the performance of a pilot plant for deep geological disposal.

Still, in most countries, civil society is not actively involved in technical discussions. And this lack of involvement also triggers a negative spiral: without the challenge of involvement in the technical side, civil society also loses interest. In the case studies, we can see apart from Sweden (until recently) and France no systematic involvement of civil society in research or other technical issues. France shows that an open attitude of an independent TSO like IRSN can play a pivotal role there, as well as an open mind of an independent regulator. In Sweden we see that securing financing for such participation is an

[151] https://www.nuclear-transparency-watch.eu/wp-content/uploads/2016/04/NTW_Transparency_in_RWM_BEPPER_report_December_2015.pdf

important precondition – and if that is secured, also a sufficient level of expertise is delivered by civil society.

5.3 Power in relationships

There are certain issues of power that play a crucial role in the quality of output from transparency and public participation.

In the case of Sweden, for instance, a high level of public engagement was partially triggered by the right of veto for the involved municipality. But also, the availability of finances for coordination and independent expertise over MKG and MILKAS helped to create a balanced power level between civil society actors on one hand, and the WMO and nuclear regulator on the other. As did the access for civil society to juridical procedures beyond mere legal aspects, i.e., on issues of content like in the case of the copper corrosion issue.

The contrary we have seen in the case of Greenland, where lack of consultation (in spite of promises) leads to increasing opposition. Whereas we have seen in Slovenia that an untransparent use of financing and compensation can lead to counter-constructive competition between municipalities.

Access to justice, especially concerning content issues, is weak in most countries, for instance because of high administrative fees for access to court and lack of sources to finance legal assistance for citizens that have encountered less than optimal decision procedures. Or because courts shy away from the content of appeals and stick to the procedural legal framework. When citizens have a position of balanced power during research, review and decision processes, tedious legal procedures may be prevented. But it is exactly the possibility for citizens to go to court, also on content issues, that is one of the crucial factors to give them the power balance in the preceding phase that results in them being taken seriously. If that option is non-existent or faces serious barriers, established interests can just wait out any resistance without implementing, or even noticing the constructive value of transparency. It is possible to see this, as an example, in the UK case, where access to justice is extremely cumbersome and costly.

5.4 The position of WMOs in transparency

The Aarhus Convention gives citizens the right of access to information held by authorities, and the right of public participation in environmental decision making by authorities. In most countries in the EU, WMOs do not consider themselves being authorities in the sense of the Aarhus Convention. In contrary, in many cases, we see that WMOs use their legal entity as argument to bar citizens from access to information or any form of public participation in their strategic development or more detail decision procedures. Our case studies have shown that the NWS Ltd in the UK, JAVYS in Slovakia, SKB in Sweden, all private entities, though in the first two cases state owned, but even ANDRA in France, a state body, in general that many WMOs do not see themselves having obligations under the Aarhus Convention. We have addressed this issue already in the case of COVRA in the Netherlands in the deliverable 9.17, where we have shown that on the basis of jurisprudence under the Aarhus Convention[152], also entities that fulfil public services as if they were a state authority, and that includes WMOs, are subject to all the obligations under the Aarhus Convention, including access to information and public participation.

It is therefore advisable that WMOs align their transparency policies with those of, for instance, their national nuclear regulators.

[152] ACCC/C/2004/1 Kazahstan: https://unece.org/fileadmin/DAM/env/documents/2005/pp/c.1/ece.mp.pp.c1.2005.2.Add.1.e.pdf

6. The process of engaging civil society in the short- and long-term

An investigation into public participation in the technical aspects of RWM and not least the development of the safety case in the short- and long-term does not make much sense if these time aspects are not related to civil society itself at a more general level: In order to understand the time dimension of the technical aspects of RWM and the uncertainties connected with these in regard to CS involvement, it would be relevant to deal with the uncertainties related to the continuity of public perception of, interest in and acceptance of RWM, especially over long periods of time. Thus, it would be meaningful to define the notion of long- and short-term not only in RWM, but also in the process of engaging CS, which is here partly developed from discussions in four UMAN workshops, try to establish general principles for the long-term engagement of CS, and briefly describe the pillars of an intergenerational stewardship culture, which in this case would be rolling stewardship and long-term stewardship.

Also, it should be noted that evolutions of uncertainties in the engagement of CS in RWM in the long-term are more difficult to predict than in the short-term, because the former are related not only to societal and political developments, but also to physical conditions that change over time and could have an impact on the geosphere and consequently on any type of final geological disposal. However, in order to be able to frame such predictions it would be appropriate to offer at least a preliminary definition of the notions of “short-term” and “long-term” in the process of engaging CS in RWM.

6.1 Definitions of short- and long- term

In the perspective of **the RWM process itself, short-term** would imply engagement of CS in RWM limited only to one of the six phases defined by EURAD to describe the RWM process in its entirety, at the time when the phase in question plays out.

Phases	Content
Phase 0	Policy, framework and program establishment
Phase 1	Site evaluation and site selection
Phase 2	Site characterisation
Phase 3	Facility construction
Phase 4	Facility operation and closure
Phase 5	Post-closure

Table 5 - The six phases of RWM, as defined by EURAD.

In regard to this process, **long-term** would in a best-case scenario mean taking into consideration all the afore-mentioned phases when engaging CS, and not only the one that plays out at the time of the engagement. Here, the post-closure phase would have a special significance because of the timescales involved. Also, it could be argued that this phase is still not properly delineated from facility operation and closure, especially in regard to the question, how long an active and a passive monitoring phase should last?

Furthermore, geological disposal depends on very long-term geological timescales – i.e., the conceptual framework used to describe the timing and relationships between events that have occurred during the history of the earth[153]. The reason is that enclosure of RW over very long periods is determined by the geologic properties of the selected isolating layers. This selection requires a layout and proof for the

[153] In increasingly smaller units of time, the generally accepted divisions are: eon, era, period, epoch, and age. See: Eustoquio Molina, “Geologic Timescale”, in Encyclopedia of Time: Science, Philosophy, Theology, & Culture, 2009. SAGE Publications, 9 December 2010.

geologic stability of the disposal and its inertness against all natural phenomena - e.g., shorter- and longer-term ice ages, as shown in Figure 6.

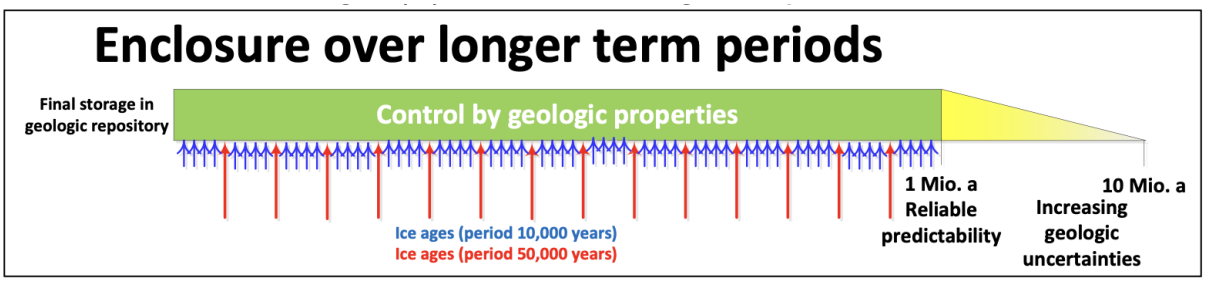

Figure 6 - Enclosure over longer term periods[154]

Although for periods beyond 1 million years, it is assumed that predictions can be made, these are only indicative. Reasonable doubts on the long-term reliability of an isolation layer could lead to the conclusion that a considered site is unsuitable for geologic disposal[155].

In a long-term perspective, the complexity of the issues at hand will increase as well as the unknowns in any prediction. As illustrated in Table 5, knowledge could be available or not, which would result in known knowns (that could be ignored) and unknowns, and even unknown unknowns, and the number and seriousness of the unknowns would increase the longer the time-perspective of the prediction is. As demonstrated in the figure, these uncertainties could relate to among others initial characteristics of the RW, RD&D, data acquisition, siting criteria, design and construction options, the evolution of the programme and the disposal systems and its environment, definitions of limits, controls and conditions and interactions with future stakeholders, etc.

Knowledge is available	*Lack of knowledge*
Known Knowns *What is known & used*	**Known Unknowns** *What we know we don't know*
Unknown/Ignored Knowns *What is known but we are not aware of or do not consider*	**Unknown Unknowns** *What we don't know we don't know*

	Known unknowns	Unknown/Ignored Knowns	Unknown Unknown
5. Uncertainties associated with ... completeness			
1. Programme uncertainties			
2. Uncertainties associated with initial characteristics			
3. Uncertainties in the evolution of the disposal system & its environment			
4. Uncertainties associated with data, tools & methods used in the safety case			

Table 6 - Classification of uncertainties according to the availability and use of associated knowledge (left) and the uncertainty matrix combining specific uncertainty types with availability of knowledge (right)[156]

Obviously, under real-life conditions, the delineation of short- and long term in the perspective of RWM could vary and there might be overlaps, because engagement of CS could cover more than one phase.

[154] Gerhard Schmidt, The Danish Inventory of radioactive waste and the required repository type Öko-Institut Working Paper 3/2014, https://noah.dk/sites/default/files/2017-01/Oeko-Instituts%20Working%20Paper%20on%20the%20Danish%20Inventory%20of%20%20Radioactive%20Waste%20-%20November%202014.pdf .

[155] Ibid.

[156] Daniela Diaconu et al., UMAN – a pluralistic view of uncertainty management, EPJ Nuclear Sci. Technol., 9 (2023) 2, https://doi.org/10.1051/epjn/2022049 .

At the same time, it might be difficult to maintain engagement during all the phases of RWM, particularly during the post-closure phase of a final repository.

In the perspective of CS, because of the long lifetime of the RW, which in some cases equals innumerable human generations (usually set to approximately twenty years each), **short-term** would be commensurate with one or a few generations, whereas **long-term** could correspond to many, very many or innumerable human generations. Here as well, there might be overlaps between the definitions of short- and long-term.

In conclusion, it could be argued that short-term and long-term in the perspectives of both RWM and CS, in each case are more long-term than for virtually any other activity in society, because of the long lifetime and thus the related uncertainties and risks of the RW. This could also mean that the concept and perspective of time is more relevant in RWM and for the engagement of CS in RWM than for most other activities in society. The challenge here would be to find a mechanism for balancing the time-perspectives of CS with the timeframes of RWM in an efficient, proportionate and politically and ethically acceptable way.

6.2 Outcomes of discussions in the UMAN seminars on long-term engagement of civil society

From October 2020 to December 2022, CS experts in ROUTES participated in four workshops organised by EURAD Work Package, Uncertainty Management Multi-Actor Network (UMAN), Task 5, which among others throw light on the engagement process from various perspectives that all appears to be relevant in this context. The seminars focused on what uncertainty management means for different types of actors and how it is related to risk, safety and the safety case and the role of ICS (*Seminar 1*, October 2020); on preferences of actors, evolutions of uncertainties throughout different phases of RWM in regard to site and geosphere, and how ICS contribute to the management of these uncertainty types (*Seminar 2*, October 2021); on evolution of uncertainties related to human aspects, including public acceptance, schedules to be considered for implementing the different phases of the disposal programme, the emergence of new knowledge and the adequacy of safety related activities for the implementation of safety provisions (*Seminar 3*, June 2022); and finally on methods to be used for discussing and organising pluralistic assessments of uncertainties throughout a disposal programme (*Seminar 4*, December 2022)[157].

Generally, concerns were raised particularly with respect to the **investigation of RWM programme alternatives** in order to address uncertainties in the process itself in the long-term and in regard to the possibility of retrievability, recoverability and related knowledge transfer. Furthermore, the precautionary principle as guidance for decision-making and the idea of rolling stewardship in RWM (*cf.6.3*) were advocated. Here, long implementation times were considered an asset. However, evolution over time might require a flexible interpretation of safety standards. More attention should be paid to managing "unknowns knowns" (or "ignored knowns"), e.g., by means of establishing appropriate management systems and developing a safety culture. Also, given that there are ways and methods of addressing technical uncertainties, other uncertainties require more attention. Particularly the CS representatives stressed that the most important uncertainty is the societal understanding of the system, and that technical and political uncertainties are related and therefore should not be separated[158].

---

[157] The description of the outcomes of the discussions in the UMAN seminars is mainly based on: Julien Dewoghelaere et al. (2023), Synthesis report of WP UMAN Outcomes from a Civil Society Point of View. Final version of Deliverable D10.17 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593 to be published in 2023.

[158] Although the different actors took different views on uncertainty management, it appears during some of the seminars that there were many shared views with CS representatives, WMOs, TSOs, REs about uncertainties on knowledge management, on storage and transfer of data over generations, as a part of societal uncertainties, cf. Klaus-Jürgen Röhlig (2021): UMAN – Understanding of uncertainty management by the

Concerns over the recoverability of RW in **the post-closure phase** of a GD were raised and it was discussed for how long this possibility should exist, if not permanently. Furthermore, the question was asked whether the possibility of full retrievability and recoverability would be one of the determining criteria for choosing the proper type of disposal method. Thus, a characterisation of the needs for retrievability options and the corresponding criteria in order to make it possible to plan for keeping these options open as long as possible would be needed. In this regard, uncertainties on trans-generational aspects, including information transfer from generation to generation, the risk of memory and data loss, warning over time, the time perspective of surveillance, and responsibilities, also after the responsible bodies have disappeared, would constitute a problem.

According to the CS representatives, **effective inclusion of CS** should be seen in an intergenerational perspective, not least due to the fact that implementation of a DGR is far from being a classical industrial delivery. Rather, it is an experimental process of development involving unavoidable uncertainties that will be dealt with over time, incorporating at each stage new social, political, economic and technical information. Hence, the objective of a risk analysis of a final disposal concept for RW must be that it is able to address the challenges from particularly the long-lived RW and produce a well-planned and science-based strategy for RWM in the long term (efficiency within a multitude of timeframes, but particularly in the long term). Furthermore, any problem complex within RWM, even when it is analysed as a supposedly isolated phenomenon, must be assessed in the context of the six phases defined in EURAD as constituting the RWM process (*cf. 5.1*) even though not all phases turn out to be relevant in a given context and some are more relevant than others. A stepwise, transparent and flexible decision-making process is needed to manage uncertainties in a way which is satisfactory to all stakeholders. The dialogue with the stakeholders is a continuous exchange that includes regulators, implementer, public experts and society in a long-term engagement and decision-making on uncertainties based on, among others, multi-layer discussions with local and national stakeholders[159].

In terms of human aspects, particularly an **enlarged safety culture**[160] (see *Figure 7*) is perceived to support long-term intergenerational multistakeholder governance of GD. Regarding uncertainties related to the adequacy of safety-related activities for the implementation of safety provisions, it is recognised that not only technical, but also socio-technical issues are at the root of this type of uncertainty. Conditions and means for a very long-term intergenerational governance are that CS must take part in the decision-making process right from the start and ample time is made available to consider and discuss the issues in depth before coming to a considered view. Here, transparency is a key factor - i.e. transparency of information, in decision-making processes, transparent reporting of participants' views, etc. Furthermore, public support can be generated through **trust** and trust, be generated through public engagement. In this regard, trust should not only be considered as a condition for the acceptance of a particular technical solution, but as a general condition for managing high complexity issues. In conclusion, the notion of safety culture can help sustain trustworthy interactions among the concerned categories of actors in the context of long-term RWM processes involving uncertainties, but there is also a need for flexibility in order to make room to consider progress and errors, necessitating reorientation during the process. This should include CS at international, national and local level, during the development of the safety case in a long-term perspective and also in the perspective of the Aarhus Convention.

---

various stakeholders. Final version as of xx.xx.xxxx of deliverable D10.13 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593 to be published in 2023.

159 See also: Muriel Rocher (2021), UMAN - Pluralistic analysis of site and geosphere uncertainty. Final version as of xx.xx.xxxx of deliverable D10.14 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593 to be published in 2023.

160 Here, the term safety culture refers to INSAG's Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident, published by the IAEA in 1986: "Safety culture is that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance."

