

Radioactive Waste Management Committee

**The Forum on Stakeholder Confidence Report on Dialogue in the Long-Term
Management of Radioactive Waste**

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Foreword

The Forum on Stakeholder Confidence (FSC) was created under a mandate from the OECD Nuclear Energy Agency (NEA) Radioactive Waste Management Committee (RWMC) to provide an environment where actors in radioactive waste management (RWM) can freely share their experiences on an international level. It explores the interactions between actors (implementers, regulators and government entities) and stakeholders on this extremely technical matter while including societal concerns.

Over the past 20 years, the Forum on Stakeholder Confidence has been committed to establishing effective means of providing and two-way communication between actors in the nuclear community and their various stakeholders. Additionally, the exchanges held during the FSC led to robust principles concerning dedicated avenues of communication.

In 2010, the FSC examined partnerships, arrangements and their history in 13 national programmes in the report *Partnering for Long-Term Management of Radioactive Waste: Evolution and Current Practice in Thirteen Countries* (NEA, 2010). Since then, many member countries have launched a dialogue as part of their disposal programmes and siting selection processes. In 2018, the FSC decided to revise this report to update the countries' experiences of different types of collaboration with potential host communities and include the ways in which additional countries approach dialogue at different stages of the RWM process.

Progressive approaches to effective dialogues between actors and stakeholders are presented throughout this report. Collaboration between local and national stakeholders allows pertinent issues and concerns to be raised and addressed, which creates the opportunity for developing a positive and functional relationship. This is advantageous for developing a mutual understanding between implementers, government agencies and the host community and stakeholders.

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List of abbreviations and acronyms

AECL	Atomic Energy of Canada Limited
AMAC	Asociación de Municipios en Áreas con Centrales nucleares (Association of Municipalities in Areas with nuclear power plants), Spain
Andra	Agence Nationale pour la gestion des Déchets Radioactifs (National Agency for Radioactive Waste Management), France
APM	Adaptive phased management
BEIS	Department for Business, Energy and Industrial Strategy, United Kingdom
BASE	Bundesamt für die Sicherheit der nuklearen Entsorgung (Federal Office for the Safety of Nuclear Waste Management), Germany
BGE mbH	Bundesgesellschaft für Endlagerung mbH, Federal Company for Radioactive Waste Disposal, Germany
BMU	Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit (Federal Ministry for the Environment, Nature Conservation und Nuclear Safety), Germany
Cigéo	Centre Industriel de Stockage Géologique (Industrial Centre for Geological Disposal), France
CLIS	Commission Locale d'Information et de Suivi (Local Information and Oversight Committee), France
CNAI	Carta Nazionale delle Aree Idonee, (National Map of Suitable Areas), Italy
CNAPI	Carta Nazionale delle Aree Potenzialmente Idonee, (National Map of Potentially Suitable Areas), Italy
CNDP	Commission Nationale du Débat Public (National Commission for Public Debate), France
CNSC	Canada Nuclear Safety Commission
CSM	Centre de Stockage de la Manche (Manche Storage Center), France
CSN	Consejo de Seguridad Nuclear (Nuclear Safety Council), Spain
CoRWM	Committee on Radioactive Waste Management, United Kingdom
CTS	Centralised Temporary Storage facility, Spain
DGR	Deep Geological Repository
EA	Environment Agency, United Kingdom
EIA	Environmental Impact Assessment

ENEA	National Agency for Energy and New Technologies, Italy
ENRESA	Empresa Nacional de Residuos Radioactivos, S.A. (National Company for Radioactive Waste Management), Spain
ENSI	Eidgenössisches Nuklearsicherheitsinspektorat (Federal Nuclear Safety Inspectorate), Switzerland
FANC	Federal Agency for Nuclear Control, Belgium
FSC	Forum on Stakeholder Confidence, NEA
GDF	Geological Disposal Facility
HAEA	Hungarian Atomic Energy Authority
HLW	High-level waste
IDKM	Information, Data and Knowledge Management
ILW	Intermediate-level radioactive waste
ITET	Izotóp Tájékoztató Ellenőrző Társulás (Isotope Information Association), Hungary
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale (Higher Institute for Environmental Protection and Research), Italy
LILW	Low- and intermediate-level waste
LILW-SL	Low- and intermediate-level waste short-lived
LILW-LL	Low- and intermediate-level waste long-lived
LLW	Low-level waste
MATTM	Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Ministry of the Environment and Protection of Land and Sea), Italy
MiSE	Ministero dello Sviluppo Economico or MISE (Ministry of Economic Development), Italy
MRWS	Managing Radioactive Waste Safety programme, United Kingdom
NAGRA	Nationale Genossenschaft für die Lagerung radioaktiver Abfälle, (National Co-operative for the disposal of Radioactive Waste), Switzerland
NBG	Nationales Begleitgremium (National Civil Society Board), Germany
NDA	Nuclear Decommissioning Agency, United Kingdom
NEA	Nuclear Energy Agency
NGO	Non-governmental Organisation
NPP	Nuclear Power Plant
NUMO	Nuclear Waste Management Organization, Japan

NWM	Nuclear waste management
NWMO	Nuclear Waste Management Organisation, Canada
NyMTIT	Nyugat-Mecseki Társadalmi Információs Ellenőrzési és Településfejlesztési Önkormányzati Társulás (West Mecsek Public Information Association), Hungary
OECD	Organisation for Economic Co-operation and Development
ONDRAF/NIRAS	Organisme national des déchets radioactifs et des matières fissiles enrichies/ Nationale instelling voor radioactief afval en verrijkte Splijtstoffen (Belgian Agency for Radioactive Waste and Enriched Fissile Materials), Belgium
ONR	Office for Nuclear Regulation, United Kingdom
PHAI	Port Hope Area Initiative, Canada
R&D	Research and development
RK&M	Preservation of Records, Knowledge and Memory, NEA
RWM	Radioactive waste management
RWM Ltd	Radioactive Waste Management Limited, United Kingdom
PURAM	Public Limited Company for Radioactive Waste Management, Hungary
SFOE	Swiss Federal Office of Energy, Switzerland
SNF	Spent nuclear fuel
SKB	Svensk Kärnbränslehantering Aktiebolag (Swedish Nuclear Fuel and Waste Management Company), Sweden
SSM	Strål Säkerhets Myndigheten (Swedish Radiation Safety Authority), Sweden
StandAG	Standortauswahlgesetz (Repository Site Selection Act), Germany
STEM	Science, technology, engineering and mathematics
SÚJB	Statni Urad pro Jadernou Bezpecnost (State Office for Nuclear Safety), Czech Republic
SÚRAO	Správa Úložišť Radioaktivních Odpadů (Radioactive Waste Management agency), Czech Republic
TAD	Territory of Advanced social and economic Development, Russian Federation
TEIT	Társadalmi Ellenőrző Információs és Településfejlesztési Társulás (Social Monitoring and Information Association), Hungary
TETT	Társadalmi Ellenőrző Tájékoztató Társulás (Local Public Control and Information Association), Hungary
URL	Underground research laboratory

USS RWM	Unified state system for radioactive waste management, Russia
WG	Working group

Executive summary

Since its inception, the OECD Nuclear Energy Agency (NEA) Forum on Stakeholder Confidence (FSC) has been committed to establishing effective methods of dialogue between actors¹ in the nuclear community and their various stakeholders.² For all countries that have used nuclear materials and technologies, it is undeniable that something must be done to manage the nuclear waste and, thus, it is imperative that channels for engagement be opened. This report is an update to *Partnering for Long-Term Management of Radioactive Waste: Evolution and Current Practice in Thirteen Countries* (NEA, 2010), with a new title - *Dialogue in the Long-term Management of Radioactive Waste*. The present volume documents how dialogue processes are implemented in 14 countries, namely: Belgium, Canada, the Czech Republic, France, Germany, Hungary, Italy, Japan, Russia, Spain, Sweden, Switzerland, the United Kingdom and the United States.

The FSC defines dialogue as “an approach of collaboration or partnership between the institutional actors and the affected communities essentially, involving public participation in the decision-making process and mutual learning” (NEA, 2013). In some countries, these dialogue processes between the institutional actors and the communities take place or will take place in the form of partnerships while in others the specific arrangements to consult and engage the local and regional levels is done through regional conferences or other participatory models. The dialogue processes include interactions between national agencies, local municipalities, business associations, regulatory bodies, members of the public and environmental concern collectives. Different countries approach dialogue on long-term radioactive waste management (RWM) in different ways, depending on cultural, political, institutional and economic factors.

This report seeks to gather and catalogue the various approaches FSC member use to establish an effective way to foster a robust dialogue with their local, regional and national stakeholders. A survey was distributed and the results were analysed to develop this report. Each country has a chapter which illustrates the following key elements:

- introduction to the national waste management programmes (current status);
- involvement of organisations at the national and regional levels;
- involvement of specific groups (e.g., youth, women, migrants);
- practical implementation of communication;

¹ “Actors” can be technical or non-technical individuals (or groups) involved in decision making and policy development at any stage. Actors are a type of stakeholder and have relationships with other stakeholders.

² “Stakeholder” is defined as anyone with an interest in radioactive waste management decision making.

- added value approaches;
- markers and memory preservation;
- lessons learnt over the last years.

While great attention has been paid in previous FSC documents to local communities, regional actors also play an important role in the participatory processes in some countries. In general, organisations responsible for stakeholder involvement in radioactive waste management recognise that insufficient attention is sometimes paid to the involvement of specific groups, including women, youth, indigenous communities and immigrants, in the process. Engaging youth in the plans and programmes for long-term management of radioactive waste has become an important consideration in all countries, as young people will have to manage the future outcomes of current decisions on waste management. Addressing radioactive waste management in different formal and informal educational activities should be maintained or introduced. Effective communication between the organisation in charge of the RWM programme or the site selection process and the local communities is crucial.

It is important to recognise that defining methods of exchanging on specific topics are as important as the topic itself. Thus, the development and implementation of an effective communication plan to organise dialogue is necessary. In order to achieve clarity through communication plans, multiple dialogues should be employed as opposed to one-way communication from implementers, regulators, or government entities to other stakeholders in the nuclear community that may or may not be actors.

There seems to be an emerging area of interest in facilitating exchange and fostering reflection on the preservation of records, knowledge and memory formally with local communities or through national projects. As some countries are approaching implementation of a geological repository, there is a growing recognition that communities willing to fulfil an essential service to the nation by hosting a radioactive waste management facility, and in particular, a final repository, are entitled to receive added value measures to develop their social and economic well-being. The term “added value” refers to an understanding that the societal benefit of a radioactive waste management facility is in part determined by its features and benefits beyond the safe management or disposal of used nuclear fuel or radioactive waste. Added value does not substitute for compensation measures, however compensation measures may lead to added value.

This report focuses on “effective dialogue” as an approach of collaboration or partnership between the institutional actors and the affected communities, essentially involving public participation in the decision-making process and mutual learning. The concept of “dialogue” in the field of RWM could be theorised in terms of co-production of knowledge between publics and experts. Theories of co-production of knowledge are gaining a greater currency in trying to understand the decision-making process around science, policy and society. The different ways these approaches are successful or encounter challenges presents lessons learnt with respect to building trust in the shared nuclear community.

These essential lessons learnt include the need to develop, at an early stage, and maintain an open and transparent process that enables continuous dialogue among all parties and builds on mutual trust. In most countries, the current approach to dialogue in RWM seems to fall mostly into a model of public debate but there are some countries which show clear characteristics of the co-production of knowledge model, which includes public stakeholders’ experiences and competencies in decision making and policy development.

1. Introduction and background

The Forum on Stakeholder Confidence (FSC) was created in 2000 under a mandate from the OECD Nuclear Energy Agency (NEA) Radioactive Waste Management Committee (RWMC) to facilitate the sharing of international experience in addressing the societal dimension of radioactive waste management (RWM). The FSC fosters learning about stakeholder dialogue and ways to develop shared confidence of RWM solutions. The FSC has documented a wealth of experience through topical sessions and studies, and in particular through national workshops and community visits. National workshops and community visits have been held in Finland (NEA, 2002), Canada (NEA, 2003), Belgium (NEA, 2005a), Germany (NEA, 2005b), Spain (NEA, 2007), Hungary (NEA, 2009a), France (NEA, 2009b), Sweden (NEA, 2012), the Czech Republic (NEA, 2014) and Switzerland (NEA, 2018). Throughout the interactive workshops, FSC members and broad representation of national and local stakeholders contributed their knowledge about how societal dialogues on RWM may be built and developed, and deepened understanding of the issues and themes that must be addressed. Summaries and proceedings are available online at www.oecd-nea.org/rwm/fsc/.

In 2010, the FSC examined partnership arrangements and their history in 13 national programmes in the report *Partnering for Long-Term Management of Radioactive Waste* (NEA, 2010). It showed the shift from the traditional “decide, announce and defend” model to the “engage, interact and co-operate” model. According to the report, this shift fostered the emergence of partnerships between proponents of the RWM facility and the potential host community. Working in collaboration with potential host communities enables pertinent issues and concerns to be raised and addressed. Such collaboration also created an opportunity for developing a relationship of mutual understanding and learning, as well as for developing solutions that will involve an added value to the host community or communities and region. The report documented the implementation of these elements in RWM strategies in most OECD countries. It focused on the following countries: Belgium, Canada, the Czech Republic, Finland, France, Hungary, Japan, Korea, Spain, Sweden, Switzerland, the United Kingdom and the United States.

In 2013, the FSC published *Stakeholder Confidence in Radioactive Waste Management: An Annotated Glossary of Key Terms* (NEA, 2013) based on a review of the full range of FSC publications across the past decade. The glossary intends to serve as a synthesised reference guide for defining concepts and principles in the area of RWM and the evolution of their understanding over time. Through continuing dialogue, the understanding of certain concepts will evolve further and other terms will come to the fore. Two of the particularly relevant entries of the glossary for this report are “local partnership” and “dialogue”. In 2018, the FSC decided to extend the Annotated Glossary with the term “Added Value”. An update of the document was in preparation as this volume went to press. In 2018, the FSC decided to update the report *Partnering for Long-Term Management of Radioactive Waste* to update the country’s experiences on different types of collaboration with potential host community or communities and include how new countries approach dialogue in RWM

processes. The reasons adduced to produce a new version of this report were, besides the necessary update of the information provided, the consideration of a wider scope of elements in the countries' analysis (for example, the introduction of special considerations towards youth and other segments of the population; or a special regard on the concept of "added value"). Making use of the same methodology as its predecessor, this report is based on a questionnaire which was sent to FSC members. The questionnaire focused on "local partnership" as formal or informal arrangements between the RWM institution or government and the representatives of the local community or communities which collaborate to develop an integrated RWM project. Although the administrative formats for collaboration between the RWM institution and the local community may vary, the active role of the local community and the need for and legitimacy of community empowerment measures should be recognised.

While the observations from the earlier report *Partnering for Long-Term Management of Radioactive Waste* are still valid today, after discussion with FSC members in the 2018 annual meeting and reporting on the results of the questionnaire, it was noted that the concept of "partnering" is not used in all countries with the same meaning. In fact, most countries do not use either the term "partnership" or "partnering". For this reason, the FSC decided to focus this update on the dialogue in the long-term management of radioactive waste. The FSC defines dialogue as "an approach of collaboration or partnership between the institutional actors and the affected communities essentially, involving public participation in the decision-making process and mutual learning" (NEA, 2013). Thus, the concept of dialogue is broader than partnership and this is the reason why the title of this report changed compared to the 2010 report on "partnering". Dialogue embraces one of the models of dialogue, partnerships, which are in fact only present in certain countries. The present volume documents how dialogue is implemented in the 14 countries, namely: Belgium, Canada, the Czech Republic, France, Germany, Hungary, Italy, Japan, Russia, Spain, Sweden, Switzerland, the United Kingdom and the United States. In this context, it should be noted that the waste management programmes that are considered in the report are at very different stages and actual experience in implementation reflects participatory measures during the stage of designing the siting procedure, first siting steps or site selection.

Box 1 shows the main elements of each country chapter. The precise order of these elements and the amount of detail provided by each country varies across chapters, reflecting in part, differing implementations or levels of dialogue. The questionnaire sent to the FSC members with detailed description of the information requested in each one of the sections is shown in Annex I.

Box 1. Country chapter elements

Introduction

Involvement of organisations at national and regional level

Involvement of other groups (youth, women, migrants)

Practical implementation of communication

Added value approaches

Markers and memory preservation

Lessons learnt in recent years

2. Overview and transversal findings

This report focuses on “effective dialogue” as an approach of collaboration or partnership between the institutional actors and the affected communities, essentially involving public participation in the decision-making process and mutual learning (NEA, 2013). Dialogue may help to find ways of creating constructive relationships among stakeholders and is necessary to reveal divergent understandings and values, as well as to build up and check shared understandings and values which are shared (NEA, 2010).

The Forum on Stakeholder Confidence (FSC) practice since 2000 has led to the following convictions regarding dialogue (NEA, 2013):

- Dialogue provides for the joint creation of knowledge about key themes. The process of creating and exchanging meanings is as important as the actual topical outcomes.
- Certain central concepts and principles cannot be successfully defined in a top-down manner; instead, their multiple meanings should be clarified through dialogue.
- Dialogue must be renewed at various decision points over the long-term process of radioactive waste management (RWM), because even when decisions have been “banked”, over intervening periods the societal views may shift and should be checked in order to adjust to actual implementations.

The concept of “dialogue” in the field of RWM could be theorised in terms of co-production of knowledge between publics and experts. Theories of co-production of knowledge are gaining a greater currency in trying to understand the decision-making process around science, policy and society. Such concepts are illustrated by French sociologist and author Michel Callon via a simple and comprehensive framework to consider the range of possible modes of representation by non-experts in science debates by interpreting different configurations of the relationships between experts and stakeholders. According to Callon there are three different models to produce knowledge: deficit model, public debate model and co-production of knowledge model (Callon, 1999). While in the first model the organisation and production of knowledge follows a strict segregation between science and society, the third model actively involves lay people in the creation of knowledge that concerns them. The type of model depends on the context, the nature of the problem or the question at hand.

Following Callon’s typology, three scenarios of dialogue can be conceptualised as part of a spectrum of engagement of stakeholders in RWM debate, as illustrated in Table 1. The models take into account the relationships between stakeholders and the RWM institution with respect to the modalities of co-operation, the conditions of legitimacy of the decisions taken and the roles of scientists and citizens in the production and dissemination of knowledge. The three categories are meant to be indicative and illustrative for different ways to establish dialogue between the RWM institution and the different stakeholders. It should be noted that there is no “best place” to be along this continuum and one model is not better than the other. The position depends on what is appropriate for a particular phase of a particular process, depending on the contextual circumstances.

Table 1. Different scenarios for conceptualising dialogue

	Deficit or public education model	Public debate model	Co-production of knowledge model
Nature and level of interaction experts-stakeholders	Minor or absent: scientific knowledge is considered opposite to lay knowledge. The RWM institution has no intention to interact with stakeholders to create a common knowledge base, since there is too much disagreement and/or mutual misapprehension.	Muddled boundaries between specialists and non-specialists. Stakeholders have knowledge competencies which enhance and complete that of scientists and specialists. Some opportunities for interaction are provided by the RWM institution, mainly focused upon consultation. These consultation processes are mainly oriented on convincing stakeholders of own assumptions and values.	Constant interactions between stakeholders and experts contributing to maintaining trust. The relationship between them is on an equal footing. The RWM institution is receptive to other insights and sources of knowledge and actively exchanges information and knowledge with stakeholders.
Type of stakeholders involved	Narrow conception of stakeholder. Involvement restricted to professionalised networks (e.g. science providers) leading the process. Indirect and passive communication towards other stakeholders like NGOs, local communities, media, etc.	Moderate level of involvement, depending on the issues to be addressed, but the circle of stakeholders is broadened up. Differentiates between stakeholders with different points of view and competencies.	Accessible to all interested parties by open invitation. Local communities are key actors in the mobilisation of knowledge and are both the objects and the subjects of research. Resources are available for some organisations to become involved in the meetings.
Degree of joint co-production of knowledge	Limited or absent: stakeholders do not participate in knowledge production. Generally, one-way statements to assist participants understand the problem. Knowledge is developed and dominated by the RWM institution.	Knowledge is generated through comparison of opinions, knowledge and judgements which are mutually enriching. The RWM institution mainly interacts with those sharing its assumptions and values but some joint activities are developed.	Process of collective learning to attain a shared understanding which is mutually reinforcing throughout the process.
Instruments and methods for co-production of knowledge	Unidirectional communication. Generally, educational and informative actions are conducted by experts and specialists.	There are forums for discussion, consultation and deliberation to address certain issues, which may take different forms. The actors are in a position to negotiate the co-production of knowledge but asymmetric distribution of power between scientists and stakeholders.	Stakeholders may play a leading role in the production, orientation and evaluation of knowledge as part of the heterogeneous networks. Different engagement instruments are used as negotiation and learning processes and allow the opening up for a process towards new issue formation.
Legitimacy of decisions	Legitimacy is conferred by the scientific, objective and universal knowledge.	Legitimacy relies on the existence of consultation and open debate.	Legitimacy relies on the ability of stakeholders to gain recognition for their actions. Legitimacy is enhanced through including formally excluded groups. Extending the responsibility to a wider group can also help to achieve greater accountability of decisions taken by stakeholders.

Source: (Callon, 1999).

Different countries approach dialogue in long-term RWM management in different ways, depending on cultural, political, institutional and economic factors. The current approach to dialogue in RWM in most countries seems to fall mostly into a model of public debate but there are some countries which show clear characteristics of the co-production of knowledge model. In Belgium for instance, local partnerships have co-designed the entire repository project, moving away from the “expert built” facility that may fail to capture local knowledge. In the case of Canada, for instance, an early milestone in Adaptive Phased Management was the collaborative design of a nine-step process to select a site. Other countries seem to be adopting features of the co-production of knowledge approach. In general, though, it remains to be seen whether the dialogue processes influence the key decisions in RWM or these remain in the control of the RWM institutions and/or the government.

Céline Parotte proposes that “...publics and RWM organisations could metaphorically be considered as partners dancing together on a particular stage” (Parotte, 2018). They jointly participate in the performance as they can each produce and receive knowledge, to which they can be “subjected”. But Parotte questions whether publics and experts equally perform the dance in nuclear waste experiments or one partner is more authoritative than the other. She also asks if publics have to wait for the invitation or they can sometimes lead the dance. This metaphor allows us to “compare the dance styles of nuclear waste management (NWM) organisations dealing with active publics on democratic stages”.

Regional authorities

Over the last decade, many OECD countries have launched dialogue processes as part of their disposal programmes and siting selection processes. In some countries, these dialogue processes between the institutional actors and the communities take place or will take place in the form of partnerships while in others the specific arrangements to consult and engage the local and regional levels is done through regional conferences or other participatory models.

While a lot of attention has been paid in previous FSC documents to local communities, regional actors also play an important role in the participatory processes in some countries. For instance, in Switzerland or Germany, regional conferences are a means of informing and involving the local population throughout the siting regions. Regional conferences represent the interests, needs and values of the population and play an important role in the site selection. Past experience shows that it is also important to involve the neighbouring communities and not only the potentially affected community or communities.

Involvement of specific groups including women, indigenous communities and migrants

In general, organisations responsible for stakeholder involvement in radioactive waste management, recognise that insufficient attention is paid to the involvement of specific groups, including women, youth, indigenous communities and immigrants, in the process. However, several initiatives are underway in some countries to inform these groups on radioactive waste management and seek out their greater participation in the process. Their involvement would provide opportunities to integrate a wider range of perspectives which can be useful to improve the quality of decision-making processes.

Involvement of youth

Engaging youth in the plans and programmes for long-term management of radioactive waste has become an important consideration in all countries, as they will have to address the future outcomes of today's decisions on waste management. Addressing radioactive waste management in different formal and informal educational activities should be maintained or introduced. However, organisations responsible for engagement in radioactive waste management recognise the low level of involvement of youth. In addition, young people identify their modest influence in decision-making processes as a limitation for their greater involvement (NEA, 2018). Organisations responsible for engagement in radioactive waste management strive to find effective ways to raise the interest of young people in this area and involve them in deliberations.

Practical aspects of the implementation of communication

Effective communication between the organisation in charge of the RWM programme or the site selection process and the local communities is crucial. The development and implementation of a communication plan to organise dialogue is necessary. This entails planning the necessary resources (human, financial, etc.) to communicate with stakeholders and address their concerns, arrange the venue of the meetings, etc.

The majority of organisations responsible for the RWM programme or the site selection process draw up a communication strategy and plans which are regularly updated. Usually at least one person is assigned to communication with communities. Generally, specific funding is allocated to support dialogue processes with communities. The frequency of meetings between the organisation in charge of the RWM programme or the siting and local communities differ very much depending on the stage of the programme and the actual design of the decision-making process.

Markers and memory preservation

Most organisations responsible for radioactive waste management in the countries reviewed in this report participated in the NEA international project on “Preservation of Records, Knowledge and Memory (RK&M) across Generations”³ which was launched in 2011 to meet the demands from member countries for facilitating exchange and fostering reflection in this area. The project addressed active memory keeping for future generations by preserving archival information but also through society maintaining memory about the facility through knowledge transfer. Only a few countries, such as Belgium, France and Sweden have started to address this topic formally with local communities or through national projects. However, there seems to be an emerging area of interest as some countries are approaching implementation of a geological repository.

In 2019, the NEA extended the objectives of the previous work on RK&M to holistically cover all RWM phases from cradle to grave through the creation of the Information, Data and Knowledge Management (IDKM) group.

3. Andra in France, ONDRAF/NIRAS in Belgium, NWMO in Canada, SÚRAO in the Czech Republic, BfS in Germany, PURAM in Hungary, Enresa in Spain, SFOE in Switzerland, SKB in Sweden, NDA-RMWM in the United Kingdom, USDOE in the United States.

Added value approaches

There is a growing recognition that communities willing to fulfil an essential service to the nation by hosting a radioactive waste management facility, and in particular, a final repository, are entitled to receive added value measures to develop their social and economic well-being (Bergmans, 2010). The FSC developed a shared definition of “added value” which will be published in an update of the *Annotated Glossary* (forthcoming):

“The concept of ‘added value’ refers to an understanding that the societal benefit of a radioactive waste management facility is in part determined by its features and benefits beyond serving its core function, which is the safe management or disposal of used nuclear fuel or radioactive waste. Added value does not substitute for compensation measures, however compensation measures may lead to added value.”

In some countries, financial support is provided to those communities entering the siting process or around the potential or operational storage/disposal facility. Communities may use these funds for a predetermined aim (e.g. seeking independent advice, communication activities, investment in local projects) or they are free to include them as part of the municipal budget. Kojo and Richardson (2012) propose a working definition of ‘added value approach’ as “an umbrella covering different elements of institutional mitigation, compensation and incentives in the site selection process” or “a coherent set of practical measures that are applied to assist the siting process”. In this working definition, the authors adopt a broad viewpoint, including incentives and compensation but also institutional mitigation to refer to empowerment of local citizenry in the facility siting decision.

The focus on “added value” in the present report stems from the 2015 FSC report on *Fostering a Durable Relationship between a Radioactive Waste Management Facility and its Host Community. Adding Value through Design and Process* (NEA, 2015) and goes beyond it. Increasing the added value of a facility means “to maximise its contribution to potential sustainability and well-being in the community once safety considerations have been addressed. Relevant design features [of the facility] relate to functional, cultural or physical aspects. Added cultural and amenity value brings direct gains to the quality of life; it can foster socio-economic gains by making the site location more attractive to visitors or future residents. In the best case scenario, added cultural and amenity value will trigger a virtuous circle, bringing benefits, encouraging an ongoing relationship with the facility, strengthening the community, and ensuring that in future years the installation can face challenges and continue to contribute to community life” (NEA, 2015, p. 10).⁴ In this sense, communities willing to fulfil an essential service to the national level by hosting a RWM facility do have the right to added value measures to develop their social and economic well-being, bringing direct gains to the quality of life.

The traditional mechanisms of financial compensations (e.g. direct, indirect and induced benefits) or development opportunities used by RWM organisations and governmental organisations do not ensure the sustainability of the project over the long term. Through planning and design, the project can offer opportunities to improve well-being, consolidate knowledge, further define community identity and image, build social relations, etc., but it needs to be the result of a dialogue with the community.

4. The report *Fostering a Durable Relationship between a Waste Management Facility and its Host Community: Adding Value through Design and Concept* (NEA, 2015) presents different features which help to maximise the added value brought to a community by a radioactive waste management facility in the short and long term.