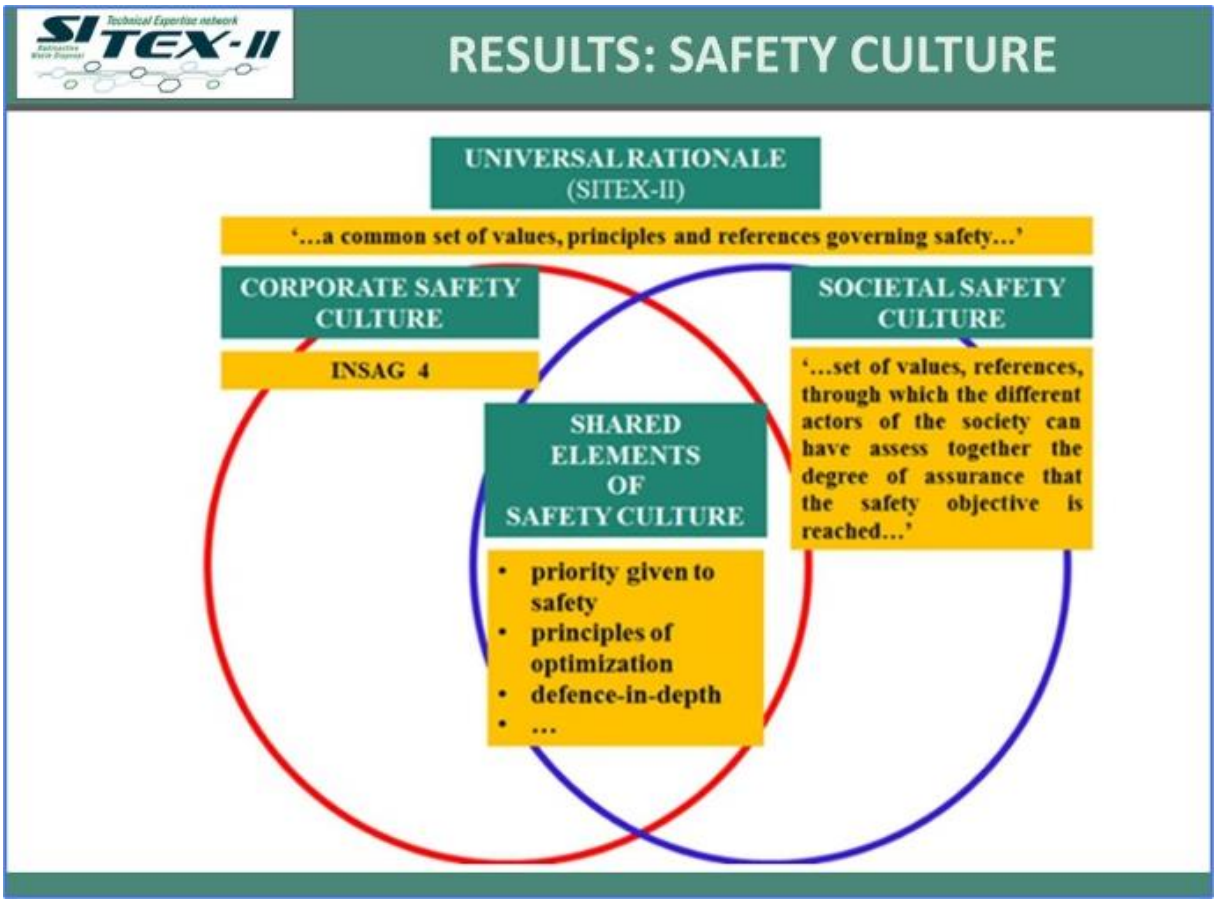

Figure 7 - An enlarged safety culture (SITEX II)[161]

In regard to **uncertainty on scheduling**, any given schedule is the result of a mixture of technical constraints and of strategies of the various actors, with sometimes opposite interests, leading to unreducible uncertainties. Here, postponing decisions can be a condition for improving safety (cf. the comments on application of the precautionary principle in 5.3) by taking appropriate time to manage unexpected events or uncertainties.

Concerning the emergence of **new knowledge** - i.e. knowledge that has emerged by new research and monitoring, is new only for certain actors, including actors that would benefit from having it (unknown knowns) or known but not taken into account (ignored knowns), is generated through RD&D activities, technology development, etc.[162] – it is inherent to a safety analysis of any long-term process. In a CS perspective, it does not undermine the credibility of the safety review, on the contrary it does contribute to reinforce it. Possibly periodic safety reviews and renewal of the licences could be used as points in time to introduce and discuss new knowledge in a democratically oriented, participatory manner. Ample resources to produce new knowledge have to be ensured, which might be a task for research policies, and transparency of the monitoring results would be a key aspect in order to create conditions for new knowledge to fully contribute to reinforce safety. Proper scheduling of periodic safety reviews open to public review associated with EIAs would also be necessary, if crucial new knowledge emerges.

[161] The EU project SITEX II (task leader: FANC) was dedicated to an enlarged safety culture to support very long-term interactions with society. See: PowerPoint Presentation, UMAN Seminar #3: Key Uncertainties Related to Human aspects from UMAN draft deliverable 10.8 from Subtask 3.4 (J-N. Dumont, Andra) The Civil Society contribution, prepared by the UMAN Task 5.2 together with the CS group (March 16th, 2022), Gilles Heriard-Dubreuil, Mutadis, June 14, 2022.

[162] Jean-Noël Dumont (2022), Pluralistic analysis of human aspects related uncertainty. Final version as of deliverable D10.15 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593.

6.3 General principles for long-term engagement of civil society

Due to the long time-perspective of RWM, **future ethics** is relevant to the decision-making in RWM as well as the structure and the legitimacy of long-term engagement of CS: future ethics is an ethical system concerned with the transactions and relationship between successive generations. These do not only impact relationships between overlapping generations of different ages, such as grandparents, parents and children, but also the relationships between the generations that live at different times, including future generations, whose numbers, quality of life and existence very much depend on the decisions and policies of current generations[163].

Regarding the question of **justice between the generations**, the most convincing argument for a future oriented responsibility for the RW is found in the so-called *intergenerational egalitarianism*, which is not an absolute, but relative standard. It says that future generations should not be put in a worse position than current generations. This argument presupposes a universal equality principle, which implies that it is possible to justify equal rights for all currently living persons. If such an argument applies to current generations, it also in principle applies to future generations, because the qualifying properties in such an extension do not have to be altered[164]. Intergenerational egalitarianism is supported by risk ethical reflections on the symmetry of and distance in time and space, because it is generally accepted that moral agents who are able to affect people, who are located far away in space, have a responsibility for these people. This point of view is recognised in all types of universal ethics: what applies to people far removed in space, also applies to people far removed in time, because it is just as arbitrary to discriminate on the basis of time as to discriminate on the basis of space. Thus, currently existing persons have obligations towards future existing persons, irrespective how far in the future they might exist. The fact that people who are distant in space can be identified, but not people distant in time, is irrelevant in this context.

The main principle to be applied during the long-term engagement of CS is **the precautionary principle**. This is a **legal** as well as an **ethical** principle and is considered one of the pillars of European environmental law. Its origin is among others Principle 15 of the Rio Declaration that defines it the following way: *"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*

This means that if there is a strong suspicion that a certain activity may have environmentally harmful consequences, it is better to act before it is too late than wait until full scientific evidence is available that unequivocally demonstrates a causal connection between the activity in question and its possible impacts. Systematically, the precautionary principle is a subcategory of the prevention principle, which says that it is easier to respond to environmentally harmful activities before rather than after they occur, by preventing them[165].

It could be argued that the precautionary principle applies to the actions of CS during the engagement as an actor in the RWM as well as to the engagement in itself, which means that both represent a manifestation of precautionary principle. Here, particularly public acceptance of crucial and irreversible

[163] Robin Attfield: Environmental Ethics, an Overview for the Twenty-first Century, Cambridge 2006.

[164] Anton Leist: ‚Ökologische Ethik II: Ökologische Gerechtigkeit, Global, intergenerationell und humanökologisch', In: Julian Nida-Rümelin (Hrsg.): Angewandte Ethik, Die Bereichsethiken und ihre theoretische Fundierung, 2. aktualisierte Auflage, Stuttgart 2005.

[165] The description of the general principles for long-term engagement of civil society, including the application of the precautionary principle, is mainly based on: Julien Dewoghelaere et al. (2023), Synthesis report of WP UMAN Outcomes From a Civil Society Point of View. Final version of Deliverable D10.17 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593 to be published in 2023.

decisions is part of the checks and balances that put safety concerns at the centre of the RWM decision-making.

6.4 Rolling Stewardship

Further exploration of the concept of rolling stewardship is one of the 22 recommendations (StSt-2) in ROUTES Deliverable 9.3 on recommendations for R&D, strategic study and knowledge management activities for future European collaboration [9.]. According to the deliverable, it is essential to integrate these recommendations into new multilateral programs, whether through the continuation of the EURAD-2 program or collaboration under multilateral organizations such as, e.g., the IAEA. Furthermore, exploration of rolling stewardship would help to clarify the issues associated with long-term planning and schedules underpinned by a stepwise decision-making process and ensure that RWM activities are meticulously thought out and strategically executed, ultimately fortifying safety and effectiveness.166

Due to the fact that final disposal of RW increasingly becomes a pressing matter, so does the different methods of disposing the waste and the issues related to disposal, including human factors such as good governance, provision of sufficient funding, transfer of knowledge and the possibility of reversibility of crucial decisions in the RWM process. One of the management models that has attracted considerable interest is rolling stewardship, which can be described as a strong version of Long-Term Stewardship (LTS) of RW. Due to the very long time-perspective that is required by rolling stewardship in regard to LTS, it is often perceived as controversial. However, because of its popularity and not least the increasing significance of the precautionary principle in environmental management and environmental law, which rolling stewardship embodies better than any other type of RWM, its constraints notwithstanding, one could argue that it – as mentioned in the ROUTES recommendations - merits not only mentioning, but also a closer look within ROUTES and the EURAD project as a whole. As of now and in this context, LTS and rolling stewardship will be perceived as a heuristic, dynamic factor developed from case studies, with the goal of contributing to the promotion of an intergenerational stewardship culture. Furthermore, the intention is to increase the spectrum of possible long-term modalities of T&PP.

Rolling stewardship was first mentioned in 1995 in a study by the U.S. National Research Council[167]. At that time, it had a more limited scope than today, planning for stewardship only one generation ahead. The study recommended rolling stewardship as an option for addressing contaminated sites that pose significant clean-up problems and where no ample technological solutions are available.

[166] According to ROUTES D9.3, StSt-2, transparency, public engagement, and knowledge preservation are critical aspects, which could be addressed by providing clarity on the dissemination of public information in the long term and establishing robust public participation processes, fostering trust among stakeholders. Moreover, this approach would ensure the perpetual utilization of past knowledge and experiences to inform future RWM practices. By considering practical challenges that can be addressed in the short term while maintaining a broader perspective on future needs, it offers a dynamic framework for intergenerational stewardship, supported by institutional control mechanisms addressing legal, technical, financial, administrative, and research and development (R&D) issues. These mechanisms include the development of overarching principles guiding stewardship activities, determining guidelines for their implementation, dissemination of information, promotion of adaptability, and addressing funding concerns.

[167] National Environmental Policy Institute (NEPI): Rolling Stewardship: Beyond Institutional Controls, Preparing Future Generations for Long-Term Environmental Cleanups, December 1999, p. 10, http://nonuclear.se/files/rolling-stewardship-nepi199912.pdf .

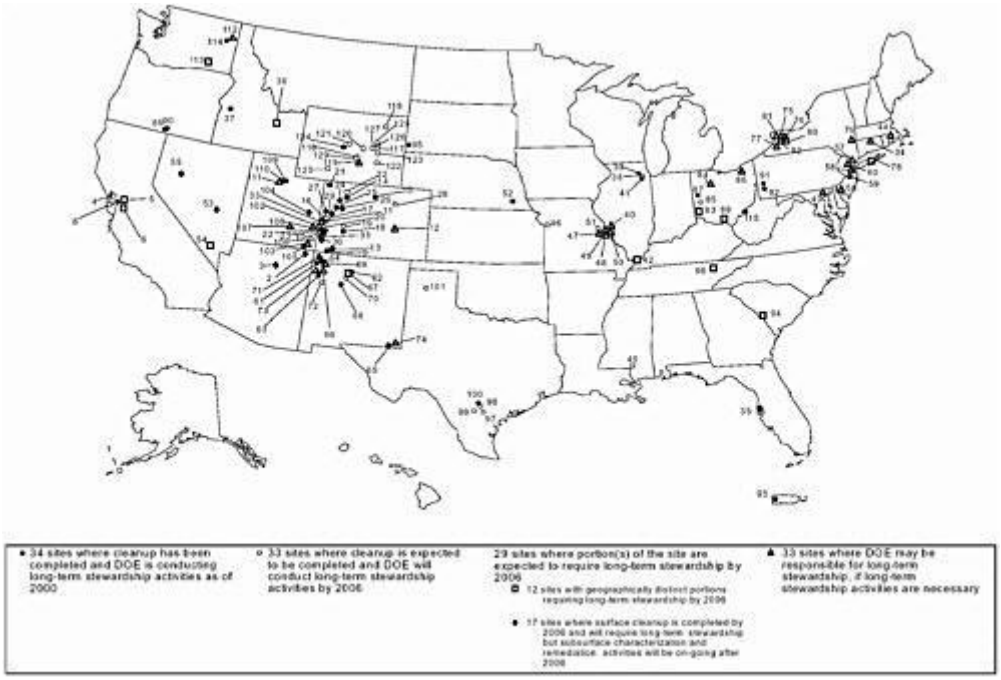

Figure 8 - Map of sites anticipated to require LTS by DOE[168]

The basis of rolling stewardship is LTS, a theoretical as well as a practical concept, necessitated by the more than 140 sites in the United States heavily contaminated by radioactive substances (*see Figure 8*). The sites are part of the legacy of nuclear weapons production during the Manhattan Project and the Cold War. The contamination at many of these sites continues to be dangerous to the public health and the environment and require management into an indefinite future. Thus, the U.S. Department of Energy (DOE) has dubbed its activities beyond closure of contaminated sites "long-term stewardship" (*for definitions of stewardship and LTS, see Table 6*). LTS is preceded by *Long-Term Institutional Management (LTIM)*, a concept developed by the National Research Council Committee. LTIM is an approach to planning and decision-making that balances the use of measures available to site managers in protecting public and worker health and safety, and the environment, i.e., contaminant reduction and contaminant isolation. LTIM also includes LTS[169].

It is worth noting that completion of remediation does not put an end to LTS: remediation is considered complete when deactivation or decommissioning of all the facilities in question have been carried out, but long-term surveillance and monitoring are excluded; when releases to the environment have been cleaned up in accordance with agreed-upon standards; groundwater contamination has been contained, or long-term treatment or monitoring is in place; nuclear materials and spent fuel have been stabilised and/or placed in safe long-term storage; and "legacy" wastes, i.e., types of waste that have been produced by past nuclear weapons production activities, with the exception of high-level waste, have been disposed of in an approved manner[170].

The concept of **rolling stewardship** in its current form is to a wide degree attributed to the president of the Canadian Coalition for Nuclear Responsibility (CCNR)[171]. Broadly speaking, it signifies an

[168] A Report to Congress on Long-Term Stewardship, Volume I—Summary Report. Office of Environmental Management, Office of Long-Term Stewardship. DOE/EM-0563. January 2001. Washington, D.C.: U.S. Department of Energy.

[169] National Research Council, Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites. 2000. Washington, D.C.: National Academy Press.

[170] U.S. Department of Energy, Long-term Stewardship Planning Guidance for Closure Sites. Office of Environmental Management. August 2002.

[171] Gordon Edwards: Comments on Consideration of Environmental Impacts on Temporary Storage of Spent Fuel After Cessation of Reactor Operation, submitted by the Canadian Coalition for Nuclear Responsibility to the

intergenerational management concept requiring monitoring and maintenance of the RW for an indefinite period of time, with responsibility being passed on from one generation to the next, preserving the possibility of retrieval, recharacterization and repackaging of the waste. It also requires a mechanism for re-instructing the next generation, which provides detailed information on the nature of the wastes and the associated hazards, and ensures that the next generation is fully aware of the need to spend time and money on the RW and if necessary, to see that corrective action is taken in a timely fashion. This process could last until a final safe solution is found which would no longer require constant care and memory.

***Definition stewardship*:** (gestion, Verwaltung) "Stewardship" is derived from "steward" who, acting in various functions, can carry out several tasks simultaneously. According to the U.S. National Research Council[172], a steward of very long-lived hazards can act as a *guardian*, stopping activities that could be dangerous; as a *watchman* for problems as they arise, via monitoring that is effective in design and practice, activating responses and notifying responsible parties when needed; as a *land manager*; facilitating ecological processes and human use; as a *repairer* of engineered and ecological structures when failures occur and are discovered, as unexpected problems are found, and as re-remediation is needed; as an *archivist* of knowledge and data, to inform the future; as an *educator* to affected communities, renewing memory of the site's history, hazards, and burdens; and as a *trustee*, assuring the financial wherewithal to accomplish all of the other functions. Furthermore, stewardship is considered a *dynamic concept*: technological capabilities are likely to change, and the study of monitoring data and the accumulating experience of stewards is likely to improve both understanding of the sites and of how to manage them effectively. Both sets of changes will likely prompt reappraisal of risks and consideration of additional remediation. This range of activities requires the human and institutional capacity to fulfil these roles as needed, through the decades and centuries in which the risks persist.
Definition LTS: The physical and institutional controls, and other mechanisms needed to ensure protection of people and the environment at sites where plans have been developed to complete clean-up after site closure (e.g., landfill closures, remedial actions, removal actions, and facility stabilisation). This includes land-use controls, monitoring, maintenance, and information management[173]. LTS applies to sites and properties where long-term management of contaminated environmental media is necessary to protect human health and the environment over time.

Table 7 - Definitions of stewardship and LTS

More specifically, rolling stewardship provides a framework for a chain of management decisions that can be changed over time, empowering each generation with greater information on stewardship tools and practices. Instead of focusing on an infinite, unpredictable future, it touches on practical problems that can be solved in the short term with some guarantee of success. Moreover, it includes institutional control mechanisms that are meant to address among others legal, technical, financial, administrative, and R&D issues[174]. Among these are:

US Nuclear Regulatory Commission, Docket ID No. NRC-2012-0246, 2013, http://www.ccnr.org/CCNR_NRC_2013.pdf .
See also CCNR - Nuclear Waste - Abandonment versus Rolling Stewardship (undated), http://www.ccnr.org/Rolling_Stewardship.pdf .

172 "Contents of Report." National Research Council. 2003. Long-Term Stewardship of DOE Legacy Waste Sites: A Status Report. Washington, DC: The National Academies Press. doi: 10.17226/10703, https://nap.nationalacademies.org/read/10703/chapter/3#17

173 U.S. Department of Energy: Long-Term Stewardship (LTS) — DOE Directives, Guidance, and Delegations, https://www.directives.doe.gov/terms_definitions/long-term-stewardship-lts

174 For more on this subject, see: Dewoghélaëre, J.; Hériard-Dubreuil, G.; Hooge, N.-H.; Mraz, G; Rey, H. (2020): Preliminary elements for D10.17: Uncertainties in Radioactive Waste Management –Views of the Civil Society's Group. Work Package 10 – UMAN.

Development of overriding principles to guide stewardship activities: common principles might be useful, without insisting that they be implemented the same way in every context. As previously mentioned, the precautionary principle (as well as other environmental principles) would be relevant here, after being subject to further definition and interpretation in the light of the situation, to which it is applied, particularly in regard to the time horizon of the issue in question.

Determining guidelines for rolling stewardship activities: e.g., these could be a comprehensive and credible characterisation of the RW, definition and delineation of administrative responsibilities (also in the long term) and proper means of funding, transparency, public participation, access to resources, and monitoring. Such guidelines can result in larger public acceptance of long-term strategies, although there is political pressure to choose short term solutions.

Dissemination of information: relevant here is, who will be in charge of information on stewardship in a given context and ensure its integrity and passage to future generations?

Promotion of adaptation capacity: the notion of adaptability - that RWM decisions and perceptions of risk should be revisited and improved based on new science or technologies becoming available – could be in conflict with any type of GD. Thus, it is necessary to develop new tools of adaptation, including suitable institutional mechanisms. Investments in new technologies and better science would be needed.

Funding: how should the different aspects of rolling stewardship activities be funded and who should hold and distribute the funds? How can the public be confident that it will not be squandered? Furthermore, the funding must not only support stewardship, but also rolling stewardship. There is a difference between addressing problems arising here and now and taking on issues with a very long timeframe. The financing should mainly be based on current spending, through commitments to future spending or through trust funds.

STRONG AND WEAK VERSIONS OF ROLLING STEWARDSHIP:

One could ask where LTS ends and rolling stewardship begins and even if LTS constitutes a weak version of rolling stewardship, which would then be a question of terminology, but first and foremost delineation of the two concepts. Apart from the obvious fact that LTS focuses on radioactive contamination and rolling stewardship mainly pertains to geological disposal of RW, there appears to be more similarities than differences between the two (*see Table 8*). Regarding the *time horizon*, weak versions of LTS and rolling stewardship could span a few human generations, whereas strong versions could be bordering on the infinite. Concerning the *scope* of rolling stewardship, a weak version would zero in on final disposal of RW, whereas a strong version could encompass final disposal of all highly toxic, long-lived waste, thus transcending the sphere of RWM.

A weak version regarding the *start-up* of rolling stewardship could begin after closure of a DGR, while preserving the possibility of retrieval, recharacterization and repackaging of the waste. A strong version could begin before and after closure of the DGR, in the latter case ensuring that the DGR is not sealed off. The difference between the strong and the weak version would then be that the strong version ensures easier access to retrieval of the RW. A strong version of rolling stewardship could proceed even without a DGR as an interminable version of an intermediary RW storage facility. If rolling stewardship begins before the post-closure phase of the DGR, it could encompass all phases of RWM, i.e., policy, framework and program establishment, site evaluation and site selection, site characterization, facility construction and facility operation and closure. In a weak version, rolling stewardship could be reactive, i.e., focus on mitigation of already existing radioactive contamination, and not in its *character* be any different from LTS, or it could be preventative in regard to disposal of RW in order to see that leakage of radioactive substances into the environment is not going to happen. Its *continuity* could be broken due to deficiencies in a weak version of its institutional *framework*, which could result in stop and go policies for the RWM, or it could be unbroken if suitable institutional mechanisms are in place. This would also be dependent on *normativity* manifesting itself as proper legislation that in a strong version would make these mechanisms mandatory and in a weak version voluntary. Regarding its role in *safety*,

it could be part of a system of safeguards or not. In a strong version of rolling stewardship, a wide range of *stakeholders* would be *involved* in the RWM decision-making process, including operators, regulators, WMOs, TSOs, REs and not least CS. In a weak version there would be no or little stakeholder involvement. In a weak version, *Transparency and Public Participation (T&PP)* would be based on the authorities Deciding, Announcing and Defending (DAD) decisions in the RWM – a top-down attitude, which loosely can be translated into: "We know best, decide things for ourselves, inform about them no more than we have to, and defend our decisions with all available means". In a strong version, there would be well-established institutional mechanisms in place to ensure T&PP. Also, in a strong version, proper *funding* for final disposal would be accumulated at the same time RW from the NPPs is generated, whereas in a weak version, funding would be provided by subsequent human generations.

Parameters	**Weak version**	→	**Strong version**
Time horizon	Few human generations		Infinite
Scope	Final disposal of RW		Final disposal of all highly toxic, long-lived waste
Start-up	After closure of DGR		Before and after closure of DGR / DGR is not closed (or no DGR)
Character	Reactive (mitigation)		Preventative
Continuity	Broken		Unbroken
Framework	Stop and go policies		Well-established institutional mechanisms for RWM
Normativity (Statutory)	Voluntary (Allowed by law)		Mandatory (Required by law)
Safety	Not part of safeguards		Part of safeguards
Stakeholder involvement	No or little stakeholder involvement		Comprehensive stakeholder involvement
T&PP	DAD		Well-established institutional mechanisms for T&PP
Funding	Funded by subsequent human generations		Funded by the RW-and waste-producing human generation(s)
Terminology	Semantically not different from LTS		Semantically different / very different from LTS

Table 8 - Weak and strong versions of rolling stewardship

Finally, in regard to *terminology*, rolling stewardship would not be semantically much different from LTS in a weak version, whereas it could be very different in a strong version[175].

Among the potential threats to the possibility of rolling stewardship and LTS both in its strong and weak versions, those that are most evident from the national case-studies in this deliverable, are first and foremost lack of continuity (e.g., like in Sweden with the discontinuity of the Swedish Council for Nuclear Waste and funding for NGOs specializing in RWM), sufficient funding, i.e., access to resources, which can also be knowledge, second opinions, etc., and well-established institutional mechanisms for T&PP. On the other hand, established models for local partnerships like in United Kingdom and Slovenia as well as the Local Information Committees in France could serve as an inspiration for initial frameworks in support of rolling stewardship and LTS. As a general rule, it could be said that uninterrupted continuity for all four pillars as defined in the BEPPER report - access to information, public participation, access to justice and access to expertise – would be a necessary, but still not a sufficient precondition for establishing and maintain rolling stewardship and LTS.

Generally, there is very little implementation of any strong version of rolling stewardship in current national, European and international law. Lack of implementation is not the case with LTS, especially in regard to U.S. national law and in parts of European law. *In the U.S.*, on a site-specific basis, where residual hazards remain after nuclear clean-up activities, management of any associated LTS is conducted in accordance with DOE Orders and guidance, Federal, State and local environmental and resource protection laws, and site-specific agreements between DOE and U.S. State and Federal environmental regulators[176]. Regarding the clean-up activities, the main laws are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). Long term mitigation efforts are coordinated by DOE and might involve other Federal Agencies as stakeholders such as the Defence Nuclear Facilities Safety Board, the Department of Agriculture, the Natural Resources Conservation Service, the Department of Commerce, the National Oceanic and Atmospheric Administration, the Nuclear Regulatory Commission, the Department of Interior (i.e. the Bureau of Land Management, National Park Service, and Fish and Wildlife Service and U.S. Geological Survey) the Department of Transportation and the Environmental Protection Agency, Local Region[177].

In *European law*, the need for LTS is not addressed because of the legacy of nuclear-weapons production but is necessitated by the many Uranium Mine and Mill Tailings (UMMT) sites located in 12 of the EU Member States (MS)[178]. Here, residues of the past six decades of mine and mill processing of uranium ore in Europe have resulted in a considerable environmental legacy[179]. The uncertainty of what will happen if institutional control with these sites breaks down sometime in the future, is a

---

175 Presentation, Niels Henrik Hooge, Notes on Rolling Stewardship, NOAH Friends of the Earth Denmark and Nuclear Transparency Watch, 31 January 2022, https://www.researchgate.net/publication/360765580_Notes_on_Rolling_Stewardship .

176 DOE, Site Transition Summary: Cleanup Completion to Long-Term Stewardship at Department of Energy Ongoing Mission Sites, February 2012, https://www.energy.gov/sites/default/files/em/SiteTransitionSummary2012.pdf .

177 Idaho National Engineering and Environmental Laboratory, Environmental Management Long-Term Stewardship Transition Guidance, Prepared for the U.S. Department of Energy Office of Environmental Management Under DOE Idaho Operations Office, November 2001, https://digital.library.unt.edu/ark:/67531/metadc887184/m2/1/high_res_d/910671.pdf .

178 The Member States are: Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Poland, Portugal, Romania, Slovenia, Spain and Sweden.

179 Maria de Lurdes Dinis and António Fiúza, The Long-Term Stewardship of Uranium Mine and Milling Remediated Sites in Europe, Department of Mining Engineering, Centre for Natural Resources and the Environment and Faculty of Engineering, University of Porto, Presentation, 2015, https://www.energy.gov/sites/prod/files/2018/10/f57/Dinis-Long-Term-Stewardship-Uranium-Europe.pdf .

significant concern. Subsequent EU Commission reports have concluded that there is a need for an effective set of measures for coordinated institutional control of UMMT, which only LTS can provide[180].

A **European legal framework already exists** that is relevant to the role of CS in LTS / rolling stewardship. Particularly relevant in this regard is the Aarhus Convention and the Radioactive Waste Directive's (2011/70/Euratom) Article 10 on transparency.

A description of best practices for ICS and T&PP can be found in Nuclear Transparency Watch's BEPPER report[181] (*for more on the report, see 2.1.4.* Among the conditions, named by the report, for what constitutes effective T&PP are:

- Building societal confidence, adopting a multi-generational perspective, considering public perceptions of safety and risk, taking into account energy policy), good practices (e.g., enhancing dialogue in pluralistic spaces, demystifying and democratising, adopting new decision-making processes, setting horizontal as well as vertical information exchanges, implementing and facilitating access to justice), plus components on innovation in resources and transparency assessment (e.g., make sure that civil society has the resources to participate; create the conditions for civil society access to expertise; engage experienced and widely trusted facilitators; develop libraries, compendia, websites of good practices, etc; elaborate standards for transparency assessment).
- Application of all international regimes and strengthening them continuously at the national level in order to improve the quality of the decision-making processes, leading to higher safety and possibilities for higher trust by the CS[182].

[180] Two Commission reports appear to be particularly relevant: W. Eberhard Falck, The Long-Term Safety of Uranium Mine and Mill Tailings Legacies in an Enlarged EU, JRC Scientific and Technical Reports, 2008, https://op.europa.eu/en/publication-detail/-/publication/19583673-511e-41bb-91af-b1e8d80e233e/language-en . Among other things, the report recommends a shift of interest from a mere managing legacies from the past to preventing the creation of future liabilities.

[181] The BEPPER report, December 2015, https://www.nuclear-transparency-watch.eu/wp-content/uploads/2016/04/NTW_Transparency_in_RWM_BEPPER_report_December_2015.pdf .

[182] Nadja Zeleznik, Johan Swahn, Jan Haverkamp, Niels Henrik Hooge, Honorine Rey, Michal Daniska, Draft Deliverable 9.16: Implementation of ROUTES action plan first phase, EURAD Work Package 9, 2021.

7. Interactions with other ROUTES tasks[183]

7.1 Task 2 on challenging waste

The objectives of Task 2 dedicated to "Identify challenging wastes to be collaboratively tackled within EURAD"[184] as mentioned in the ROUTES project work package description of work are as follows:

- Collection and analysis of existing work on categorisation and classification of radioactive waste with regard to disposal options, identification of waste for which there is not yet a complete management plan in each Member State, identification of waste management routes for pre-disposal steps.
- Understanding at EU level of the practical issues on RWM routes for challenging waste.

From June 2022 to November 2022, the work conducted within Subtask 2.2 consisted in sharing the main outcomes of deliverable D9.5 and notably the R&D needs identified by the different partners including Civil Society experts to improve the management of challenging waste. These sharing actions have been made notably during ROUTES annual meeting in Cherbourg (June 2022) in which Civil Society members were present both online and physically, but also in the framework of updating the EURAD SRA. Support to other ROUTES Tasks is also provided by ROUTES Task 2.

7.2 Task 3 on characterisation approaches

The objectives of Task 3 dedicated to the "Description and comparison of radwaste characterisation approaches"[185] as mentioned in the ROUTES project work package description of work are as follows:

- Radioanalytical characterisation of radioactive waste and waste with complex/toxic properties.
- Characterization and segregation of legacy waste.

Following the Task 3.1 workshop in M36 (Mai 2022), the results of the workshop were evaluated. Two dedicated working group meetings were held in M38. The first was dedicated to the analysis of existing approaches and issues for RAW characterisation, the second was dedicated to the analysis of knowledge gaps and future R&D recommendations. These meetings concluded the content-related work for D9.7. D9.7 was prepared for the internal review. The first review by task participants was concluded in M39, the second review by ROUTES board members was concluded in M41. Currently, the external, strategic review of D9.7 is ready for strategic review as concluded in M44 and the deliverable approved by PMO in M48. The deliverable D9.7 has been published by the end of M48.