In general, the approaches to added value aim to build a long-term sustainable relationship between the community and the facility and increase confidence. The concept of added value as such is barely used in the countries reviewed in the present document, except for Belgium and Sweden. However, the country examples confirm that there is a tendency to consider the need for a discussion on how the project can contribute to the well-being of the potentially hosting community and the surrounding area, beyond the economic part and without compromising safety. “Added value” may include the promotion of the local economy, contributions to the field of education and research, cultural, amenity and other intangible values, etc. The added value approach continues to evolve. Its adoption has different aspects in different countries and in individual projects. Each country and each project might take its own approach to deliver benefits to the community and the area over the long-term.

Lessons learnt

Nevertheless, a range of lessons has been identified by the different countries from previous attempts to implement long-term radioactive waste management policies. Many of these relate to the need to develop, at an early stage, and maintain an open and transparent process that enables continuous dialogue among all parties and builds on mutual trust

BELGIUM

Introduction

ONDRAF/NIRAS, the Belgian agency for Radioactive Waste and Enriched Fissile Materials, is preparing for the construction and operation of a surface disposal facility for low- and intermediate-level short-lived radioactive waste (LILW-SL) in the municipality of Dessel. Since 2006, ONDRAF/NIRAS has been working on the integrated repository project providing a technically safe solution for LILW-SL waste and a long-term social and economic added value for the region.

An extensive process preceded the 2006 federal government decision for surface disposal in a facility on the territory of the Dessel municipality. What started as a search mission for a purely technological and safe solution in the 1980s eventually became at the end of the 1990s an active participative process in which ONDRAF/NIRAS and the local communities developed several safe and technologically feasible but also socially acceptable options. First of all, the local community must be guaranteed a safe and robust concept and technical realisation of the repository that meets the most stringent quality requirements. In other words: The people living in the neighbourhood must rest assured that both the construction and the operation of the repository are, and will remain, safe. But it is just as important that the entire repository is acceptable for the local community. Only then will the project receive continued support of the population. The fact that ONDRAF/NIRAS and their partners have been actively looking for solutions together from the beginning is crucial in establishing that sustainable support.

Local partnerships were set up as formal agreements between the parties, with a management board and several working groups dealing with different aspects of the project. The partnerships employ professional management teams and are directly funded by ONDRAF/NIRAS. Their continued existence and commitment is crucial. The essence of the ONDRAF/NIRAS approach with the partnerships is collective design and collective realisation. Openness, transparency and co-operation are essential in the project. The local partnerships were ordered to develop an integrated preliminary design of the repository that would be technologically sound and accepted by the population. This procedure gave the concerns of the population in the areas of safety, environment and health, a prominent place in the pilot study of the disposal project. Within this unique co-design model, STORA in Dessel and MONA in Mol developed, together with ONDRAF/NIRAS, the technical and societal aspects of the project. In this way, the entire project is supervised by a joint steering committee of ONDRAF/NIRAS, STORA and MONA, in which the mayors of Dessel and Mol play an advisory role. All important decisions on the progress of the project are taken by consensus within that steering committee.

An example of the influence of the partnerships in the co-design of the repository project in Dessel was the decision to construct an inspection gallery under the repository, where visual inspections can be carried out during operation. The local communities wanted a visual guarantee during operation that the facility will function as planned. This will

contribute to the “sense of security” and shows the commitment of ONDRAF/NIRAS to involvement and accountability.

In March 2010, ONDRAF/NIRAS published the Master plan, the vision for the construction and operation of the surface disposal facility of both the agency and the local partnerships. Since 2013, ONDRAF/NIRAS has been carrying out preparatory work on the disposal site. Thus, the project has evolved over the last few years from the design phase to the execution phase. The project is subdivided in several subprojects which have evolved over the last few years.

The following initiatives are an example of these subprojects:

- A) Disposal: construction works have started. All of the trees which need to be cut in order to free the space for the facility will be compensated by planting more trees in the natural reserve Den Diel around 5 km from Dessel, as part of a legal obligation;
- B) Communication centre: The construction of the Tabloo communication centre has started;
- C) Local Fund: was officially founded in 2016 and will fund projects and activities for the next 300 years;
- D) Participation: the participatory process is entering a new phase, which will shift the focus of the partnerships. This turning point was used to reflect on the current functioning of the local partnerships and to see where the potential opportunities lie for the future;
- E) Spatial planning and mobility: spatial opportunities have been created for Dessel and the access to the disposal site is rationalised in order to relieve traffic;
- F) Employment and retention of nuclear know-how: the construction project will involve around 200 people working in the site over a number of years. Also, the Learning and Info-Point Management of Radioactive Waste (LIBRA), a collaboration with a local university college to inform students and enter into dialogue with them, is set up;
- G) Safety, environment and health: the 3xG study, a continuous health monitoring in the region, is ongoing.

In 2018, ONDRAF/NIRAS organised brainstorming sessions with the partners about how to collaborate in the future. Through these workshops, three major action points were clearly identified for future actions: a more active involvement of the partnerships in the project, care for rejuvenation, and attention for the transfer of knowledge between the volunteers. One of the important tasks of the partnerships is to keep the collective memory of the repository alive. In addition, not only the mission of the partnerships is evolving, but society is also constantly changing. What social trends and evolutions can be expected? How can society best respond to this changing context? All this will now be further elaborated in a follow-up process. A plan of concrete actions to further shape the future of the partnerships is being prepared.

Table 2 outlines the key dates in the Belgian process for the siting, construction and operation of the surface disposal facility in Dessel.

Table 2. Belgium: Key dates in the Belgian process for the siting, construction and operation of the surface disposal facility⁵

Key dates	
December 1998	ONDRAF/NIRAS invites communities to volunteer.
1998- 1999	Social studies of the volunteer communities (Mol, Dessel, Fleurus and Farciennes).
1999-2005	STOLA and MONA partnerships are founded in September 1999 and February 2000 respectively and work on their proposals for around 4 years.
2003 - 2005	PaLoFF partnership is founded in Fleurus and Farciennes in February 2003 and works on their proposal for around 2 years.
January 2005	Dessel becomes an official candidate to host a LILW repository after the municipal council decision.
April 2005	Mol becomes an official candidate to host a LILW repository after the municipal council decision.
February 2006	Fleurus Council decides not to proceed with the proposal.
June 2006	Government decision to proceed with surface disposal in Dessel after the final report by ONDRAF/NIRAS in May 2006 inviting government to decide on the continuation of the disposal programme.
November 2007	Signing of collaborative agreement.
March 2010	Master plan describing the disposal project in Dessel.
2013	Start of preparatory works for the construction of the repository. ONDRAF/NIRAS requests to FANC a nuclear authorisation for the facility in Dessel (safety dossier of 20,000 pages).
2016	Creation of the Local Fund.
End of 2017	After studying the safety dossier, FANC confirms that all questions on safety of the repository have been answered by ONDRAF/NIRAS.
February 2019	ONDRAF/NIRAS submits the amended safety case to FANC, who will review it and submit it to its Scientific Council. The latter will issue an advice on the licensing.
2020	Official public inquiry on the dossier where inhabitants of Dessel, Mol, Retie, Kasterlee and Geel will have the opportunity to make comments. The Province of Antwerp and the European Commission will also be heard. Scientific Council of FANC to issue a final advice.
2021	Expected authorisation licence issued by royal decree.
2024	Expected operation phase.

5. Detailed information on the timing of Belgian partnership process is provided in *Partnering for Long-Term Management of Radioactive Waste: Evolution and Current Practice in Thirteen Countries* (NEA, 2010).

Authorities and organisations involved in local partnerships

National level

Nuclear matters are a federal competence and as such, different governmental departments are involved in the process at different phases. ONDRAF/NIRAS is supervised by the Federal Ministry of Economic Affairs and of Energy.

The regulator, FANC, is not directly involved in the partnerships, but has been and is being widely invited to comment on their work, especially on the safety dossier.

Regional authorities

Many aspects of the surface disposal project relate to the competences of the broader region around the disposal site, either the Flemish government or the Province. Depending on the subject, specific co-operation arrangements are set up for this purpose. For instance, through the Regional Consultation Platform (ROP), ONDRAF/NIRAS, the STORA and MONA partnerships and the Regional Economic and Social Consultation Committee (RESOC) Kempen work together to enhance the socio-economic benefits of the disposal project in the area. The ROP was launched on 8 November 2011. The participants brainstormed on five themes: social employment, tourism, nature and sustainability, education and industrial opportunities. Their ideas gave rise to several interrelated projects. Another example is nature development, where there is very close co-operation with the 'Nature and Forest' agency of the Flemish government for nature development.

Partnerships were established as advisory bodies for municipalities. The neighbouring municipalities are, where relevant, involved in the development of certain subprojects. For instance, working groups were also set up with a more supra-local function in which, depending on the subject, representatives of advisory bodies, government organisations, etc., participate.

Other organisations

Partnerships include representatives from various organisations active in Dessel and Mol, including socio-cultural associations (e.g. youth council, cultural council, environmental council), economic associations (e.g. large companies, union of independent employers, trade unions) and the locally active political parties. In addition, interested citizens can also join the partnership and participate in working groups. ONDRAF/NIRAS is also a member of STORA and MONA.

When the partnerships were set up, the composition of the partnership was determined on the basis of a “social map” of the municipalities. This “social map” gave an overview of potential partners from the political, economic and social fields. This 'social map' is regularly updated to examine the changes in the communities of Dessel and Mol since the partnerships were established. Organising a new influx of volunteers is a constant point of attention. However, it is not easy to attract new volunteers and, above all, to bring the younger generations on board.

Involvement of families and youth

In general, few women and young people are involved in the RWM debate in Belgium. ONDRAF/NIRAS is launching different initiatives to involve a broader spectrum of civil society, including women and youth, in the project. In September 2016, ONDRAF/NIRAS,

STORA (Dessel) and MONA (Mol) partnerships and a local university college, the Thomas More Hogeschool Kempen, joined forces to set up the Learning and Info-Point Management of Radioactive Waste (LIBRA) in order to seek the involvement of the younger generations in the preservation of nuclear knowledge in the region. This way, the students get more insight into the theme of RWM and ONDRAF/NIRAS can better understand their views. In addition, the students regularly carry out project work on behalf of ONDRAF/NIRAS. With the coaching of Thomas More's teachers, the students take a closer look at a problem, work it out further and put forward possible solutions. For example, some students surveyed public opinion on radioactive waste management in the region. Others drew up an operating plan for the future communication centre. In addition, LIBRA organises seminars where students can participate in workshops, discussion groups and plenary sessions where experts answer their questions.

Tabloo is the future communication centre in Dessel, which brings together all information on radioactive waste management in an accessible and attractive way. It will be the reference for information on the disposal of LILW waste and on the management of radioactive waste in the broad context. Schools, families and groups will all be able to visit Tabloo for an exhibition, workshops, lectures, as well as for recreation and relaxation in the outdoor areas and in the landscape park around the centre.

Practical implementation of communication

ONDRAF/NIRAS draws up a communication strategy every five years and communication plans every year. The needs of ONDRAF/NIRAS and the expectations of the partnerships are taken into account in the development of communication strategies and plans.

Almost all ONDRAF/NIRAS employees working on the LILW surface disposal project have frequent interactions with the partnerships and thus also have a communicative role. However, there is also one employee who is responsible full-time for the communication and follow-up of some societal subprojects. There is a great deal of contact between almost all ONDRAF/NIRAS employees working on the project and all volunteers in the partnerships. In fact, the entire project (the disposal and all the conditions attached to it) is worked out in an atmosphere of co-design. The co-design process requires sufficient time and flexibility to ensure that everyone is always on board. Due attention should also be paid to specific groups (e.g. young people) that are less represented in the partnerships and require a specific approach.

Since the 2006 decision, not only has ONDRAF/NIRAS interacted with the STORA and MONA partnerships, but specific project groups have also been established with both partnerships together. Depending on the case, meetings can be held at the premises of the partnerships or at the premises of the project team that has been installed in Dessel since 2006.

The partnerships each have a budget that they manage autonomously. They receive an annual statutory amount of EUR 250 000, which is mainly used to pay staff members, communication of the partnership, operating costs, business trips, etc. In addition, they can decide that they are in need of some additional research in certain areas and may subcontract specific studies or experts. The operating costs of the partnerships are settled annually and it is agreed that any unused funds are returned to ONDRAF/NIRAS.

Surveys are carried out by ONDRAF/NIRAS and also by the partnerships to ascertain whether the partnerships are known to the local population and how they are perceived.

The results show that they are well known, especially STORA in Dessel, and that their activities are valued positively.

Added values approaches

A repository has an undeniable impact on the people in the neighbourhood. The social effects of the repository and its activities will continue for a long stretch of time. Several generations will be faced with the consequences. Through their active participation, the Dessel and Mol municipalities help to solve a problem that affects the Belgian society. It is therefore only fair to offer social added values or benefits to the inhabitants in return for this service. The added values run like a common thread through all the building blocks of the project. First and foremost, the local community demands that general conditions in the areas of safety, environment, health, communication and participation will be met. In addition, it requires a clear appreciation for its contribution to a large societal problem in the form of social and economic added values. Hand in hand with the realisation ONDRAF/NIRAS, again in collaboration with the local partnerships, is working on real added values for the population of the Dessel-Mol region.

An integrated project

The repository at Dessel combines a safe and technologically feasible solution for LILW with socio-economic added value for the region that will positively impact prosperity and well-being, not only today but also in the faraway future. This added value includes stimulating use and retention of nuclear know-how, anticipating spatial opportunities, organising health monitoring, the establishment of a Local Fund for financing socio-economic projects and activities, etc. These added values are a fair appreciation for the solution municipalities Dessel and Mol offer to a problem that involves the entire Belgian population. Integration is essential for this project: the technological and societal dimensions of the project cannot be separated from each other, it is fundamental that they are considered as a whole. This integration is demonstrated by the development of a safe and effective repository that can count on continuous support from the population at the same time.

Participation, openness and transparency

ONDRAF/NIRAS guarantees participation during all phases of the disposal project and incorporates openness and transparency, both in the approach and in the design of the project. It conducts open, transparent and complete communication about the project and endeavours to create and maintain a relation of trust with the people living in the vicinity. Finally, it is committed to develop and solidify the support for the project vis-a-vis all those involved (STORA and MONA, the municipality and neighbouring municipalities, the waste producers, regional and federal government, etc.).

Sustainability and biodiversity

The project also contributes to sustainability in different ways. Firstly, the principles of sustainable construction will be applied and thus, there will be sustainable management of energy and raw materials. Secondly, sustainable mobility will be promoted and the facility itself will have little impact on road traffic and materials will be supplied via the canal where possible. Finally, ONDRAF/NIRAS will ensure maximum integration of the disposal site into its natural surrounding through green arrangement of open spaces. Scenic

elements and plantation of trees and plants characteristic to the region will provide an extension of the natural biotopes into the disposal site.

Integration of the facility in the landscape

A surface disposal cannot be hidden in the landscape. It evidently has a strong visual impact on its surroundings. The social acceptability of a disposal facility for radioactive waste is also partly determined by the way in which the facility is physically integrated into the environment. ONDRAF/NIRAS therefore devotes a great deal of attention to the visual integration of the disposal site into the environment. A coherent logistics chain, a logical spatial arrangement of the components and optimal access to the site provide a visual logic.

Fund to support local projects

At the same time and again together with the local partnerships, ONDRAF/NIRAS is working on realistic added values for the inhabitants of Dessel, Mol and the region. Among these added values are a fund to support local projects and activities, realisation of spatial opportunities and a positive impact on local employment.

Lessons learnt

Challenges of the project

The partnerships have ensured that a repository can be realised in a densely populated area, which is certainly not an easy task. Thanks to the unselfish efforts of the many volunteers in the partnerships, societal support for the disposal was realised in the local community.

The challenges for the project now lie mainly in the future role of the partnerships, focusing on three issues: active engagement, rejuvenation and transfer of knowledge. In the early stages, STORA and MONA were heavily involved in the design of the installation and in determining the societal conditions. Now that everything has become concrete, they are becoming more of a driving force behind a number of societal subprojects. For example, they will play an important role in bringing people together in the communication and community centre Tabloo. How a new inflow of volunteers can be realised also remains a point of attention. It is not easy to find volunteers who want to get involved. It will be a challenge to attract new volunteers and specially to bring the younger generations on board.

In recent years, the volunteers involved in STORA and MONA have also built up a great deal of knowledge. They know the projects through and through. Care must now be taken to ensure that this knowledge is not lost when experienced volunteers leave. Action plans should be drawn up to retain knowledge, make it available on a permanent basis and organise the transfer of knowledge between volunteers.

Achievements

ONDRAF/NIRAS has developed a policy of proactive and transparency communication on all the aspects of radioactive waste management. There have been continued efforts to establish a dialogue with the public, even maintaining personal contact with the partnerships and the working groups in the partnerships. In this way, ONDRAF/NIRAS has been able to build trust in the organisation and confidence in the decision-making process and in the safety of the facility. This has been possible by approaching the local representatives as an equal discussion partner and involving them fully in the design of the

facility. This clearly led to a form of co-ownership between ONDRAF/NIRAS and the local partners over the outcome of the process. By engaging the host community in the design of their project, leaving options for the creation of added value and giving them voice and a sense of ownership, stakeholders become shareholders.

CANADA

Introduction

The government of Canada has jurisdiction over nuclear energy and Natural Resources Canada is the department responsible for federal nuclear energy policy. Nuclear regulation is also a federal jurisdiction which is under the specific responsibility of the Canadian Nuclear Safety Commission (CNSC), Canada's independent nuclear regulator. With respect to waste management, Canada has a national approach for the long-term management of spent fuel. The Nuclear Waste Management Organization (NWMO) is responsible for implementing the Adaptive Phased Management (APM) approach that was selected by the government of Canada for the long-term management of spent fuel.

The government of Canada, through Atomic Energy of Canada Limited (AECL) (the federal organisation which owns the national nuclear laboratories), also has responsibilities for the management of legacy and historic radioactive waste, as well as any waste that continues to be produced as a result of the ongoing activities at the national nuclear laboratories. Historic radioactive waste (referred to as historic low-level radioactive waste) refers to waste for which the government of Canada has accepted responsibility given that the original owner no longer exists and the current owner cannot be reasonably held responsible.

In this chapter, two programmes currently underway in Canada, are discussed:

Nuclear Waste Management Organization (NWMO)

The planned deep geological repository for the long-term management of Canada's spent fuel and associated facilities which is being led by the NWMO. Referred to as Adaptive Phased Management, it is Canada's plan, as selected by the federal government, for the management of this waste. The project is currently in the siting phase of work. For planning purposes, a preferred site is identified in 2023 for detailed site characterisation, and regulatory approval and a construction licence is granted in 2032;

Port Hope Area Initiative (PHAI)

This programme represents Canada's commitment to clean up and safely manage historic low-level radioactive waste situated in the municipalities of Port Hope and Clarington. The objective is to safely manage roughly 1.7 million m³ of historic low-level radioactive waste and contaminated soils. Modern facilities for the long-term management of the wastes (near-surface disposal facilities) are being constructed in each municipality and have started receiving waste from existing waste management facilities, as well as other wastes which are dispersed in the local area.

Furthermore, it is important to note as context that Canada is a federation and that therefore provinces have their own sets of powers. Provincial governments are responsible for deciding their energy mix, including the role of nuclear energy. Spent fuel, and most of the inventory of low- and intermediate-level waste, in Canada is currently owned either by provincial utilities or by AECL. As appropriate, the CNSC engages with provincial regulatory bodies on nuclear projects.

Authorities involved in the debate of RWM

National level

NWMO: In the siting process, a commitment has been made that the project will only be sited at a location with a strong partnership. That partnership will need to involve the community that initially expressed interest in the project, First Nation and Métis communities and potentially others in the area. The breadth of the required partnership in order to advance the project may vary with potential siting area. The composition of the needed partnership is being explored through activities in the siting process itself. An area economic development plan and/or implementation plan for the project is expected to be developed over the course of the siting process and with the involvement of potential partners. Regional participation is not prescribed by the siting process. Table 1 outlines key dates for the deep geological repository for spent fuel in Canada.

Table 3. Canada: Key dates for the deep geological repository for spent fuel

Key dates	
November 2002	Parliament passed the Nuclear Fuel Waste Act and required the major owners of the spent fuel to establish the NWMO.
2002-2005	Canada's plan is developed. The plan emerges through a three-year dialogue with a broad cross-section of Canadians. Possible approaches for the long-term management of Canada's spent fuel were assessed, engaging specialists, indigenous peoples, members of the public and interested individuals and organisations.
November 2005	NWMO submitted the final report to the Minister of Natural Resources, including the preferred approach.
June 2007	The federal government, based on NWMO's recommendations, selected Adaptive Phase Management as Canada's plan for the long-term management of spent fuel and mandates the NWMO to begin implementation.
2008-2009	Public engagement on the site selection process is undertaken. The NWMO and citizens collaboratively design a process for selecting a preferred centralised site for the deep geological repository and Centre of Expertise.
May 2010	NWMO initiated step one (out of 9) of the site selection process with a programme to provide information, answer questions and build awareness.
2010 to 2013	Twenty-two communities express interest in learning about and potentially hosting the project. In collaboration with interested communities, the NWMO conducts initial screening. Expression of interest phase suspended in September 2012.
2012-2015	In collaboration with people in the area, preliminary studies are conducted to further assess suitability. Areas with less potential to meet project requirements are eliminated from further consideration.
2015 to 2022	The NWMO expands assessment to include field studies. Areas with less potential are eliminated from further consideration. 2017: By the end of 2017, five communities and areas remain in the site selection process. Initial borehole drilling begins. 2018 – 2022: Narrowing down process and subsurface studies continue. A Reconciliation Statement is issued, acknowledging historical wrongs in Canada's past and the need to co-create a better future. A Reconciliation Policy is formalised, setting out how the NWMO will contribute to Reconciliation in all its work.
2023	A single preferred site is identified.
2024	Detailed site characterisation begins. Construction of the Centre of Expertise begins.
2028	Licensing applications submitted.

PHAI: The PHAI was created as a result of an agreement between the government of Canada and the local municipalities that specifies the government's role in the clean-up activities. This agreement was based on extensive public consultations and engagement at the local/regional level on the proposed solution to the contamination in the local area. As part of the environmental assessment process, public hearings were held in the local area. The regulatory authority invited members of the public to participate in this hearing process, although the nuclear regulatory organisation is not involved in the legal agreement. However, the regulatory authority continues to be engaged as the project progresses. Other federal and provincial regulatory organisations (e.g. Ontario Ministry of the Environment) are also engaged as per their regulatory oversight responsibilities.

Regional authorities⁶

NWMO: The siting process does not assign roles and responsibilities to different regional levels. As part of their ongoing involvement in the siting process, involved municipal and indigenous communities reach out to neighbours and others in the area, such as through information sharing, presentations and workshops. With the guidance of communities involved in the siting process, the NWMO makes presentations to, and seeks dialogue with, regional bodies. These include: regional municipal associations; regional councils; regional planning and economic development organisations and resource management groups; regional service groups; regional mutual aid groups; regional groups such as trappers and camp owners. The NWMO has a programme to engage Treaty organisations; regional, provincial and national Indigenous organisations.

The NWMO has a Municipal Forum, with representatives of municipal associations in nuclear provinces, however its role is only to provide general advice and counsel regarding outreach and engagement of communities. The NWMO also has a Council of Elders and Youth with representatives of Indigenous organisations; its role is also general advice and counsel although with a focus on engagement of Indigenous communities.

PHAI: Canada has a legal agreement with the municipalities of Port Hope and Clarington for the clean up of historic, low-level radioactive waste. Canada does not refer to this as a “partnership”. Roles are established in the legal agreement. The public consultation and engagement activities which were undertaken and led to the creation of the PHAI and the agreement between the local municipalities and the government of Canada included the establishment of a Siting Task Force on Low-level Radioactive Waste Management. The purpose of this Task Force was to find a location for the siting of a permanent management facility for Port Hope area wastes. All municipalities in the province were invited to express interest; in the end, the local communities where the waste is located proposed to construct the long-term waste management facilities within their communities. Once the agreement was reached between the local municipalities and the government of Canada, the projects underwent environmental assessments which included public engagement.

Furthermore, today, as part of ongoing stakeholder engagement activities for the delivery of the project, resources are being provided to the local municipalities to help with engagement with the PHAI as well as public communications. There are forums for discussion at the official's levels (between municipal officials and representatives of the PHAI), updates to municipal councils, as well as citizens' liaison groups.

6. Provincial governments and local governments (municipalities) are considered together in this section.

Given that the PHAI is under the responsibility of AECL (a federal crown organisation), co-ordination with regional/local authorities proceeds on the same basis as co-ordination between regional and national levels.

Involvement of Indigenous communities

NWMO: There are specific initiatives for involving Indigenous and municipal communities. Indigenous engagement, and the ability to develop a supportive partnership with their involvement in order to advance the project, is a requirement of the siting process and siting decision making.

PHAI: As part of the environmental assessment process, Indigenous groups were specifically consulted on the proposed projects. Furthermore, as part of the ongoing public communication and engagement programme of the project now underway, Indigenous groups are engaged to discuss the status of the project, discuss their preoccupations and areas of interest, etc. There is no formal effectiveness assessment process for the engagement of Indigenous groups. A report is prepared on an annual basis to review the potential effects of the project on Indigenous people's traditional land use and this is discussed during engagement sessions with them.

Involvement of youth

NWMO: There is targeted funding to communities for the involvement of youth as part of resource agreements designed to cover costs associated with participation in the siting process. Communities have also lead special efforts to involve youth through involving them as members of community liaison committees, organised speakers to go to schools to support youth learning, visits to interim storage sites and community open houses on the project and have sponsored events to engage youth. In addition, NWMO supports a separate programme for investment in early education and skills development in siting areas which also targets youth, as well as provides resources for youth involvement in Science, Technology, Engineering, and Mathematics (STEM)-related camps and enrichment activities.

PHAI: As noted above, while Canada does not consider the PHAI to be a “partnership”, there have been efforts made to engage youth as part of the PHAI outreach activities. This includes engagement and presentation in local schools, hosting local school groups for site tours, participating in “bring your kids to work day” and increased communications through social media.

Practical implementation of communication

NWMO

Staff

No formal partnerships have been established to this point. In the interim, a regional communication manager is assigned to an area as part of a multidisciplinary NWMO team working with communities in the area, including a municipal relationship manager, and an Indigenous engagement manager.

Funding

Funding is designed to cover costs of participation. Investments have also been made in community well-being reserve funds as communities enter more intensive phases of study in the site selection process, to support ongoing efforts to grow well-being and community capacity building to participate in discussions.

Meeting arrangements

NWMO has an ongoing presence in communities with staff located in community offices in each of the siting areas. Community Liaison Committees, established by communities, tend to convene their regularly scheduled and open meetings monthly. Engagement activities are ongoing in siting areas as people in the area learn about and explore the project. Activities include, briefings and discussions with service groups in the community and area, participation in community and area events such as fall fairs and learning and sharing gatherings, and participation in conferences and meetings convened by Indigenous organisations and municipal associations.

PHAI*Funding*

Resources are being provided to the local municipalities to help with engagement with the PHAI as well as public communications. There are forums for discussion at the official's levels (between municipal officials and representatives of the PHAI) which are regularly scheduled. As part of the legal agreement with the municipalities, CAD 10 million was provided to each municipality. Furthermore, resources are being provided to enable the municipalities to engage with the project and manage increased demands from citizens as the project gets underway.

Meeting arrangements

Meetings with municipal officials happen at various levels and various frequencies. For example, there is a high-level meeting to monitor the delivery of the legal agreement and work through any outstanding matters between the mayors and their staff, as well as Vice-president level at AECL and CNL. This meeting takes place every quarter. The project also provides updates to municipal councils, with the frequency being defined by the needs expressed by the municipalities – in one case this happens quarterly, whereas in another it is on an annual basis. There are also frequent working-level meetings between officials of the project with their municipal counterparts.

Added value approaches

NWMO: There is a commitment to foster community and area well-being through the implementation of the project, as defined by people in the area. During the site selection process, the opportunity to foster well-being is an area of study and collaboration with communities and is being explored more formally in partnership-building discussions. A “partnership roadmap” was developed with communities as a plan for working together during the siting process to incrementally explore and build partnerships, develop area project implementation plans, and hosting agreements over a five-year period. Early steps

in the roadmap include the development of a shared set of values and principles to guide more detailed exploration of the project in the area, and the development of a project vision which explores opportunities to align the project with the long-term aspirations the community and area have for themselves. Well-being discussions use a sustainable livelihoods framework to guide a broad discussion with communities about community priorities and project opportunities. This well-being framework continues to evolve through these discussions to ensure that what is important to people in the area is addressed. An example is the refinement of the framework to include Spirit at the centre, to encourage reflection on the interconnectedness of well-being elements and ways of life of people in the area.