Following the combined workshop of Tasks 3.1 and 3.2 in M36, where the approach for the work in T3.2, as well as the content of D9.8 was discussed and agreed upon, preparatory work for the second T3.2 workshop, including the preparation and distribution of a questionnaire to all task participants prior to the workshop, planned for M45, was done. The second workshop of T3.2 was held online in M45, discussing the characterisation and segregation of legacy waste. The Minutes of the workshop have been published in M46, summarising its results (MS161). Currently, D9.8 is in preparation.

7.3 Task 4 on WAC

The objectives of Task 4 dedicated to the "Identification of WAC used in EU Member States for different disposal alternatives in order to inform development of WAC in countries without WAC/facilities"[186] as mentioned in the ROUTES project work package description of work are as follows:

- Current use of waste acceptance criteria.
- Sharing experience on waste management with/without WAC available.

---

[183] Information taken from the Periodic Technical Report #4

[184] Task 2 is coordinated by ANDRA from France and SSTC NRS from Ukraine.

[185] Task 3 is coordinated by NCSRD (DMT) from Greece.

[186] Task 4 is coordinated by ONDRAF / NIRAS from Belgium and VTT from Finland.

- R&D needs and opportunities of collaboration.

The materials of some of the participants to the subtask 4.3 workshop "R&D needs and opportunities for collaboration", which was held on May 10th, 2022, were received only after the workshop and with some minor delay. After all inputs, including ones from Civil Society, were gathered, the third internal memorandum, documenting the outcomes of the subtask 4.3 workshop, was written. Subsequently, it was circulated to all participants to the subtask 4.3 workshop to invite feedback. The third internal memorandum (corresponding with milestone MS192) is expected to be finalised around the end of 2022, after which the deliverable D9.9 will be written. D9.9 will be a compilation of the internal memoranda produced within Task 4 and is expected to be finalised in the Spring of 2023 (with the exact time scale dependent on the scope and timescale for internal and external review).

The subtask 4.3 workshop materials (presentations, recordings) have been made available only within EURAD (via Project Place).

The ROUTES Task 4 co-leader also presented a poster prepared jointly by ROUTES Task 4 and PREDIS Task 2.3 at the EURADWASTE 2022 conference held from 31 st May to 2 nd June 2022. This poster described cooperation and collaborative activities between EURAD and PREDIS pertaining to the development and application of WAC. The ROUTES Task 4 co leader also presented a paper on wider ROUTES activities at the same conference (prepared jointly with the EURAD – Periodic Technical Report 4 – From June 2022 to May 2023 5 WP coordinator). This paper is included in the published conference proceedings.

The ROUTES Task 4 leaders participated in a webinar on the status of WAC in PREDIS, which was held on October 5th, 2022. They presented a summary of the main outcomes of the subtask 4.3 workshop under the title "Needs and opportunities for WAC-related R&D: Update from ROUTES". This presentation helped to set the scene for further discussion of ROUTES Task 4 outcomes as part of upcoming interactions at the ROUTES R&D recommendations workshop on December 6th 2022.

Subtask 4.3 outputs were used as a basis for identifying WAC-related recommendations to feed into consolidated ROUTES inputs to the EURAD Strategic Research Agenda (SRA), which were submitted to the EURAD PMO on 21 st November 2022. These recommendations will also feed into discussion at the ROUTES workshop on December 6th which was attended by Civil Society experts.

7.4 Task 5 on SIMS

The objectives of Task 5 on "RWM solutions for small amounts of wastes"[187] as mentioned in the ROUTES project work package description of work are as follows:

- Collection, analysis and comparison of the actual existing knowledge about disposal options for small amounts of waste.
- Description of the necessary predisposal routes for the disposal options.
- Evaluation of the possible small-scale disposal solutions and description of their positive and negative aspects. In this regard, knowledge and experience will be reviewed in order to identify knowledge gaps.
- Dissemination of the results to other SIMS and description of the spin off for countries with large amounts of radioactive waste.
- Identification of R&D gaps.

During months 37 to 48, *Deliverable 9.10, Report about the knowledge for existing and potential disposal options for SIMS*[188] in Subtask 5.1 was published as well as *Deliverable 9.11, Report presenting the*

[187] Task 5 is coordinated by NCRS from Germany and SURO from the Czech Republic.
[188] EURAD - D9.10 Collection and analysis of actual existing knowledge about disposal options for SIMS.pdf (ejp-eurad.eu).

results of the workshop dealing with possible conditioning routes for SIMS[189] in Subtask 5.2. During this period, Task 5 organised or participated in about a hundred meetings in person and/or online, including workshops and conferences, some of which CS experts from Task 7 attended, with some exchanges as a consequence. In November 2022, Task 5 cooperated with a CS expert in an EURAD lunch and learn session on *The role of Knowledge Management in Civil Society*[190].

7.5 Task 6 on shared solutions

The objectives of Task 6 on "Shared solutions in European countries"[191] as mentioned in the ROUTES project work package description of work are as follows:

- State of the art on shared development and use of technologies and facilities
- Case studies on shared development and use of technologies and facilities.
- Assess the feasibility of developing further European shared solutions for waste management from cradle to grave.

Between June 2022 and September 2022, deliverable 9.13 "Case studies of shared development and use of technologies facilities" was under internal review by country representatives. Task 7 participants contributed to the internal review with comments and suggestions.

During June 2022 task 6.3 WS was organised in parallel to the Annual Meeting in Cherbourg. Input from other tasks including Task 7 were collected. Work to compile the deliverable D9.14 "Report on the feasibility of developing further European shared solutions for waste management from cradle to grave" is ongoing. Task 7 members will contribute to this new deliverable.

Task 7 members also participated in ERDO webinar in October 2022 where ERDO activities on shared solution were presented including on new disposal option (Deep borehole disposal) and siting of repository.

7.6 Task 8 on disposal solutions for SIMS

The objectives of Task 8 on "Evaluation of the possible disposal solutions for Member States without WAC and with small inventories (SIMS)"[192] as mentioned in the ROUTES project work package description of work are as follows:

- Qualitative analysis of the predisposal routes.
- Qualitative analysis of the disposal options.

MS281 was prepared during the IPR4 and was forwarded for internal review in December 2022. The milestone was published in February 2023 and was then integrated in D9.21 "Evaluation of existing predisposal routes for SIMS with regard to disposal options", whose draft is expected by the end of June 2023.

Based on the results of the first workshop in M34, the second workshop of Part 8.2.1 was organised in hybrid form and conducted in M41. 21 participants participated, representing 6 SIMS and 6 LIMS. The minutes for the second workshop (MS284) published in January 2023.

Preparation of the case studies that will be integrated into D9.22 "Summary report on analysis, assessment and evaluation of disposal options for SIMS".

Two workshops dealing with the SIMS/LIMS interactions topic are planned. The first one took place from 2 to 4 of May 2023 in Vienna dedicated to ROUTES Extension participants - including Task 7 - and its

[189] EURAD - D9.11 Report presenting the results of the workshop dealing with possible conditioning routes for SIMS.pdf (ejp-eurad.eu)
[190] Lunch & Learn | The role of Knowledge Management in Civil Society - EURAD EJP (euradschool.eu)
[191] Task 6 is coordinated by COVRA from the Netherlands.
[192] Task 8 is coordinated by NCSRD (DMT) from Greece.

minutes will shortly be published; the second one will take place in Portugal next November with a broader audience. This workshop will be open to all interested parties of the EURAD consortium, as well as interested parties outside of EURAD such as members of IAEA and NEA.

8. Conclusion and focus of Task 7 in year 5

The present report D9.18 is the result of the implementation of an action plan developed after the first year of Task 7 ICS [1]. The investigation focused on different aspects of PP in RWM activities, and in particular to technical issues developed by responsible institutions. Therefore, in the report discussion on transparency and public participation in relation to RWM implementation is provided with an overview of legal frameworks, the position of regulators and an analysis of societal requirements. Like in other ROUTES Task 7 reports, also a small, limited survey was conducted among the participants of ROUTES and the CS larger group to obtain the views of different actors on questions of public engagement in national context and in particular in technical topics. To developed broader outcomes for PP in RWM, a number of national case studies are described with focus on PP in recent RWM activities, including also participation in technical issues. These findings are not conclusions, rather meant to gain more understanding of back-laying dynamics in the role of civil society in radioactive waste decision procedures and research and highlighting some of the better practices. They relate to creation of a pluralistic information environment, CS participation in technical topics, power distribution in relationships, the position of WMOs in transparency. The last part of report provides the summary for short and long term engagement process which can be applied to RWM.

The chapter 2 highlights the legal basis and importance of Transparency and Public Participation (T&PP) in Radioactive Waste Management (RWM), focusing on international agreements like the Aarhus Convention and related EU directives. It discusses T&PP's pillars, challenges in implementation, and the role of international organizations like the IAEA and OECD-NEA. Gaps include limited access to information, constraints on public participation, and the need for broader transparency policies at international levels. Furthermore, case national cases are studies namely Belgium, France, Slovakia, Slovenia, Sweden and the United Kingdom (UK). In Belgium, federal responsibility ensures oversight, with detailed regulations in place for safety and transport. France's framework has evolved through key legislative steps, emphasizing T&PP. Slovakia faces challenges in public involvement despite recent legal improvements. Slovenia emphasizes transparency in RWM through public access to data, with the Slovenian Nuclear Safety Administration providing regular reports and various communication channels. In Sweden, complex legislation influences decision-making, and issues with access to information and regulatory openness have emerged. In the UK, post-Brexit challenges include gaps in policy and limited public participation in waste management decisions, despite access to information laws. Recent initiatives in the UK aim to improve transparency, but implementation is pending. Finally, societal requirements for involving civil society in RWM and ensuring meaningful interactions between experts and citizens were developed emphasizing the need for inclusive engagement, pluralistic expertise, and consideration of long-term implications. The goal is to achieve fruitful interactions that address societal concerns and enhance safety in RWM.

In chapter 3, a questionnaire from the CS experts of EURAD aimed to gather ROUTES participants' views on public engagement in RWM across Europe. While some countries effectively implement Aarhus Convention regulations, challenges like limited engagement and transparency persist. Engagement methods vary, with some using public hearings while others lack robust mechanisms. Support for engagement varies, with lessons learned highlighting the need for improved transparency and inclusivity. Overall, the questionnaire reveals diverse approaches to public engagement in RWM activities across Europe, emphasizing the need for better evaluation mechanisms.

Chapter 4 examines case studies from Belgium, France, Greenland, Slovakia, Slovenia, Switzerland and the UK regarding public participation in RWM. It highlights Belgium's transition to a national participatory process for high-level waste disposal, France's use of local information committees for transparency, and Greenland's political challenges with uranium mining. These cases underscore the importance of transparency and public involvement in decision-making processes related to radioactive waste. In Slovakia, updating the national program for managing nuclear waste lacked public participation until a civic association intervened, revealing significant obstacles to effective engagement. In Slovenia, local partnerships aided public involvement in site selection for a radioactive waste repository, but their discontinuation after selection raised concerns. Switzerland's Commission on Disposal Concepts for Radioactive Waste Repositories proposed innovative monitoring solutions but faced governance challenges. In the UK, past attempts to site a waste repository struggled with limited public engagement and industry influence, highlighting the need for improved community involvement and independent scientific advice.

The chapter 5 summarizes key findings from case studies on civil society's involvement in RWM. It highlights the importance of creating transparent information environments and emphasizes the need for multi-directional information flow. Additionally, it discusses civil society's role in technical discussions and power dynamics within these relationships. The chapter also addresses the position of Waste Management Organizations (WMO) regarding T&PP. Overall, it underscores the significance of transparency, public involvement, and access to expertise in informed decision-making processes regarding radioactive waste.

Chapter 6 explores the complexities of involving civil society (CS) in RWM, considering short- and long-term engagement. It discusses uncertainties in RWM, the outcomes of seminars focusing on long-term CS involvement, and general principles for such engagement. Key points include the need for flexible decision-making, intergenerational perspectives, and proactive measures like the precautionary principle to ensure safety and societal acceptance in RWM. This chapter also explores "rolling stewardship" as a model for managing radioactive waste disposal, emphasizing its long-term approach and alignment with the precautionary principle. It contrasts weak and strong versions of rolling stewardship, detailing differences in implementation and legal frameworks in the US and EU. The importance of Long-Term Stewardship (LTS) in addressing legacy nuclear contamination is highlighted, along with the role of civil society (CS) in T&PP. Best practices outlined in the BEPPER report for effective CS involvement are also discussed.

Finally, the chapter 7 shows the interactions that took place with every other task of the ROUTES work package focusing on different aspects of RWM and involving collaborative efforts to identify challenging wastes, radioactive waste characterization, evaluation of waste acceptance criteria, exploration of disposal options for small waste amounts, examination of shared solutions, and assessment of disposal solutions for Member States. These interactions happened though workshops, internal reviews, webinars, and reports, aiming to improve waste management practices through collaboration and analysis.

For EURAD year 5, the Task 7 activities will be devoted to summarising the conducted work in task 7 and to prepare Deliverables D.9.19 Synthesis of Task 7 activities (due to M59). In addition, CS experts will participate to the activities still to be performed in other tasks (2-6 and 8).

Appendix A. Structure and content of the Questionnaire

Presentation of questionnaire and participants:

Introduction:

The objective of the questionnaire is to obtain information on **how public participation is organised for different Radioactive Waste Management (RWM) activities**, from development of facilities to smaller technical activities, like preparation of Waste Acceptance Criteria (WAC) or safety report and their upgrades.

The participants of the survey are members of ROUTES, Civil Society experts and of a larger Civil Society group. The answers are expected to be provided as **experience from the ongoing activities.**

The following questions will help understand what the existing procedures accessible to the public to participate in the RWM activities are and how they are taken into account.

All answers will be anonymised and used only for the purpose of the ROUTES Task 7 deliverable **D9.18**.

Specific questions:

1 - How is the engagement of the public in RWM organised in general in your country?

2 - Is the engagement of the public in your country organised for prescribed RWM activities (like mandatory Environmental Impact Assessment (EIA) / Impact procedures for facilities, like storage, disposal, management...), and how?

3 - Are there non-prescribed forms of public participation organised (outside EIAs, like development of safety report and its changes)?

4 - How is engagement organised in regard to the national programme for the management of spent fuel and radioactive waste development?

5 - Are there any methods used for engagement concerning smaller technical activities (like development of Waste Acceptance Criteria (WAC) and their changes)?

6 - Is there any support (expertise, special devoted reports in understandable language, resources, finances...) available for engagement of the public? If yes, what lessons have you learnt regarding what works well and what does not work?

7 - What is done if there is no interest within the public?

8 - Is there long-term CS engagement, or is there after some time engagement tiredness on the side of CS? If so, how is this dealt with?

9 - Do you have the mechanism in place to evaluate the effectiveness of public participation (if yes, please provide information)?

10 - Any other comments or observations under this topic?

Answers

1 - How is the engagement of the public in RWM organised in general in your country?

Austria	In the first mandate of the new Advisory Board on RWM (2021-2024) 3 members are from Civil Society organizations. The National Waste Management Programme was submitted to a SEA in 2018, further SEAs are foreseen, also an EIA, also transboundary. A participation concept is being developed in a first step in the Advisory Board for further participation procedures, and for setting up an information centre. Austrian NGOs who engage in RWM can get funding for projects they work on.
Austria	Generally speaking, Austria is party to the Aarhus Convention and therefore is obliged to guarantee access to environmental information, public participation in decision of specific environmental issues (such as facilities for the long-term storage and disposal of radioactive waste) and access to justice. These three pillars of the Aarhus Convention have been implemented in several national regulations, including those pertaining to radioactive waste management. The Radiation Protection Act 2020 is the main legal framework for radiation protection in Austria and includes provisions regarding the management of radioactive waste. In Austria, draft laws which are in the parliamentary approval process can be commented on by the public within a certain timeframe (typically, 6 weeks). The National Programme for the Management of Radioactive Waste, which Austria was obliged to establish as per Council Directive 2011/70/Euratom, had to undergo a Strategic Environmental Assessment (as required by Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment). The National Programme covers all stages of radioactive waste from its generation to final disposal. Facilities for the disposal of radioactive waste are subject to an Environmental Impact Assessment. The participation of the public in the relevant administrative procedure is defined in the Environmental Impact Assessment Act 2000. Regarding final disposal, an Advisory Board (the Austrian Board for Radioactive Waste Management) was established, including experts and stakeholders (representatives from the federal states and federal ministries and civil society). This Advisory Board is mandated to compile a participation concept with recommendations on how the population may be informed, involved and included in any decisions pertaining to the disposal of the Austrian radioactive waste. The results of the Board are expected to be presented to the Federal Government of Austria in 2024 in the form of recommendations.
Belgium	Through EIA and as part of the legislative framework (public participation organised through Koning Boudewijnstichting for long-lived waste; public partnerships in local municipalities Mol and Dessel for short-lived waste repository).
Belgium	The establishment of national policy measures involves a social debate. The modalities for this social debate will be laid down by royal decree.
Bulgaria	Through public discussions of EIA of programs and projects.
Bulgaria	There is a lack of transparency and citizens' access to information.