The NWMO has initiated a Reconciliation Policy to set out how the NWMO will contribute to Reconciliation in all its work. The siting process is designed to encourage building of relationships among municipal and Indigenous communities to explore the project. These relationships may also help pave the way to healing and to working together in the area more broadly.

In order to prepare for the possible implementation of the project in an area, funding is also available for communities to invest in development of transferrable skills, foundational social infrastructure projects, and in education which builds capacity to lead and actively participate in project implementation. The range of initiatives implemented to date include contributions to a community well-being reserve fund in communities, which communities can draw from to advance the well-being of their community as they choose. Initiatives also include investments in early education and skills development focused on transferrable skills, identified by community liaison committees established by each community to advance learning about the project in their community.

PHAI: The end use for the two waste management facilities were subject to extensive community consultations at different stages depending on the needs and requests of the community. Final designs were based on engagement and input from the community during the project design phase. In particular, the Port Hope Long-term Waste Management Facility is being designed for passive recreational uses (e.g. walking trails and a lookout on the top of the mound), as based on the community's requests. Furthermore, active recreational elements (e.g. soccer fields) have already been built by the project to surround the facility and will remain once the project is finished and capped. In the case of the Port Granby project, the community came together later in the process and is now proposing an end use to AECL as the site owner.

Markers and memory preservation

NWMO: This topic regularly emerges in discussions with communities. The implementation of the project is in part driven by a sense of responsibility to future generations and discharging this responsibility to future generations is perceived to include a plan for knowledge transfer. Discussion continues. This discussion is aided by the advice and guidance of Indigenous communities involved in the siting process, their connection with the land and planning and decision making with the well-being of future generations in mind.

Lessons learnt over time

From working with communities in the siting process, NWMO has come to understand that the project not only requires a willing host community but a supportive partnership

involving multiple communities in an area. More specifically, the initially interested community and nearby First Nation and Métis communities must be involved, as well as potentially other communities. This requires building relationships which start with understanding the history, aspirations and world view of people in the area and are designed to build mutual respect. Time and working together to explore and advance the project is needed to build these relationships. Time is also needed to explore safety of the project together. Dialogue is needed to learn about questions and concerns and explore the basis of confidence in safety with a pace and manner guided by the communities themselves. Local knowledge, Indigenous Knowledge and western science must come together in a participatory approach in which studies are planned, implemented and findings assessed collaboratively with people in the area.

NWMO's commitment to communities involved in the siting process is that they will be better off for having participated in the siting process and advancing the implementation of Canada's plan. Through working closely with communities, a range of opportunities have been identified to foster well-being both through the study phase of the siting process and also in the process for shared planning of how the project would be implemented if the area was selected for the project. Throughout these conversations, the social necessity of the project and the importance of discharging the collective responsibility to future generations is and underlying sustained theme.

CZECH REPUBLIC

*Introduction*⁷

There are three radioactive waste disposal facilities currently in operation in the Czech Republic, the largest of which is the Dukovany disposal facility for radioactive waste mainly from the operation of NPPs, followed by the Richard disposal facility for institutional waste and the Bratrství disposal facility for the disposal of waste containing only naturally occurring radionuclides. The Dukovany disposal facility is operated by SÚRAO through the private company ČEZ a.s., the Czech power company, on a contractual basis, while the Richard and Bratrství disposal facilities are operated by SÚRAO. In addition, the Czech Republic has a closed disposal facility in the abandoned Hostim limestone mine. The disposal facility is now owned by the Beroun municipal authority and SÚRAO conducts regular monitoring of the radiation situation in the surroundings of the facility.

According to Czech legislation, SÚRAO is responsible for the disposal of spent nuclear fuel and radioactive waste including the development of a deep geological repository in the Czech Republic. The search for a suitable site for a deep repository started shortly after the commissioning of the first nuclear units at the Dukovany nuclear power plant in the 1980s. According to the national Concept for Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic updated in 2017, SÚRAO is obliged to take two decisions by 2025: selection of two candidate sites by 2022 and selection of the final site by 2025. The Concept assumes that the site selection process will be conducted in several stages during which the number of sites and the surface areas thereof will be gradually reduced. In each stage the suitability of the selected sites will be summarised in the form of a number of documents which will be structured in compliance with the requirements of the State authorities to which the documentation will finally be submitted (the State Office for Nuclear Safety (SÚJB), the Building Authority, the Czech Mining Office and the Ministry of the Environment). The involvement of the municipalities directly concerned as well as other stakeholders will be taken into account during the site selection process. As this time schedule is seen as overambitious, SÚRAO proposed to divide the process into three stages: 1) reduction of the number of sites from 9 to 4 in 2018 (postponed to 2020) for more detailed geological investigations; 2) selection of main and alternative site by 2025 and 3) approval of the final site (SÚRAO, 2017).

⁷ This section draws on ESDRED (2008), “Radioactive Management in the Czech Republic”, International Conference on Underground Disposal Unit Design and Emplacement Processes for a Deep Geological Repository, 16-18 June 2008, Prague; and on SÚRAO (2017), “DGR development in the Czech Republic: Action Plan 2017-2025”, Technical report No: 112/2017.

Table 4. Czech Republic: Key dates for radioactive waste management and presumed timetable for the development, construction and operation of the DGR

Key dates	
May 2002	Approval of the national for Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic which declares that the basic strategy of the Czech Republic consists of the direct disposal of spent nuclear fuel in a deep geological repository, the commissioning of which is set for 2065.
2016	Provision of information to the public on current geological disposal work carried out at 9 sites preselected as suitable for DGR siting. The opportunity to meet with experts was offered to local people in order for them to discuss any topic they found of interest. A number of local councils took advantage of this offer during 2016. A socio-economic analysis based on social and economic concerns of the seven localities identified as suitable for the construction of the DGR was conducted.
January 2017	New Atomic Act (No. 263/2016) became effective on 1 January 2017.
November 2017	Approval of the updated national Concept for Radioactive Waste and Spent Nuclear Fuel Management.
2017-2018	Investigation work continues (non-invasive methods) at the 9 sites preselected as the potential sites of the DGR.
2020	Selection of two candidate sites based on preliminary characterisation of the sites, including the position of the communities concerned.
2025	Selection of the final site including the position of the communities concerned and the submission of an application for land protection at the selected site.
2026	Commencement of the EIA procedure for the construction of an underground laboratory at the final site.
2028	Submission of an application for planning permission for the underground laboratory.
2035	Commencement of the EIA procedure for DGR construction.
2040	Submission of documentation for DGR planning permission to all the institutions concerned.
2045	Submission of documentation for the granting of building permission.
2050-2064	DGR construction and drafting of documentation for the commencement of operation.
2063-2065	Drafting of documentation for DGR operation authorisation, decision issuance.
2065	Commencement of DGR operation.

Organisations involved in the debate of RWM

National level

The SÚRAO Board is an advisory body established by the Ministry of Industry and Trade. The main task of the Board is to supervise the cost-effective and efficient use of funds. Board members are appointed by the Minister of Industry and Trade and include around 11 representatives of state administration authorities (Ministry of Industry and Trade, Ministry of Finance and Ministry of the Environment), major radioactive waste producers, academics and the mayors of the municipalities with operating repositories.

In 2018, a new SÚRAO expert commission of on the siting of a DGR completed its task; i.e. to assess all the expert studies which have to be completed to reduce the number of potential DGR sites from 9 to 4.

Working Group for Dialogue on Deep Repository

The “Working Group for Dialogue on the Deep Repository” (the Dialogue WG) which was established in 2010 and operated until 2016, was supported by the Ministries of Industry and Trade and the Ministry of Environment. It formed a platform for enhancing the transparency of the process of selection a locality for a deep geological repository by means of the involvement of representatives of the various communities concerned, environmental organisations, the state, Parliament, academic institutions, etc. The Dialogue WG was concerned with improving the transparency of the decision-making process regarding deep repository siting while fully respecting the interests of the general public and with strengthening the active involvement of the public and, specifically, the communities involved in the process. SÚRAO had a representative in the Dialogue WG and took an active part in the activities of the secretariat and the preparation of documentation on issues to be discussed at the group’s meetings.

The main priority of the Dialogue WG was to strengthen the role of the communities concerned through legislative means in connection with which the group prepared a proposal for draft legislation relating to the involvement of such communities in the decision-making process regarding deep repository siting. The activities of the group were significantly influenced by the resignation of representatives of a number of localities in 2016 and the gradual loss of quorum.

Civil safety/control committees

Civil Safety or Control Committees are established in each of the operating disposal facilities sites with the aim to raise public awareness of the existence of radioactive waste and its safe disposal, of SÚRAO’s activities and to strengthen mutual confidence between the public, currently operational disposal facilities and SÚRAO as the managing authority. The main tasks of the commissions are to carry out independent checks of the operation of radioactive disposal facilities, compare the results with relevant international practice and provide the public with information on the knowledge gained. The committees are financed by SÚRAO, who is also a member, and performs the secretariat role. Members of the commissions consist of representatives of the communities concerned and their surroundings, specialists from SÚRAO and the relevant mining authority.

In the case of Dukovany disposal facility, the Civil Safety Committee was founded in 1996 and is linked to the Dukovany nuclear power plant. Its members consist of representatives of ČEZ a.s., the operator of the nuclear power plant, the Energoregion 2020 and Ekoregion 5 municipal associations and the municipalities of Dukovany and Rouchovany. Since September 2016, the committee also included a representative of SÚRAO. SÚRAO keeps the committee updated on the operation of the disposal facility, the results of the monitoring and any other topics of interest, like reconstruction of the disposal facility.

The Civil Control Committee at the Richard disposal facility was established in September 2015. The members of the committee consist of representatives of the municipalities concerned and the surroundings and specialists from SÚRAO. Finally, the Bratrství Civil Control Committee was established in 2018 in the town of Jáchymov.

Involvement of youth

There are school educational programmes for elementary and secondary schools to raise awareness on various issues related to radioactive waste. In addition, there are information

centres for the public and students to visit the repository sites. There is also a SÚRAO information centre in Prague for schools and teachers. Additionally, one member of staff is available to go to the schools to talk about radioactive waste in case there is a request. Since 2018, SÚRAO organises one-week summer schools for university students studying technical sciences. Although the invitation was also sent to social sciences universities, they did not show an interest in such a summer school.

Practical implementation of communication

The Civil Safety and Control Committees in the three repository sites hold regular meetings, usually, four a year. Sometimes the meetings are held at the request of local councils. SÚRAO, as performing the secretariat role, prepares the agenda, takes notes, finances the location and refreshments, etc. The members meet on a voluntary basis and are not paid for their participation.

If requested, a specialist may attend the meeting and present a specific topic. In some cases, NGOs and businesses may attend these meetings, when they are open to the public.

In 2017, SÚRAO organised the first open day in one of the disposal facility sites and there were so many people interested that those who had not followed the procedure and registered for the visit beforehand could not enter. In 2018, the registration system for the visits changed and all those interested could visit the disposal facility.

The municipalities preselected for the DGR were kept regularly informed of the progress of the DGR project via the “News from SÚRAO” newsletter and at joint meetings with municipality representatives. Statutory contributions amounting to nearly CZK 72 million were paid during 2016 to those communities in whose areas investigation for specific encroachment into the earth’s crust have been identified.

Lessons learnt over time

Civil committees have shown to be good mechanisms to establish trust with the local population in the long-term operations of LILW management. At the same time, though, the level of interest of the public may decrease over time due to the familiarity with the facility.

The main challenges in the Czech Republic with the DGR project are the influence of political changes and the low trust of general public in institutions and political decisions. In addition, more communication with the public and the younger generations is needed.

FRANCE

Introduction

In France, radioactive waste management is regulated by the law of 28 June 2006 on the Sustainable Management of Radioactive Materials and Wastes. Waste producers are technically and financially responsible for their waste. The French national radioactive waste management agency, Andra, is responsible for managing all radioactive waste produced in France. The National Plan for the Management of radioactive Materials and Waste (PNGMDR) describes waste management objectives.

Andra designs, builds and operates the required disposal centres, which include:

- Centre de Stockage de La Manche: the surface repository under post-closure monitoring phase, since 1994, located in the Manche district.
- Two industrial facilities operating at the Aube department: the disposal facility, Centre de stockage de l'Aube (CSA), dealing with low- and intermediate-level short-lived radioactive waste and the nearby centre for grouping, storage and disposal (Centre industriel de regroupement, d'entreposage and de stockage, Cires) dealing with very low-level radioactive waste at Morvilliers, both operating in the Aube District.
- The Centre Meuse/Haute-Marne, including the Underground Research Laboratory which is located in Bure. The Cigéo project is designed to host all the HLW and LILW produced by nuclear facilities.

Table 5. France: Key dates in the radioactive waste management programme

Key dates	
1991	Bataille Act passes, setting out the management of HLW and creating Andra.
1994-1996	Geological investigations carried out by Andra to locate suitable geological sites.
1998	Meuse/Haute-Marne site selected by the government for the construction of an underground laboratory.
2000	Construction of Andra's underground laboratory in Meuse/Haute-Marne begins.
2005	Andra concludes that a deep geological disposal facility in Meuse/Haute-Marne is feasible and safe, in its "Dossier 2005 Argile".
2005	First public debate on the management of HLW.
2006	Act of 28 June is passed, adopting reversible deep geological disposal as the solution for this type of waste.
2006	Studies continue in the underground laboratory to refine the disposal facility design.
2009	The government approves the 30 km ² underground zone proposed by Andra for studying the location of Cigéo's underground facility.
2011	Decree authorising Andra to continue its activities in the underground laboratory until 2030.
2012	Presentation of the conceptual design for the disposal facility project, name Cigéo.
2013	Second public debate on Cigéo organised by the National Public Debate Commission. The debate was held on the internet due to the difficulty of holding public meetings.
November 2014	Andra launched a consultation roadmap.
2016	Cigéo moves into the detailed engineering design phase.
2016	Act of 25 July on the terms of construction of Cigéo and its reversibility.
2019	Debate on the French National Plan for the Management of Radioactive Materials and Waste (PNGMDR).

Source: Adapted from Andra (2016) "Cigéo Project. Deep geological disposal facility for radioactive waste in Meuse/Haute-Marne departments".

Authorities involved in RWM

National level

Andra is under the administrative supervision of the three ministries of ecology, research and industry.

Regulatory body

The regulatory body, the ASN, is the independent authority created under the 2006 Law on Transparency, which ensures the control of nuclear safety and radiological protection. However, the ASN does not participate in public information meetings. The ASN is supported by the technical support organisation, the IRSN, created in 2001.

National Commission on Public Debate

The national commission on public debate organises and conducts official consultations for major infrastructure projects in France, like the Cigéo.

High Committee for Transparency and Information on Nuclear Safety

The High Committee for Transparency and Information on Nuclear Safety (HCTISN) was created by the 2006 Transparency Act as a forum to debate in the fields of hazards and impact of nuclear activities on health, environment and safety at the national level. The committee can issue opinions on any topic related to nuclear safety and security as well as take up any issue concerning access to information and propose provisions to ensure transparency.

Evaluation commissions

At the national level, there are three different evaluation commissions: national commission of evaluation, parliamentary office of evaluation of the scientific and technological choices and the environmental authority.

In addition, there are the following commissions:

- The Scientific Council, composed of twelve members appointed for a five-year term by ministerial decree, issues opinions on all matters related to the Agency's research strategy, programmes and scientific results;
- The industrial committee: Andra's industrial committee issues opinions and recommendations to Andra's Board of Directors on all matters that the Board submits to it relating to Andra's industrial activities and projects, in particular the Cigéo project.

Regional level

France has a highly centralised and complex administrative system compared to other countries. In France, the regional level represents an administrative territorial unit that incorporates both the few communities more closely situated to a facility, for instance, the "département" (district) as well as the larger region. In this regard, Public Interest Groups (GIP) are set up by law to handle funding, industry investment and development orientations on a district-wide basis with respect to the Cigéo project. A GIP exists for each of the Meuse and Haute-Marne districts and supports more than 300 communities situated within the zone of proximity of the laboratory of Bure and defined through socio-economic criteria.

At the national level but with a regional focus, the high-level committee for Cigéo (comité de haut niveau Cigéo) has met with variable frequency since 2013, to discuss economic development in the area of Meuse/Haute-Marne and in particular, in the surrounding area of Bure. This committee includes parliamentarians, presidents of the regions, departments, communes, local elected, Andra, producers and representatives of the state administration in the regions under the presidency of the State Secretary and the Ministry of ecological transition and solidarity.

Other organisations

Under the 1991 Planning Act, the CLIS are important actors fulfilling its active public information role. The main communication channel between Andra and the local stakeholders is the CLIS (Commission locale d'information et suivi – Local Information and Oversight Commission) in Bure.

Following the public debate in 2013 and the commitment to engage with civil society and given that Cigéo is entering a more concrete phase, Andra launched in 2016 the Ethical Committee and Society (Comité éthique et société), attached to the administrative board, to reflect on the ethical, democratic and territorial aspects of the Cigéo project and provide recommendations. The committee also evaluates dialogue and stakeholder involvement in the projects and activities run by Andra. The committee has around ten figures drawn from the local, national and international context, who are experts in different disciplines – economy, law, environment, sciences, health, ethics and philosophy and territory. The committee holds four meetings per year and gives advice and recommendations in order to ensure the quality of public participation processes conducted by Andra.

The Ethics and Society Committee’s mission is to inform, advance, give opinions and evaluate the Agency on:

- effective consideration by Andra of ethical, citizen and societal issues in its activities and projects;
- dialogue and involvement of stakeholders and interested parties in Andra’s activities and projects;
- the orientation of Andra’s research in the field of social sciences in relation to the areas of competence of the committee.

Since the end of 2017, the CNDP also nominated two guarantors (“garants” in French) of the public post-debate consultation, responsible for ensuring the proper information and participation of the public. The next steps are public inquiries of the declaration of public utility (DUP) and the application for authorisation of creation (DAC) of the future storage centre.

Involvement of other groups

The CLIS is the main structure for public information between the local population and Andra and are constituted of elected representatives of different political levels and of different groups (associations, unions, experts, etc.).

Additionally, in order to improve the conduct of its activities and enrich the projects it designs, Andra implements an approach of consultation and involvement of all stakeholders (civil society, citizens, local actors, inhabitants, etc.). For this, it is important to set up appropriate methods of association to mobilise all audiences and give them the means to contribute to the issues facing Andra. For this, the following methods are also used:

- Door-to-door operations: in order to collect citizens’ questions and attitudes towards the Cigéo project and their potential concerns as closely as possible, Andra initiated a door-to-door operation in June 2016. Almost 2,700 households were met by the Agency's teams.
- Public meetings and thematic conferences: in order to regularly inform about its activities and projects, Andra organises on its territories information meetings and thematic conferences for the inhabitants on various subjects: safety, environment, integration in the territory, health, etc.

Beside this approach to engage more directly with local representatives and the general public, Andra is eager to involve stakeholders in radioactive waste management activities and projects. Regarding the Cigéo project, although some decisions were taken following

the public debate of 2013, many decisions still have to be taken, which can range from very local issues (road and rail services, water management, energy supply, architecture buildings, etc.) to national issues such as long-term governance. Issues such as how Andra and the host territory of the project will be associated with the decisions to be taken on Cigéo, since its authorisation until its final closure, still need to be taken. Stakeholder involvement will be key in this process.

At the local level, important topics related to the territorial and environmental integration are to be discussed with the public of Meuse and Haute-Marne concerned. This consultation takes the form of:

- Concertation workshops: For each subject on which Andra wishes to collect the contribution of the local populations and actors, Andra organises concertation workshops. These workshops can take different forms depending on the objectives pursued: analysis of variants, collection of expectations and questions, construction of proposals, co-design, etc. Themes open to consultation in 2018-2019 include the water cycle, transport infrastructure, energy and spatial planning and living environment;
- Territorial Workshops: Andra launched in 2016 in the territory of Meuse / Haute-Marne regional workshops. The purpose of these meetings is to organise an exchange with the local actors based on feedback from major construction sites (Grand Paris, High Speed Line, Flamanville EPR, etc.) in order to prepare the territorial integration of the Cigéo project.

It is important to underline also specific approaches launched with stakeholders by IRSN, the French Institute of Radiation Protection and Nuclear Safety (IRSN). IRSN has a long history of co-operation with the ANCCLI (French National Association of local public information committees) on the waste management area issue. According to its Openness Society Charter, the IRSN has set up since 2012 a continuous Technical Dialogue with the ANCCLI and CLI members. This ongoing joint initiative on HL-IL-LL waste management creates conditions for a co-construction process in order to identify the main issues according to the involved parties. Regular open information sharing meetings co-organised by the IRSN and the ANCCLI help stakeholders in building capacity upstream in the process and let them to actively participate and to better understand technical and long-term sensitive stakes. At the same time, it is a new way for the IRSN to perform its expertise and to enhance the quality and the credibility of its actions.

As an example, a technical dialogue related the technical assessment of the safety options of a centralised spent fuel storage pool has been launched with stakeholders in 2018, in the context of the IRSN's assessment of safety options for the project of a future centralised interim wet storage facility for spent fuel assemblies. Two meetings with members of CLI, associations and non-institutional experts have been set up in 2018 in order to present the project and main safety issues the IRSN was about to assess, and also to collect questions of civil society representatives (such as: spent fuel characteristics, maintenance and operating time, management of effluent release and transports). A third meeting held in march 2019 was the opportunity to present and discuss with stakeholders the results of the IRSN's assessment and the ASN's decision project.

Involvement of youth

In addition, Andra has developed an action plan to involve youth in the debate by using their communication tools. As part of this plan, different initiatives have been promoted to go beyond the debate pro- and anti-nuclear or radioactive waste to discuss radioactive waste management as a societal concern: facility visits by bloggers, a Facebook live debate including Andra's spokespeople and participants opposed to the Cigéo project; partnerships with YouTubers, etc.

Practical implementation of communication

As a result of the public debate on Cigéo conducted in 2013, Andra has launched a communication strategy that prioritises dialogue and fosters greater engagement with the public. As such, there is an ongoing process internally to adapt to the evolving need for dialogue. An example is that communication staff at Andra, both at national and at the local sites, have organised themselves focusing on target groups rather than communication tools. There are around 30 people involved directly full-time on communication and dialogue in the different centres of Andra (1 person at the CSM, 5 at the Centre de l'Aube, 10 people at Bure, 12 people at Andra headquarters) although all staff are indirectly working on communication.

One of the challenges faced regarding communication at national level is to restrict discussion to radioactive waste, as often the public raises the issue of nuclear energy. The main challenge though both at local and national levels is to involve as many people as possible in the debate around the Cigéo project and radioactive waste management in general.

Added value approaches

The prefect of Meuse was entrusted by France's Prime Minister to draw up a local development contract in consultation with local stakeholders with the aim to identify projects to be launched to prepare the Cigéo's arrival. For each project, they should specify the project owner, the timetable and the associated funding. The projects must meet Cigéo's industrial needs and optimise local impact. Since July 2016, a large number of stakeholders – the Meuse and Haute-Marne prefectures, local authorities, local district councils, the mayors of Bure, Mandres-en-Barrois and Saudron, EDF, Orano, CEA, Andra, etc – co-ordinated their actions in order to draw up the local development contract around three topics: transport and infrastructures; quality of life and attractiveness of the area and economic development – training, jobs, capacity building, etc. Two hundred actors in 14 working groups participated in the development of the contract, which involved 70 proposals which were sent to the Prime Minister in April 2017 and should be signed in 2019.

In addition, each GIP received between 9 and 15 million euros per year from 2000 to 2010 and 30 million per year from 2010.

Markers and memory preservation

The project Mémoire (memory) was launched in 2010 and is ongoing. Every site (Aube, la Manche, Meuse/Haute-Marne) has a working group or a task force "mémoire" created in 2012 where local actors (e.g. retired Andra staff and other nuclear professionals, archivists, artists, local citizens and locally elected officials) reflect on and propose ways to transfer

the history and memory of the site to future generations. For instance, on the site of the Manche Surface Repository (Centre de stockage de la Manche) every ten years a group of experts assess the accessibility and clarity of the information in the CSM's archives by putting themselves in the shoes of future generations. Their findings are used to improve the memory-keeping provision over time. Andra also supported the organisation of an international conference and debate on the preservation of records, knowledge and memory of radioactive waste across generations in Verdun in 15-17 September 2014. Since 2015, Andra opens yearly a call for projects and invites artists from different disciplines to imagine the memory of the repository sites for future generations.

Lessons learnt over time

The lessons learnt by Andra during the siting process can be summarised under the following headings:

- **Time:** it is important to have enough time to build trust in the relationships with all stakeholders. Immediate feedback should not be sought, as the siting process is long-term.
- **Space:** discussions should be held in an extended area and not solely focused on a targeted single municipality.
- **Content:** building a territorial project with elected representatives and local population is key to have a sustainable project which is co-created and co-owned with the residents.
- **Support:** the support of local and national elected representatives in the siting process is essential to move forward.

Additionally, Andra also highlights the following lessons learnt from trying to build and maintain stakeholder confidence in radioactive waste management programmes:

- Public dialogue and stakeholder engagement firstly require understanding the public, their culture, background, sensitive issues, beliefs, fears, etc.
- Adopting an ethical attitude based on: transparency, honesty and humbleness is necessary in order to build confidence among the public. It is important to admit that there are risks and uncertainties and Andra is not expert in everything, but also the public possesses part of the solution.
- Capacity to listen, accept contradiction, debate and talk about sensitive topics like risk, health, environment or impacts.

GERMANY

Introduction

In 2011, Germany decided to opt out of nuclear energy. This was the prerequisite for restarting the search for a repository for high-level radioactive waste. In 2013 consensus across the political parties was achieved when in July the Act on the Search and Selection of a Site for a Repository for Heat-Generating Radioactive Waste (Repository Site Selection Act – Standortauswahlgesetz, StandAG) was adopted. Prior to the start of the site selection procedure, the “Commission for the Storage of High-Level Radioactive Waste Materials” considered and assessed basic issues relevant for the repository site selection procedure from 2014 until 2016. Furthermore, the Commission evaluated the StandAG and made recommendations for its further development. On 16 May 2017 the amended StandAG entered into force; it defines the search and selection procedure for a repository site for the safe storage of high-level radioactive waste in Germany. Public participation in the Site Selection Act gives the public the opportunity to get involved in the site selection procedure. Public participation is seen as a prerequisite for the final determination of the repository site by the Bundestag being tolerated by the affected population. On the one hand, the Site Selection Act sets up clear regulations for public participation and thereby establishes a management of expectations and, on the other hand, it allows to react on future developments that cannot be foreseen yet.

The selection of the repository site consists of several phases including the involvement of the public at the regional and national level. The comparative, participatory, science-based, transparent, self-questioning and learning process aims at finding the repository site which ensures the best possible safety for one million years. Therefore, the Act does not include neither veto rights nor voluntariness of host communities. Rather, public participation shall enhance transparency and understanding as well as improve the site selection process. The selection procedure is based on exclusion criteria, statutory minimum requirements and weighing criteria, which are to be applied in several phases of the procedure for narrowing the site options and which are to be underpinned by safety investigations to be refined successively and further test criteria. The Site Selection Act foresees that high-level waste must be retrievable during the operation of the repository. After the decommissioning of the facility, a recovery of waste through mining should be possible for 500 years after disposal.

The publicly-owned Federal Company for Radioactive Waste Disposal (Bundesgesellschaft für Endlagerung mbH, BGE mbH) is the project implementer. The BGE mbH is organised under private law. According to the StandAG, the BGE mbH will apply the step-by-step procedure mentioned above for narrowing the site options. The Federal Office for the Safety of Nuclear Waste Management (Bundesamt für die Sicherheit der nuklearen Entsorgung, BASE) established within the portfolio of the Federal Ministry for the Environment, Nature Conservation und Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, BMU), as regulatory body, is responsible

for monitoring the implementation of the site selection procedure. It will assess the proposals submitted by the BGE mbH, organise and co-ordinate the participation of the public and submit its results to the BMU. Besides, the BASE sets up all forms of participation laid down in the Site Selection Act and provides them with organisational and financial resources for their entire duration. The BMU is responsible for the technical and legal supervision of the BASE and the shareholding management of the BGE mbH. At the end of each phase of the site selection procedure, the Federal Parliament [Bundestag] and the Federal Council [Bundesrat] will decide on the regions and sites to be further explored as potential sites.

The assessment by the BGE mbH, with safety being the primary goal, will be based upon a comprehensive set of geological data and a consistent repository design. The site specific geological data will be completed by means of surface and subsurface exploration programmes and test criteria agreed upon with the BASE and preliminary safety investigations. This procedure will narrow down the number of potential sites. At the end of the site selection procedure the BASE will make a proposal for the future repository site, based on the comparison of at least two possible sites. This proposal will be forwarded to the BMU. The site decision is then made by means of legislative procedure by federal law.

Box 2. Overview of the phases in the selection of the repository site

Identification of subareas (§ 13 StandAG)

Determination of regions for surface exploration (§ 14 StandAG)

Decision on surface exploration and exploratory programmes (§ 15 StandAG)

Surface exploration and proposal for subsurface exploration (§ 16 StandAG)

Decision on subsurface exploration and exploratory programmes (§ 17 StandAG)

Subsurface exploration (§ 18 StandAG)

Final comparison of sites and proposal of a site (§ 19 StandAG)

Decision for a site (§ 20 StandAG)

So far, the site selection procedure is still at an early stage of the first phase One: currently the BGE mbH collects and assesses existing geological data to identify the subareas which offer favourable geological conditions for the disposal of high-level radioactive waste. Therefore, there are no regions identified yet that might be suitable for a future repository site. Formal participation according to the Site Selection Act has not yet begun. Nonetheless the BASE has already started to inform the public about the site selection procedure and the opportunities for the public to get involved.

Table 6. Germany: Key dates for radioactive waste management

Key dates	
July 2013	Repository Site Selection Act entered into force.
2014	German Bundestag and Bundesrat set up the Commission for the Storage of High-level Radioactive Waste Materials.
June 2016	The Commission for the Storage of High-level Radioactive Waste Materials submits its final report.
July 2016	The law on the reorganisation of the organisational structure in the field of final disposal becomes effective.
December 2016	First meeting of the National Civil Society Board, which accompanies the site selection procedure – in particular public participation – as an independent institution with the commitment to the public welfare and the aim of enabling trust in the execution of the procedure.
May 2017	The revised Site Selection Act, based on the recommendations of the Commission for the Storage of High-level Radioactive Waste Materials, becomes effective.
Mid-2020	The BGE mbH plans to submit its report on the subareas, which offer favourable geological conditions.
By 2031	Site decision sought.

Authorities and organisations involved in the site selection procedure

National level

The repository site selection process is implemented on a step-by-step basis. The public is to be given opportunity of intensive participation in the process of site selection at the national and regional level. The BASE is the organiser and co-ordinator of public participation. For the involvement of the public several bodies will be set up at the national and regional level that are independent of authorities and the project implementer and equipped with the necessary resources.

After the BGE mbH will have identified subareas that offer favourable geological conditions for the disposal of high-level radioactive waste, the Subareas Conference (Fachkonferenz Teilgebiete) will be set up by the BASE. It is the first formal body of participation foreseen by the Site Selection Act. The aim of the Subareas Conference is to discuss and comment on the report of the BGE mbH which led to the identification of these subareas. The Subareas Conference shall initiate expert consultations before primarily regional interests take over. The report of the conference has to be taken into account by the project implementer. After the report will have been submitted to the BGE mbH the Conference will be dissolved.

Regional authorities

As soon as the BGE mbH suggests potential site regions for surface exploration, the BASE convenes a Regional Conference (Regionalkonferenz) in each proposed region. These regional conferences are the central institutions for participation. They consist of a General Assembly (all citizens of the site-region aged over 16 years) and a Representative Committee. The Representative Committee of each Regional Conference is composed of citizens (elected by the General Assembly), representatives of organised interests and representatives of the municipal authorities of the proposed region, each of these groups constituting one third of the members. Neighbouring municipalities are equally represented within the Regional Conferences. This may also include municipalities in neighbouring

countries. Thereby, a site-region is defined as the area that is suggested by the implementer for surface exploration to identify potential suitable sites for a final repository including neighbouring municipalities.

The BASE will set up a secretariat for each Regional Conference and provide them with financial resources for their entire duration. The Regional Conferences should be empowered to work at a high degree of autonomy. They accompany the steps of the site selection procedure in the long run and intensively involve regional expertise and regional interests. They check the accuracy and comprehensibility of key proposals and decisions. If Regional Conferences identify deficits that cannot be clarified in dialogue with the BASE and the BGE mbH, they have the right to demand a reassessment of proposals and reports once in each phase of the site selection process. With each phase within the process (e.g. surface explorations) and the following decision of the Bundestag, the number of regions is narrowed down. Conferences in regions that are not considered further will dissolve.

After the constitution of the Regional Conferences, a Council of the Regions Conference [Fachkonferenz Rat der Regionen] is set up by the BASE. The Council of the Regions Conference gives the Regional Conferences the opportunity of cross-regional exchanges. In this body, representatives of all the Regional Conferences can share the experiences gained on the processes in their respective regions and develop a cross-regional perspective of the site selection procedure. Representatives of the sites currently hosting an interim storage facility will also participate. The Council of the Regions Conference and the Regional Conferences conduct their work in parallel in terms of content and time.

In addition to these bodies, clearly defined legal procedural elements (e.g. public hearings) are in place at the end of each phase. Furthermore, all actors are free to implement additional, informal forms of participation. At the end of phase two (decision on the sites to be explored underground) and three (site selection), there is the option of legal protection.

Other organisations

The National Civil Society Board (Nationales Begleitgremium, NBG) accompanies the site selection process, especially the public participation, independently with commitment to the public welfare. It is composed of individual citizens selected in a procedure started from random selection and acknowledged public figures appointed by the Bundestag and the Bundesrat. Finally, the NBG will consist of 18 members. The members are appointed for three years. Re-appointment is possible two times. The members are granted access to all records and documents of the BGE mbH and the BASE. The NBG is not only to accompany the procedure with commitment to the public welfare but also with the aim of enabling trust in the execution of the procedure. The NBG appoints a representative for participation. He will assist in settling disputes or mediating in case of conflict. The NBG and the Regional Conferences can consult a scientific council or individual experts for its deliberations, structures or to obtain scientific expert opinions.

Involvement of youth

Within the National Civil Society Board, one third of the seats is reserved for citizens selected based on random selection, of which again one third should represent the younger generation of 16 to 27-year-olds. So far, the process of site selection is still at an early stage and no formal participation has taken place yet. Special opportunities to engage young people in the discussion are foreseen in participation processes later on. To explore how

these opportunities could be designed, the BASE has launched a research project and plans to enhance co-operation with educational institutions. Currently NBG, BGE mbH und BASE are preparing a joint workshop with young people to discuss how they can be informed and involved best.

Practical implementation of communication

So far, no regions for further explorations have been chosen. Nonetheless, the BASE has published a report on its understanding of public participation in the site selection procedure (BASE, 2018a) and, based on that report, a concept for public participation in the initial phase of the site selection procedure (BASE, 2018b) before the BGE mbH has identified subareas. In the BASE, the Public Participation Division, which is part of the Directorate Site Selection Procedure and Public Participation, is responsible for conducting public participation. In 2018, EUR 2.4 million were provided for public participation.

Furthermore, several means are already employed or planned by BASE to ensure early, appropriate and comprehensive information such as brochures, exhibitions, films, conferences, workshops and hearings. The BASE involves the public and stakeholders through the publication of draft documents (e.g. policy papers, concepts etc.). These drafts are discussed with the public and the stakeholders. The results of the discussions are documented and published. Additionally, BASE operates an internet platform (BASE, 2017) since May 2017 where all relevant documents, data and other information of BGE mbH and BASE related to the site selection process are published.

Added value approaches

The site selection process in Germany aims at finding a repository site that will offer the best possible safety for one million years and is therefore not based on voluntariness. Nonetheless, the region for the final repository site is carrying the burden for the whole country. A potential negative impact on the image of the region should be counteracted by developing a concept for compensatory measures. The strategies how to implement these measures are individual for each region. To develop and validate suitable long-term strategies, a detailed study of the economic, historical and social potential of the region will be required. The objective of these strategies is not merely to achieve compensation in the form of a short-term financial compensation but rather to elaborate the long-term development potential for the region in question and provide a differentiated response to the construction of the repository. The concerns of the current population as well as expert knowledge and predictions of future developments all need to be incorporated into this process.

Analyses of the socio-economic potential of the potential site regions will be developed by the project implementer at the beginning of phase 2 of the site selection process (surface exploration) and will be discussed at regional conferences. Regional conferences and the Council of the Regions Conference work out concepts for the regional development.

Memory preservation: documentation

The Commission for Storage of High-level Radioactive Waste Materials that laid the basis for the Site Selection Act discussed and proposed which information and data should be available during and after these phases. The Site Selection Act has entrusted the BASE with the task of permanently storing and keeping safe data and documents that are or may be relevant for the final and interim storage of radioactive waste. Details are to be regulated

by an ordinance which is to be issued with the approval of the Bundesrat. The ordinance is currently being developed.

Lessons learnt over time

In Germany, there has been a long history of conflict regarding RWM, especially regarding high-level radioactive waste management. Starting from the late 1970s, the salt dome of Gorleben was explored as a potential repository site for high-level radioactive waste. Exploration was terminated with the Site Selection Act in 2013. Key lessons learnt from failure of the first siting process were taken into account in the Site Selection Act of 2017. In addition to early public participation, this includes a science-based procedure based on predefined criteria, a step-wise, comparative siting procedure and the consideration of different host rocks (clay, rock salt, crystalline rock). Public participation provisions in the Site Selection Act gives the public the opportunity to get involved in the site selection procedure from an early stage. Public participation is the prerequisite for the final decision by the Bundestag being tolerated by the affected population. On the one hand the Site Selection Act sets up clear regulations for public participation and thereby establishes a management of expectations. On the other hand, it allows the project to take into account unexpected future developments. In addition, the Act makes provision for the assessment, permanent reviewing and learning processes.

Challenges

The process of site selection and the exploration of Gorleben has been highly controversial over the last decades. The decision of 2011 to opt out of nuclear energy in 2022 was a prerequisite for restarting the search for a repository for high-level radioactive waste. The central challenge for a successful public participation in the site selection process is whether or not it is possible to create a social climate that allows the historically grown mistrust of the public in the actions of state actors in the field of RWM to be overcome.

HUNGARY

Introduction

On June 1998 the Public Agency for Radioactive Waste Management was established for performing the functions specified in the 1996 Atomic Act related to the disposal of radioactive waste and spent nuclear fuel. In January 2008, the company was transformed into the Public Limited Company for Radioactive Waste Management (PURAM). On the other hand, the Hungarian Atomic Energy Authority (HAEA) is the competent regulatory body for licensing and supervising nuclear facilities and radioactive waste disposal facilities. From 1 January 1, 2016, the HAEA took over the regulatory tasks for radiological protection.

The 1996 Act on Atomic Energy promoted the establishment of public oversight and information associations by the licensee of an NPP or RWM facility in order to regularly provide information to the population of the communities in the vicinity of the facilities. The law established the legal basis for providing financial incentives for the associations to conduct public information and oversight activities as well as for regional development purposes. There are nowadays four Public Information Associations, each established in the vicinity of a storage or disposal facility, construction site or investigation area:

- the Isotope Information Association (ITET) is established in the vicinity of the radioactive waste treatment and disposal facility for institutional LILW at Püspökszilágý and involving 10 settlements;
- the Local Public Control and Information Association (TETT) for the LILW national repository in Bataapáti and involving 8 settlements;
- the Social Monitoring and Information Association (TEIT) created in connection to the spent fuel interim storage facility at Paks involving 16 settlements;
- the West Mecsek Public Information Association (NyMTIT) connected to the candidate siting area of the HLW repository around Boda and involving 11 settlements.

The control function of the associations consists of the regular control of incoming materials and carry out measurements in the operating facilities by a group of trained local inhabitants. Each settlement delegates one person to the control group whereas the host settlements delegate a minimum of two persons.

The composition of the associations follows the act of atomic energy:

Anyone can be a member of the association, but half of the affected municipalities must be members as well as the host municipality. According to national law, the definition of “affected area” is different depending on whether there is an operating repository or an area under investigation. In case of an operating repository, affected area means the host

settlement and the adjacent settlements while in case of an investigation process, affected area means all settlements on whose territory drilling takes place.

The Hungarian government adopted the national programme under the 1459/2016 (VIII.24) Governmental Decree.

Table 7. Hungary: Key dates in the Hungarian site selection processes for LILW and for HLW

Key dates	
1993	A new site investigation programme for LILW was initiated taking societal factors into account, after failed attempts in late 1980s and early 1990s. A voluntary siting process was launched, in which public information and financial incentives played a crucial role. Start of the research programme when a potential host rock (clay stone) for a deep geological repository (HLW) was accidentally found in a uranium mine.
1997	Reception of spent fuel in the interim storage facility at Paks (to be closed between 2064 and 2072).
July 2005	Local referendum held in Bataapati which approved the repository.
November 2005	National Parliament votes to establish the facility in Bataapati.
2008	Start operation of the national radioactive waste repository in Bataapati to be closed down in 2084.
Ongoing	Multi-phase geological research programme both near-surface and underground to determine the location of a URL and HLW repository.
2030	Estimated date to select the location of an URL.

Authorities and organisations involved in RWM

National level

PURAM performs the tasks related to the final disposal of radioactive waste, as well as the interim storage of spent fuel, the closure of the nuclear fuel cycle and to the decommissioning of nuclear facilities. HAEA is responsible for the regulatory tasks in connection with the use of nuclear energy, the safety of nuclear facilities and transport containers as well as the security of nuclear and other radioactive materials and associated facilities. The Hungarian Atomic Energy Authority (HAEA) organises public hearings before taking decisions in order to obtain the opinion of the public. These hearings are open events where anybody can ask questions if she/he is interested. According to the Atomic Energy Act, the implementer PURAM and the regulator HAEA must hold public hearings together, to provide information to the public before taking a decision. In addition to the HAEA, the Environmental authority and the mining authority are also involved at specific stages of the licensing process as part of the public hearing.

Local associations

According to the Act of Atomic Energy, local associations, formed by host settlements and neighbouring settlements to nuclear or RWM facilities, share information among local people and follow up the work regarding nuclear or RWM activities. The associations establish civil control groups which periodically control and oversee the nuclear facility operating in the vicinity and the implementer's work. Each municipality delegates one or two member(s) to the group who have to pass an examination before they can perform any inspection tasks.

Involvement of youth

Every year PURAM has some students from different universities, who undertake vocational training at the company. In addition, PURAM has an exhibition day, twice a year (together with all of the nuclear actors) at different universities. PURAM also has stands on different career orientation days.

Specific lessons are conducted every year in different schools by PURAM staff. Contact is maintained with the teachers who organise school trips to the sites and to visitor centres. PURAM also organises kids' contests, physics-chemistry competitions, presentations and leisure activities to introduce the younger generations to radioactive waste management.

Practical implementation of communication

PURAM has a communication strategy and develops an annual communication programme. PURAM has a communication department and five members of the team are responsible for local involvement and for information sharing with the public.

The company, together with the responsible ministry, sign a contract with all the public associations. All parties – ministry, association and PURAM – have a say regarding the content of the contract, which includes the activities that the association will deliver (e.g. organise public events, edit newspaper, maintain the website, etc.). The associations need to reach the goals and targets included in the contract in order to get the financial support. This is monitored by the Ministry and PURAM.

The four associations, which involve 45 settlements in total, get around 3,700,000 euros per year. These subsidies can be used for operational costs of the associations, developing the settlements, controlling and providing information to the public. This money is not a tax in Hungary, but this is a support which is financed separately in the yearly governmental budget. The concept of added value is not yet discussed, as local people prioritise getting a job at PURAM or at the facility if she or he is qualified.

PURAM meets with the associations very often. Apart from meeting at annual events of the associations, open days and unofficial events, PURAM meets on a quarterly basis with the mayors at public forums and also quarterly with civil control groups. Apart from these meetings, PURAM uses printed media as a channel to communicate with the locals.

PURAM conducts opinion polls every two years and depending on the results, some aspects of the communication strategy can be modified. These opinion polls are conducted in the areas with RWM facilities in order to measure the satisfaction of the public with the facility, with PURAM and the association. According to the latest results, around 60% of the local population in the areas nearby RWM facilities are aware of the existence and role of the local associations, around 75% are aware of the existence of sites for RWM and research and 75% are aware of the existence of PURAM.

Lessons learnt over time

The main challenges in Hungary are the involvement of younger generations in RWM, knowledge management and the translation of technical language for local people.

In terms of achievements, the creation of local associations, according to the act on atomic energy, was key to reach a good communication with local stakeholders. The role of the mayors is very important, as they are respected and credible personalities among the residents and they help PURAM to communicate with the local population. The opinion

polls conducted by PURAM show good results regarding public acceptance of PURAM and their work. In fact, the members of the associations have increased over the years and more municipalities would like to take part in the associations.

Another useful tool for communication between authorities and the local public are the public hearings, which allow the local population to meet the different authorities - Environmental Authority, the HAEA, the Mining Authority, PURAM. These events help to increase transparency, trust and confidence, as participants may ask any question face-to-face to the authorities.

ITALY

Introduction

In Italy, nuclear energy was phased out following a referendum in 1987. Ten years later, in 1997, the National Agency for Energy and New Technologies (ENEA) launched a programme for providing the country with a repository for disposal of LLW and a long-term interim storage for HLW. In 2001, the national institutional framework was reorganised and the responsibility for waste management and decommissioning was transferred to Sogin, a company fully owned by the Ministry of Economy. In 2003, there was an attempt to select a site in southern Italy, which led to a strong opposition by the local community and the siting programme was stalled.

Sogin is currently responsible for the Italian nuclear sites decommissioning and the management of radioactive waste. Thus, Sogin is assigned the task of siting, designing, building and operating the National Repository for radioactive waste and the Technology Park. The National Repository includes a centralised facility for the disposal of low- and intermediate-level short-lived waste (LILW-SL) and the long-term storage of conditioned HLW, low- and intermediate-level long-lived waste (LILW-LL) and un-reprocessed spent fuel. The Technology Park will represent a centre of excellence to be realised on the same site of the National Repository, with laboratories and R&D installations devoted to the management of radioactive waste and other themes to be agreed with the hosting territory.

The current procedure for siting the national repository is based on voluntarism and collaboration with local authorities. According to Italian law, Sogin is responsible for drawing up a proposed National Map of Potentially Suitable Areas (CNAPI) to host the national repository. On the basis of exclusion criteria issued by ISPRA (Italian authority responsible for nuclear safety), Sogin performed, during 2014, the systematic screening of the national territory for identification of potentially suitable areas included in the CNAPI. The proposed map was then sent to ISPRA who validated it and sent its results to the Ministry of Economic Development and the Ministry of Environment for their final approval. Once authorised, Sogin will proceed with the publication of the CNAPI as well as the preliminary design. Waiting for the institutional authorisation, Sogin organised information and engagement activities, especially at national level.

In the next phase, consultations will be conducted and a national seminar will be organised to invite regional and local administrations with suitable areas as well as all involved stakeholders to a public discussion, where the proposed national map along with the preliminary design of the National Repository and Technology Park will be presented. Legislative Decree 31/2010 foresees the involvement of all interested stakeholders in the public consultation phase leading to the National Seminar: regions, counties, municipalities, trade unions, universities, research entities, etc. identified within the potentially suitable areas, together with national stakeholders

Such stakeholders, before the National Seminar, will be involved also in Regional Workshops where the main topics will be discussed with regional representatives and this will guarantee their engagement during the overall siting process.

The law also requires Sogin to draw up an updated version of the proposed National Map of Suitable Areas within 90 days from the seminar and submit it to the Ministry of Economic Development for formal approval. Once the map is approved, within 30 days, Sogin starts the following consultation phase for the collection of expressions of interest from the regional and local institutions in the suitable areas. A bilateral negotiation is then undertaken by Sogin with the administrations showing interest in order to achieve an agreement. In case more than one local community enters negotiations, a ranking of suitability based upon ISPRA criteria is applied in order to schedule the technical investigations. The final agreement is laid down as a formal protocol between the interested regions and the government.

Should this process fail due to lack of suitable expressions of interest, a second phase is scheduled with a national/regional dialogue, in order to find a shared decision on a higher level.

Organisations involved in RWM

National level

Sogin, beyond its role as implementer, is supervised by the Ministry of Economic Development (MiSE). MiSE, together with the Ministry of the Environment and Protection of Land and Sea (MATTM), has specific roles in the siting process. These include a shared green-light to publish CNAPI and Preliminary Design (still pending), and formal consent also in the final version of the National Map of Suitable Areas (CNAI) and in the final site selection.

Regional authorities

Regional authorities, through their technical departments have taken part in the Public Consultation on the Environmental Report issued within the Strategic Environmental Assessment process relevant to the National Programme (2011/70/EURATOM).

Regional authorities will also take part in the Public Consultation following the publication of the National Map of Potentially Suitable Areas (CNAPI) for hosting the National Repository and ending with a National Seminar with all interested stakeholders. When such Map will be confirmed (CNAI), concerned regional authorities together with local administrations will be invited to express their interest to host the national repository.

Every regional authorities of areas included in the Map are invited to express a formal statement to host the repository. Such expression of interest is not binding for the region and has the main goal to allow technical investigations for identifying the suitable site in the following phase. A Local Partnership is not explicitly scheduled at the moment, but Leg. Decree 31/2010 (Article 27, paragraph 7) states that a formal agreement (protocollo di accordo) must be signed by local authorities and the project's implementer.

A co-operation between regional authorities and local communities (included elected officials) is scheduled during the Public Consultation of the national repository, but the details are likely to be provided during the consultation or later, in the formal agreements. Until now information and statements are informal or spread through media.

Other organisations

Sogin is currently dealing with the national phase of the Public Consultation, preceding the publication of the CNAPI. In this phase, an Advisory Committee (Comitato Scientifico) was created inside Sogin to help in engaging influential stakeholders (physicians, geologists, radiological protection specialists, etc.). Moreover, environmental associations, mostly at national level, were fostered to an independent analysis about RWM and disposal. Such co-operation is scheduled to be revamped after the publication of the CNAPI, focusing also on local engagement. Sogin's presumption is that local communities, inside or outside a formal partnership, will be enabled to find independent experts, in order to promote the competence building and to make the decisions as trusted as possible.

Involvement of youth

The younger generations will be certainly engaged in the next phases of the siting process, and Sogin is already testing initiatives to bridge the gap, especially spreading awareness of RWM challenges and showing a strong commitment for future generations' rights. Examples are the 'Open Gate' initiative which fosters the visits of families and schools in the decommissioning sites and the 'Night of the Research' initiative which encourages visits of young students in the Sogin RWM research installations.

Sogin also plans to include a focus group with younger generations in each of the Regional Workshops that will be arranged during the Public Consultation, and to collect and to publish the output.

Added value approaches

Both the "economic" and the "social" perspectives of the added value approach are foreseen in the National Repository project. In the economic perspective, annual contributions to local institutions, whose levels shall be duly agreed, are foreseen starting from the operational phase. As the project's implementer, Sogin will discuss with local communities the best way to guarantee, in line with international best practices and recommendations, opportunities for financing local activities in the early stages also. In the non-economic perspective, the realisation of the Technology Park will allow to include, together with necessary activities for the repository, other initiatives aiming at maximising the positive effect deriving from the facility. These initiatives will be decided together with local communities and will be financed with both public and private funds. They should include a training centre, for sustaining at local level a unique know-how in fields like RWM and radiological protection, environmental monitoring and protection activities, and a set of laboratories able to boost local features and opportunities for a long-term sustainable development. Some of these proposals will be discussed during the Public Consultation, as fundamentals of the Preliminary Design. A more detailed discussion, and actually a negotiation in case of an expression of interest, will be performed with the concerned communities, and will include both of the added value perspectives, economic and non-economic one.

JAPAN

Introduction

The Japanese government steadily promotes deep geological repository as a basic policy for the final disposal of specified radioactive waste. In 2013 Geological Disposal Technology Working Group was established under METI's Advisory Committee to review the technical reliability of geological disposal on the state-of-the-art geoscientific knowledge. The Cabinet's decision to revise the basic policy in 2015 has said that national government would play an active role and for its first step present a nationwide map of scientific features for geological disposal, and the "Nationwide Map of Scientific Features relevant for Geological Disposal" of the entire country was published by METI in 2017.

NUMO is tasked with implementing geological disposal (GD) of high-level radioactive waste (HLW) and low-level radioactive waste containing long-lived nuclides (TRU waste) arising from Japanese nuclear fuel cycle. In accordance with the basic policy for the final disposal of specified radioactive waste from 2015, the Japanese government and NUMO continue making efforts to promote the involvement of the public in order to gain understanding of the GD project.

The following table shows a summary of the activities undertaken in Japan to select the repository site.

Table 7. Japan: Key dates in the radioactive waste management programme

Key dates	
December 2002	NUMO started open solicitation for literature survey.
January 2007	Toyo town in Kochi prefecture applied as a volunteer area.
April 2007	Toyo town in Kochi prefecture withdrew application after the strong opposition from local residents.
May 2015	The Japanese government decided to lead the site selection process more in front, in co-operation with the local stakeholders and revised "the Basic Policy on the Final Disposal of Specified Radioactive Waste (HLW)".
2015	The Japanese government decided that it would publish "the Nationwide Map of Scientific Features for Geological Disposal."
2016-	NUMO has been holding dialogue-based explanatory meetings to enhance understanding among the public about the GD project. NUMO and METI deliver presentations and interested people can participate in small group discussion where the staff responds to their questions and concerns.
July 2017	The Japanese government published the map with a view to reinforce efforts to promote better understanding of geological disposal at both national and regional levels. Utilising this map, the Japanese government and NUMO put efforts into dialogue by holding explanatory meetings throughout Japan.

In July 2017, the Japanese government published the Nationwide Map of Scientific Features of Geological Disposal which categorises all areas in Japan into four categories: 1) area with unfavourable geological features that may damage the long-term stability of geological environment; 2) area endowed with natural resources; 3) area with a good chance to be confirmed as having favourable characteristics and 4) area within the former area which is also favourable from the point of view of waste transportation. This publication is the first step in the siting decision-making process.

Along with the communication activities, NUMO is providing a generic safety case at present, pre-siting stage, by integrating state-of-the-art knowledge of science and technology to instill technical confidence in the implementation of a safe geological disposal in Japan. Despite the fact that there has not been a site or specific host rock identified, the safety case report has developed detailed geological and hydrogeological models for potential host rock environments. Repository design and safety assessments have been performed for these geological models, thereby providing underpinning evidence to demonstrate the technical feasibility and the safety for the various types of Japanese geological environments. The safety case report has been developed to provide a basic structure for subsequent safety cases that would be applied to any selected site, emphasising practical approaches and methodology, which will be applicable for the conditions/constraints during an actual siting process. The final draft report (in Japanese) for external peer review by the Atomic Society of Japan was published in November 2018. The draft will be further modified by reflecting the comments from the Atomic Energy Society of Japan (AESJ) review and translated in English for NEA international review.

Up to now, there are not any regions which show an interest in accepting the survey for site selection. So far, NUMO has been holding public meetings across the country, holding frank and open discussions on key topics related to the safety and the societal significance of developing a geological disposal repository (GDR) with a small group of the participants sitting around a table, preparing as many tables as necessary for participants. The meetings have been held on weekdays evenings and weekend afternoons.

In these meetings, NUMO expresses its desire that local government organises the “dialogue occasion” which enables NUMO to promote dialogues with stakeholders in order to work together to assess technical and socio-economic issues. NUMO has also been supporting local organisations which study GD voluntarily (e.g. giving information, giving lectures, financial support for site visit of URLs of Mizunami and Horonobe).

Once a specific region is decided, METI and NUMO will co-operate with local governments to organise this “dialogue occasion (local stakeholders’ forum)” and support local stakeholders to discuss the safety and importance of GD, progress of investigation, etc.

So far, the nuclear regulatory body has not been involved in the decision-making process. The regulatory body will review the programme, the design of the waste disposal facility or other applications in accordance with regulatory requirements, and then will issue the approval after the completion of all necessary reviews as provided in the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. Any explanation regarding the regulatory activities will be conducted upon request of local municipalities.

Involvement of youth in dialogue on RWM

At present, NUMO is making efforts to encourage the public to learn about both the safety of GD of HLW and the societal significance of its implementation by the current generation with a view to both encouraging municipalities to apply for the literature survey as the first step to decide the site for the GDR and seeking broad societal support for them to do so. To facilitate learning, the younger generations are involved in different activities as follows:

- During 2015 to 2016, a group of school teachers developed instruction material and teaching aids for energy and environmental education to be used by teachers who want to utilise information on RWM and GD in particular, as the subject material in social studies and science lessons. NUMO has been supporting these activities.
- NUMO supports teachers to deal with GD in their school classes by dispatching experts for their support.
- A college professor holds debate classes on the topic of geological disposal of HLW. NUMO dispatches experts on radiation and GD for topical lectures and financially supports tours to facilities for GD including underground research laboratories (URL).
- NUMO dispatches a communication vehicle “Geo Mirai” in which PR tools and a mini 3D-animation theatre are installed to areas such as front yards of shopping malls and science museums where people gather.
- NUMO supports educational activities in colleges in which WM and GD of HLW are dealt with.