Czech Republic	The act on the involvement of the affected municipalities in the selection of a site for the disposal of radioactive waste in DGR and on the authorization of the operation of a repository is in the comment procedure. At each candidate site there is working local group that meets regularly. Representatives of the municipalities are informed at the meetings about the progress of the preparation of the DGR.
Czech Republic	The Czech Republic has not yet adopted the law ensuring public participation and transparency. Although the existence of this law is mandated by the 2016 Atomic Energy Act. SURAO (the WMO) in the past years organized (and now tries to organize again) so called working groups for dialogue. These are only open to mayors of the towns concerned with the siting process (and some other officials but not NGO and public representatives). However, these working groups have so far been rather misused to mask dialogue and public participation. The status of the participants is not equal, there is no real dialogue and therefore most mayors do not want to participate in these working groups. The state does not make an effort to communicate with the citizens, it seeks to easily push through the siting process of the DGR in order to be able to start the development by 2050 - related to the EU taxonomy on sustainable activities and the intention to build new nuclear units.
Denmark	We have two contact fora for radioactive waste - a national and a regional. THE NATIONAL CONTACT FORUM FOR RW: In 2016, a national contact forum for RW was established under the Danish Ministry of Higher Education and Science. The idea is to bring all the stakeholders together in one room and have them address each other directly. The national forum has approximately twenty members (representatives from the union of citizens groups and Roskilde Municipality, green NGOs, Local Government Denmark, Danish Regions, the regulating agencies - Danish Health Authorities (Radiation Protection) and Danish Emergency Management Agency - Danish Decommissioning, Geological Survey of Denmark and Greenland and the Danish Agency for Higher Education). Any representative can bring anything to the agenda for future meetings and the minutes are public. THE REGIONAL CONTACT FORUM FOR RW: The national contact forum is supplemented by a regional contact forum in Roskilde Municipality, where an interim storage facility is built, with potentially more contact fora to follow, when possible, host sites for the final repository are designated. ALSO ACCESS TO RESOURCES – POSSIBILITY OF SECOND OPINIONS ON ALL RWM DECISIONS: Affiliated with the contact fora is an independent panel of scholars from Danish universities, which provides second opinions in the RWM process and replies to questions from the general public. The panel members have been selected by The Danish Council for Independent Research, which provides independent scientific counselling to the Danish Government.
Denmark	In Denmark we have a national contact forum consisting of CSO representatives, ministry representatives and representatives from the municipal and regional cooperation (KL) and the organization Danish Regions. There is also a local contact forum in the municipality where Danish Decommissioning is located. In this contact forum politicians also participate. Furthermore, we follow the law on Open access to Environmental information according to the Aarhus convention. Danish Decommissioning has an annual Open house event where all citizens in DK can visit our facilities. We also have other visits during the year for instance from high schools and so on.

Denmark	The public is involved through contact forums. Both a local contact forum in Roskilde, where DD is located and a national contact forum regarding the disposal solution. Furthermore, it is by law possible to apply for access to all DD's documents in our electronic archive. Once a year we also have an Open House event where the public can get a guided tour of our facilities.
Finland	There are public hearings with EIAs. Authorities are not interested in the engagement of the public. Civil society does not have resources and limited access to information.
France	Regulator (ASN) implements public participation in its draft regulatory and individual decisions taken in its areas of competence, BNIs, nuclear pressure equipment and the transport of radioactive substances, whenever they have a direct and significant on the environment.
France	France is a county with a high level of running activities regarding public participation both on disposal operating surface facilities and projects. The highest level of engagement is of course related to the DGR project named Cigéo. In addition to all the activities organized voluntarily by Andra to inform and dialogue with the public, public participation is ruled by national regulation: multi-year roadmaps of consultation are implemented on these long-term projects and may include public inquiries and public debates. A national organisation is specifically responsible for supervising public participation in projects which have an impact on the environment: the national commission for public debates, with guarantors who make sure of the right level of information and participation of the public.
Germany	Example: Act on the Search and Selection of a Site for a Repository for High-Level Radioactive Waste (Site Selection Act - StandAG) Part 2 - Participation procedure § Section 5 Principles of Public Participation (1) The objective of public participation is to find a solution that is supported by a broad social consensus and can thus be tolerated by those affected. To this end, citizens shall be involved as co-designers of the procedure. (2) Pursuant to this Act, the Federal Office for the Safety of Nuclear Waste Management shall ensure that the public is informed comprehensively and systematically at an early stage and for the duration of the site selection procedure about the objectives of the project, the means and the status of its realisation as well as its probable impacts, and that it is involved through the envisaged forms of participation. This is to take place in a dialogue-oriented process. For this purpose, it shall make use of the Internet and other suitable media. (3) The procedure for public participation shall be developed accordingly. For this purpose, the parties involved may make use of further forms of participation beyond the minimum requirements regulated by law. The suitability of the forms of participation shall be reviewed at appropriate intervals. § 6 Information platform [..] § Section 7 Comment procedure; discussion dates [..] § Article 8 National Monitoring Committee [..] § 9 Sub-area conference [..] § 10 Regional conferences [..] § 11 Council of the Regions expert conference [..]
Hungary	There almost no engagement of the public in RWM
Hungary	On the territories which are touched, it is very heavy: on NGO and on political level. (City of Pécs, County Baranya, South-West Hungary)

Lithuania	Information of public and local authorities about main activities and approved projects are mandatory.
Poland	The principles of informing the public and its participation in the decision-making process regarding the management of radioactive waste and spent nuclear fuel are regulated by the following normative acts: • Act of 3 October 2008 on providing information on the environment and its protection, public participation in environmental protection and on environmental impact assessments76) (the EIA Act); • Act – Atomic Law. The provisions of the above-mentioned normative acts are consistent with the applicable acts of international and European law. The provisions of the Atomic Law provide the public with the opportunity to obtain information regarding: • the state of radiological protection of the radioactive waste repository; • its impact on human health and the environment; • size and isotopic composition of releases of radioactive substances from the repository to environment. Anyone may obtain such information in writing from the head of an organizational entity conducting activities involving exposure, consisting in the operation or closure of a radioactive waste repository (head of the entity). In addition, at least once every 12 months, the head of the unit is obliged to post the above-mentioned information on the website of the organizational unit. It should be emphasized that the regulations do not provide for any situations in which the head of the entity may refuse to provide the information in question. Also, the wording "anyone" ensures that any entity (both a natural person and an organizational unit) will be able to receive the requested information.
Portugal	Very poor
Portugal	Engagement of some interested stakeholders in RWM started with the sporadic involvement in research project's. According to Law, the National Strategy Management of Radwaste and Spent Fuel issued by the Regulator has to be put for public analysis and comments before being adopted. There is a master course, MPSR, that involves a curricular unit called Radioactive Waste. However, the overall involvement of the general public is very, very low and the stakeholders have a bad communication among them and with the authorities and academia. In resume, there is a lack of organization and communication in this area. In the National report, the involvement of the public is recognized. Academia and private companies develop courses level III and II for technical qualified personnel and qualified experts in the Country.
Slovakia	1. In practice, the engagement of the general public happens during the EIA process, although, in principle, the public has a legal right to participate also in the RWM related administrative and authorization processes (e.g. held by the Nuclear regulatory authority of the Slovak republic - NRA SR). The legislation guarantees that a public participant of an EIA process holds automatically also the position of a participant in the subsequent administrative and authorization processes. In general, a public person can participate in the administrative and authorization processes even if it did not participate in the EIA process. The effectivity of the public participation is, however, a different question. I. e. de iure the public has the right to participate, but de facto the effectivity of the participation is limited. Due to lack of resources and personal capacities, lack of independent experts and difficult

	access to information, even if the public (including municipalities) participates in the EIA process, it decides not to participate in the following authorization processes. Moreover, even the public participation in the EIA processes is very formal, the public must rely on information provided by the project proposer. There is minimal or no effort from the main actors to encourage the public to participate in a more active way (the opposite might be closer to the truth). Until 2019, the public participation was mostly represented only by attending the EIA public hearings (usually mayors of the affected (the nearest) municipalities and 1-2 "common" citizens (if any)). Only the project of incineration of foreign RW and related capacity increase of the treatment facility in Jaslovské Bohunice led to a larger attendance of public hearings and significant public/media attention. There are also "citizen information committees" both near Mochovce and Jaslovské Bohunice (the two Slovak nuclear sites) which are committees established by the respective associations of municipalities from the two nuclear regions. These committees have no legally binding status, de iure it is just an advisory board of the respective association of municipalities. The committee members are selected only from mayors and representatives of the nuclear facility operators. A common citizen cannot participate in the committee meetings. Questions can be asked only by committee members. There is therefore strong information asymmetry (the only source of information are the nuclear facility operators). Some people nicknamed the committee as "travel agency", since it very often makes trips to nuclear facilities and surrounding municipalities in other countries. The committees are funded partially by the municipalities and partially by the nuclear facility operators. The company JAVYS also publishes and distributes its own magazine (a few issues a year) to all households in the region around the nuclear facility. Naturally, only the point of view of the company is presented to the reader.
Slovakia	very little
Slovakia	like in other EU countries
Slovakia	In general, public authorities typically attempt to eliminate transparency of information [1] and opportunities for a real public participation in decision-making and project permit procedures particularly and solely for commercial nuclear sector issues/projects [2.3]. In the RWM, this has a strong influence on a constantly increasing delay in starting transparency and public participation with regard to the SNF final solution [4]. Specific situation concerns incineration of foreign RAW (as reported under EURAD/NTW) [1]See: https://www.nuclear-transparency-watch.eu/activities/transparency-and-public-participation/overview-of-activists-submissions-addressing-lack-of-public-access-to-nuclear-sector-information-in-slovakia.html [2|See:https://www.sciencedirect.com/science/article/abs/pii/S0149197019303002 [3]See: https://www.tandfonline.com/doi/abs/10.1057/kmrp.2011.22 [4]See: https://link.springer.com/chapter/10.1007/978-3-658-21441-8_8
Slovenia	The public engagement in RWM in Slovenia is organised according to the Environmental protection law: it refers to the transposition of directives related to access to information and public participation. In fact, by law, in case there is EIA process (this is the case for new nuclear facilities, like storages, management and disposal facilities), public has the right to participate, comment and raise questions to documents in public hearing (obligatory is EIA report, but also some other documents can be open to public, like design of facility and safety report), and authorities have to provide responses to the comments and remarks. In case,

	there is no EIA process (this is usually the case for any modification in RWM facilities or activities), public has very limited or even no right to participate in decision making. However, for site selection of LILW repository, the local partnerships were organised in 2 local municipalities, where locals have resources for organisation of participation and information exchanges, for obtaining all related documents prepared for their potential site and for independent expert opinion. More is available in ROUTES D9.16, and also in deliverable 9.18.
Slovenia	The engagement of the public in RWM is in general organised in line with Environmental Protection Act (ZVO-1) and the Decree on the method of drafting and on the content of the report on the effects of planned activities affecting the environment, to produce an environmental impact assessment report. Additionally, in RESOLUTION on the National Programme for Radioactive Waste and Spent Fuel Management for the 2023–2032 Period (ReNPRROIG23–32) and Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the Republic of Slovenia, principles of transparency, information provision and public participation and principle of the public nature of information are required to be implemented.
Sweden	The public and environmental NGOs can take part in the obligatory consultation process carried out by the implementer for the development of the environmental impact statement for a licence application. The public and environmental NGOs can take part in the licence review process carried out by the Land and Environmental Court according to the Environmental Code. Environmental NGOs can also take part with opinions in the regulatory license review carried out by the Swedish Radiation Safety Authority (SSM) according to the Nuclear Activities Act.
Ukraine	Various forms of public involvement are used, in particular: regular informing the public about the activities of licensees and the regulatory body in the field of RWM, holding public hearings when creating new facilities, the work of public councils, preparing information at the request of citizens.
United-Kingdom	For the most part by way of stakeholder engagement groups focused on specific topics, e.g., Sellafield site stakeholders' group, Office of nuclear regulation NGO forums and Community Partnerships for the GDF siting process.

Table 9 - Answers to the question 1 of the questionnaire

2 - Is the engagement of the public in your country organised for prescribed RWM activities (like mandatory Environmental Impact Assessment (EIA) / Impact procedures for facilities, like storage, disposal, management...), and how?

Austria	SEA and EIA are planned, one SEA has already been conducted. In the Advisory Board we are of the opinion that these instruments are not enough, more and more effective participation is needed. A participation concept is being developed.
Austria	See above.
Belgium	Yes, see above
Belgium	An EIA, involving a public inquiry, is drawn up for activities and projects which may have significant adverse effects on the environment. Nuclear projects fall under federal legislation. Non-nuclear aspects are a regional competence.

Bulgaria	Yes, with dissemination of information at municipal and regional level for public discussion of EIA of projects, procedures for the impact of storage facilities, and disposal of RAW, for upcoming RWM activities, etc.
Bulgaria	No
Czech Republic	Representatives of municipalities and civil societies participate in public hearings such as the mandatory environmental impact assessment (EIA).
Czech Republic	Yes, the Czech Republic has adopted EU environmental legislation, so the EIA is organised and public can participate. In connection with the siting process, there are some other processes, such as the establishment of an exploration area for specific crustal interventions, in which the municipalities affected by the project can participate. However, the problem is that the comments of the public and municipalities are not properly dealt with and the appeal bodies are the institutions responsible for the construction process of DGR. (excluding court proceedings, of course).
Denmark	It could be argued that the Danish level of implementation of the Convention is high. Transparency and access to information is regulated by the Public Access to Information Act and the Public Access to Environmental Information Act. The latter gives the public the right to access official documents, provided the documents are not subject to secrecy. Civil and local government servants are also entitled to disclose information to a third party provided that the information is not confidential. Public participation in issues related to RWM is embedded in Danish environmental legislation by the Environmental Assessment of Plans, Programmes and Projects Act (EIA and SEA). Citizens have the right to submit responses in public consultations on environmental assessment of plans, programmes and projects, which are published on the website of the Danish Environmental Protection Agency. Public participation in decision-making concerning national policy on RWM is addressed in Parliamentary Resolution B48/2003, Parliamentary Statement R4/2009, and Parliamentary Resolution B90/2018. It is supported by information dissemination on relevant websites, first and foremost of The Ministry of Higher Education and Science, Danish Decommissioning and The Danish Health Authority, public hearings and facilitation of stakeholder dialogue through the afore-mentioned contact fora. It would be fair to conclude that effective access for CS to T&PP in regard to the Aarhus Convention have been established in Denmark. Access to justice is further supported by a de facto municipality veto in the final RW repository selection process, considering that there so far has been no intention by the authorities to locate a repository without a consent by the designated municipality.
Denmark	Environmental Impact Assessment is mandatory by law for all major infrastructure projects like e.g. storage and repositories, handling facilities etc. The public is also involved in the local planning activities in the municipalities.
Denmark	Yes, there are EIA's for all larger facilities being build, e.g. for our upgraded storage facility that will be completed around 2027. There will be a public hearing where written input can be given.

Finland	There are formal hearings with regard to EIAs, but no information provided by civil society is considered nor have any effect in the processes. The Finnish Onkalo appears to be built without state level environmental permit with several conflicts with environmental laws and regulations.
France	Public inquiries and debates are organised for projects that have a significant impact on the environment, notably in reaction of EIA.
France	Public participation in France is governed by the environmental code. This includes several procedures for public participation in the decision-making process adapted to the types of projects, plans and programs and to the progress of their development. These procedures are intended to apply to the issues at stake and at different stages of the authorization or approval procedure.
Germany	Yes, e.g. EIA mandatory for all facilities requiring a permit or planning approval under the atomic energy act (see German atomic energy act § 2a).
Hungary	In Hungary the courts appear to only permit RWM EIA procedure involvement.
Hungary	For main projects related to RAWM, only information of public and local authorities. All main technical design documentation should be provided to local authorities after approval by state institutions. Public hearing for main activities are mandatory. No Veto rights for local authorities are established in legislation.
Lithuania	Yes, but it is campaign-like.
Poland	Pursuant to the Atomic Law, the PAA President issues a permit for the construction, operation and closure of radioactive waste repositories and for the construction, commissioning, operation and decommissioning of nuclear facilities (Article 4(1)). In both cases, the act provides for analogous regulations regarding public participation in the decision-making process. According to Art. 55n sec. 1, the PAA President, after receiving an application for a permit to perform activities involving exposure, consisting in the construction of a radioactive waste repository, shall immediately publish on its website in the Public Information Bulletin the content of the application along with a summary safety report and information on: • initiation of proceedings to issue a permit to build a repository; • possibility to submit comments and motions; • the manner and place of submitting comments and motions, indicating at the same time a 21-day deadline for their submission; • the time and place of the administrative hearing. Specific provisions of the Atomic Law Act guaranteeing public participation are: • art. 55n sec. 3, which provides that the hearing referred to in Art. 89 of the Act of June 14, 1960 - Code of Administrative Procedure, is open to the public;

	• art. 55n sec. 4, according to which the PAA President, in the justification of the decision, provides information on public participation in the proceedings and on how the submitted comments and requests have been taken into account.
Portugal	The public as far i now is not aware of the existence of an RWM activities
Portugal	The centralized Interim Storage of radwaste is licensed by the Regulator and had a EIA study made by an independent consultant. Management procedures are in the National report and in place. No provisions for disposal. The IAEA has carried out an ARTEMIS Mission 2 weeks ago to PT without visiting the Interim storage site. The objective was to analyze de regulatory framework once the Regulator in place started its duties in 2018. ARTEMIS report is not yet public.
Slovakia	The Slovak EIA Act requires mandatory full EIA process (i.e. not only the plan phase) for all main relevant nuclear facilities including NPP, treatment/conditioning of RW and SNF, interim storage of RW or SNF, repositories, etc. This applies only to completely new projects, not its subsequent modifications. For example, the project of the second incineration plant went only through the plan phase of the EIA process, since the addition of the incineration plant was presented as a "minor" modification of the Bohunice RW treatment facility which consists of multiple treatment installations and in its original form went through the EIA process years earlier. During the ongoing preparation of the update of the National programme for RW and SNF management (supervised by the National nuclear fund - NNF) the public participants (citizens, municipalities, NGOs) were not actively sought, only actors from nuclear industry, government and authorization bodies were originally invited. Our civic association, after finding out about this process (by chance), requested to be invited as well. The request (based on the Aarhus convention right to participate), after some discussions within NNF, was approved in the end. However, we were unable to meet the requirements - there were too many working groups, none of them dedicated to interaction with the public/municipalities; the meetings were taking place in the middle of the day (conflict with the regular work) and we would have needed to catch up on months of work done by the workgroups before we were invited. So, instead, after the workgroups prepared a draft of the national programme in December 2020, we (and all other invited actors) were given 2 months for commenting on the draft. In summer 2021 a final version of the programme (which took into account the comments) was sent to the invited actors. Almost all comments of our association were rejected. We also had to fight for having a SEA procedure for the update of the national programme - since it is an update of a strategic document and not a new one, the nuclear industry argued there is no reason for the SEA. The previous update (7 years ago) did not go through SEA as well. Fortunately, the Ministry of environment stated that the SEA is compulsory. Nevertheless, as of now, after a year, the SEA has not started yet, since the National nuclear fund has not provided the documents for the SEA process to the Ministry of environment. There will be a full SEA process, since it is a strategic document with a nationwide reach.
Slovakia	yes. The representatives of the public have the opportunity to be involved into the assessment / licensing process
Slovakia	Yes. EIA is open for public comments.

Slovakia	"De iure yes (with frequent breaches of the Aarhus Convention and/or the EU Acquis Communautaire), but de facto no" (as explained in the resources referred as [1,2,3,4] above.
Slovenia	Yes, see also previous respond. The lead authority for EIA process is responsible ministry who should issue the EIA consent for facility. The EIA process should be implemented for all new RW facilities (there are two examples from latest period, LILW repository (site selection going on from 2004 until 2010) and dry spent fuel storage (on NPP Krško site, from 2017 to 2020)). The process is in line with EIA directive and provides minimum 30 days window for public to review the documentation after public presentation of project, give the comments and remarks which are than answered by authorities. For the activities related to RW (other than facilities), the public engagement is not required by law. Also, for the RWM facilities in function, no public participation is organised. For example, for the safety report, including the WAC for facility, and its updates based on the period safety review, there is no legal requirement for any public participation. However, in case of LILW repository site selection, the broader process for public participation was organised, where the local citizens were able to be informed about almost all documents (like design basis, safety report, WAC, field investigation reports, ...), comment them and received the answers on the questions. The local partnerships stopped immediately after the site was selected, although other promises were given earlier. More is given in this deliverable under Slovenian case. Anyhow, in the Atomic act it is stated that all environmental information and other data on nuclear safety and radiation protection are public and interested parties can get them by using Public information access act.
Slovenia	Yes, it is. See also answer above. Decree on activities affecting the environment that require an environmental impact assessment follows the Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment and among other defines types of activities in the environment for which an environmental impact assessment is mandatory, which also includes nuclear energy and specific RWM facilities.
Sweden	Consultation before the license application is related to the development of the obligatory Environmental Impact Assessment to be included in license applications for all facilities that can cause environmental harm. This includes repositories and intermediate storage facilities.
Ukraine	Consultation before the license application is related to the development of the obligatory Environmental Impact Assessment to be included in license applications for all facilities that can cause environmental harm. This includes repositories and intermediate storage facilities.
United-Kingdom	Not that I am aware within a defined structure, but issues are raised and discussed within existing forums

Table 10 - Answers to the question 2 of the questionnaire

3 - Are there non-prescribed forms of public participation organised (outside EIAs, like development of safety report and its changes)?

Austria	We expect that the abovementioned Advisory Board will present recommendations regarding the participation of the public in the decision-making process for a disposal facility in Austria. The storage of radioactive waste in the interim storage facility in Seibersdorf is governed by a "Disposal Agreement" between the Federal Government, the Municipality of Seibersdorf and Nuclear Engineering Seibersdorf GmbH (NES), the only Austrian Waste Management Organisation. The views of the Municipality and local representatives were taken into account when this Agreement was negotiated in 2003 and when it was subsequently amended in 2013 (e.g., they set forth the prerequisite for the new interim storage facility that each drum should be visitable for inspections). A delegation from the Municipality of Seibersdorf visits the facilities and the interim storage of Nuclear Engineering Seibersdorf once a year. The Advisory Board has a publicly available post box on its website entsorgungsbeirat.gv.at, through which the public can get in touch with the Secretariat of the Board.
Austria	Participation should be enabled in all steps of RWM: from programme development to the post-closure phase of a final repository. Especially important are the procedure to set up the site selection criteria and the responsible organisations, and the site selection - especially in these two procedures, co-decision making should be enabled (but not clear yet how and for whom). Participation during operation of a final repository is planned, but not in detail yet. PSA could be point in times to meet for regular dialogues. A National Citizens' Oversight Committee is considered, also local committees for the candidate sites.
Belgium	The siting of the surface repository involved the establishment of local partnerships between ONDRAF/NIRAS and a candidate site community. The partnerships were able to give advice in relation to the repository and its design. In 2006, the Governement chose the municipality of Dessel as the site of the Belgian surface repository.
Belgium	Public partnerships and the way they interact is through consensus
Bulgaria	In some cases, on the initiative of the municipal and regional level, a public discussion of non-prescribed procedures is carried out or the inclusion of public representatives and independent experts in professional discussions in state institutions.
Bulgaria	NO
Czech Republic	Events aimed at informing CS are organized at sites. The municipalities had their representatives in the expert advisory committee during the process of reducing the number of sites.
Czech Republic	Not, a part of the working groups organized by SURAO (WMO). There is no independent body between the public, municipalities and the WMO. The WMO, whose main task is to continue the process of DGR siting and development, is also responsible for the communication with the public.
Denmark	Yes, see the answer to question 1.

Denmark	The national contact forum and the local contact forum are a non-prescribed form of public participation. Denmark has a long tradition for involving the public in planning processes.
Denmark	Contact forums as mentioned above.
Finland	There may be local PR-events(?) and tourism like activities.
France	Several organisations develop their own actions in order to engage the public in RWM (Andra, IRSN, ASN notably). The coordination of these actions is ensured by a national Committee for transparency and information on nuclear safety (HCTISN) on behalf of the French Environment ministry
France	Of course: beyond legal aspects, the aim is to involve as much as possible stakeholders and to reach different target groups. This includes firstly regular and transparent information towards multiple stakeholders, but also dialogue and outreach activities in order to raise awareness on the issue of RW. Many initiatives including visits, online meetings, conferences, and many other activities both face-to-face and online are therefore organised.
Germany	There are non-prescribed information events by multiple organisations, e.g. energy producers and industries of the nuclear fuel cycle.
Hungary	No
Hungary	All approved Technical design (TD) and Safety Analysis Reports (SAR) results are presented in general during public hearings, as well this sort of documentations (TD and SAR) after approval by state institutions are provided to local authorities for information, and they have possibilities to evaluate and to provide question, to require clarification if any.
Lithuania	Yes, a lot of NGO and civil movement, but campaign-like, mostly.
Poland	The public was not involved in the preparation of the safety report for the National Radioactive Waste Repository (NRWR) and other facilities related to the management of radioactive waste.
Portugal	As far as I know, there isn't non-prescribed forms of public participation
Portugal	No. Unless the Regulator is developing those forms at the moment.
Slovakia	Any person can demand a participant status in any administrative procedure held by the Slovak authorities according to the Administrative code (see also response to the question no 1.). By filing such demand, the person automatically becomes a participant. Only if the authority proves that no rights or interests of the person can be affected in the administrative procedure or by the output of the procedure (e.g. a ruling, a permit, ...), the participant status can be revoked/denied. So the public can in principle participate in various types of decision-making processes related to RWM, but in reality only a few actually did so. For example (based on our own experience) as a participant of a procedure held by the NRA we were notified and (since only a minimum of documents, if at all, are provided online) had to arrange a meeting at the NRA premises in order to physically inspect the printed documentation (provided by the operator when the procedure started) - thousands of pages. The documentation or most of it usually cannot be provided in the electronic form. You then must select parts you

	wish to copy, the NRA employees must make physical copies of the pages and redact "sensitive" information on each of the pages. Only after that you are given the redacted copies. It is nearly impossible to search the relevant parts for selection within the office hours (even half a day or a full day is often not enough), it takes hours/days for the NRA employees to redact and copy the selected parts (pages), you then have to study it and sent reaction within a short deadline (often only 7 days since the first notification, not the inspection date), ... The authorities (e.g. NRA, NNF) do no actively seek inputs/comments from the public on the documents they prepare (see also the response to the question no. 2). The public does not participate/ is not invited to participate in preparation of national reports issued by the NRA, e.g. the national report compiled in terms of the Convention on Nuclear Safety or the national report compiled in terms of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.
Slovakia	no
Slovakia	Case by case. Generally, based on transparency law are most materials open for public.
Slovakia	"De iure yes (with frequent breaches of the Aarhus Convention and/or the EU Acquis Communautaire), but there exist many controversies and potential breaches of laws which are impossible to report in the short format of a questionnaire.
Slovenia	As said, for LILW repository site selection process, the public participation was organised in the form of local partnerships with broad and intensive access to information, participation opportunities and resources. Also, during the re-licensing of Central interim storage facility for small producers, the EIA process was organised with public hearings, and later with separate local partnership to support exchange with local population and their participation.
Slovenia	Yes, there are. Safety report is through EIA procedure publicly available (web pages of environmental regulating authority) with other supporting documentation such as design basis documentation and other.
Sweden	No, not for consultation before a license application. But the safety analysis report that is included in a license application is open for comments in the license review process, both with the court and the regulator.
Ukraine	Citizens can send inquiries to the regulatory body, management body, licensees on any issues. Also, any issues can be considered at public councils.
United-Kingdom	No. No that I am aware of although local government representatives may be aware.

Table 11 - Answers to the question 3 of the questionnaire

4 - How is engagement organised in regard to the national programme for the management of spent fuel and radioactive waste development?

Austria	See question 1
Austria	SEA for the first version, SEA for future significant changes.

	Information and dialogue before the SEA starts or at least before it is finished
Belgium	See the answer to question 1.
Belgium	See above
Bulgaria	Dissemination of general non-technical and summary information through media and information sites of government institutions.
Bulgaria	A government decision is awaited
Czech Republic	SÚRAO informs mayors of the affected municipalities about every change related to the concept of RWM for example the EU taxonomy, changing in the national energy concept.
Czech Republic	Commenting is possible as with other regular legislatives through the regional representatives or the Parliament.
Denmark	See the answers to question 1 and 2.
Denmark	Engagement is mainly through the national contact forum.
Denmark	Contact forums.
Finland	Only EIAs.
France	see 1.
France	The national programme itself has been built taking into consideration the involved stakeholders' opinion with a public debate organised in 2019-2020 and its follow-up also checked by the national commission of public debate. Many requirements and reports asked in the national programme include public consultations which, for instance, can take the format of multicriteria / multi stakeholders analysis. However, the framework of consultation regarding the national programme does not really involve the general public.
Germany	See question 1.
Hungary	Engagement for RW is only seen, if at all, at the local level.
Hungary	National program 1 of 6 parts are dedicated to DGR project implementation. Other related to implementation of other activities related to decommissioning and management of all RAW including SF and LL waste.
Lithuania	The governemental boards and facilities exclude civil participation practically, although the national programme requires that.
Poland	In order to select the most favorable solutions for the management of radioactive waste in terms of possible environmental effects and to ensure public participation in the planned activities related to the management of radioactive waste and spent nuclear fuel, a strategic environmental impact assessment procedure (SEA procedure) was carried out for the draft of the National Plan. As part of the strategic environmental impact assessment for the draft National Plan, an environmental impact assessment was prepared. Subsequently, the

	project together with the prognosis was subject to social consultations and opinions by the General Director for Environmental Protection and the Chief Sanitary Inspector, in accordance with the provisions of the EIA Act. Since the Prognosis did not show the possibility of transboundary impacts, no transboundary consultations were carried out. After completing the procedure, the SEA was prepared, in accordance with Art. 55 sec. 3 of the EIA Act, a written summary containing e.g. information on how they have been taken into account and to what extent the findings contained in the environmental impact prognosis, opinions of the competent authorities and submitted comments and conclusions have been taken into account. Conclusions from this summary constitute Annex 4 to the National Plan. Pursuant to the provisions of the Regulation of the Council of Ministers of September 10, 2019 on projects that may have a significant impact on the environment, installations related to the management of spent nuclear fuel or radioactive waste listed in the draft of the National Plan are projects that can always have a significant impact on the environment. In connection with the above, the implementation of this type of investment will require an environmental impact assessment to be carried out in accordance with the provisions of the EIA Act. A public hearing will be required during this procedure. The update of the National Plan meets the conditions set out in Art. 48 of the EIA Act, therefore the strategic environmental impact assessment procedure was abandoned.
Portugal	As WMO, we report annually the inventory of RW received. We are also involved in discussions with the regulatory body, for treatment of challenging RW
Portugal	Regulator issues the National Report on the safe management of radwaste and spent fuel according to EU Directives and that should also show the Govern strategy for the future of the sector but that it is not so clear in all aspects of the report.
Slovakia	See response to the question no. 2. The public (citizens, NGOs, municipalities) participation in draft preparation or commenting is not actively sought and the public individuals have to actively request invitation to participate. During the previous update (7 years ago) no SEA process was held. The current update of the programme will go through the full SEA process (as requested e.g. by our civic association and also by the Ministry of environment), although, originally, no SEA was planned.
Slovakia	Only in frame of the SEA process for the national programme as a strategic document
Slovakia	National program is in Slovakia actually under SEA.
Slovakia	The same laws and practice as for any other document approved by the government, i.e. the process is transparent and public can send comments, but none of the NGOs are being notified about the start of this procedure, i.e., NGOS and the public must actively look at the electronic "noticeboard" not to miss the period when this is possible. A lot of public institutions that were notified and asked to submit comments would ignore this procedure, into which none of the NGOs or representatives of the public were involved in 2015 [1]

	[1] https://rokovania.gov.sk/RVL/Material/12127/1
Slovenia	The national RW and SF programme is open for comments of public: the engagement follows principle for EIA process: responsible authority publich the information and proposal document on portal e-democracy (example https://e-uprava.gov.si/drzava-in-druzba/e-demokracija/predlogi-predpisov/predlog-predpisa.html?id=13812) and provides minimum 30 days for remarks and comments. The national programme is after this period further improved if comments are considered, and sent to government which adopt the decision and sent it further to parliament, who adopts final version. In last version of document, there was no written comments received, but during discussion in Parliament one NGO (called ZEG) presented their views.
Slovenia	Public hearing for national programme for at least 1 month is required where anyone can comment and provide suggestion to the draft of the national programme for RWM. The last was done in February and March 2022.
Sweden	It is managed by the implementer. The consultation process including how comments have been taken due account of in the development of the environmental impact statement have to be documented and submitted with the licence application according to the Environmental Code. The Land and Environmental Court approves the report as part of giving a license.
Ukraine	Draft national programs are posted on the websites of the relevant departments. Public comments should be considered. Also, projects of national programs can be considered at public councils.
United-Kingdom	In the UK over 70% of all spent fuel and radioactive legacy waste is stored at Sellafield. NGO representatives have requested to join the Stakeholders Group recently but have been denied.

Table 12 - Answers to the question 4 of the questionnaire

5 - Are there any methods used for engagement concerning smaller technical activities (like development of Waste Acceptance Criteria (WAC) and their changes)?

Austria	Not yet, as there is no final repository yet in Austria and therefore no WAC for such a facility. It is possible that the Advisory Board will present recommendations regarding the participation of the public in such smaller technical activities.
Austria	In the planned participation concept, it is foreseen to offer dialogue on many topics.
Belgium	The public is not directly involved in the establishment of WAC. However, the conformity criteria for the disposal packages, which is the main source of input for the WAC, are given in a specific chapter the safety report. The safety report is part of the documentation supporting the license application of the surface repository. In the case of the surface repository, after a preliminary positive advice by the nuclear safety authorities in 2019, the municipal executives of Dessel and the surrounding municipalities were informed of the license application, and they

	organized a public inquiry. The (favourable) result of this inquiry was fed back to the nuclear safety authorities.
Belgium	No
Bulgaria	Partial information on such technical activities (for example, on the presence of WAC) in individual cases is included in the general non-technical and summary information for some procedures related with RWM.
Bulgaria	No
Czech Republic	Most technical activities are handled by experts and specialists from research organizations, academia and technical companies. In the solution, national legislation regarding the management of RAW must be ensured.
Czech Republic	Not apart of the above mentioned working group for dialog between SURAO (WMO) and the municipalities.
Denmark	The smaller technical activities can at all time be a subject of discussion in both contact fora for RW.
Denmark	The plan is to discuss these themes in the upcoming siting process for a disposal facility with local stakeholders.
Denmark	Not currently.
Finland	Authority may have written hearing, but there is no consideration of the information, transparency of the processes nor no means to appeal decisions.
France	As far as i know, no
France	Public participation may concern smaller projects for example a public consultation has been organised in 2021 on the extension of the disposal facility for VLW-LL. Moreover, the public participation can be a voluntary procedure from the project owner. There is no public participation concerning WAC but the RW owners who are the clients of the surface facilities answer every year to a satisfaction survey.
Germany	I don't know. Probably yes, as they are developed by federal institutions (e.g. BGE for WAC of Konrad repository)
Hungary	Not to my knowledge
Hungary	WAC are developed for disposal facilities as part of SAR's and in some case WAC for storage (for LL waste). Update of WAC are necessary in case of new inventory (not foreseen initially at stage of SAR development for repositories) or in case of change of nuclide compositions of RAW.
Lithuania	The problem, that very few and uncertain information's about efflux of waste, HLW and other NPP-waste

Poland	No such action has been taken so far.
Portugal	The WMO has a WAC system implemented at storage facility.
Portugal	IST-ID is part of the Project ROUTES where development of WAC is one of the topic keys for SIMS. There are technical procedures for RWM according to IAEA best practices but no WAC' s have been established yet.
Slovakia	We are not aware of any.
Slovakia	No, in such activities only the "authorities" are involved
Slovakia	Not defined.
Slovakia	I don't know
Slovenia	If there is a new RW facility, the safety report (a version) is usually part of the documents published in the EIA process, WAC are one of the chapters and public can give comments and remarks. The other question is what is than done with the comments and remarks: usually they are not considered as not relevant.
Slovenia	Yes, there are, WAC criteria as the part of safety report are publicly available during the licensing process (EIA, consent on nuclear and radiation safety). Additionally, for LILW repository approval process, dialogue with interested persons and organisations was organised where written or oral answers were provided.
Sweden	The Swedish Radiation Safety Authority (SSM) has a public consultation when developing regulations for RWM. WAC are normally developed by the implementor to be approved by the regulator in the licensing process and separately afterwards during operations oversight.
Ukraine	Small technical activities can be considered at the request of individual citizens, at public councils.
United-Kingdom	Not that I am aware of

Table 13 - Answers to the question 5 of the questionnaire

6 - Is there any support (expertise, special devoted reports in understandable language, resources, finances...) available for engagement of the public? If yes, what lessons have you learnt regarding what works well and what does not work?

Austria	The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK, the Austrian regulatory authority for waste management facilities) provides in-depth and easily understandable information about radioactive waste management in general, the national programme and regulatory tasks on its website strahlenschutz.gv.at. Reports are in general made public. The same is true for the Advisory Board and NES, which provides information on their respective tasks and activities on their websites. In the framework of the Advisory Board, a study entitled “What do you know and what do you want to know about radioactive waste?” was launched. It included more than 40 participants divided into several “focus groups”, which were asked about

	their knowledge about radioactive waste in general, about their opinion on open issues and their expectations for public engagement in the decision-making process for the disposal of radioactive waste. The results of the study are expected to help with the elaboration of the participation concept of the Advisory Board. The BMK and NES participated in the biannual event "Long Night of Research", during which employees with expertise in radioactive waste management presented to the visitors' general data about radioactive waste in Austria, about the Advisory Board, etc.
Austria	The website of the Advisory Board is already set up. This website seems to be not known by the public, and no request for information reached the Advisory Board in its first 3 years of mandate. Some basic information is available on the website of the responsible Ministry Some information is available on the website of the WMO responsible for interim storage, and there is a possibility for excursions to the interim storage. Besides, no further official information material is available, no events have been organized for the public, no media campaign has started yet. No lessons learned because no major public outreach has taken place as of yet.
Belgium	The social debate for the establishment of national policy measures for the management of LILW and SF is planned to be supported by the King Boudewijn/Baudouin Foundation, an independent and pluralistic foundation of public utility. This foundation has experience with initiatives concerning public involvement.
Belgium	Public partnerships profit from a Fund which is legally foreseen to be paid by producers and maintained together with the WMO
Bulgaria	Yes, there is such support but mainly with non-technical reports in understandable language, and information materials available for engagement of the public. That works well but is not enough. Other forms of support and incentives for public participation are also effective, for example coverage of such public discussions in media newscasts, accompanying welcome coffee and cocktails, etc.
Bulgaria	No
Czech Republic	A quarterly report about the RWM is published regularly and distributed to all affected sites. For information, SÚRAO uses not only websites, but also social networks. SÚRAO is trying to involve young people. The excursion of representatives of municipalities to Onkalo (Finland) and discussion with Finnish representatives of municipalities brought changes in opinion on the size and operation of the planned repository. A cycle of educational courses for schools is organized at the sites. The employees of SÚRAO ensure the teaching of the subject of high-level waste management at the Czech Technical University.

	SÚRAO organizes a week summer school for students and interested adults. The interest is greater than the course allows.
Czech Republic	No. SURAO publishes a magazine "News from SURAO" (distributed in the municipalities concerned with the siting process) which is more of a promotion of the project, nicely done PR on and expensive paper with fancy photographs, not and objective information. There is no independent body that would that mediate communication between the public and the WMO (state). There is no state funding or financing scheme available for public and NGO participation.
Denmark	Yes, questions of any kind related to RWM can be submitted to the independent expert panel described in in answer to question 2.
Denmark	Not currently but this will be a focus in the siting process for the disposal facility.
Denmark	We try to publish new about our work in a language that is clear and understandable for the public. With regards to reports this can be difficult. We have not gotten feedback from users of our website.
Finland	There is no such thing, and it works better in more civilized countries.
France	IRSN's review are systematically made public. In addition to this, in collaboration with the National Association of Local Information Committees (Anccli) and the Local Information and Oversight Committee (Clis) of the Bure research laboratory, IRSN has set up a technical dialogue since 2012. This dialogue allows i) civil society to increase their technical skills in the objective to participate in public decision-making but also to enhance IRSN's and ii) IRSN to make its expertise more robust by integrating reflection the concerns and questions of civil society.
France	In terms of tools, the roadmaps of consultation may include many ways to involve the public: specific participation websites, online and face to face meetings, citizens conferences, actions towards specific targets such as the young public or the neighbouring communities. For each formal consultation, a specific document presenting the issues at stake is produced as a support for the public. At the end of the consultation, a report summarizing the opinions expressed and the way they have been taken into account is also issued.
Germany	Yes, e.g. website of federal institutions are available in sign language and "simple language"
Hungary	I am not able to answer.
Hungary	No special support mechanism exists for support engagement of the public. But main general information about activities in field of RAM are available for public and during public hearings, which periodically organized can be answered officially.
Lithuania	Yes, university professionals work on that, but they have to care of their status on the university, which is supported by the governmental nuclear facilities...
Poland	a) Twice a year, an information bulletin on the state of operation of the NRWR is developed and published on the ZUOP website

	https://zuop.pl/aktualnosci/264-biuletyn-informacyjny-ksop-2-2022 b) Once a year, information on the state of radiological protection of the National Radioactive Waste Repository in Rozan and nuclear facilities is compiled and published on the ZUOP website https://zuop.pl/bezpieczenstwo-jadrowe c) The local community is provided with annual reports on the operation of the NRWR, where the results of radiological monitoring performed in the vicinity and within the NRWR are presented in an understandable language. d) During the meetings of the repository operator with the Radiological Protection Commission (representatives of the local community), all doubts related to the above-mentioned issues in the report are clarified. e) During the session of the Rozan City Council, each person may read the content of the report and ask related questions. f) The Commune Office is informed about the results of the inspections carried out in the NRWR area. The involvement of the authorities and the local community in the processes related to the operation of the repository is essential for its operation. By conducting information activities in the form of NRWR Open Days and meetings with representatives of local authorities, the Radioactive Waste Management Plant tries to provide details related to its activities.
Portugal	As far as I know, NO
Portugal	There is no support for people's engagement. The National plan is public. Communication with public is not developed in terms of achieving full engagement.
Slovakia	According to the EIA Act, every EIA report must contain a part called "a generally understandable/comprehensible concluding summary", which should be an easy-to-read (for general public) summary of the report on up to approx. 10 pages. According to §12 sec. 1. f) of the National nuclear fund Act, the NNF resources can be used (among others) also for "reasonable" costs for engagement of the public in decision-making processes related to site search, geological survey, preparation, design, construction, commissioning, operation and closure of RW or SNF repositories (but only these and no other type of nuclear installations) and for "reasonable" costs for communication with the public (in relation to projects of the RW and SNF repositories only). This provision has been in effect since 2019, but has never been applied in practice (as far as I know). There is no real support of any kind available for engagement of the public (apart from the above-mentioned hypothetical support related to RW and SNF repositories). From our point of view the public engagement is in reality discouraged rather than supported (de iure the participation is possible (in general), but the authorities do not actively seek public participants and effective public participation is almost impossible).
Slovakia	Only available published documents on web page as information source for feedback. But there is practically no feedback. The interest of the public must be initiated.

Slovakia	Not defined.
Slovakia	I am not aware of anything in this regard.
Slovenia	In general, there is no such support (as mentioned) for engagement of public. But in case of LILW repository site selection, 2 local partnerships had all such support: resources for their experts, they could require special reports devoted to their concerns, in understandable language, also obtain most of the developed documents, unless they were confidential based on the law (like physical protection plan). There was general agreement between all involved that such approach was the key for the adoption of site. See more in the Slovenian case description.
Slovenia	Yes, there are, see answers above. Open dialogue with stakeholders and public is crucial. It is important that public can be included in all approval processes from early start. This is why in Slovenia principles of transparency, public engagement, ... are defined in national acts or RWM programme.
Sweden	There has been support for local communities and national environmental NGOs from the nuclear waste fund and the government budget for many years. This resourcing has allowed improved consultation and licence review processes and allowed the use of independent expertise. It has worked will but the NGO funding is now being discontinued and the local community funding has become very restricted to what the money can be used for.
Ukraine	Information understandable to the public must be prepared and disseminated, organizational and technical measures must be taken to conduct public hearings.
United-Kingdom	Not currently, but there may be in future. it is understood the South Copeland Community Partnership will have access to independent expert scientific advice concerning the seismic data gathered last year by NWS through provisions made in the Working with Communities Legislation

Table 14 - Answers to the question 6 of the questionnaire

7 - What is done if there is no interest within the public?

Austria	Radioactive waste management and especially the disposal of radioactive waste are sensitive topics in Austria, as the public can be considered to be widely anti-nuclear and there are many misconceptions about the use of radioactive substances in Austria in applications in medicine, industry and research. The interest in radioactive waste management is nevertheless high. The Federal Government of Austria already tried to find a solution for the disposal of the Austrian radioactive waste in the 1980s and 90s, but due to a lack of public engagement and the resulting public resistance in the site selection process, the plans were brought to a halt. Now, more than 20 years later, the challenge will be to involve the public in the decision-making process, in order to find a viable and acceptable solution.
Austria	As the responsible actors have not reached out to the public yet, it is not known if interest will develop.

Belgium	In the case of the management of LILW and SF, ONDRAF/NIRAS already organized a public inquiry in 2010. This led to the establishment of the Waste Plan, which was presented to the Government. The public participation at the time was limited however. At present, there are plans to frame the decision process in specific legislation and to repeat the public inquiry in the future so as to ensure a broad public acceptance (also see the answer to question 1)
Belgium	I do not understand this question
Bulgaria	Distribution of information materials, leaflets, flyers in public places to passively inform the public.
Bulgaria	There is no opportunity for public participation. We have been reminding governments for several years now that the Strategy needs to be edited.
Czech Republic	Every event that SÚRAO organizes is attended by some interested CS. It is important to prepare the event well, inform sufficiently in advance. The program of the event must be interesting for CS. SÚRAO also tries to inform through national television programs, radio programs and programs with a nationwide impact.
Czech Republic	There is no such a problem. Public is interested but the state bodies would be happy if they were not interested and the WMO could proceed without undue delay in communicating with the public.
Denmark	In Denmark, the public is represented in the contact fora by 3 nation-wide green NGOs and an association representing all the RW-related local citizens groups, which means that the public interest is permanent, because it has been institutionalised and integrated into the RWM process.
Denmark	We have not experienced a lack of interest. On the contrary there is a very long tradition for involvement from and with the public.
Denmark	Our yearly event with Open House and guided tour of our facilities is very well visited and it has not yet been necessary to do more to involve the public.
Finland	Minimum interest is the desired situation.
France	In a former public debate, when public refused to participate in meetings organised by the national commission organising this debate, an "online" debate was organised, through global presentations or expert debates without public attendance (public could only ask questions or react online). This debate form was seen as really frustrating for all participants.
France	The idea saying that there is no interest within the public has to be challenged. In our experience, specific initiatives of dialogue and information adapted to the targeted public show that there is an interest in knowing more about the RW management and the issues at stake, and that people are willing to get some information, for instance trough brochures and the media, or might come to open days to ask questions. However, it is also true that when it comes to formal public consultation procedures, a very few numbers of stakeholders is really involved and no general public participates. Local issues such as energy supply

	or local integration of the project are the kind of topics the local public is the most willing to get involved in.
Germany	I don't know. There is quite a lot of interest for the official information events and the events are well advertised.
Hungary	State-funded NGOs get involved.
Hungary	Usually interest of local communities exist during public hearings, when projects are presented. Less interest when public hearing of new legislation organized.
Lithuania	As mentioned, it is very campaign-like. If sometime happens, then interest is growing.
Poland	In the case of the NRWR there is public interest.
Portugal	Provide information, carry out awareness campaigns
Portugal	The directives are in place, so legal provisions exist. Public interest has not yet been seen as fundamental for decisions (more for non-decisions) but only when the Law obliges.
Slovakia	Nothing in terms of any effort to engage the public. If, for example, no common citizens show up at the public hearing of the EIA report, they have no or only a few trivial questions, if the public/NGO/municipality does not actively participate and raise objections in the EIA process, it is interpreted as a clear sign of a high level of support and trust of the public to the work done by the nuclear industry and regulatory authorities. Based on our experience, no or minimal public interest seems to be preferred by the operators and also the state authorities - they can use it as a proof of interpretation mentioned in the previous sentence, they avoid the risk of a bad PR, they have much less work (do not have to deal with other opinions/objections/comments/ different point of view) and the processes can be shorter.
Slovakia	Nothing (no interest = no problems)
Slovakia	It is proceed according to standard procedures and existing laws.
Slovakia	All the public authorities (except for the Ministry of Environment under the government in power from 03/2020 to 05/2023) are most probably happy when this is the case because this is what they obviously want as outlined in my answer on Q no. 1 and in the articles referred in that answer.
Slovenia	Very rarely there is no interest of public. It happened in case of very generic documents, like adoption of national program for RW and SF management, as they are generic, and without very particular challenges (like selection the site for RW facility, ...). More could be done for engagement of public: like special presentations online by authorities, round tables in the expert communities, presentations for journalists or any other way to support the engagement.

Slovenia	This can happen at certain stage of the process, but before final approval there are multiple phases where public can be further engaged, e.g. after public hearing, public can be further included in parliamentary approval procedure.
Sweden	The resourcing of the local communities and the environmental NGOs was intended as a way to increase public interest. It has worked to the extent that it is unlikely that the environmental NGO would have had much interest otherwise due to prioritisation.
Ukraine	There are no special requirements.
United-Kingdom	Not a great deal currently. The Community Partnerships do produce updates following meetings but there doesn't currently seem to be a plan to raise public awareness on issues concerning public participation and civil society awareness.

Table 15 - Answers to the question 7 of the questionnaire

8 - Is there long-term CS engagement, or is there after some time engagement tiredness on the side of CS? If so, how is this dealt with?

Austria	There has been long-term engagement of civil society and especially non-governmental organisations regarding issues of nuclear energy and, linked to that, the topic of radioactive waste management. Those NGOs often were founded in the last decade and are still active today. We cannot perceive engagement tiredness on the side of civil society.
Austria	NGOs in Austria who focus on nuclear issues, have a long tradition. Their interest is focussed on RWM in Austria's neighbouring countries, but it can be assumed that they will also participate in a dialogue on national RWM. The general public has not shown any interest as of yet, not clear if the public at the site of the interim storage shown interest.
Belgium	In the case of the partnerships between ONDRAF/NIRAS and the local community one can speak of a long-term engagement. The partnerships still exist and are active.
Belgium	It is always a challenge to maintain engagement given the long-term decision making process
Bulgaria	The pursuit of massive public engagement on all issues leads to tiredness. Selective public engagement is needed on significant and important issues with potential wide-scale impact.
Bulgaria	A small group of citizens are engaged, there is no fatigue, but the barrier to their participation continues.
Czech Republic	CS is active. They organize their own events, invite experts to talks, send inquiries to the authorities and so on.

Czech Republic	There´s been a long time CS engagement, in some of the siting localities going on for more than 20 years. In some newly added localities public engagement arises now.
Denmark	The time perspective of CS engagement depends on the existence of the contact fora. So far, there has been no plans to cancel them.
Denmark	For many years it has been the same representatives in the local contact forum and therefore we have a focus on engaging the younger generations in the work so that the involvement in our contact forums will continue with new representatives in the future.
Denmark	We are currently discussing how we can keep engaging the public in participating in our contact forums. We are worried that it can be difficult to engage new people in the future.
Finland	There is tiredness and frustration in civil society. There is no interest for participation. Last time there was some interest was with Fennovoima about 2017-18 when apparently there was a secret consideration of ending the project based partially on challenge by civil society.
France	In my point of view, no sign of tiredness in France at this stage for CS engagement
France	Local stakeholders in particular such as local elected people are very often asked to participate to consultations either from the WMO or from others, therefore the requests towards them have to be carefully balanced in order to avoid tiredness. However, one should not be scared to repeat the same information and answer the same questions over and over as it is well understandable that the public does not have a very high and detailed knowledge of the project.
Germany	I don't know.
Hungary	Unable to respond to this.
Lithuania	I think, our CS "root" does not have tiredness, but the work intensity and effectiveness is wave-like, dependent from external political conditions
Poland	There is a long-term commitment to NRWR. So far, engagement tiredness has not been observed.
Portugal	As far as I know, NO
Portugal	There are institutions (Academia, WMO and Regulator) that have been involved in projects where Civil Society was paramount but that does not seem to translate to the Portuguese reality in terms of engagement. The interested organizations do not show most interest in radwaste in PT. There is no clear bridge to linking Society, Academia, WMO, Research, Regulation and political decisions. So, there is no short-term or long-term engagement of CS.
Slovakia	There is no functional institutional mechanism for a long term public engagement. The nuclear industry and state authorities might present the

	"citizen information committees" as an example of the long-term engagement of the affected municipalities, but it is far from what the CS EURAD understands under the term "long term CS engagement" (see response to the question no. 1 for details). Of course, the difficult conditions lead to tiredness and burn-out. The CS members have to spend a lot of time and own resources and sacrifice other life opportunities if they want to verify information from independent sources and obtain additional information or even have at least a minimal chance of affecting the outcomes of the decision-making processes. Therefore, if some citizens participate at all, they limit the participation to attending the public hearings of the EIA report. That is also the reason why there is only one Slovak NGO (ours) participating in the nuclear/RWM issues.
Slovakia	Not defined
Slovakia	Except for the NGO "We want a healthy country" there is no other environmental NGO interested in RWM related issues (as I follow only passively as an academic, except for [1]) [1] https://www.nuclear-transparency-watch.eu/activities/transparency-and-public-participation/overview-of-activists-submissions-addressing-lack-of-public-access-to-nuclear-sector-information-in-slovakia.html
Slovenia	In fact, currently there is very limited long-term CS engagement. It looks like that there are only few CSOs which are following the RW (and also other nuclear) development. The residents near nuclear (and RW) facilities are for now not visible. The regulatory authority has yearly exchanges with CSOs, but from the distance it looks like they always agree that there are no problems (records on RB website). However, the CSOs are present and react in case something is not according to their understanding of participation and the law (one case, described in D9.16, was the EIA process for NPP LTE, which they manage to assure).
Slovenia	Sometimes tiredness is observed and is probably part of the process and depends on other environmental activities in the country and is not specific only to RWM. As RWM is a slow process, there is always some time and opportunity for public to be engaged at later phases.
Sweden	The CS engagement has been ongoing for a very long time. In order to activate more interest for the consultation process for the repository for spent nuclear fuel that started in 2002 the resourcing of the environmental NGOs started in 2005 and has continued for 19 years.
Ukraine	There are no special requirements.
United-Kingdom	See above (7) More could be done

Table 16 - Answers to the question 8 of the questionnaire

9 - Do you have the mechanism in place to evaluate the effectiveness of public participation (if yes, please provide information)?

Austria	The upcoming revision of the National Programme for Radioactive Waste Management is going to include two Key Performance Indicators (KPIs)

	regarding transparency and public participation, specifically concerning the activities of the Advisory Board and visits to the facilities of NES. The Advisory Board will develop and recommend further KPIs, with which it will be possible to monitor the progress in and the effectiveness of public participation.
Austria	We are trying to include this evaluation in the planned participation concept that is being developed by the Advisory Board. It will be implemented in close connection to the administrative body, and KPI might help to evaluate outcomes.
Belgium	No specific mechanism has been installed yet.
Belgium	Not really
Bulgaria	Metrics such as the number of participants and/or questions asked in a given discussion are used, but this has not been developed as a system for actually evaluating the effectiveness of public participation
Bulgaria	No
Czech Republic	A number of articles, news and publications related to the RWM are submitted to the SÚRAO Council regularly every year. A trend in the positive/negative perception of this issue is monitored. SÚRAO conducts socio-economic surveys on the site regarding the awareness of the population. SÚRAO uses questionnaires to obtain feedback at its events.
Czech Republic	No, we don´t.
Denmark	The Danish model is considered a success by all the stakeholders, including the regulators. In this case the mechanism is public acceptance, which has so far been achieved.
Denmark	We get feedback from the contact forums but not in a structured way. The contact forums are very satisfied with the level of information given on the meetings. We are currently considering a more structured way to follow up on our Open House events to see the effect of this type of public involvement.
Denmark	We are working on an online evaluation of our Open House event in order to see if the event has the right form. But other than that this is not currently a focus of ours.
Finland	Not really. EIA opinions are shown on the ministry webpages.
France	The number of questions / meetings / public / attendants us reported for each public debates or inquiries. However, only qualitative evaluation can be based on this, as the opinions on the effectiveness of these actions clearly depends on the respondent organisation
France	As mentioned above, at the end of every milestone of consultation, a report is issued and made public in order to summarize the participants' opinion and how the future steps of the project takes it into consideration.
Germany	I don't know.

Hungary	No mechanism to my knowledge
Hungary	No special mechanism exist to evaluate the effectiveness of public participation.
Lithuania	Until now we had a lot of undersigning campaigns, petitions, Internet, interviews, press, etc. The public acceptance of them is very effective. But, the real effectiveness is very heavy to appreciate, because the official RWM activity is going on as "business as usual"
Poland	No such mechanisms were in place to assess the effectiveness of public participation.
Portugal	At this time there is now mechanism to evaluate the effectiveness of public participation.
Portugal	No. No mechanisms in place besides the responses to the analyse of the National report on the management of radwaste and spent fuel and, eventually, the very sporadic participation of general public and stakeholders in exercises related to radwaste. This information might be available but it has to be confirmed and asked for.
Slovakia	We are not aware of such mechanism.
Slovakia	No such indicators do not exist in our case
Slovakia	Standard procedures defined in legislation.
Slovakia	I have never heard of any (even outside of the RWM and nuclear sector related public participation procedures)
Slovenia	There is no mechanism for the evaluation of effectiveness of public participation currently. But during local partnerships functioning, there were several methods applied: collection of feedback, reporting from the events and collection of lessons, proposals for improvements.
Slovenia	Not specifically for RWM.
Sweden	No.
Ukraine	Such evaluations may be carried out, but specific procedures for such evaluations have not been established.
United-Kingdom	No

Table 17 - Answers to the question 9 of the questionnaire

10 - Any other comments or observations under this topic?

Austria	Engagement should be defined more precisely: There is a high distinction between information, discussions and dialogues, legally guaranteed procedures like EIA, and participation in co-decision making. The latter is highly contested

	and the most difficult to arrange, but can nevertheless be the most important part of the whole participation regime.
Belgium	No
Bulgaria	Conducting public opinion surveys, sociological studies and polls, and especially referendums on a regional or national scale, on the most important issues related to radioactive waste will contribute to increasing the effectiveness of public participation.
Bulgaria	We need pressure and more active intervention from the EC, for each country to fulfil its commitments for the storage of spent nuclear fuel and radioactive waste. The Bulgarian strategy is very late, for example.
Czech Republic	In the context of the pressure to build new nuclear units in CZ and the need to start construction of DGR by 2050, there is still a risk that legitimate public interests in the affected localities will not be discussed and processes, including technical design and hydrogeological investigations at the sites, will be rushed and not properly implemented.
Denmark	The Danish model could serve as a model for CSI, at least in terms of the small inventory member states.
Denmark	When discussing shared solutions it is important to have a collaboration between CSO's across Europe. We think that Routes has helped create a good foundation for this collaboration.
Finland	Civil society is not considered worth hearing, as the closed circle of nuclear engineers in companies, regulator, and ministry considers to have all information needed and supreme understanding of the matters even overriding specialized scientist of relevant fields or information from other countries like copper issue in Sweden
Germany	I believe there were a lot of "lessons learned" from the first site selection process concluded in 1977.
Hungary	Sanctioning MS authorities for failure to engage the broad public might be effective in Hungary.
Hungary	Mandatory approval of RAWM and other country strategical projects by local authorities not required by EC directives therefore are not mandatory at present time.
Portugal	Not at this moment
Portugal	PT is not well prepared for communication with CS in the area of radwaste maybe because the subject has been out of the main concerns until Waste Directive EURATOM 70. It also seems an urgency understood by the Regulator but not so much by the political decisions. The fact that the Country has no NPP's may explain it but PT had a research reactor from 1961-2019 so, it should be expected more involvement of the public. This important issue needs to be seen as it is, important, by the political power.

Slovakia	No
Slovakia	No.
Slovakia	All my comments I tried to publish in the documents/sources referred as [1,2,3,4] in the answer to the Q no. 1. There might be an event about the SNF final solution organised by the Ministry of Environment on 1 June 2023 which I would attend only passively via Zoom as they did not provide an option to reimburse travel costs of participants living outside of Bratislava. This event might be cancelled as the Slovak Government might soon be replaced by the so-called "Bureaucratic/Take caker government" (i.e. officials outside of political parties nominated by the President, a subject of an approval by the Parliament, currently ongoing).
Slovenia	This topic is very important and should be seriously investigated further.
Slovenia	No.
United-Kingdom	No

Table 18 - Answers to the question 10 of the questionnaire

References

[1.] Zeleznik N., Swahn J., Haverkamp J., Hooge N.H., Rey H. (2020): Scoping of ROUTES, initial ICS input and ICS action plan. April 2021. https://www.ejp-eurad.eu/publications/eurad-deliverable-915-scoping-routes-initial-cs-input-and-ics-action-plan-task-71.

[2.] Zeleznik N., Swahn J., Haverkamp J., Hooge N.H., Rey H., Daniska M. (2021): Implementation of ROUTES action plan first phase. May 2022. https://www.ejp-eurad.eu/publications/eurad-d916-implementation-routes-ics-action-plan-first-phase.

[3.] Zeleznik N., Swahn J., Daniška M., Haverkamp J., Hooge N.H., de Butler M, Wales C., (2022): Implementation of ROUTES action plan second phase. Final version as of 22/08/2023 of deliverable D9.17 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593.

[4.] Possibilities and Challenges of RWM with Regard to Civil Society Interactions, (2023), HOOGE, Niels Henrik; ZELEZNIK, Nadja; DE BUTLER, Malcolm; MIKSOVA, Jitka; HARVEY, Elisabeth, accepted contribution, IAEA conference Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability, November 2023.

[5.] Directive 2003/4/ECof the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0004.

[6.] Directive 2003/35/ECof the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC.https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0035.

[7.] Regulation 1367/2006/EC of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006R1367

[8.] Council Directive 2011/70/Euratom of 19 July 2011 establishing a community framework for the responsible and safe management of spent fuel and radioactive waste: EUR-Lex -32011L0070 - EN - EUR-Lex: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32011L0070&from=EN.

[9.] Marsal F., Maître M. (2024): ROUTES - Recommendations for R&D, strategic study and KM activities for future European collaboration. Final version of deliverable D9.3 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593.