NUMO also intends to organise school festival style exhibitions, where NUMO exhibits a booth in places capable of attracting large number of people from different backgrounds (e.g. large shopping malls, business districts). The booth would have a virtual reality exhibition, a 3D animation movie and mock-ups of components of a GDR.

Added value approaches

METI and NUMO plan to discuss with local stakeholders at each stage of investigations of potential sites the integration of the GD project into the community.

NUMO’s principal concept of co-existence with a host community is as follows:

- Sustainable development of the region which accepts a repository is essential for an implementer to manage geological disposal project steadily, because it is long-term project (over 100 years). So, NUMO will move its headquarters near the site and contribute to development of the region, as a member of the region. NUMO will support culture, invest in education and stable job creation for the youth and contribute to boosting the local economy.
- NUMO aims to build a win-win relationship with regional stakeholders by communicating sufficiently.
- NUMO makes efforts to increase positive effects on the region and take precautionary measures against negative effects.

Makers and memory preservation

So far, the issue of memory preservation has not been addressed, but will be considered in the future.

Lessons learnt over time

- Two-way face-to-face discussion in a small group is very efficient for communication for a better understanding of the DGR project by local stakeholders.
- The nationwide map is very useful to provide a basis for the discussion on the DGR.
- Teaching DGR at school is proper communication with society, because the younger generations tend to talk simply without prejudice of what they learnt in the class with their friends and family.

RUSSIA

Introduction

The state policy of Russia in the field of RWM and SNF management is underpinned by the principle of SNF processing to ensure environmentally sustainable management of fission products and the return of regenerated nuclear materials to the nuclear fuel cycle.

The principle Federal Act No. 170-FZ in the field of nuclear energy was adopted in Russia in November 1995. The separate Federal Act No. 190-FZ “On radioactive waste management and amendments to certain legislative acts of the Russian Federation” was adopted in Russia in July 2011. In accordance with Article 11 of that Federal Act, the government of Russia approved the procedure and terms for the establishment of a unified state system for radioactive waste management within the period from 2013 to 2025.

The process of the establishment of the unified state system for radioactive waste management (USS RWM) involves three stages. During the first stage (2013-2014), the principal regulations, which specify legal and institutional framework for the USS RWM establishment, were set. Within the second stage (2015-2017) the programme on establishing the system of LLW and ILW disposal facilities was implemented. That stage involved the construction of the first disposal facility unit and selection of sites potentially suitable for the disposal facility. The third stage (2018-2025) provides for the commissioning of an URL for HLW as well as the commissioning of disposal facilities for LLW and ILW.

The state policy of Russia in the field of SNF management is based on the principle of SNF processing to ensure environmentally acceptable management of fission products and the return of regenerated nuclear materials to the nuclear fuel cycle.

In accordance with the Russian legislation, public hearings are deemed to be an essential stage in the decision-making process on siting RWM management facilities. Public hearings are held regularly in cities and towns located near the sites proposed for construction of RWM facilities. Following the results of the public hearings, a Protocol is developed. The Protocol is an integral part of the official documentation related to the construction and operation of the RW storage or disposal facility, which has to be submitted to the state environmental expertise.

Table 8. Russia: Key dates in the radioactive waste management programme

Key dates	
November 1995	The principle Federal Act № 170-FZ was adopted in the field of nuclear energy.
July 2011	The separate Federal Act № 190-FZ "On radioactive waste management ..." was adopted.
December 2011	A national operator in the field of RWM was created.
November 2012	The government of Russia approved the procedure and terms for the establishment of a Unified state system for radioactive waste management within the period from 2013 to 2025.
March 2013	Initial establishment of tariffs for disposal of radioactive waste.
August 2016	The updated Territorial Planning Scheme of the Russian Federation in the field of energy for the period of 2030 includes six radioactive waste disposal sites.
2019-2025	The third stage of USS RWM establishment provides the commissioning of an URL for HLW as well as commissioning of disposal facilities for LLW and ILW.

Authorities involved in RWM

National level

At the national level, government's agencies have the authority to organise and conduct state environmental assessment and to provide the public with reliable information on the state of the environment related to the siting of waste storage and disposal facilities.

Moreover, in 2006 Public Council of Rosatom was set up, which is the permanent monitoring and advisory body for public awareness as well as for dissemination of information on the safety of planned facilities for RWM. The Council consists of independent experts from professional associations and scientific organisations, as well as representatives of interested Federal and regional public organisations, nuclear industry and the Civil Chamber of the Russian Federation. Public Council of Rosatom provides co-operation between Rosatom and the nuclear industry with NGOs, regional and local authorities, professional associations and local communities in order to develop recommendations for decision making in the field of nuclear energy.

At the national level, regulators participate in public events as invited experts. They empowered to organise and conduct state ecological expertise and to provide the public with reliable information about the state of the environment.

Regional authorities

In accordance with article 30 of the Federal Act from 28.06.2014 No. 172-FZ "On strategic planning in the Russian Federation" the Territorial Planning Scheme in the field of energy, which is based on documents of regional and sectoral strategic planning, has to be developed. According to the Decree of the government of the Russian Federation from 2012 No. 162-p, the facilities of storage, processing and disposal of radioactive waste are considered to be the parts of the Territorial Planning Schemes in the field of energy.

Co-ordination of the Territorial Planning Scheme takes place in the Federal Information System, access to which is provided at the subnational level (regional authorities) and at the local level (local authorities), where the placement of these facilities is planned. The regional authority should inform local authorities at the start of the process of a territorial

planning scheme's co-ordination, and has to set the procedure for co-ordination. While co-ordinating the territorial planning scheme, it is possible to hold public events at the initiative or with the support of regional authorities. On the basis of the conclusions of local authorities, the regional authority (within three months via the Federal Information System) prepares a consolidated conclusion in the form of a single document which contains provisions on consent to such a project or disagreement (with the justification of such disagreement). When one or several regional authorities disagree with the scheme and justify their disagreement (the negative consolidated conclusion), the Federal body (within 30 days since the date of the expiration of the established term of approval) makes the decision on the establishment of a Conciliation Commission. The composition of the Conciliation Commission includes representatives of the Supreme Executive authorities of the regions, who sent the negative summary conclusion. The Conciliation Commission has to be established to consider the observations contained in the negative consolidated conclusions in order to make mutually acceptable decisions.

Involvement of women

In 2017, the Russian branch of the international movement "Women in nuclear industry" was established ("Women in Nuclear Russia") in order to consolidate and develop the professional community of women specialists working in the nuclear industry. The members of that movement take part in public hearings and dialogue forums with local communities on the disposal of radioactive waste, as well as in other activities.

Involvement of youth

In Russia, the main mechanism for involvement of the younger generations in the implementation of plans and programmes for waste disposal is to awaken the interest of the youth in the nuclear industry as a whole and to strengthen the desire to get a quality education to work in a high-tech industry.

Rosatom State Corporation has developed the Rosatom School Project the aim of which is to provide every student with the opportunities for a quality education, regardless of their place of residence. This project includes the following activities: competitions for talented children, the competition "honours pupil of Rosatom", the summer ten - day tent camp "Ecotour" (a meeting place and communication of students from networked schools, included in the different research and technological micro- projects, especially on ecology and radiation safety). Russian universities (which train specialists in the nuclear industry) have internships for young professionals in the industry and in universities in foreign universities. Purposeful work with schoolchildren and young people is carried out mainly in order to attract future students to these Russian universities.

Furthermore, educational books and interactive digital games (developed by Rosatom State Corporation) are distributed to schoolchildren in the field of nuclear and radiation technologies, including waste management and waste disposal.

Practical implementation of communication

In general, communication is undertaken centrally and locally at the locations of radioactive waste disposal sites. On the one hand, the Russian national operator has a unit responsible for informing and organising co-operation with stakeholders, including local communities. On the other hand, in the locations of radioactive waste disposal sites (as in other core sites of the nuclear industry), Rosatom State Corporation has set up information

centres at the location of waste disposal sites (as in other core sites of the nuclear industry), which inform the public and hold joint meetings with local communities. Each centre annually develops a plan of communication with the local community, as well as the plan of the placement of waste storage and waste disposal facilities. Funds are allocated from 2015 for the operation of waste disposal facilities and information centres near them, along with the publication of information materials. The information meetings are held at least once a quarter, with the participation of representatives and experts of the Public Council of Rosatom State Corporation.

Added value approaches

In Russia, the idea of value added is primarily associated primarily with the socio-economic development of the territory where the building of waste disposal facilities is planned, but is not associated with the distribution of subsidies.

In accordance with the new legislation in 2015 in Russia, “the Territories of Advanced social and economic Development” (TAD) were created. TAD are economic zones with preferential tax conditions, simplified administrative procedures and other privileges, created to attract investment, accelerate the development of the economy and improve the life of the population. With the support of Rosatom State Corporation, such territories are created at the locations of nuclear industry facilities, including the sites for waste disposal, for example, the city of Zheleznogorsk in the Krasnoyarsk region and the town of Ozersk in the Chelyabinsk region.

Lessons learnt

At that stage of the development of the USS RWM, the establishment of information centres and regular meetings and forums-dialogues with the participation of local communities is an effective measure for co-operation. However, there are some difficulties in organising communication between experts of the national operator and representatives of local communities due to the following reasons:

- many experts are ready to speak only in a professional environment and are not ready to discuss complex issues with members of the public using understandable language (the language barrier);
- many representatives of local communities want to receive quick answers, guarantees and privileges, but do not want to discuss complex issues with experts (the cognitive barrier).

To overcome these difficulties and to establish long-term partnerships, it is necessary to create conditions for the setting of networking Community of Practice around the construction of the waste disposal site, whose members are ready to discuss complex issues using understandable language and to provide clear-cut answers to the questions.

SPAIN

Introduction

The lifetime of the Spanish nuclear fleet is current object of negotiations between the utilities and the government. Among the Spanish NPPs, Vandellós I was dismantled to level 2 according to the IAEA scale in 2003 and is currently in dormancy phase; decommissioning works are currently being finalised at José Cabrera NPP; and Santa María de Garoña, in a situation of administrative shut-down, will be the next one to be dismantled. The rest of operating NPPs (Vandellós II, Ascó I and II, Almaraz I and II, Cofrentes and Trillo) will be progressively shut down over a decade starting from 2030. Besides the operation and decommissioning of these facilities, radioactive waste is generated in a number of radioactive and nuclear facilities in the country.

It is the task of the government to establish the policy on the management of radioactive waste, including spent nuclear fuel, and the dismantling and decommissioning of nuclear facilities, through the adoption of the General Radioactive Waste Plan, the national programme developed by the Ministry of Ecological Transition (MITECO).

Enresa, created in 1984, is the public company that fulfils the essential public service of the management of all radioactive waste produced in Spain and the decommissioning of nuclear facilities and acts under the tutelage of MITECO. With regards to LILW, the site of El Cabril in Hornachuelos (Córdoba) was selected in a particular historical context. Over many years, radioactive waste was stored in an abandoned uranium mine located in this site. In 1984, Enresa was created and became the new owner of the site, having the mandate to build a disposal facility for LILW. The co-ordination with the autonomous community of Andalusia took place, in accordance with the legislation in force at that time⁸, during the environmental impact assessment to evaluate the suitability of the site for its purpose.

In relation to the management of spent nuclear fuel and high-level waste, the government approved, by means of the Council of Ministers' Agreement of 30 December 2011, to the designation of Villar de Cañas (province of Cuenca in the autonomous community of Castilla la Mancha) as the chosen municipality for the location of the Centralised Temporary Storage (CTS) and its associated Technological Centre.

In the future, Spain needs to undertake the licensing of the deep geological repository, which will pose important challenges in particular on the side of public involvement in the site selection process.

Another important landmark in radioactive waste management in Spain over the last few years is the Ministerial Order enacted in 2015 which regulates the allocations to municipalities in the vicinity of nuclear facilities, charged to the fund for the financing of activities of the General Radioactive Waste Plan. A system to provide allocations exists since 1988. The new Order of 2015 introduces new types of allocations which coexist with

8. Royal Legislative Decree 1302/1986 of June 28th of Environmental Impact Assessment was in force at that time and applied to the project.

the former, allowing municipalities to apply for extra funding to undertake economic development projects. As the preamble of the new Order of 2015 states:

[...]twenty-five years after the first introduction of these allocations⁹, the same municipalities remain economically dependent on nuclear facilities, due to the low incidence that such allocations have had on their economic development, rarely having been used for investment in projects that contribute to the generation of alternative economies. Consequently, and taking into account the interest shown from different sectors, it was considered convenient to introduce mechanisms to contribute to such an objective, principally with a view to the future, once activity at the facilities has stopped. With this purpose, the allocation of further funds in addition to those drawn down by the municipalities in light of the various ministerial orders is set forth, receipt of which will be conditioned upon the financing on the part of those municipalities of projects that contribute to the economic development or the conservation and improvement of the environment.

The aim of these support measures is basically to help municipalities find alternative means of economic development, through co-financing projects, once the facility is no longer operational.

The mechanisms to approve and monitor implementation of the co-financing projects is foreseen in the Ministerial Order of 2015 as follows:

- To decide the eligible projects: During the third quarter of each year, an Evaluation Committee will analyse the proposals submitted by the municipalities. This Evaluation Committee shall be chaired by the Ministry of Ecological Transition (in charge of nuclear energy matters), having at least two representatives of Enresa and two representatives appointed by the municipalities. The Committee shall submit a report to the said ministry and on the basis of this report, the ministry will issue a resolution prior to 30 November, whereby eligible activities will be determined.
- To pay the activities: as these activities are being undertaken, municipalities shall submit the corresponding payment documents to Enresa, who, following verification, shall make the payment.
- To monitor implementation: in the first quarter of each year, Enresa shall submit to the ministry a report on the activities carried out during the previous year, to enable verification of the degree of implementation and the application of resources for the intended purposes. In case of non-compliance, the ministry will require the return of funds already paid.

9. Traditional allocations of funds regulated by law and paid directly to the municipalities around nuclear facilities.

Table 8. Spain: Key dates in the site selection for the CTS (Centralised Temporary Storage facility)

Key dates	
December 2004	Resolution by the Congressional Commission on Industry, which urged the government, in partnership with Enresa, to develop criteria for establishing a centralised storage facility for spent fuel storage and high-level radioactive waste in Spain.
April 2006	Call from the Parliament to the government to designate a location for the CTS and complete the process of site selection (bill from the Commission for Industry, Tourism and Trade of the Lower House of the Spanish Parliament).
June 2006	Approval of the 6 th General Radioactive Waste Plan, still in force, as of October 2018.
2006	Creation of the Interministerial Commission to establish the criteria to be met by the site for the CTS and its associated Technology Centre.
29 December 2009	Decree to launch the site selection process establishing the criteria and procedures on a volunteer, public process to host the CTS facility and Technology Centre.
September 2010	Technical report released pre-characterising the 8 final candidate sites and providing a proposal to the Cabinet.
30 December 2011	Cabinet Minister approves Villar de Cañas as the municipality to host the CTS facility and Technology Centre.
January 2014	Enresa submitted the authorisation applications for the siting and construction of the CTS to the Ministry.
July 2015	Decision of the Regional government of Castilla la Mancha for the initiation of the extension of the nearby (11km) zone of CTS as Natura 2000 special protection area.
July 2018	The Superior Court of Castilla La Mancha annuls the extension of the special protection area. The new central government blocks the licensing phase of the CTS facility.
2015-18	Collaboration agreements with 10 municipalities around the CTS facility to cover basic needs.

Table 9. Key dates in the allocations to municipalities in Spain

Key dates	
1988-...	System of allocations to municipalities charged upon the Fund for Financing activities of the General Radioactive Waste Plan is put in place.
2015	Ministerial Order IET/458/2015, of 11 March, regulating the allocations to municipalities in the vicinity of nuclear power plants.
2016	Additional funds approved for the co-financing of local development projects, in accordance with Ministerial Order IET/458/2015.
2017	Approval of 34 co-financed projects in 2017 to be developed between 2017 and 2018.
2018	Completion of 8 co-financed projects and 26 in the implementation phase. New submission of 30 projects to be co-financed, currently under implementation phase (as of December 2018).

Authorities involved in RWM

National level

In the case of planned CTS facility of Villar de Cañas, the law to be applied is the Royal Legislative Decree 1/2008 (predecessor of the Law 21/2013 on EIA/SEA), which was in force when the project was launched. The promoter of the project is Enresa. At the beginning of the project (2013), the Ministry of Environment was the authority issuing the Environmental Impact Statement (“environmental organ”); and the Ministry of Energy (MINETAD), being responsible for the authorisation of the activity, was its “substantive organ”. This has changed very recently, as from June 2018, after a governmental change in Spain, a newly created Ministry of Ecological Transition (MITECO) is now responsible for environmental and energy matters, including nuclear energy and waste. Since then, the substantive organ and the environmental organ are different dependencies of the MITECO.

As has been referred, the Directorate General for Energy Policy and Mines of the Ministry of Ecological Transition (MITECO) has an active role in the approval and monitoring of local development activities. The Ministerial Order (“the Order”) sets out a tripartite Commission with representatives of the Ministry, of Enresa and of the municipalities to assess the compliance of the Order requirements by the requested projects. On the basis of a report prepared by said Commission, MITECO does or does not approve the projects.

The Nuclear Safety Council

According to Law 15/1980, the regulator in Spain, the Nuclear Safety Council shall facilitate access to information and the participation of citizens and civil society in its operation. For this purpose:

- It shall inform citizens about all the relevant facts related to the operation of nuclear and radioactive facilities, especially in everything that refers to its safe operation, the radiological impact for people and the environment, the events and incidents occurred in the same, as well as the corrective measures implemented to avoid the repetition of the events. To facilitate access to this information, the Nuclear Safety Council will make use of information and communication technologies.
- It shall inform all of the agreements of the CSN’s Board, with clear exposition of the matters, the reasons for the agreement and the results of the votes taken.
- It shall submit for public comments the safety instructions and technical guides during the elaboration phase, making extensive use of the corporate website of the Nuclear Safety Council to facilitate access for citizens.
- It shall promote and participate in Information Committees in the environments of nuclear power plants (in operation and in decommissioning phase), which deal with aspects related to the operation of the same and especially the preparation in emergency situations and the analysis of the events that have occurred.

*Regional authorities*¹⁰

Autonomous Communities

Autonomous communities have an important role to play in the process of adoption of the national programme and in the Environmental Impact Assessment (EIA) of projects such as disposal or centralised storage facilities in their territories. The participation of autonomous communities in the adoption of the national policy and strategy, which is set in the General Radioactive Waste Plan, is defined in the Royal Decree that regulates in Spain the basics of RWM (Royal Decree 102/2014 of Safe and Responsible Management of RW), as well as in the relevant legislation of SEA and EIA (Law 21/2013 on Environmental Impact). Their role and tasks are defined in the following legislative documents:

- Based on article 5 of the Royal Decree 102/2014: formal hearing of the draft General Radioactive Waste Plan by the autonomous communities from the point of view of land planning and environment.
- Based on SEA and EIA, the role and tasks are more significant: audience and right to express their views and ask questions at different stages of the SEA (in respect of the adoption of the next editions of the General Radioactive Waste Plans¹¹) and EIA when relevant.

In the case of the *planned CTS facility*, during the EIA of the CTS facility, the government of Castilla La Mancha has had a very active role in the request for clarifications, submission of allegations, etc.

Following the Ministerial Orders, autonomous communities do not have any role to play in relation to the regime of financial allocations to the municipalities.

Parliament

Autonomous communities are also represented by the Senate, one of the two chambers of Parliament. Any law dealing with RWM goes through a process of debate and approval in both Chambers. Also, when the General Radioactive Waste Plan is adopted, both Chambers are informed (apart from the fact that the relevant autonomous communities are informed before adoption following the procedure of Royal Decree 102/2014). The members of the Senate can address questions to the government on certain topics; more general interpellations on transcendent issues of national policy; or urge motions, that is, proposals for the government to carry out certain actions. Other measures of control of the Senate can be the constitution of commissions of investigation on certain subjects; the responses to communications from the government; etc.

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10. In Spain, regional authorities are understood as the government of the autonomous communities. The Spanish Constitution of 1978 recognizes 17 autonomous communities as territorial administrative entities having their own regional governments and legislation; the Constitution establishes in general terms the competences that correspond exclusively to the central state and those which can be shared or exercised by the autonomous communities.
 11. In the adoption of the current edition of the General Radioactive Waste Plan, which dates back to 2006, a Strategic Environmental Assessment was not performed, as this was not a requirement in the legal framework applicable at the time of adoption of said document. However, with the new legislation in force, future editions of this Plan will be subject of SEA.

Both within the Congress and the Senate there are parliamentary committees that deal specifically with energy (former Energy, Tourism and Digital Agenda Commissions; now linked to Ecological Transition). In addition to that, and only in the case of the Congress (not the Senate), a subgroup has been created within the relevant parliamentary commission in charge of relations with the Nuclear Safety Council.

Both parliamentary committees of the Congress and Senate may act as an interlocutor with institutions dealing with radioactive waste. Thus, the Senate committee may request the appearance of the Minister or another member of the government (including the President of the public company Enresa) to clarify issues related to the management of radioactive waste. As an example of these actions in the Senate, a report that the Senate presented on "the problem generated by the radioactive waste management" already recommended the construction of a CTS in 1998. A more recent example is that of 2012: when, at the time, the location of the CTS was selected, successive interventions were made to request that the Minister of Energy explained the selection criteria followed.

Other organisations

In Spain, it is particularly important the leading figure of AMAC as an intermediary between the municipalities and the institutions. AMAC¹², acronym for *Asociación de Municipios en Áreas de Centrales Nucleares*, is a private association supported by the contribution of its members, in this regard, out of the "official authorities" category. It was founded in 1988 with the aim to co-ordinate and represent the interests of the municipalities in zone "1" of the Nuclear Emergency Plans –when this volume went to press 59 municipalities were registered, see www.amac.es (in Spanish only). AMAC often uses the figure of "Local Development Employment Agents" (AEDL - "*Agentes de Empleo de Desarrollo Local*"), founded by the General Administration of the Spanish State to help, essentially, municipalities and autonomous communities develop its respective territories and to create employment. Generally, in every nuclear facility location there is an AEDL or similar body whose aim is to help prepare and present co-financing projects that municipalities can set forth to collect Fund allocations.

AMAC was also very active in debating potential features of the procedure for site selection of the CTS facility. Many of the points agreed between AMAC, the Ministry, CSN and Enresa formed the basis of the provisions of the Royal Decree of 2006 defining the process.

Involvement of other groups

Enresa undertakes regular campaigns of information on its activities, with a particular effort devoted to the environment close to its facilities. Minority groups such as ethnic or immigrant-related groups have not been considered in the facilities' communication plans. Among the visits to Enresa's facilities, specific groups of women, retirees, immigrants and convicts have been received.

Local and professional groups

Specific actions aimed at professional groups have been addressed. For example, economic and social agents, as well as environmental groups have been invited to visit Enresa facilities (dismantling nuclear power plant of José Cabrera and Vandellós as well as El Cabril). The doors of Enresa are always open to the social and economic environment with

12. Out of 180 municipalities in nuclear areas, around 30% are affiliated with AMAC.

an active policy of visits to facilities. Such policy promotes and facilitates the visit of every kind of group (in some cases financing transport and food) as has been previously mentioned.

Regarding specifically the decommissioning projects, dismantling was seen as a threat and as a possible loss of land value in the municipalities concerned. Local and professional groups were explained in detail and since the start of the project (José Cabrera) what were the tasks Enresa was going to carry out during the following years so as to avoid misinformation, fears and false expectations (employment creation, required resources, etc.).

Youth

Several informative campaigns of Enresa target students in particular. During the last few years, Enresa has promoted several actions aimed at younger audiences, among which stands out the Seminary on Science, Journalism and Environment which takes college students of said disciplines to Córdoba. During such a meeting there was an interaction with a young audience concerned about matters related to Enresa. In addition, informative aspects on the company were included and a visit to El Cabril completed the journey. The initiative had a very positive acceptance in social media – reaching the trending topic mark in Spain – and served as appeal to gain young followers in the media.

For El Cabril¹³, the following groups are addressed in the communication plan:

- High School students, Vocational Training Degrees, Universities, Social and Technical groups. Many of them come from the province of Córdoba, but the area can be extended on demand. They are received in the facility where a guided tour takes place.
- Middle school students: in this case, personnel from Enresa visit the schools of the province of Córdoba and organise a talk and activities related to the facility.
- (Younger) students at primary school: an activity called “Fun Science” is put in place. Personnel from Enresa visit schools in the province of Córdoba and organise activities and games related to radioactivity.
- In addition, home talks can be organised for social groups, associations, teachers, etc.

Bringing students to Enresa premises is the more direct way to introduce them to RWM as they can experience the whole process first-hand. In the area of Cabril, Enresa’s personnel goes to schools and high schools and explains their activities. This is planned to be undertaken also in the other facilities. Summer schools are also an interesting tool for reaching young people. Preparing teachers is also partially put in place and can be increased in the future. All these actions could be complemented by a higher presence on social media (twitter, etc.). Daily tweets with news on the facilities and the activities of Enresa is a good way to let young people know more about RWM. In this regard, Enresa takes part in a social media plan that allows a better disclosure of its activities and also enables interaction with other audiences, besides creating content in specific formats and languages.

13. For El Cabril, the total number of visitors has been 117,109, grouped in the 4,220 visits that have taken place from 1992 (start of operation) to 31st May 2018.

Another way to involve youth would be to arrange visits to other institutions, like the CSN information centre, which includes a tour on ionising radiation and its applications, interactive games for fun learning, and explanatory videos. Although not done yet, having subsidiaries of the central information centres in the different autonomous communities besides Madrid could also be the basis to bring the debate on radioactive waste management closer to the younger generations.

Practical implementation of communication

Communication with the municipalities from the point of view of corporate social responsibility

MITECO itself (formerly the Ministry of Industry), launched a general information campaign in every municipality in a nuclear area, provided them with a copy of the Ministerial Order of 2015 and informed them about the possibility to request co-financing funds for socio-economic development projects which met certain characteristics. Enresa carried out a number of information meetings with the surrounding municipalities of their facilities to inform them of such possibility. In addition, AMAC has an important role as spokesperson between MITECO and the municipalities.

So far, there is not a communication plan for this kind of co-financing projects and collaboration agreements, so municipalities find out through the Boletín Oficial del Estado (Official State Gazette) – or through AMAC.

Communication of Enresa's activities and facilities

Before engaging in a technical project, Enresa develops a “Landing Plan” in the area where the project is going to be hosted, aimed to plan and prepare the relationship with the different stakeholder groups. Information centres are established to inform of the activities to be developed. Furthermore, a proactive policy of visits (both to the facilities of Enresa but also from Enresa staff to schools, city councils, associations, etc.) is also promoted. Regular contact is maintained with the different stakeholders: municipalities, provinces, autonomous communities, business organisations, universities, etc.

In the facilities (El Cabril and decommissioning projects), the staff in charge of communication activities is always local, coming originally from the area where the facility is located and living in the surrounding area, i.e. being integrated as neighbours where they work.

One of the main stakeholder groups considered by Enresa is media. In general, Enresa has adopted a proactive communication policy, with regular information meetings and the promotion of press visits to enhance the knowledge about Enresa's work.

Communication regarding the José Cabrera decommissioning project

A specific communication plan was prepared in this case based on an “open-door” policy. Numerous visits from professional groups, students, institutions, etc., were received and the national and provincial press were hosted in the site and received regularly detailed information of the progress of decommissioning. For instance, a periodic meeting with the media was set and, initially, it consisted of two press conferences per year. Information leaflets and computer tools complemented such meetings.

Audio-visual media was given close attention and, specifically, a virtual reality application was developed to allow the visitors to enter the different areas of the facility during the visit (**Figure 1.1**).

Figure 1.1.: Example of Virtual Reality Application on Tablet



Source: Enresa (2019)

Communication for El Cabril

For the facility of El Cabril, the communication plan focuses mainly on inviting students to the facility as well as other professional groups, national institutions and international groups. The interaction with media is also key in the communication plan of the facility and regularly journalists are invited to visit the facility.

Added value approaches

From the corporate social responsibility point of view, the concept of “shared value generation” has been used over the last few years to reflect that every stakeholder (organisation, company, etc.) shall contribute to improve the social, economic and environmental aspects, having an impact on the reputation and the self-esteem of the municipality. In this regard, the contribution of both Enresa and the municipalities participating in RWM projects shall be understood as a “win-win” situation.

In Spain, there are three types of allocations for socio-economic development:

- Traditional allocations consisting of assigning specific amounts of money directly to the local authorities,¹⁴ which they manage under their sole discretion.
- Allocation for co-financing projects which have a clear development and employment creation aim: the main characteristic of these co-financing projects is that they promote employment creation. For example: The co-financing of a nursing home, which creates from 15 to 20 permanent jobs within the municipality or camping facilities to promote tourism in the area.
- Collaboration agreements with municipalities surrounding the CTS have a social approach. This kind of agreements can be divided into two groups: the ones that contribute to environmental improvement (e.g. public park conditioning, country road repair, stream cleaning, etc.) and those related to improving municipal infrastructure (e.g. energy efficiency improvement of public lighting, multipurpose building repair, libraries, elderly day care centres). They all contribute to the social well-being of the municipality.

Regarding the second type of allocations, these new kind of funds¹⁵ were put in place for co-financing projects that contribute to the economic development of the municipalities or the conservation and improvement of the environment and the creation of employment. These new funds were meant as a supplementary measure by the Ministerial Order enacted in 2015, given that Enresa Foundation had been suppressed in 2013 as a result of a Governmental Agreement for restructuring Foundations and Business Public Sector. By way of a transitional measure, the Order sets out the possibility that Enresa may enter into partnership agreements with municipalities in the vicinities of the facilities for which a building licence has been requested and other kinds of allocations have not been given yet. Such agreements allow Enresa to interact with the municipalities surrounding the CTS, which, in principle, are not able to benefit from other kinds of allocations. These agreements came into effect in 2015 for about a million euros. Applying the proximity principle (in terms of kilometres to the facility), 22 municipalities can request these funds, although only 10 have done so, as of 2018. Furthermore, in the case of the CTS, a number of R&D activities will be performed and for this reason, the Technological Centre associated to the CTS will be constructed, attracting researchers and students to the facility.

Markers and memory preservation

Among the tasks entrusted to Enresa by law is the establishment of research and development plans within the framework of the State Plan for Scientific and Technical Research and Innovation, which covers the needs of the General Radioactive Waste Plan and enables the acquisition and maintenance of the necessary knowledge and skills. In this regard, Enresa participates in different projects involving analysis and preservation of knowledge: R&D Technological platforms like those concentrated in CEIDEN at national level (the Spanish Platform on Fission Nuclear Energy); and at the international level, on the European R&D platform on Geological Disposal of Radioactive Wastes (IGD-TP); other working groups in the NEA and IAEA; etc.

-
14. Local authorities whose jurisdiction covers or is close to a radioactive waste storage and disposal facility or nuclear power plants where spent fuel is stored on site.
 15. Such funds (as well as the previously existing allocations) come from the Fund for the financing of activities included in the PGRR, governed in Spain by the Law of the Electricity Sector.

In the dismantling of the José Cabrera nuclear power plant, recordings and photographs of every process have been taken and video clips have been edited, in order to preserve the knowledge and memory of the site.

Lessons learnt

The new co-financing conditions established by the Ministerial Order of 2015 can lead to two positive factors:

- An improvement of the living conditions in the municipalities in nuclear areas;
- A closer dialogue between Enresa, the Ministry and the municipal councils who have to interact among themselves to discuss the projects' requirements. Nevertheless, the administrative material needed to requesting co-financing may become a burden for small municipalities. In this regard, AMAC may be a good facilitator. Enresa and the Ministry also provide advice to help prepare the documents for requesting co-finance. The lack of involvement of autonomous communities in this area may need to be considered in the future.

SWEDEN

Introduction

In Sweden, the licensing phase started in 2011 and this changed all the previous conditions of the site selection process radically. Firstly, the initiative partly moved from SKB as implementer to the regulator SSM and the Environmental Court but also to the government and the municipalities, as they are or will be responsible for the licensing procedures and the final decision making. Secondly, there are new stakeholders, new roles and more integrity between different stakeholders than during the past site selection, site investigation, consultation and EIA-phases. Contacts and good dialogue between the main stakeholders are still crucial in order to keep and develop trust and confidence. Furthermore, direct co-operation, which was avoided in the past, is now completely out of question. The Added Value Programme (AVP) is now in effect.

The municipalities took great part and responsibility from the beginning in informing, inviting and engaging local stakeholders, setting up the reference and working groups. SKB could start from these groups and enlarge them when necessary and successively focusing on the most concerned stakeholders. This was and still is a very good way to avoid missing any important local stakeholders and ensuring the involvement of the most concerned and potentially affected (e.g. nearby residents and land owners and the municipality).

Table 10. Sweden: Key dates of the siting process

Key dates	
1992-2000	SKB conducts eight feasibility studies on regional and local levels in order to select a site for the spent fuel repository.
2002-2007	SKB conducts site investigations at two potential sites: Forsmark (Östhammar municipality) and Laxemar (Oskarshamn municipality).
June 2009	SKB selects Forsmark for the repository for spent nuclear fuel.
March 2011	SKB applies to the authorities for permission to build a repository for spent nuclear fuel in Forsmark and an encapsulation plant in Oskarshamn.
Autumn 2017	The main hearing in the environmental court takes place.
January 2018	SSM and the Land and Environment Court submitted their respective opinions to the government on the SKB application for a licence to construct a spent fuel repository in Forsmark and an encapsulation plant in Oskarshamn.
April 2019	SKB submits supplementary documentation to the government. These are referred to SSM and other stakeholders.
2020	Municipal approval and government decision expected.
2021-22	Licences/permits with terms and conditions could be granted by the regulator and the Land and Environment Court.
2023	Beginning of the construction of the spent fuel repository and the encapsulation plant, which would take around ten years to complete.

Authorities involved in dialogue on spent fuel repository

National level

The government participated in the RWM process through the triannual RD&D programme and funding reviews and decisions. Currently, the government is preparing for its decision making about the applications and licences according to the Environmental Code and the Nuclear Activities Act. Involved government departments are primarily the Ministry of the Environment and to some extent also the Ministry of Enterprise and Innovation.

The Swedish regulator SSM takes care of the licensing procedures under the Act on Nuclear Activities. SSM is a referral body to the Land and Environmental Court and the preparatory authority for the government's decision. SSM reviews the application and is the Swedish expert body in the nuclear field, during consultations, EIA and licensing under the Environmental Code. SSM participates in seminars organised by the government advisory body and other public meetings within the field. It also has regular meetings with the affected municipalities and NGOs. SSM publishes information, such as news from the reviewing process, on the authority website. They also document all meetings with SKB and other operators in a public diary.

SSM involves the public and stakeholders in decision making in several ways. Firstly, there is a formal process of referral to stakeholders in the area linked to the review of final disposal applications. Anyone interested have the opportunity to comment on SKB's applications and SSM takes the responses into account in the authority's opinion to the government. Secondly, according to the Act on Nuclear Activities there is also a formal process for SKB's research and development programme. Stakeholders can comment according to referral proceedings. Finally, when SSM gave its opinion to the Land and Environmental Court the authority attached preliminary review reports and before that, parts of the results from the review were published as the review process proceeded. The intention was that the authority would be as open as possible.

Other government or State authorities than SSM do also participate but to a very limited extent and mainly only as formal review parts, not actively. Such examples are the Swedish EPA, The Sea and Water Authority, The Traffic/Infrastructure Board and the Geology Survey of Sweden.

Regional authorities

In addition to the government, the municipalities have quite strong positions in Sweden both in general and specifically concerning RWM due to their Environmental Code veto right and possible use of referendums while the regional level has a more administrative profile and is less powerful within this area. Regional authorities have also a specific role according to the environmental code when it comes to the consultation process for application of disposal facilities. In the early stage of the EIA process, regional authorities were also organisers of regional EIA forums both in Oskarshamn and Östhammar.

There are regular meetings, both formal and informal ones, between the municipalities of the region, some of them organised by the region and others by the municipalities, where RWM is normally non-existent or one of many points on the agenda. RWM has only been focused by the regions on rather rare occasions. These events mean mostly information exchange and only very limited discussion and do not have much influence on the RWM issue, at least not directly. One exception is the national and regional infrastructure

planning and agreements where the AVP action discussions and negotiations has certainly made a difference.

Earlier, during the site investigations and consultations, up until the licence applications were submitted, SKB arranged regional *dialogue groups* with frequent meetings for information and discussion about the RWM issue and the programme/project progress. These groups consisted of local, regional and national stakeholders.

County Administrative Boards

In Sweden, County Administrative Boards (CAD) are the authority at regional level for consultation and licensing with special focus on emergency preparedness, environment (including EIA, nature and culture values) and regional development. The CAD represent the government and the Swedish state defending national interests. The CAD also for example grant specific licences for impacts on endangered species, if relevant. The CAD is involved in the AVP but has a somewhat lower profile with the exception of infrastructure investments.

Regional Council

There is also a regional council (RC) which represents the municipalities more directly (not the government or the Swedish state) but they focus on business and infrastructure development and are more peripheral in RWM. The RC is more involved in the AVP. The RC has a freer role dependent on the agreement by the founders (the municipalities).

Neighbouring municipalities

In Sweden partnerships and direct co-operation is avoided between the applicant and the municipalities. Neighbouring municipalities have been invited to participate by the concerned municipalities and the CAD and have done so from time to time. Over time their direct participation and engagement have been very low as well as their influence and interest to influence. This applies both to informal participation in the municipal reference and working groups and meetings and to formal engagement in the consultations and licensing review procedures.

Other organisations

Researchers and experts

SKB has its own experts (for example on safety, facility design and EIA) who are also engaged in information and communication activities. In addition, SKB engages:

External independent experts to investigate and explain various societal concerns, fears and effects and answer questions forwarded by the municipality reference and working groups and from decision makers. This include for example investigations of impact on tourism, property and real estate values, psychosocial effects, image, attitudes and opinions, commuting patterns, infrastructure improvements, local and regional economy, possible synergies with other businesses and facilities.

Independent researchers who could propose topics and apply for support in the “Social Science Research Programme” running from 2004 until 2010. Topics to be studied were selected among the applicants by a “Social Science Advisory Group” with members from the universities and academic institutions. Four groups of topics were covered: Socio-

economic impact, Decision making processes/Governance, Opinions and attitudes/psychosocial effects and Societal change in the surrounding world.

There are also other experts in the field engaged by other stakeholders. For example, SSM has a large number of researchers and experts attached to the authority.

The Swedish National Council for Nuclear Waste

The Swedish National Council for Nuclear Waste is another important actor as advisory body to the government. The Council investigates and clarifies matters relating to nuclear waste and serves as a knowledge base for other stakeholders in the area. The Council conducts broad discussions, national and international hearings and seminars to bring up important RWM aspects that are not discussed elsewhere.

Involved local institutions

A range of local organisations, companies and associations have been and are part of the local/municipal reference and working groups. Among these are local or regional branches of national political parties, environmental NGOs, nearby residents and land owners, companies, the public and others. In particular, NGOs active in this area have received funding from the Nuclear Waste Fund (allocated by law from the reactor owners) to review the application and follow final repository issues. From 2018, NGOs receive financial support from the state to continue their work.

Involvement of youth

Over the years SKB has made special efforts to reach out to for example women and young people. Such initiatives have been (and are) offering site and facility visits, open houses, school information and education packages, school projects as well as approaching relevant associations in their normal meetings and venues.

Efforts have mainly been focused on information and dialogue, increasing the interest and improving the knowledge about RWM and SKB's projects/programme and not primarily on directly involving people in the reference and working groups. There are a number of concrete projects involving and engaging youth in the topic of long-term memory keeping and communication with future generations about the existence of final repositories. For example, the "Underground" school project about symbols and signals about ten years ago, a recent theatre project and another current school and student collaboration with French agency Andra based on both French and Swedish contributions.

Practical implementation of communication

Communication plan

SKB, as implementer, has been and is the driver of the process. SKB has a communication strategy and plan based on their needs and targets. Local presence, being available, transparent and open for dialogue with other stakeholders is crucial to building trust and confidence in a voluntary but controversial and complicated process where local acceptance and consent is needed. This means that listening, responding and adapting to other stakeholders' wishes is crucial.

During the current licensing procedures SKB does not meet other stakeholders as often as earlier but there are still meetings of many kinds and on all levels and with the regulator.

SKB has high-level management meetings, meetings with reference and review groups and meetings and contacts with municipality politicians or staff, nearby residents and land owners as well as with interested individuals.

The importance of local presence

On the top level, close contacts were established early, from the beginning, and are still maintained between the CEO and head of communication/stakeholder contacts at SKB and the top local decision makers and politicians. The same applies to SKB experts and staff and municipality staff, reference and working groups. Very important roles have been and are still the project leader/head of site - often a geologist, construction expert or generalist from SKB - and the local information officer from SKB - SKB employee living in the area/the municipality with good knowledge about and reputation among locals.

The local information and communication teams from SKB in the concerned municipalities have consisted of 3-5 employees with different functions working both with existing and planned facilities at the sites where for example stakeholder contacts and visitors service are important tasks. Especially during consultations and EIA before submitting the applications and starting the licensing procedures the SKB “EIA and consultation team” had a crucial role in stakeholder contacts (a team consisting of 3-4 SKB employees supported by 3-4 consultants and a number of internal and external experts). Then, SKB conducted all the formal consultations and participated actively in a lot of the informal stakeholder meetings and contacts in both municipalities Östhammar and Oskarshamn. For the moment, and since the site selection, the AVP representative has had a very crucial role connecting with the local decision makers and business associations.

Financial support to municipalities and NGOs

There are no partnerships in Sweden. Concerned municipalities and NGOs have been able to apply for, and have got, financial support from the Swedish Nuclear Waste Fund by way of the regulator or other sources directly from the authorities in order to follow and participate in consultations, EIA and licensing. The concerned municipalities have also received different kinds of support for specified purposes through the AVP due to an agreement with SKB and its owners. The latter is however not at all intended for stakeholder, reference or working group support and means actions of common interest and benefit not money that is handed over. The support, or possibilities to get financial support, have not really changed for almost 15 years. Before that and the legislation changes made at that time for this purpose, such support did not exist or was very limited.

Added value approaches

Since the site selection in 2009, there is an agreement about an AVP launched by the concerned municipalities Östhammar and Oskarshamn, SKB and its owners. The AVP is an acknowledgement for their long-time participation with the highest priority (75%) to the municipality (Oskarshamn) that was not selected for the final repository. The total value of the programme is SEK 1.5 to 2 billion.¹⁶ Value added initiatives are financed directly by SKB owners and are not taken from the Nuclear Waste Fund.

16. Further information is provided in NEA (2012), “Actual Implementation of a Spent Nuclear Fuel Repository in Sweden: Seizing Opportunities. Synthesis of the FSC National Workshop and Community Visit, Östhammar, Sweden, 4-11 May 2011”.

The aim is to create mutual benefits for both parts (municipality and industry) through actions and investments of different kinds treated and decided by a board with members from both parts and not by paying money. Actions included are for example establishment of new direct and indirect local jobs, research, school and education programmes, business and innovation support, attractive housing, infrastructure development and improvements. The first part of the AVP started from the site selection in 2009 and is almost finished and a second major part will come in effect when the necessary licences for the final repository and the encapsulation plant are granted by the government, the regulator and the Land and Environment Court.

Markers and memory preservation

SKB identified and started to work on the topic of markers and memory preservation in the 1990s, in dialogue with the regulator and some other countries, and brought it up again in a more comprehensive manner around 2005-06 due to questions about and interest for the topic during the consultations. SKB and Andra together, with a few other implementers, promoted and supported the NEA RK&M (Records, Knowledge & Memory) project initiative (2011-2018) for international co-operation and development on the topic which successively engaged more countries and organisations. The municipality of Östhammar has stated during the licensing procedures that the work on these issues must continue and that a plan ought to be presented as well as a clear statement about the responsibilities for the repository after closure. The Land and Environmental Court also raised this question in their statement to the government. SSM has a general advice that a strategy for preservation of information should be produced so that measures can be undertaken before closure of the repository. The Swedish Parliament has now decided on an amendment to the Act on Nuclear Activities which means that the final responsibility for the final repository, and the waste in the facility, will rest on the state. A permit from the government is also required to finally seal a geological repository. The legislative changes will take effect on November 1, 2020. The question about the responsibility after closure is subject to a government inquiry where a clearer responsibility for the state is proposed. SKB, the regulator, the National Archives, the universities, the Swedish National Council for Nuclear Waste, the municipalities and the NGOs are all engaged in the discussions about information and memory preservation. The next step will be to try to use and adapt the results, principles and guidelines from the RK&M project to the Swedish case in a sound and reasonable way. An international workshop on “information and memory for future decision making” was held in Stockholm in May 2019.

Lessons learnt over time

In earlier stages it was a fact that the national level, except the regulator SSM, held a very low profile and were hardly present. For instance, the government, national politicians and decision makers and other authorities, for example the Swedish EPA, took little, or no part in the process. However, at present, from both the SKB and SSM points of view, no stakeholders are missing and if so it would not have been due to lack of information or invitation but by choice or lack of interest.

Since 2011 when SKB submitted its application to build a final disposal for spent nuclear fuel it has been especially important to maintain and underline integrity between stakeholders to not affect the independent review and statements about the application.

Achievements

The planning of a final repository for spent nuclear fuel in Sweden has gathered many stakeholders. The consultation has been extensive. Both the regulator and the implementer have succeeded to have an open process with the possibility for other stakeholders to give their opinions, both before the applications and during the application processes.

In the view of SKB, the Swedish approach is so far positive with clear roles and financing for RWM, voluntary participation, openness and transparency, trust and confidence and the final decision making upcoming in a relatively near future. SKB puts pride in promoting everyone to come forward, offering different ways to do it, listening carefully and answering every question or comment. If not directly, SKB returned later with the answer to the person or organisation who had formulated a question or a comment. Openness, transparency and the process of building trust and confidence between SKB, the municipalities and other local stakeholders over time has contributed to the stability of the process in such a way that political changes, the Fukushima Daiichi accident or other issues have had a minor influence or none at all.

During the consultations and the licensing process, for example site proposals, designs and layouts, environment protection and impact mitigation measures have been identified, substituted, adjusted and added due to stakeholder dialogue and comments. Procedures have been changed or further developed and time schedules adjusted or prolonged. Subjects or topics of certain interest have been specifically and repeatedly focused and explained like for example long-term safety, alternatives (sites and methods), transports and traffic, noise, natural and cultural values and endangered species.

Challenges

Openness and transparency are very important but this can never mean that for instance working material, preliminary results or viewpoints or all kinds of internal or bilateral meetings, etc., from implementer or regulator should be open for others.

At local consultation meetings disagreements or conflicts sometimes appeared. The use of independent moderators for such meetings came as a result partly of this reason and turned out to be very helpful.

Keeping focus and avoiding loss of understanding and memory about why certain decisions have been taken and how important the stakeholders are during the process is a challenge in such a long process. Particularly challenging are shifts of generations, long unexpected delays or vacuums, as they result in the following steps of the process not being initiated.

SWITZERLAND

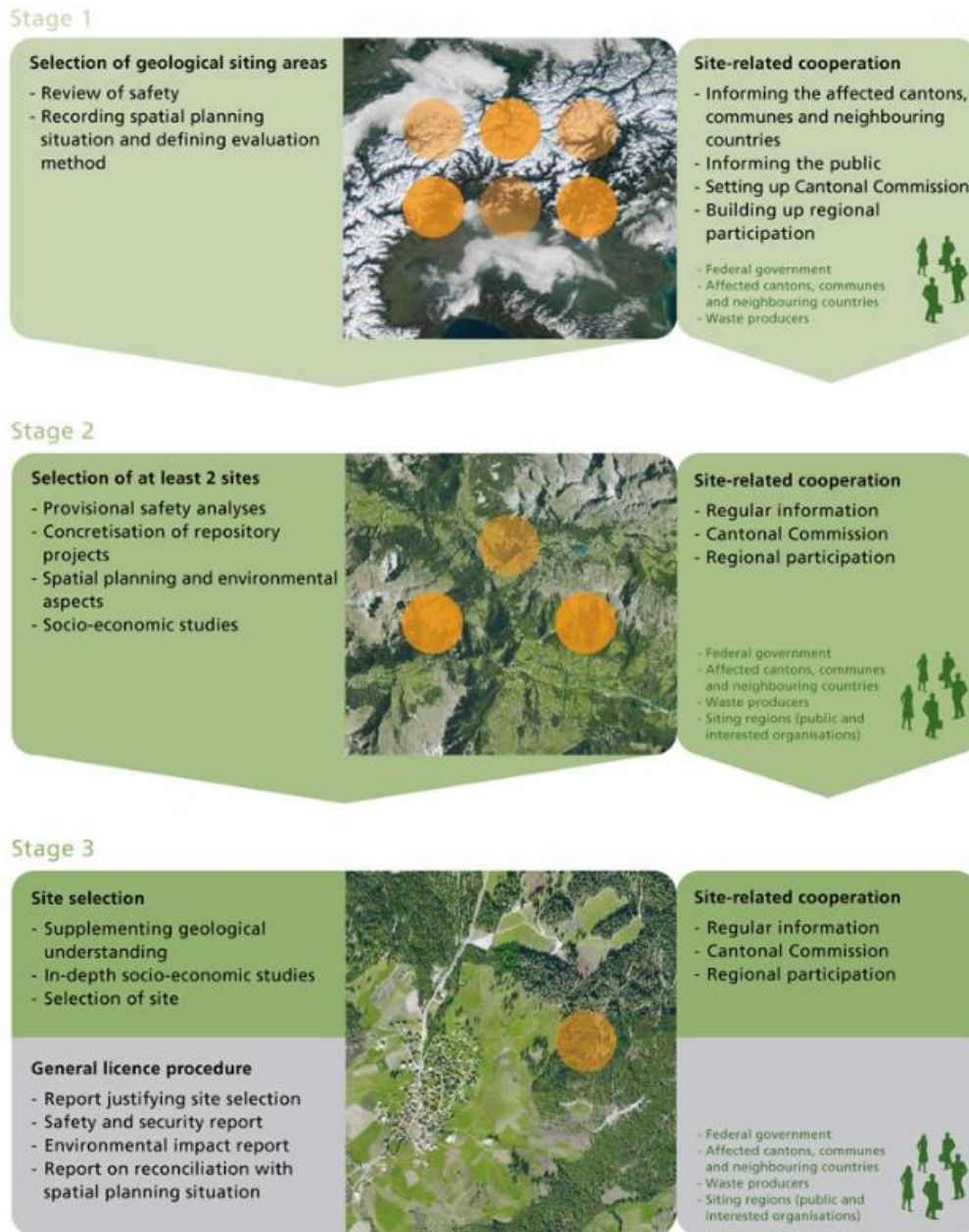
Introduction

In Switzerland, the provisions of the Nuclear Energy Act and the Nuclear Energy Ordinance, both of which entered into force on 1 February 2005, govern the management (handling and storage) of radioactive waste. The Act stipulates the main requirements, including the conditions under which radioactive waste has to be disposed of so that the long-term safety of human beings and the environment is assured. It also requires that radioactive waste produced in Switzerland must be disposed of in Switzerland. The user-pays principle applies to the disposal of radioactive waste. The operators of the nuclear power plants (NPPs) are responsible for the disposal of spent fuel and radioactive waste arising from the operation and later decommissioning and dismantling of NPP. The federal government is responsible for managing waste that arises from medicine, industry and research. For this purpose, the Swiss waste producers established the National Cooperative for the Disposal of Radioactive Waste (Nagra) in 1972. ON behalf of the waste producers, Nagra is responsible, on behalf of the waste producers, for the preparation of siting proposals and repository licence applications. Nagra is also required to prepare a waste management programme. The latest Waste Management Programme from 2016¹⁷ describes Nagra's waste disposal concept and provides a framework for the long-term planning of the disposal facilities.

To implement the site selection procedure for deep geological repositories for L/ILW and HLW, the federal government is using a spatial planning instrument, a so-called Sectoral Plan. The Conceptual Part of the Sectoral Plan for Deep Geological Repositories (Conceptual Part) was approved by the federal government in April 2008. This ensures that sites for geological repositories are evaluated and identified as part of a fair, transparent and participatory process. Of paramount importance in the disposal of radioactive waste is the long-term protection of man and the environment. The Conceptual Part specifies a three-stage site selection procedure (Figure 1) and it defines the safety-related criteria, with land use and socio-economic aspects playing a secondary role. It also defines milestones, the roles of all stakeholders and the collaboration between the Federal Council and the cantons, neighbouring countries, etc. Each stage follows the same procedure: Nagra proposes, the authorities review the proposal, followed by a three-month public consultation and at the end, the federal government decides. The Swiss Federal Office of Energy (SFOE) is in charge of the site selection procedure as well as regional participation, which is an important part of the site selection procedure in stage 2 and 3, as explained below.

17. Nagra is required to update the Waste Management Programme every five years. Each time, it is reviewed by the federal authorities and approved by the federal government.

Figure 1.2. Selection of sites in 3 stages and site related co-operation



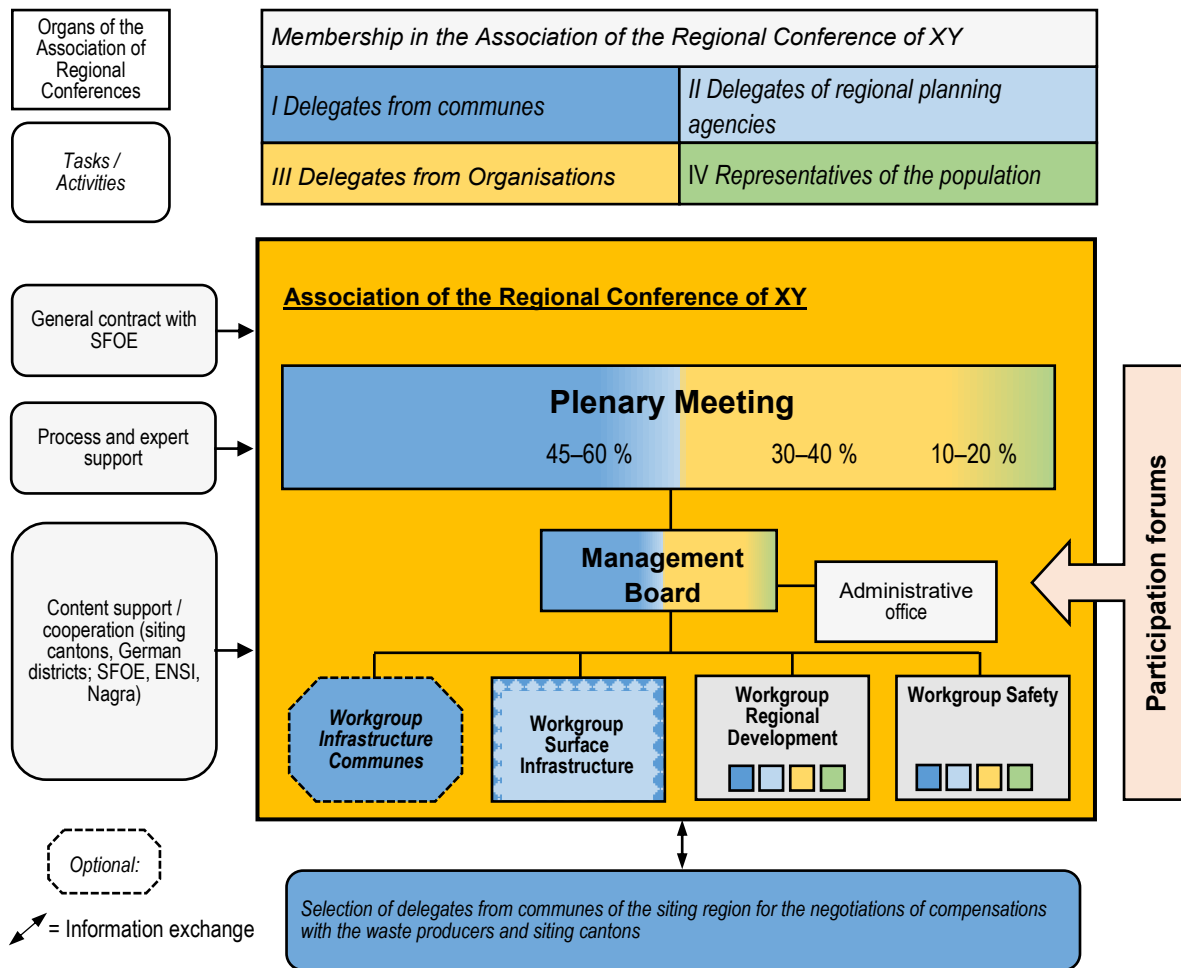
Source: SFOE (2008), *Sectoral Plan for Deep Geological Repositories: Conceptual Part*.

In the first stage, Nagra submitted proposals for six suitable geological siting areas for L/ILW and three for HLW repositories to the SFOE on 17 October 2008. ENSI reviewed Nagra's documents and confirmed all six geological siting areas proposed. The SFOE conducted a public consultation in 2010 and submitted a report to the federal government, who approved all potential siting regions.

The second stage focused on reducing the number of siting regions to at least two per waste category for L/ILW and HLW and the approximate designation of locations for the facilities needed on the surface (surface facilities). In November 2018, stage 2 ended with the Federal Council's decision to further explore the three siting regions Jura Ost, Nördlich Lägern and Zürich Nordost in stage 3.

Intensive stakeholder involvement took place in stage 2 and will continue in stage 3 through so-called "Regional Conferences" (Figure 2). Regional conferences were established in each siting region in 2011. In the ongoing stage 3, they constitute up to 130 delegates from local authorities, political parties, local organisations and the public, including delegates from southern Germany.¹⁸ Each regional conference has a management group and an administrative office, as well as workgroups (WG): WG Surface Infrastructure, WG Regional Development, WG Safety and the optional WG Infrastructure Communes. Regional conferences run their own websites, where they publish all relevant documents and statements.

18. All three siting regions, which are further explored in the on-going stage 3, are near the Swiss-German borders.

Figure 1.3: Organisation of regional conferences in stage 3

Source: SFOE (2019), “Fact sheet regional conferences”.

The aim of regional participation is to take regional interests and concerns into account at all stages.

Regional conferences (see Table 11) have specific tasks each year, which are based on the milestones of the procedure. In annual contracts between each regional conference and the SFOE, the tasks are defined. Members of the regional conferences are compensated for their engagement in the regional conferences.

In stage 2, the regional conferences discussed the placement of the surface facilities and published statements with their questions, recommendations and demands. At the end of this process, Nagra defined one or two sites for the placement of surface facilities in each siting region, based on the statements of the regional conferences. Additionally, all regional conferences published a statement regarding the implementer’s proposal for stage 2. With the approval of the Federal Council in November 2018, the areas of the surface facilities were incorporated into the sectoral plan as an interim result.

In stage 3, the three remaining sites are investigated in more detail by Nagra. The three remaining sites will be compared from a safety perspective. The facilities on the surface

will be designated in collaboration with the regional conferences, the cantons and Germany. Additionally, socio-economic aspects will be examined in depth.

During the period 2009 to 2017, the overall cost of the dialogue process organised through the regional conferences was approximately 18.7 million Swiss Francs, excluding the cost of personnel from the SFOE and other organisations such as ENSI or Nagra.

Table 11. Switzerland: Number of meetings of regional conferences

Year	Number of meetings	Number of regional conferences	Observations
2012	175	6	
2013	161	6	
2014	113	6	
2015	127	5	The regional conference «Südranden» suspended its work after Nagra's «2x2-Proposal»
2016	128	5	
2017	125	5	Regional conferences "Wellenberg" and "Jura-Südfuss" held their last activities in 2017
2018	91	3	Jura Ost, Nördlich Lägern and Zürich Nordost are further investigated in the ongoing stage 3

Involvement of authorities and organisations¹⁹

National level

Several Federal Offices are involved in the sectoral plan procedure:

- SFOE is the lead federal office in the sector plan and general licence procedure;
- Swiss Federal Nuclear Safety Inspectorate ENSI is the safety regulator and reviews and assesses the proposals for sites in terms of safety aspects;
- Federal Office for the Environment (FOEN) reviews and assesses environmental aspects and supports the SFOE;
- Federal Office for Spatial Planning (ARE) reviews and assesses spatial planning aspects and supports the SFOE;
- Swisstopo supports ENSI on geological issues.

There are also three commissions at the national level:

- Commission for Radioactive Waste Disposal which advises ENSI on geological issues;
- Waste Management Advisory Council advises DETEC on implementation of the site selection process for DGR;

19. For detailed descriptions of the roles of each stakeholder, see Conceptual Part of the Sectoral Plan (Appendix V).

- The Nuclear Safety Commission advises ENSI, the Federal Council and DETEC on fundamental safety issues and prepares opinions on the findings of ENSI in the three stages.

Various committees and workgroups exist to ensure co-ordination on and between all levels (national, cantonal, regional).

Regional authorities, organisations and neighbouring countries

Affected cantons and communes do not have a right to veto, but the Sectoral Plan ensures collaboration with the concerned cantons, communes and neighbouring countries. They are key stakeholders and have been engaged early on.

Cantons are not members of the regional conference, but they generally participate at relevant meetings, such as the plenary meetings of the regional conferences. The regional conferences and cantons collaborate with the SFOE and the implementer Nagra on specific issues such as the placement of the surface infrastructure.

A Cantonal Commission ensures co-ordination between the affected cantons as well as with the federal government. The Commission can make recommendations to the federal government. A Cantonal Expert Group supports the Cantonal Commission.

Due to the proximity of the three siting regions to Germany, Germany can delegate a specific amount of members to the regional conferences. Additionally, Germany participates in various committees and workgroups.

Involvement of youth, women and people with a migrant background

The SFOE has long recognised that women, youth and people with a migrant background are underrepresented in regional conferences. During the set-up stage of regional participation, efforts were undertaken to nominate young people, unfortunately, without much success.

To analyse the situation and to receive specific recommendations for stage 3, the SFOE commissioned a study "Participation of women, young people and people with a migrant background as exemplified in the disposal of radioactive waste project".²⁰ This sub-project was part of a larger research project undertaken by the University of Bern on the evaluation of the regional participation.

Youth

Looking at the composition of the regional conferences, it quickly becomes evident that young people are underrepresented. To raise interest from youth to a topic that seems far removed from their current life, requires an extra effort and new approaches. Specific events have to be tailored to them. The use of social media plays a role as well.

To gain further insights, the FSC National Workshop 2016 "Bridging Gaps: Developing Sustainable, Intergenerational Decision Making in RWM" (NEA, 2018) which took place in Switzerland, invited 10 young people to participate and discuss along with the other

20. "Participation of women, young people and people with a migrant background as exemplified in the disposal of radioactive waste project," University of Bern, English abstract available at <https://www.aramis.admin.ch/Default.aspx?DocumentID=45671&Load=true> (accessed December 2020)

national and international participants. The proceedings provide further insight regarding the results of the discussion.

Young people often are not interested to participate and commit for several years as is necessary for the participation in the regional conferences. Short-term methods to get them engaged might be more attractive. To have an additional tool, which does not require long-term involvement, the SFOE is developing a simulation game. After finalisation, this can then be used by the regional conferences or by schools. Additionally, Nagra provides materials to interested teachers.

Practical implementation of communication

In general, the SFOE informs the population of the siting regions with a newsletter on paper (once or twice yearly, depending on the milestones) and regular information events in the siting regions. For the interested public, the SFOE publishes an electronic newsletter, blogs, flyers and other publications. All relevant reports, concepts and studies are published. The SFOE informs all stakeholder involved prior to publication.

Much of the communication with the regional conferences take place by personal contacts, organising co-ordination meetings and sending regular e-mails to the presidents and administrative office. Additionally, the SFOE staff attends all regional conference meetings.²¹

In May 2019, twelve staff are working for the SFOE's Nuclear Waste Disposal section. The section has two services, one of them with four people responsible for regional participation and communication. Each of the three siting regions, is supported by one staff.

Nagra actively communicated regarding nuclear waste disposal many years prior to the initiation of the site selection procedure in 2008. Independent of the sectoral plan, a broad communication mandate aims at reaching all relevant stakeholders in siting regions as well as politicians. A variety of measures range from printed and online publications, newsletters sent to all households in the siting regions, guided tours to the underground rock laboratories and interim storage facility, information journeys to other European countries and active media work.

At Nagra, three full-time employees support the regional conferences and co-ordinate the contributions required from Nagra. In stage 2, Nagra attended about a third of the meetings of the regional conferences, depending on the issues or information that had to be provided by Nagra. Additional collaboration was and continues to be necessary, for example regarding the co-ordination of the drilling locations for further field investigation in the siting regions.

Added value approaches

So far, there is no far-reaching understanding or concept, what Added Value means. It is clear that regional conferences are the right addressee for this issue. The subject was first introduced to members of the workgroup surface facilities by the SFOE in 2017. It was the first time that the SFOE tried to stimulate a discussion about how a surface facility could provide a cultural added value to communes.

21. Plenary meetings (all members of the regional conference) take place 3-4 times a year, the Management group meets about 6 times a year and the Workgroups meet depending on the tasks at hand (approximately 2-10 times a year).

According to the Conceptual Part of the Sectoral Plan, there are two kinds of compensations: “Kompensationen” and “Abgeltungen”. “Abgeltungen” are a financial compensation paid to the siting region by the waste producers, in order to compensate the siting region for a service it provides to solve a national task. The other form of compensation, “Kompensationen”, is for demonstrably negative effects due to planning, building and operation of a DGR. There is no legal basis for either form of compensation, they are voluntary. Compensation is thus paid solely on the basis that deep geological repositories are to be built and operated in the region or regions. Compensation will be paid at the earliest when a legally binding general licence for deep geological repositories is issued. In stage 2 (2017), guidelines have been negotiated and agreed upon for when, with whom and how they are negotiated.

The decisive reason for the acceptance of a deep geological repository shall not be gained with financial contributions to a particular siting region, but the safety-oriented, transparent and comprehensible choice of the site.

Markers and memory preservation

The Swiss legislation includes provisions on the preservation of the relevant documentation in archives, as well as on the marking of the disposal site. Compiling documentation on the repository is an activity that covers the whole lifetime of the facility and must be initiated early in the process. In 2010, the SFOE commissioned a literature study on this topic (“Literaturstudie zum Stand der Markierung von geologischen Tiefenlagern”).

Some regional conference members participated at the conference organised by the NEA and Andra in September 2014 in Verdun, France. Therefore, the topic is familiar to some of the members. Additionally, questions regarding this topic are raised regularly at public events.

A symposium organised by the SFOE with the title “Marking, Indicating or Forgetting – Reflections on the Preservation of Knowledge of Nuclear Repositories over Generations” took place on 4 September 2019, where the final report of the NEA initiative NEA initiative “Preservation of Records, Knowledge and Memory (RK&M) across Generations” was presented and the Swiss situation regarding RK&M was discussed. Members of regional conferences were invited to participate

In addition, Nagra keeps an extensive archive of scientific and technical documentation covering forty years of research, as well as other documents relevant to decision making. Marking a deep geological repository, on the other hand, has strong local components and can only be addressed in detail after a site has been selected. According to the safety authority guidelines, the corresponding concept is expected as part of the construction licence application (in the 2040’s according to the current schedule).

Like many other activities related to radioactive waste disposal, the issue of developing an integrated concept for information preservation and transfer is best addressed in the framework of international co-operation. The SFOE and Nagra were members of the NEA initiative “Preservation of Records, Knowledge and Memory (RK&M) across Generations” (2011-2018) and actively contributed to the work of the initiative. Nagra was an active member and was involved in the preparation of the final report (NEA, 2019). Communication of the findings to stakeholders as well as continuation of international collaboration are currently under discussion.

Lessons learnt

From the beginning of the procedure to now, some of the lessons learnt are:

- **Co-ordination:** Co-ordinating a long-term process with cross-border collaboration, a multitude of stakeholders and different views and interests is complex, demanding and resource intensive.
- **Communication:** Communicating in a clear, consistent and understandable way and informing all involved stakeholders prior to relevant steps in the process or the publication of documents is crucial.
- **Acceptance of the general framework:** Continuously communicating what the potentials and limits of the collaboration are, what the roles of all stakeholders are, etc. is necessary for the general framework to be accepted.
- **Maintenance of motivation:** Keeping people involved, informed and interested in a process that lasts almost two decades is challenging.
- **Knowledge gap:** A knowledge gap exists within the regional conferences – between old and new members, between the more or less involved members, between the regional conference members and the rest of the non-involved public as well as between current and future generations.
- **Knowledge transfer and preservation:** Considering how knowledge and information can be preserved and transferred over many generations needs to be considered early on.
- **Inclusion of opponents and minority views:** Including opponents in order to consider their views and to document the positions of minorities is central.
- **Divide between opponents and proponents:** A large part of opponents and proponents only accept arguments for or against a deep geological repository, if they correspond with their own views.
- **Awareness of general public:** A study showed that a large part of the general population in the siting regions is aware that a deep geological repository may potentially be built in their region. Among the people surveyed, only about 40% were aware of the possibility to participate in the regional conference. Outside of the siting regions, the general public shows little interest in the process.
- **Resources of local stakeholders:** the SFOE, ENSI and Nagra have to consider that the resources of local stakeholders are limited and compensating them financially for their efforts to be involved in the process is not sufficient. Local stakeholders need enough time to fulfil their tasks and documentation has to be clear and concise. A thorough understanding of the process is helpful as well.
- **Regulatory function:** ENSI has implemented a process to collect stakeholder comments on new regulatory guidelines. It also conducts hearings or if necessary, specific technical meetings on new regulations. During the consultation process, ENSI publishes all draft guidelines on its website. The process works well and improves the quality of the guidelines, i.e. clarity of the text. The process raises the awareness of the regulatory work.

- **People:** Key to good collaboration are the people and their commitment to the process and the stakeholders involved. Experts interacting with the general public and local stakeholders thus need strong skills in communication, authenticity and the will to engage.

Monitoring and review

In 2018, the SFOE commissioned a study entitled “Evaluation of the regional participation procedure used during the search for sites for deep geological repositories for radioactive waste: comparison of the ongoing evaluation and the ex-post evaluation” (University of Bern, 2018) One of the reports by the University of Bern evaluated the six siting regions of stage 2, while the final one considered only the three siting regions that are further explored in stage 3. Thus, the regional participatory procedure in three proposed siting regions were compared based on specific criteria – fairness, transparency, early and iterative participation, institutional integration, etc. This study pointed out the need to improve the procedure for laypeople, enhance exchange of information among the regions, increase representativeness of the regional conference (e.g. youth), find more attractive activities to interest people to this field and adapt communication channels to specific target groups, like young people.

In stage 2 (2011-2014), socio-economic ecologic impact studies (impact study) were carried out with the same method applied in all six siting regions. The objective of the impact study was to identify assessable economic, ecological and social effects on a siting region as early and objectively as possible, so that the siting regions could counteract any negative developments and seize opportunities for positive developments. Cantons and regional conferences raised numerous supplementary questions, which remained unanswered with the impact study, but whose clarification was nevertheless of broad interest. SFOE has answered many of these supplementary questions in several reports. Questions that could not yet be answered or dealt with to the desired depth have been taken into account in the design of the in-depth investigations.

Systematic and regular monitoring is planned to document effects of the site selection procedure and later on of the deep geological repository. This will provide the siting regions with current data so that they can detect undesired developments and opportunities for positive developments at an early stage.

In September 2015, SFOE published a synthesis report with the most important results from the impact study and supplementary questions for each of the six siting regions. SFOE will update the synthesis reports of the remaining siting regions periodically and supplement them with the latest findings from the various studies and reports.

UNITED KINGDOM

Introduction

In the United Kingdom, Radioactive Waste Management Ltd (RWM Ltd) is a public body and a wholly-owned subsidiary of the Nuclear Decommissioning Authority (NDA). RWM Ltd is responsible for developing a deep geological disposal for the long-term management of higher activity radioactive waste, including the design, construction, operation and closure of any facilities.

The United Kingdom (UK) is more properly known as the United Kingdom of Great Britain and Northern Ireland. It is a political union of three countries: England, Scotland and Wales plus the province of Northern Ireland.

In the United Kingdom, radioactive waste management is a “devolved” matter. This means that different policies may apply in England, Scotland, Wales and Northern Ireland. The current siting process for a Geological Disposal Facility (GDF) in the United Kingdom applies only to England and Wales and is defined in separate but similar, policies for each country. Northern Ireland is not currently part of the siting process for a geological disposal facility. Scotland does not have a policy of deep geological disposal. Accordingly, this chapter only refers to the process for selecting a site in England and Wales in relation to deep geological disposal.

In 2001, the UK government and the “devolved administrations” (legislative bodies) in Scotland, Wales and Northern Ireland initiated the *Managing Radioactive Waste Safely (MRWS)* programme, with the aim of finding a practical long-term management solution for the United Kingdom’s higher activity radioactive waste.

Between 2003 and 2006 the Committee on Radioactive Waste Management (CoRWM), which was established to provide independent advice to the UK government and devolved administrations, on how to manage higher activity waste, considered various options. It recommended deep geological disposal, coupled with safe and secure interim storage, as the best approach for the long-term management of higher activity radioactive waste (CoWRM, 2006).

In 2007, the Scottish government withdrew from the deep geological disposal programme.

In 2008, the UK government published a *White Paper, Managing Radioactive Waste Safely (MRWS): A Framework for Implementing Geological Disposal*. This set out a staged approach to developing a GDF. The White Paper invited communities to express an interest in opening up a discussion, with government, without commitment, on the possibility of hosting a GDF at some point in the future. The White Paper described six stages in the process of site selection and assessment for a local council expressing an interest to participate in the process. These six stages were:

- Stage 1: “Expression of interest” – an open invitation for communities who wished to register interest in discussions about participation in the siting process, without commitment to host a facility;
- Stage 2: a high-level geological screening to ensure that unsuitable areas are discounted at an early stage;
- Stage 3: community consideration leading to a Decision to Participate in the siting process;
- Stage 4: would follow a positive Decision to Participate and involve the identification and assessment of potential candidate sites for geological disposal with an ongoing right of withdrawal for communities;
- Stage 5: would comprise more in-depth surface investigations on remaining potential sites;
- Stage 6: would involve underground operations including construction of the GDF.

Three local authorities in the county of Cumbria, in the north west of England (Allerdale Borough Council, Copeland Borough Council and Cumbria County Council) had reached Stage 3. A West Cumbria MRWS Partnership had been set up by the three councils. In August 2012, the partnership published the *Final Report of the West Cumbria Managing Radioactive Waste Safely Partnership* (West Cumbria MRWS, 2012), which described the three rounds of public and stakeholder engagement that the Partnership conducted and summarised their consideration of issues related to participation in the siting process. The Report was presented to the councils to inform their deliberations on whether to participate in Stage 4 of the siting process. On 30 January 2013, the councils in west Cumbria took their individual decisions on whether to participate in Stage 4. While both Allerdale and Copeland Borough Council’s Executive were in favour of further participation in the process, Cumbria County Council’s Cabinet voted against. This decision led to the end of this siting process, because it had been agreed with UK government ministers that all the local authorities would have to agree, in order for the process to continue to Stage 4.

On 31 January 2013 the Secretary of State for Energy and Climate Change announced that the UK government remained committed to deep geological disposal and to an approach based on working in partnership with willing communities to find a site for a GDF. He also announced a period of reflection to look back over the operation of the MRWS siting process since 2008 to draw lessons learnt and make improvements. In May 2013, the government announced a Call for Evidence to invite views on the site selection aspects, particularly from those who were engaged in the MRWS process. In September 2013, a public consultation was published with proposals on how the siting process might be updated and improved.

In July 2014, the UK government and the Northern Ireland Executive published a White Paper (policy framework) for a renewed process for siting a GDF. This set out further work that would have to be completed before RWM could begin formal discussions with communities.

In 2015 the Welsh government issued a policy statement: Welsh government Policy on the Management and Disposal of Higher Activity Radioactive Waste (Welsh Government, 2015a). This was followed in December 2015 by a further policy statement: Geological Disposal of Higher Activity Radioactive Waste: Community Engagement and Siting Processes (Welsh Government, 2015b). These policy statements confirmed the Welsh

government policy that geological disposal is the best long-term option for managing higher activity waste, and confirmed that the policy of geological disposal can only be delivered in Wales with a consent-based approach of working in partnership with potential host communities.

Between 2014 and 2018 work was undertaken on three commitments made by government. A GDF National Geological Screening exercise process was carried in England, Wales and Northern Ireland, including up to 12 nautical miles off the coast. This brought together existing high-level existing geological information relevant to safety of a GDF.

Land-use planning is also a devolved matter, so different legislation can apply in the different administrations across the United Kingdom. Work was undertaken to update planning legislation in England only, to include a GDF and associated deep boreholes as ‘Nationally Significant Infrastructure’ within the scope of the Planning Act 2008.

A process to develop how RWM would work with communities to implement a consent-based siting process was undertaken. This included establishing a Community Representation Working Group (CRWG) to help develop processes for how community representation, the test of public support, and community investment could operate.

Further public consultations took place in England and Wales during 2018 on how communities could be involved in decision making. In December 2018 the UK government published an updated framework for the long-term management of higher activity waste for England. It replaced the 2014 White Paper and is entitled “Implementing Geological disposal: working with communities” (Department for Business, Energy, and Industrial Strategy of the United Kingdom, 2018). In January 2019 the Welsh government published its working with communities policy for Wales: “Geological Disposal of Higher Activity Waste: Working with Communities” (Welsh Government, 2019). This complements the 2015 policies, which remain in place.

The policy in Northern Ireland has not been developed further, because of the absence of a functioning Northern Ireland Executive. Any future decisions on policy would be a matter for the Executive. Therefore, the current GDF siting process only applies to England and Wales.

Table 12. United Kingdom: Key dates in the site selection for a GDF

Key dates	
2001	The UK government and devolved administrations initiated the Managing Radioactive Waste Safely (MRWS) programme with the aim of finding a practical long-term management solution for the United Kingdom's high-level radioactive waste.
2003-2006	CoRWM considered a wide range of options on how to deal with the United Kingdom's higher activity radioactive waste.
July 2006	CoRWM recommended that deep geological disposal, coupled with safe and secure interim storage, was the best available approach for the long-term management of the United Kingdom's higher activity radioactive waste.
October 2006	The UK government and devolved administrations accepted CoRWM's recommendations.
2007	Scotland withdraws from further consultation on implementing deep geological disposal.
2008	The UK government and the devolved administrations for Wales and Northern Ireland published the White Paper: Managing Radioactive Waste Safely – A Framework for Implementing Geological Disposal and launched a siting process based on the approach it set out.
2011	Scottish government publishes Scotland's Higher Activity Radioactive Waste Policy.
2008-2013	A number of communities participated in the early stages of the MRWS GDF siting process.
February 2013	Potential local communities were no longer involved in the siting process and the process ended.
2014	A new White Paper, Implementing Geological Disposal, was published for England and Northern Ireland, based on lessons learnt, evidence gathering and consultation. It committed to three 'initial actions': collation of relevant national geological information, changes to the land-use planning system in England and mechanisms for community engagement in the siting process.
2015	Welsh government published two policies for the management and disposal of higher activity radioactive waste.
2016	The UK government carried out public dialogue events to explore the views of the public on issues relating to community involvement in the siting of a GDF. Scottish government published an Implementation Strategy for the management of its national higher activity waste programme. The strategy included an illustrative timeline for implementation of near-surface facilities in Scotland.
December 2018	The UK government published a new document, Implementing Geological Disposal – Working with Communities. This replaced the 2014 White Paper. It sets out the UK government's overarching policy framework for managing higher activity radioactive waste through implementing deep geological disposal in England only.
January 2019	The Welsh government published a new document, Geological Disposal of Higher Activity Waste: Working with Communities. Along with the 2015 policies, which remain in place, it set out the Welsh government's framework for working with any interested communities in Wales for managing higher activity radioactive waste through implementing deep geological disposal.

The current siting process applies to England and Wales only and is a community consent-based process governed by the principles of:

- safety, security and protection of people and the environment;
- partnership with communities; and
- flexibility to work at a pace that reflects the communities' needs and preferences and taking into consideration local social, economic, political and environmental interests and the diversity of the area.

The consent-based process means that a GDF may only be constructed if a suitable site can be identified and the potential host community consents to hosting a facility. In addition, the community has the right to withdraw from the siting process at any time, for any reason, up to the point at which a Test of Public Support is undertaken. RWM aim to establish and maintain a close partnership with each community discussing the potential for hosting a GDF. There are two main liaison groups: the Working Group, which is expected to have a small number of members and exist for a relatively short period and the Community Partnership, which will be larger in size and be the key group over the long period expected for the siting process. In addition, the Community Partnership is also expected to establish a Community Stakeholder Forum, which will have an open membership for anyone.

A Working Group comprises the interested party (i.e. the person or organisation who first put forward an area for RWM to consider for a GDF), RWM Ltd, an independent facilitator, and independent chair and any 'relevant principal local authorities' that wish to join. The Working Group is formed to gather information about the community and provide information to the community about geological disposal before a Community Partnership is formed. The role of the Working Group is:

- To propose a Search Area. This is the area in which RWM Ltd can look for a suitable site.
- To start work to understand the local area and any issues or questions the community within it might have. This work may include:
 - gathering information about the different people and organisations in the area who will have an interest or who are likely to be affected;
 - gathering information to understand the existing geographic, social, economic, environmental, cultural and administrative structures of the Search Area;
 - understanding the community's issues, concerns and questions about geological disposal and the process for identifying potential locations for a GDF;
 - engaging with relevant principal local authorities within the Search Area (if they have not joined the Working Group);
 - identifying members of the community who may be interested in joining a Community Partnership.

Funding will be provided for independent support (e.g. a facilitator) to support the Working Group. The independent facilitator will be a member of the Working Group and will help to bring together different views so that discussions progress in a constructive and informative manner. RWM will provide guidance on the support that could be available to the Working Group. Funding will also be available to cover reasonable out-of-pocket expenses for members of the Working Group and Community Partnership (e.g. travel costs for attending meetings). The costs that a relevant principal local authority may incur, if they are members of the Working Group or Community Partnership, will also be met by RWM Ltd.

A Community Partnership between members of the community and RWM Ltd can only be formed and continue to operate if one or more relevant principal local authorities in the Search Area agree to participate.

The role of the Community Partnership is to:

- facilitate discussion with the community;

- identify relevant information that people in the Search Area and Potential Host Community want or need about the siting process;
- be the key vehicle for community dialogue with RWM Ltd;
- review and refine the boundaries of the Search Area as RWM Ltd’s investigations progress;
- identify priorities for Community Investment Funding;
- make recommendations to the relevant principal local authorities on the Community Partnership on whether to invoke the Right of Withdrawal and if and when to launch a Test of Public Support;
- agree a programme of activities to develop the community’s understanding of the siting process and the potential implications of hosting a GDF;
- develop a community vision and consider the part a GDF may play in that vision;
- monitor public opinion in relation to siting a GDF within the Search Area and the Potential Host Community.

The Community Partnership will need to engage with the community over a long period of time and this could be done by holding open public meetings of a Community Stakeholder Forum. This Forum will be open to people from the Search Area and neighbouring local authority areas can be invited. Neighbouring areas are expected to be informed of progress but have no formal influence. The Stakeholder Forum could meet at regular intervals, and could also exist online, giving the Community Partnership the opportunity to report on activities it has undertaken and the outcome of those activities. It would give members of the community the opportunity to raise questions and issues that they want addressed, which could then be fed into the programme of activities. It will be important that all interactions between the Community Partnership and people in the community are made public.

As of July 2019, no partnerships have been formed, but the Community Partnership is meant to be reflective of the community in the Search Area. Mechanisms for engagement of specific groups will be developed to reflect local needs.

Authorities and organisations involved in the long-term management of high-level radioactive waste

National level

The Department for Business, Energy and Industrial Strategy (BEIS) is the UK government department with policy responsibility for radioactive waste management in England. The Welsh government has the responsibility in Wales; the Scottish government in Scotland and the Northern Ireland Executive in Northern Ireland.

Governments have no defined role in the Community Partnerships. The Secretary of State for BEIS will take decisions on which communities will go through to site characterisation and on the final site that is selected for a GDF.

The Secretary of State for BEIS will take planning decisions for a GDF in England and the Welsh government will take planning decisions for a GDF in Wales.

The NDA is a non-departmental public body established by the Energy Act 2004 responsible for implementing government policy on the long-term management of radioactive waste and delivering decommissioning and clean-up of certain designated publicly-owned civil nuclear legacy sites. RWM, as a subsidiary of the NDA, is the delivery body for a GDF and responsible for complying with all the regulatory requirements on geological disposal.

The relevant independent environmental agencies are the Environment Agency (EA) for England and Natural Resources Wales (NRW) for Wales. The environment agencies regulate the disposal of radioactive waste from nuclear licensed sites and other premises that use radioactive substances and also enforce other environmental protection legislation which may be relevant to this development.

The Office for Nuclear Regulation (ONR) regulates the safety and security of civil nuclear installations and transport of nuclear materials in Great Britain (England, Wales and Scotland). The regulators are working together to ensure that any future applications for the development of a GDF will take full account of regulatory requirements. The relevant environment agency and the ONR will jointly regulate a GDF because both environmental permits and a nuclear site licence will be required. The regulators also have a statutory role in land-use planning decisions. The regulators do not have a formal role in the decision-making process to select potential sites for development of a GDF. However, the regulators will be available to provide information and advice to the community partnership and other relevant stakeholders.

Regional authorities

The United Kingdom does not have “regional governments”. For the purposes of the siting process in England and Wales, the key local authorities are the so-called “relevant principal local authorities” which include all the district, county or unitary authorities that represent people in all or part of the area under consideration.

In England, relevant principal local authorities will be responsible for some key decisions about the community’s involvement in the process. At least one relevant principal local authority must be on the Community Partnership.

In Wales, a local authority with community council areas in the Search Area or Potential Host Community must be on the Community Partnership in order for this land to be considered in the siting process.

Relevant principal local authorities will take two key types of decisions. They will have the final say on:

- whether to seek to withdraw the community from the siting process (through invoking the Right of Withdrawal);
- when to seek the community’s views on whether it wishes to host a GDF (i.e. proceed to a Test of Public Support).

Neighbouring local authority areas do not have to be part of the Community Partnership for it to carry out its work. They are expected to be kept informed of progress, but have no formal influence. If they are invited to be members of the Community Partnership, then

they have no formal powers in respect of a community withdrawing from the siting process or in the final Test of Public Support.

Other organisations

The Committee on Radioactive Waste Management (CoRWM) provides independent scrutiny and advice to the UK government and the devolved administrations on the management of radioactive waste. CoRWM will also be available to provide advice to community partnerships on request but will have no formal role in selecting a community to host a GDF.

Additionally, if there are “contested and unresolved technical or scientific issues” then the Community Partnership will have access to Learned Societies, whose members could provide advice on a particular issue.

Decision making within the Community partnership

It is vital that communities have confidence in the information provided to them about the siting process, including on all relevant scientific and technical issues. RWM Ltd will be the first port of call for information on geological disposal and the siting process. In addition to being able to call on CoRWM and the environmental and nuclear safety regulators (EA/NRW and ONR respectively), the Community Partnership may also commission reports and research on specific topics from independent experts, as part of an agreed programme of activities.

Apart from decisions on the Right of Withdrawal and the Test of Public Support, the Community Partnership should take all decisions. It will be for the Community Partnership to decide how it takes these decisions, for instance whether unanimity is required, or a simple majority, and what constitutes a quorum, or whether a decision is delegated to a subgroup. The decision-making processes should be set out in a Community Partnership Agreement.

Although the relevant principal local authorities will have the final say in the decision on: i) whether to withdraw from the siting process and ii) whether to proceed to a Test of Public Support, they should involve other members of the Community Partnership in the discussions. Equally, the other members of the Community Partnership should be able to make recommendations to the relevant principal local authorities on the Community Partnership on invoking the Right of Withdrawal and the timing of the Test of Public Support.

All relevant principal local authorities on the Community Partnership must agree before the Right of Withdrawal can be invoked or the Test of Public Support can take place in that area. It would not be appropriate for principal local authorities to take these decisions without being members of the Community Partnership and fully engaged in the process so they must be a member of the Community Partnership in order to have a say. If a local authority leaves the Community Partnership then the land in its area will no longer be considered in the siting process unless the people in that area are represented by another relevant principal local authority on the Community Partnership.

Right of withdrawal

The relevant principal local authorities can either take the decision to withdraw the community from the process themselves or do so after seeking the community’s views. If

the relevant principal local authorities agree that the decision to withdraw the community from the process should involve the community directly, then the method for seeking the community's view on possible withdrawal from the process will be considered by the Community Partnership as a whole. The Community Partnership's view on what mechanism could be used for this should be set out in a Community Partnership Agreement, which can be updated as views on this develop over time.

RWM Ltd can unilaterally halt the siting process at any time in a particular area. For example, if it determines that the siting process is unlikely to be successful in that area; for technical reasons or in order to prioritise the available funding in a different area.

Test of public support

The relevant principal local authorities must seek a final view from the potential host community, on whether it is willing to host a GDF, through a Test of Public Support, before RWM Ltd seeks the necessary regulatory approvals and planning permissions for the construction and operation of a GDF. The Test of Public Support can only take place in a community if all the relevant principal local authorities on the Community Partnership for that geographical area agree to it being held.

If the relevant principal local authorities agree that it is an appropriate time to seek the community's view on whether or not it wishes to host a GDF then the method for taking that Test of Public Support will be decided by the Community Partnership as a whole. The Community Partnership's view on what mechanisms could be used for this should be set out in a Community Partnership Agreement, which can be updated as views on this develop over time. In the event that the relevant principal local authorities do not agree on whether to invoke the Right of Withdrawal or move to the Test of Public Support, RWM Ltd could fund independent mediation to ensure concerns are heard, understood and attempts are made to address them.

Involvement of youth

As of July 2019, no communities are engaged in the siting process and the work with youth groups has been limited. In 2018 RWM Ltd attended two national science fairs (Big Bang and New Scientist Live) alongside other organisations working in the nuclear life cycle. A set of modules have been created to support staff that volunteer to support teaching of Science, Technology, Engineering and Mathematics (STEM) in two primary schools near the main office. In 2019, RWM Ltd introduced a Volunteering Policy that permits staff to have two days per year for volunteering activities of their own choosing; to date these have been used for volunteering in schools.

RWM Ltd has a mature programme of supporting postgraduate (PhD) students. Over 100 students have been supported over the past 10 years in topics as diverse as 'engineered barrier evolution' and 'climate change in the biosphere'. Some of these have involved international collaboration, for example the European Commission funded project CEBAMA, which aims to understand the interface processes between host geology and cementitious materials.

RWM Ltd is also part of a research project (TRANCEND) which aims to train the next generation of UK researchers with relevant skills and experiences that can be applied in the decommissioning sector and provide a route for public understanding of research and development needs, opportunities and solutions.

Practical implementation of communication

Communication with RWM Ltd and other members of the Community Partnerships and between the Community Partnership and the community is expected to be via meetings as well as via digital and print media. Additionally, RWM Ltd expects to have a liaison manager for each Community Partnership. Funding and training will be available to operate the partnership as well as funding, described below.

Added value approaches

Different types of funding are available throughout the siting process, as follows:

Engagement funding

RWM Ltd will provide funding throughout the siting process to support the Working Group and Community Partnership's engagement activities, information gathering, and support services that may be required. It will be used to cover the administrative costs associated with the operation of the Working Group and Community Partnership and management of Community Investment Funding. It will also provide independent facilitators and the Chairs of committees to work with the Working Group, Community Partnership and Stakeholder Forum to provide constructive guidance and challenge to make sure all voices are heard and to help reconcile different views where possible.

The types of engagement and information gathering activities by the Community Partnership provided through engagement funding could include:

- activities through which communities learn about geological disposal;
- commissioning of reports on specific issues;
- accessing independent scientific and technical advice;
- communications activity, such as a stakeholder forum, websites, information leaflets, social media and outreach and information events.

Engagement Funding will also be available to cover reasonable out-of-pocket expenses for members of the Working Group and Community Partnership (e.g. travel costs for attending meetings). The costs that a relevant principal local authority may incur, if they are members of the Working Group or Community Partnership, will also be met by RWM.

Community investment funding

The Community Investment Funding recognises the long-term nature of the GDF project and that the benefits associated with jobs, infrastructure and major investment may not materialise until the project has been operational for several years.

The UK government has committed to make available Community Investment Funding, via RWM, once a Community Partnership is formed. This funding will initially be up to GBP 1million per year per community for projects, schemes and initiatives in the Search Area. The Funding will rise to up to GBP 2.5 million per year per community in areas where deep borehole investigations take place to assess the geological suitability of a site.

Community Investment Funding can be used to pay for projects, schemes or initiatives that:

- improve community well-being, for example improvements to community facilities, enhancement of the quality of life or health and well-being of the community;
- enhance the natural and built environment including cultural and natural heritage, especially where economic benefits, for example through tourism, can be demonstrated; or
- provide economic development opportunities, for example employment opportunities, job creation, skills development, education or training, promotion of local enterprise, long-term economic development or economic diversification.

Mitigation funding

This funding may be provided to mitigate impacts as a result of development, in respect of planning issues. Such payments will be assessed on a case-by-case basis and may apply during the site investigation work as well as during the construction of a GDF.

Significant additional investment

For the community chosen to host a GDF the significant additional investment will replace the Community Investment Funding. This additional investment will enhance the significant economic benefits that are inherent in hosting a GDF and recognise the long-term commitment from the community towards the national interest. Investment could include, for example, improved local education and skills capacity, improved transport infrastructure or improved recreational facilities. RWM will work as part of the Community Partnership to help integrate a GDF with its Community Vision, and what this might mean for the Significant Additional Investment.

Markers and memory preservation

RWM Ltd took part in the international project of the OECD/NEA on Records, Knowledge and Memory Preservation. However, this topic has not yet been discussed in specific communities as the siting process has only been launched recently.

Lessons learnt over time

The siting process that began in late 2018 in England and early 2019 in Wales differs from the siting process that operated ended in 2013 in a number of ways, including:

- The siting process will take place under revised government policy frameworks, called Working with Communities in England and Wales only. Separate policies apply to England and Wales.
- RWM Ltd needs to identify both a suitable site and a willing community.
- It is a consent-based process, so RWM Ltd cannot select a site for development without a willing community.
- Any organisations or individuals can come forward to suggest an area for consideration in initial discussions.

- A GDF could be constructed under the sea up to 12 nautical miles (approximately 20 km) off the coast of England or Wales.
- There are no ‘stages’ that have to be voted on, in order to progress through the siting process.
- RWM Ltd will lead the siting process and be an integral part of the community partnerships.
- If there is more than one relevant principal local authority on a Community Partnership they need to be unanimous in decisions to withdraw a community from the siting process or to hold a Test of Public support.
- A “community” is defined by electoral ward boundaries (in England) or community council area boundaries (in Wales) within a local authority, rather than the full local authority boundary. This is called the Search Area.
- Community Investment Funding of up to GBP 1million (rising to GBP 2.5 million) per year available for projects in a Search Area.
- Significant Additional Funding will be available once a site is selected. This will be comparable with other international projects of this type.
- A community has the Right of Withdrawal from the siting process at any time, for any reason, up to the point when it takes a Test of Public Support.
- RWM can close the siting process in an area and it would share the reasons for doing so.
- A Test of Public Support must be taken by the Potential Host Community before RWM Ltd can apply for planning, environmental and nuclear permits for a GDF.
- The planning framework for a GDF in England has changed. A GDF is now designated a Nationally Significant Infrastructure Project. This means that local or county local authorities do not have the decision-making role to approve a planning application to build a GDF. This decision lies with the government minister known as the Secretary of State. In Wales, the equivalent decisions on the land-use planning process, i.e. for a GDF to be considered as a Development of National Significance, have not yet been taken.

UNITED STATES

Introduction

The Waste Isolation Pilot Plant (WIPP) is the only geological disposal facility in the United States for transuranic (TRU) waste. It was developed by the Department of Energy (DOE) and is located in Carlsbad, New Mexico. WIPP has been disposing legacy TRU waste operated since 1999. WIPP is operated by the Nuclear Waste Partnership, LLC, for the US DOE. In November 2010, the New Mexico Environment Department renewed the WIPP Hazardous Facility Permit with the US DOE and Nuclear Waste Partnership, LLC, for a 10-year period.

Involvement of authorities and organisations in WIPP

National level

The EPA has an oversight role at the WIPP to ensure that it protects human health and the environment, as defined by the Land Withdrawal Act (LWA), mandated by the US Congress. If there were any changes in this role, Congress would need to amend the LWA. Any bill submitted for revisions in Congress would be done with input from local, regional and national lawmakers/agencies. Local stakeholders and public interest groups/individuals (in New Mexico) are always encouraged to submit comments and invited to EPA-sponsored public meetings, whether they are informal discussions or formal hearings pertaining to an official rulemaking.

The US Nuclear Regulatory Commission affords the public opportunities to comment on proposed rules and policies, licensing actions, and draft technical documents. The regulations also call for a public, formal adjudicatory hearing. However, there are currently no active opportunities associated with a deep geologic repository for high-level waste and spent nuclear fuel.

While not directly related to radioactive waste management, DOE Office of Nuclear Energy staff meets annually and co-ordinates with programme stakeholders on transportation planning associated with shipments to a storage or disposal facility.

Regional authorities

The State of New Mexico is authorised by the EPA to carry out the State's base Resource Conservation and Recovery Act (RCRA) and mixed waste programmes in lieu of the equivalent Federal programmes. New Mexico's Environment Department reviews permit applications for treatment, storage and disposal facilities for hazardous waste, under Subtitle C of RCRA. The New Mexico Environment Department holds public hearings and/or meetings related to any permit modifications that are proposed for the WIPP facility.

The WIPP project has a good number of regularly involved stakeholders and public interest groups that cover most of the state of New Mexico, from Carlsbad (in the southwestern part of the state) to Albuquerque and Santa Fe (in central and northern areas).

Other organisations

The Carlsbad Environmental Monitoring and Research Centre (CEMRC) is a division of the College of Engineering at New Mexico State University. Its primary mission is the independent environmental monitoring in the vicinity of the WIPP site and to make the results easily accessible to all interested parties. CEMRC started monitoring in 1997, two years before the WIPP facility accepted its first shipment of radioactive waste and continues during the operation. Monitoring is carried out independent of direct oversight of DOE and data from monitoring is not provided to any regulatory body to meet the compliance demonstration requirements applicable to the WIPP.

Involvement of tribal groups

Very early on in the EPA's WIPP oversight role, the Agency actively sought out tribal groups and the Latino community in the State of New Mexico in its outreach activities. This included translating publications/fact sheets into Spanish and tribal languages and placing targeted ads in local newspapers/radio outlets. However, the feedback for this targeted outreach was overwhelmingly negative, as these communities preferred to be reached with the regular outreach materials in English. The reasoning given was that they did not want to be seen as a "special needs" group and wanted to be part of the stakeholder community as a whole.

Involvement of youth

Recently, with the introduction of webinars in outreach activities, the EPA has been able to host sessions at local universities in New Mexico (e.g. University of New Mexico, New Mexico State University – Carlsbad), which allows greater access to younger communities. The EPA has a range of educational tools available to teachers and educators on radiation and radioactive waste, but it is up to each institution to use/cultivate/develop knowledge and interest in RWM as a whole.

The DOE Office of Nuclear Energy sponsors the Millennial Nuclear Caucuses, a series of events that bring together the next generation of leaders in nuclear innovation. While not focused specifically on nuclear waste management, these events feature discussions on the path forward for the nuclear industry and the role innovative technology will play. Participants at the events represent the full spectrum of the nuclear field, including young leaders supporting the existing fleet, those designing small modular and advanced reactors, and those advocating for a thriving nuclear future.

Practical implementation of communication

The Community Relations Plan is a requirement of the Hazardous Waste Facility Permit (Permit) for the US DOE WIPP facility. Its purpose is to provide permit-related information to communities and interested members of the public and to alert the public to opportunities for participation in the Permit process. Permit-related activities include waste disposal operations, facility closure, post-closure and Permit-driven corrective actions.

The EPA develops and tailors outreach and communication materials depending on the action surrounding the WIPP – whether it is a public meeting, a rulemaking, a planned change to the facility, etc. The Agency works in tandem with the DOE to ensure that the messages are consistent across both agencies. EPA staff meets regularly with DOE, WIPP

and contractor staff in New Mexico. The EPA also meets on an ad hoc basis with stakeholders and public interest groups.

Communication staff

There is one person on the EPA's WIPP team who is in charge of communicating with stakeholders on a day-to-day basis. If there are WIPP-related issues that rise to a higher/national level (e.g. the February 2014 radiological incident in the WIPP underground), members of the Agency's Center for Radiation Information and Outreach (CRIO) in the Office of Indoor Air and Radiation (ORIA), along with the EPA's Office of Public Affairs/press office work together to craft messages and materials. The DOE has a communication team and press office in place to deal with all public stakeholder issues as well.

Funding

The EPA's WIPP oversight is funded by the DOE, as mandated by the WIPP Land Withdrawal Act. There is an interagency agreement in place since the WIPP project began. The Department sends funds to the EPA usually on a quarterly basis throughout the financial year.

Communication with intergovernmental groups

The DOE's Office of Environmental Management meets regularly with Intergovernmental Groups both individually and in an annual Combined Intergovernmental Working Group meeting which brings all the groups together along with DOE leadership to discuss current challenges and opportunities around the DOE complex. The Intergovernmental Groups include the National Governor's Association, Energy Communities Alliance, National Association of Attorneys General, Environmental Council of the States, National Conference of State Legislatures and State and Tribal Working Groups.

Added Value Approaches

Since 1995 the DOE Office of Environmental Management has provided financial support to national intergovernmental groups by means of grants and co-operative agreements to facilitate communication and discussion on different aspects of geological disposal, including transportation. These relationships further the understanding of DOE Office of Environmental Management activities and policies by the regulators and local officials. The relationships also help the department to better understand and respond to the concern Intergovernmental Groups have about DOE programmes and policies.

Markers and memory preservation

As far as the WIPP facility goes, there are requirements in place for markers (e.g. passive institutional controls) around the geographic area to notify/warn the general public and future populations, well after the site is projected to close (currently somewhere in the 2035 area). All records and documentation will be housed in the federal dockets applicable to the WIPP.

Lessons learnt over time

Achievements

The biggest achievements of the project have been the fostering of the co-operation between the federal and state agencies in such a long-term project as well as breaking down the stigma and stereotypes of federal government employees with the general public. Also, the knowledge of local stakeholders about the EPA's oversight activities has very much increased. Although local stakeholders might not always agree with EPA or DOE actions, they have expressed appreciation for these organisations to come out to New Mexico and/or take the time to meet with them to discuss issues.

Challenges ahead

One of the main challenges is to continue to improve transparency and communication, both between federal/state partners and with the general public, and look for ways to incorporate ever-improving technology (e.g. social media, webinars, etc.) with the public to reach larger audiences in a more efficient manner. The EPA is always striving to provide as much information as possible and stress transparency in its actions.

Another challenge or lessons learnt over time has been that formal public hearings (in the way that they are laid out in the Administrative Procedures Act) are usually not conducive to effective co-operation and fostering relationships with stakeholders. The hearing process is very rigid and does not allow the federal agencies to respond directly at the hearings, which causes the whole issue of distrust and withholding information. That is why very early on during its WIPP oversight, the EPA tried to have as many informal meetings/interactions with stakeholders in order to have an actual back-and-forth with individuals to answer questions and address comments directly. The Agency continues to hold these informal, roundtable-format meetings as part of its regular stakeholder interactions.

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Annex I. Questionnaire sent to FSC members

Dear Sir/Madam,

The questions below focus on different aspects related to partnerships in the field of radioactive waste management. Depending on your national situation, these may apply to surface disposal, geological disposal or long-term centralised storage facilities. Following the concept of ‘local partnership’ included in the *FSC Annotated Glossary of Key Terms* (2013)²² this questionnaire refers to formal partnerships but also to informal arrangements between the radioactive waste management institution or government and the representatives of the local community which collaborate to develop an integrated RWM project. Thus, although the administrative formats for collaboration between the RWM institution and the local community may vary, the active role of the local community and the need for and legitimacy of community empowerment measures should be recognised.

This questionnaire is not intended for partnerships around nuclear power plants, decommissioning projects or interim storage facilities. In case there are different programmes in your country, please fill out the questionnaire as many times as programmes you are working on or indicate in the background information to which programmes you refer to.

In case you would like to share this questionnaire with other competent authorities (regulatory body, governmental authorities, etc.) in your country who also hold responsibilities in this field, please co-ordinate the answers and provide us with one feedback per country.

The survey consists of the following sections:

- involvement of authorities in the local partnership;
- involvement of other groups;
- practical implementation of communication between the RWM institution and the local partnership;
- added value approaches;
- markers and memory preservation; and
- lessons learnt from partnering over the last years.

Background information

Contact person (respondent) –name and position:
Name of the organisation that you represent:
Country:
Programme / facility considered to answer the questionnaire (please describe):

22. www.oecd-nea.org/rwm/docs/2013/6988-fsc-glossary.pdf

Topic: Involvement of authorities in the partnership

The aim of this section is to understand how different authorities (e.g. regulatory organisation, other official bodies like governmental departments, the environmental court, technical support organisations [TSOs], etc.) may be involved in the partnership. Although they are not members of the partnership, these authorities may be involved in the process at specific times, as and when required, depending on the specific stage in the process.

Supra-local / regional level

The aim of this section is to introduce a new topic which was not addressed in the 2010 report regarding the regional involvement in RWM policies. Thus, this section aims to explore the role of additional layers of decision making in some countries, like regional authorities in Federal or de-centralised States; but also neighbouring communities beyond the local level which do not necessarily coincide with an “official” territorial demarcation. Some of the issues to be addressed include the organisation of federal conferences or regional public hearings on radioactive waste disposal which have an influence on the final approval at local and national level or the negotiations that may be held at national level with candidate regional administrations.

N°	Question
A1	Is there any kind of regional participation foreseen as part of the RWM debate?
A2	Which is the role and tasks of the regional authority in the RWM debate/policy or in the local partnership? Where is this role defined?
A3	Are there any events / structures or forums at regional level to represent regional interests in the RWM debate? In what way do these events/structures have an influence?
A4	Is there co-ordination between the local and the regional level in the RWM programme? Are there any specific channels used for this co-ordination?
A5	And between the regional and the national level? Are there any specific channels used for this co-ordination?
A6	Are neighbouring municipalities part of the partnership and which is their level of influence?
A7	Any other comments or observations which may be of interest under this topic:

Other public authorities and professional organisations

Apart from regional authorities, there might be other public authorities (e.g. regulatory organisations, governmental departments, etc.) or professional organisations (technical support organisations – TSOs, trade unions, etc.) which may have a role in the partnership at some point in time.

N°	Question
A8	Are specific governmental departments involved in the partnership at specific stages of the process? Which ones, when and how are they involved?
A9	Is the nuclear regulatory organisation involved in the partnership? When and how?
A10	Are there any expert organisations, such as TSOs, involved in the partnership?
A11	Are there any other relevant official authorities (governmental organisations, advisory bodies, etc.) engaging in some way with the partnership? If so, which ones and how?
A12	Any other comments or observations under this topic:

Topic: *Involvement of specific groups*

This section introduces the topic of involving specific groups (such as social, ethnical minorities, young people, gender groups, religious organisations, etc.) in local partnerships. Please note that actions with the younger generations are specifically addressed in the sub-section below.

N°	Question
E1	Are there any specific initiatives for involving specific groups (e.g. minorities, gender groups, etc.) in the RWM debate and if so, which minority groups and which initiatives?
E2	If yes, do you evaluate the effectiveness of these initiatives?
E3	Any other comments or observations under this topic:

Involvement of youth

This sub-section is focused on the involvement of people in the age group between 16 and 25 years old.

N°	Question
E4	To what extent have there been special efforts to engage youth in the partnership around RW? Please, provide specific examples.
E5	In your view, what is needed to effectively engage youth around RWM? What would be the best mechanisms for engagement?
E6	Any other comments or observations under this topic:

Topic: Practical implementation of communication between the RWM institution and the local partnership

This section focuses on the practical aspects related to the communication of the radioactive waste management institution with the local partnership, such as the development and implementation of a communication plan, the resources (human, financial, etc.) needed by the institution to regularly communicate with the partnership members and address their concerns, the venue of the meetings, etc.

N°	Question
P1	How is communication undertaken between the RWM institution and the partnership? Is there a specific communication plan/strategy developed, is it based on the partnership's requests, on the implementer's needs, etc.?
P2	Does the RWM institution designate a specific person/s to communicate with the partnership? If so, which is the position of this person/s? And how much of his/her time is devoted to the partnership communication?
P3	How much money is provided to the partnership? Has it increased or decreased since the 2010 report?
P4	How often does the RWM institution meet the partnership representatives? With whom do they meet? Where? When? Is it always the same people?
P5	Which are the main communication challenges faced regarding communication with the partnership?
P6	Which are the main achievements regarding communication with the partnership?
P7	Any other comments or observations under this topic:

Topic: Added value approaches

Although there is not a particular definition by the FSC yet on “added value”, there is ongoing work to try to define it further. In some countries, financial support is provided to those communities entering the siting process or around the potential or operational storage/disposal facility. Communities may use these funds for a predetermined aim (e.g. seeking independent advice, communication activities, investment in local projects) or they are free to include them as part of the municipal budget. However, in this section, the focus is on “added value” as considered in the 2015 FSC report on ‘Fostering a Durable Relationship between a Radioactive Waste Management Facility and its Host Community. Adding Value through Design and Process’. As explained in that report, increasing the added value of a facility means “to maximise its contribution to potential sustainability and well-being in the community once safety considerations have been addressed. Relevant design features [of the facility] relate to functional, cultural or physical aspects. Added cultural and amenity value brings direct gains to the quality of life; it can foster socio-economic gains by making the site location more attractive to visitors or future residents. In the best case scenario, added cultural and amenity value will trigger a virtuous circle, bringing benefits, encouraging an ongoing relationship with the facility, strengthening the

community, and ensuring that in future years the installation can face challenges and continue to contribute to community life” (NEA, 2015, p. 10) .²³ In this sense, communities willing to fulfil an essential service to the national level by hosting a RWM facility do have the right to added value measures to develop their social and economic well-being.

In general, the approaches to added value aim to build a long-term sustainable relationship between the community and the facility and may include the promotion of the local economy, contributions to the field of education and research, cultural, amenity and other intangible values, etc. Thus, the focus in this section is on added cultural and amenity value which brings direct gains to the quality of life.

N°	Question
C1	Is there an approach to added value foreseen in your case? If so, please describe the concept of “added value” and provide examples.
C2	Please specify at which stage of the process the concept of or the negotiation on “added value” is incorporated in the dialogue and by whom.
C3	Any other comments or observations under this topic:

Topic: Markers and memory preservation

This section focuses on the topic of the preservation of records, knowledge and memory across generations and whether this has arisen as an issue to be considered by the partnership in the next years.

N°	Question
M1	Has this topic emerged as part of the discussions in your national RWM debate? If yes, can you describe by whom, when and whether there any initiatives to address this topic? If not, can you provide some suggestions on why this might be the case?
M2	Any other observations under this topic:

Topic: Lessons learnt from partnering over the last years

One of the important parts of this report will focus on the challenges in partnering and the lessons learnt since the 2010 report. Ideally, this part could be conceived as a self-evaluation of how the different components of the partnership approach have worked out and what could be improved for the future.

N°	Question
	Most relevant issues
L1	Which is the most relevant issue that has changed since 2010 regarding partnerships in your country?
	Approach and membership

23. The 2015 NEA report *Fostering a Durable Relationship between a Waste Management Facility and its Host Community – Adding Value through Design and Concept* presents different features which help to maximise the added value brought to a community by a radioactive waste management facility in the short and long term.

L2	How are the members of the partnership chosen? Are there any stakeholders missing? If so, who?
L3	Has the membership changed over time? Are new stakeholders brought in? If so, who and how?
L4	Has the focus of the partnership changed since 2010 and why (e.g. different phase in the programme)?
L5	What specific experiences in the past have influenced trust or distrust within the partnership?
Decision-making process	
L6	Describe the level of influence of the partnership on decisions (based on specific examples).
L7	Describe how disagreements are identified, debated and eventually resolved within the partnership.
Role of the nuclear regulatory organisation	
L8	Does the nuclear regulatory organisation involve the public and stakeholders in its decision-making process (e.g. through contributions on draft regulatory documents)? If yes, specify how.
L8a	If yes, through what means (e.g. hearings, advisory committees, panels, internet platforms)?
L8b	If yes, what lessons have you learnt regarding what works well and what does not work (number and relevance of responses, image of the nuclear regulatory organisation, etc.)?
Monitoring and review	
L9	Do you assess the activities/arrangements of the partnership? Who conducts this review? How and how often?
L10	Has the partnership set performance targets? If so, is progress towards targets actively monitored and reported? How often and by whom?
General awareness of the partnership	
L11	How well are partnerships known by the general public in the region of the partnership? How does the general public perceive the partnership?
Strengths, weaknesses and recommendations	
L12	Identify the strengths and benefits of the current partnership approach (including its most significant achievements).

L13	Identify the challenges to effective partnership working (for example, the areas where it could be improved).
L16	Any other comments or observations under this topic: