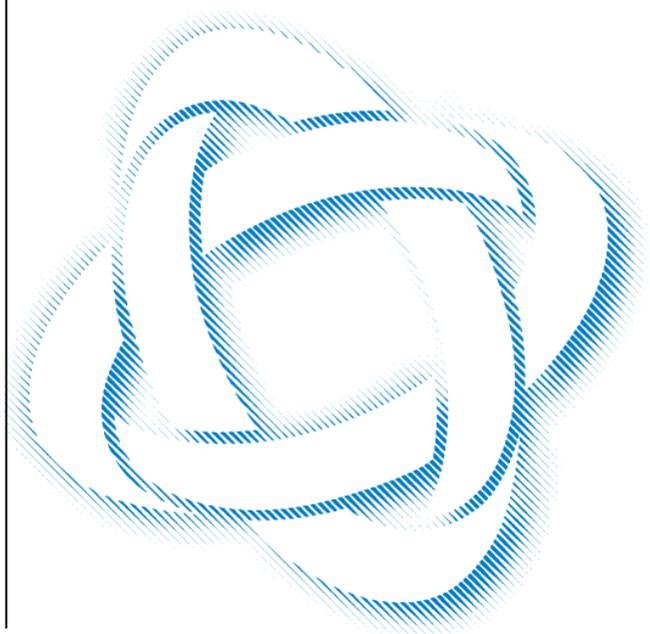


# FSC

# 11<sup>th</sup> Session



## PRESENTATIONS:

Day 1: Morning

14-16 September 2010  
OECD Nuclear Energy  
Agency  
Issy les Moulineaux, France

OECD Nuclear Energy Agency  
Le Seine Saint-Germain - 12, boulevard des Îles  
F-92130 Issy-les-Moulineaux, France  
Tel. +33 (0)1 45 24 82 00 - Fax +33 (0)1 45 24 11 10  
Internet: [www.nea.fr](http://www.nea.fr)



# Forum on Stakeholder Confidence (FSC)

## Update since September 2009; The 10-year Anniversary Colloquium

**Claudio Pescatore**  
FSC-11 (14 September 2010)  
**Items 4.a + 4.b**

1

## Meeting & Workshop 2009

**FSC-10**, Sept. 2009 : **Topical Sessions – Proceedings in press**

- “*Regional Elected Authorities as Stakeholders in RWM: Their Needs, Interests and Aspirations*”
- “*Creating a Durable Relationship Between a Host Community, a Facility and the Main Institutional Actors*”

**Workshop “Repositories and Host Regions: Envisaging the Future Together”**,

Bar-le-Duc, France, April 2009

- **Support & cooperation:** *Local Information and Oversight Committee* (CLIS) and Andra
- **Participants:** FSC delegates + invited local & district councils, various authorities, NGOs, universities, RWM agencies; from 13 countries & the EC
- **Local Visits:** CLIS Reading Room, Underground Research Laboratory Visitors' Centre & Technological Exhibition Facility (Bure-Saudron)
- **Sessions :** *Historic & legislative context; Public info; Reversibility; Environmental monitoring & memory*

2

## Publications [www.nea.fr/fsc](http://www.nea.fr/fsc)

### Studies released in early 2010:

- *More Than Just Concrete Realities: The Symbolic Dimension of Radioactive Waste Management*
- *Partnering for Long-term Management of Radioactive Waste – Evolution and Current Practice in 13 Countries*
- *Repositories and Host Regions: Envisaging the Future Together (France Workshop Proceedings)*

### Other:

- Flyers on *FSC Workshops*, *the Partnership Approach*, and *\*\*10-yr in stakeholder engagement\*\** (new for colloquium); plus translations of several flyers (Spanish and Japanese; Chinese under development)
- Updated web site
- [NEA News articles on](#) *Partnering with Stakeholders in RWM*; *Geologic Disposal of RW: Records, Markers & People. An Integration Challenge to Be Met Over Millennia*

3

## Updated Programme of Work

### Current FSC Themes of Interest

- 1. Link between RD&D and Stakeholder Confidence**
- 2. Changing Dynamics of Interaction among RWM Institutions and Stakeholder Confidence**
- 3. Media, Internal and External Communication, and Stakeholder Confidence**
- 4. Tools and Processes to Help Society Prepare and Manage RWM Decisions through Stakeholder Involvement**
- 5. Increasing the Value of RWM Facilities to Local Communities**

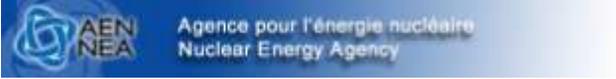
## Preparation of 2010 Meeting and Colloquium

### FSC-10, Sept. 2010 : Topical Sessions

- **Memory** (Archives, Markers and Stakeholder Involvement)
- **Safety Case**
- **Cooperating with Regional Elected Authorities** on Development Objectives (*follow-up on 2009 session*)
- **Seeking Transparency**
- **Increasing Journalists' Knowledge Base and Contacts**
- **Initial contacts and draft agenda for the Sweden National WS and Community Visit (May 2011)**

## 10-year Anniversary Colloquium

- ★ Presentations by former Chair, Yves Le Bars, and by several academic and practical consultants – familiar and unfamiliar with the FSC - to look back at the FSC record and achievements, and to push us forward
- ★ Reliance in part on the Evaluation and Guidance Survey (invitations to the FSC List of Contacts, survey online June-Sept, some 65 responses)
- ★ Dialogue with civil society and institutional stakeholders on:
  1. Increasing the Value of WM Facilities to Local Communities
  2. Partnering for Long-term Management of Radioactive Waste
- ★ Panel on impact of seven FSC National Workshops and Community Visits
- ★ In discussion, collect guidance on themes and concerns to be considered in future activities
- ★ **Overall: Important celebration event**, but also looking into **ways to continue the dialogue with our various constituencies**.



# Colloquium Statistics

Number of Countries registered	Number of People	International Organisations	Universities	Local Communities & NGOs
<b>19</b>	<b>105</b>	<b>5</b>	<b>5</b>	<b>11</b>

R&D (Public & Private)	Regulatory Organisations	Disposal Organisations	Policy Organisations	Happy?
<b>13</b>	<b>10</b>	<b>14</b>	<b>5</b>	<b>Yes</b>

7

# Review of the RWMC and its working parties

Claudio Pescatore

FSC-11 (14 Sept. 2010)

Item 5

1

## Web Info RWMC

- The specific web page of the RWMC has been updated and given a new look, and has become more friendly.  
[www.nea.fr/rwm](http://www.nea.fr/rwm)
- A “flyer” about the RWMC has been produced and is available for download
- The web page of country profiles and reports is up to date  
<http://www.nea.fr/rwm/profiles/>
- The same page also has the updated table on the regulatory infrastructure in NEA countries

2



## RWMC Activities

- **Reversibility and Retrievability, Reims 14-17 Dec. 2010**
  - [The FSC was asked to comment on draft report; proposed FSC presentation. See our own meeting item 16 ]
- **ICGR-2011, October, Japan “National Commitment – Regional/Local Confidence”.**
  - Preparations are ongoing [Role foreseen for FSC; see our own meeting item 17]
- **Project on Long-Term Preservation of Information and Memory**
  - Topical session and survey of countries needs and suggestions at RWMC-43. Project is being started.
  - See also WPDD messages to RWMC (later in this presentation)



## RWMC Activities

- **The Waste Management Professional(s)**
  - Seeking to write a flyer/brochure on waste management opportunities and specificities as a professional area
- **Dialogue with radiation protection on the applicability and application of basic radiation protection concepts to disposal [see doc NEA/RWM(2010)8]**

## Reflections by WPDD Core Group to RWMC

- **Most current research for decommissioning is applied rather than fundamental**
  - Conversion into industrial applications requires **good interaction** between the research institutions (including universities), the decommissioning and waste management organisations and the industrial partners who develop the technologies on an industrial scale.
  - There is a **need for good coordination and information transfer** between the above groups, e.g. to avoid duplication and to gain leverage
- **Decommissioning and waste management are very interdependent**
  - Issues affecting one will generally have implications for the other, e.g. strategy for management of large components from decommissioning concerns dismantling, waste packaging, transport, interim storage and final disposal (including options for reuse).
  - **Greater focus needed on overall optimisation and on how regulators and stakeholders should be involved in this process**
- **Compiling and promulgating information on lessons learned from decommissioning remains a difficult issue**
  - **More efforts are needed** – in cooperation with IAEA and the European Commission - to further improve the processes for sharing experience and to providing access to information on lessons learned.
- **There is a specific need to ensure that decommissioning lessons are passed on for new build.**
  - Current technologies enable **future deconstruction** sequences to be considered as part of the design process enabling potential future difficulties to be avoided or reduced.
  - This should lead to shorter timeframes for decommissioning and production of less waste, translating directly into cost gains and with lower funding needs during project operation

## Reflections by FSC Core Group to RWMC

FSC meetings and the national workshops provide for the **joint creation of knowledge** about RWM themes.

FSC practice over past 10 years has led to the following convictions:

1. The **process of creating and exchanging meanings** is as important as the actual topical outcomes of this process.
2. In society, certain central RWM concepts and principles (e.g., safety; reversibility...) cannot be successfully defined in a top-down manner; instead, their **multiple meanings should be clarified through dialogue**.
3. Importantly, this **dialogue must be renewed at various decision points over the multi-year cycle of RWM**, because, even when decisions have been “banked”, over intervening periods the societal views may very well shift e.g., on ethical values, priorities, or other features of definition, and they should be checked in order to tune actual implementations.

## Long-term preservation of information and memory

### REVIEW OF COUNTRIES' INPUT AND RWMC PROJECT VISION

FSC-11 (14 Sept, 2010)

Item 6.a

Claudio Pescatore, PhD



1

## Contents

- **FIVE QUESTIONS TO RWM ORGANISATIONS in preparation of Topical session at RWMC-43**
- **RESPONSES FROM NINE COUNTRIES (plus others in the Topical session at the RWMC-43) + IAEA and EC**
- **Vision of Project**
- **Preliminary programme of phase-1 Workshop**

2

## Q: WHY preserving information and memory - 1 ?

- Requirements for records, markers, and other LT memory measures have been associated, historically, with the need to limit the potential for human intrusion.
- In the US there is a high-level requirement to maintain the capability to retrieve waste for some times after disposal. This was applied to WIPP
- There is now an affirmed intention to favour decision making by future generations. In particular,
  - an emerging issue of “continued” monitoring and safeguards
  - realization that any development project will take decades until end of operations: which data to save, how to contextualize it so that it is useable by future generations for their management decisions and also for re-use, e.g., in a safety case ?

3

## WHY preserving information and memory - 2?

- Requirements for records, markers, and other LT memory are prescribed sometimes by law (Switzerland) , sometimes by regulatory authorities (e.g., USA, France, ...) (timescales vary with countries and with type of waste)
- The NDA reports on the interest of communities in discussing the strategy for information and memory preservation
- *From FSC:*
  - *Local communities/partnerships do look at information preservation and memory as “control” measures that increase safety.*
  - *Some also have an interest in helping in monitoring and in managing information and memory.*

4

## Q: Time scales of interest ?

- Several decades of transferring information to succeeding generations for managing decisions
- One-to-two centuries of actual operations and continuous data checking and re-certification of data and licenses
- A few centuries of active information and memory keeping, with perhaps reviews of license
- Millennia of repository evolution where information and memory-keeping would be desirable.
- *Some mention all those scales, others only one or two*

5

## Q: Planning for information preservation (and memory) ?

- Is a legal obligation and also descends from regulatory or policy guidelines
- Has been (is being) implemented in the field of LLW (e.g., Spain, Korea, France)
  - Possibly important lessons to be learnt there

6

## Planning for the future is to take place now

- In any event a license would not be given without proposed provisions for long-term info and memory keeping; much work done at the WIPP for their operating licence and at La Manche for their closure in France
- Communities want to discuss strategies for long-term information and knowledge management
- “In order to achieve the long-term objective we must focus on **the** timescale for transferring the information and knowledge to the next generation in a way that it does not foreclose their options for managing it in turn, which we characterise as a timescale of the **order of 30 years**”

7

## Q: What to “save”?

- **Information and knowledge about the nature of the hazard**
  - Land use controls, permanent markers, preservation of records at multiple locations
- **Actual records**
  - Waste characterization and inventory
  - Location and lay-out of repository, boreholes, shafts and ramps, boundaries of the site
  - Site data, the rock volumes that provide containment, those that contribute to retention, the results of monitoring,...
  - The nature and hazard of the waste, the location of the WP,...
- **Metadata to support decisions of future generations**
  - How data was used; basis for decision-making
- ***Both summary and detail information should be preserved***

8

## Q: What useful material is already available ?

- WIPP CCA of 1996 has numerous references
- Experience from the LLW field
- Study Reports of the NDA.
- Recent guidance (2010) from the UK regulator (HSE)
- EC study on the collection, recording and storage of waste data up to disposal
- IAEA-TECDOC-1222 on Waste inventory record keeping systems (WIRKS) for the management and disposal of radioactive waste of 2001
- Nordic Countries' study of 1993....
- Documents in the Hungarian programme
- Studies from the Japanese programme (also in English)

9

## Q: Where efforts would be needed ?

- The NDA and the HAEA observe that the real challenge for the future lies on the “long-term of enabling or contextual information and the importance of metadata”. Think short- to medium-term in order to prepare for the long-term
- The USA points out the importance to arrive at uniform archival of records and uniform type of markers, in a long-term optics
- STUK suggests revisiting the Nordic Countries's study of 1993. Archiving is an important issue. [In Finland and Switzerland archiving is the job of the Administration]
- Japan speaks of the interest of an overall study
- *Interest in survey to provide guidance or confirm approaches in national programmes for identifying and managing information and meta-data*

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## Messages at the RWMC-43 meeting - 1

- Spent fuel will never be regarded as waste by the safeguards community. Therefore records must be kept. Both Euratom and IAEA will have to keep the info in their archives.
- Not all information has the same value, and not all data deserve the same preservation efforts. It is not easy how to tell, however, which is which and how to reduce the info to be kept to the required level without being overwhelming.
- At WIPP, one of the messages that the scientists gave is that a message will not be understood the same way as society evolves. **Maintaining meaning is one challenge in maintaining information.**

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## At the RWMC-43 meeting - 2

- The IAEA is interested in co-operation. Several documents are available.
- If we take a few steps back: where are the most important dangers in today's society? In disposal? What is the situation in other fields? What memory systems are applied, for instance, to uranium mill tailings (UMTRA programme in the USA)?
- Any marker may attract people to the facility in other ways than just for keeping memory.
- One thing is clear from history: memory is lost and recovered intermittently. One must expect loss of knowledge and plan for making recovery possible.
- A plan that would work, on its own, for thousands of years is not credible; we must plan to pass on the task from generation to generation.

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## At the RWMC-43 meeting - 3

- The IAEA is interested in co-operation. Several documents are available.
- EC is also interested
- If we take a few steps back: where are the most important dangers in today's society? In disposal? What is the situation in other fields? What memory systems are applied, for instance, to uranium mill tailings (UMTRA programme in the USA)?
- Any marker may attract people to the facility in other ways than just for keeping memory.
- One thing is clear from history: memory is lost and recovered intermittently. One must expect loss of knowledge and plan for making recovery possible.
- A plan that would work, on its own, for thousands of years is not credible; we must plan to pass on the task from generation to generation.

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## Additional points - 1

- Proposal in France to subject these M.I.K. measures to an international review every 10 years.
- Within its sustainable development programme, Andra is also considering a number of initiative that would contribute to society keeping a relationship to the waste.

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## Additional points - 2

- SKB have considered a variety of potential incidents that could lead to loss of memory and are devising strategies to cope with these scenarios.
- DOE proposes to address MIK requirements via several measures, including a hierarchy of permanent markers, national and international archives and continued ownership of the site.
- RWMC should pay attention to on international consistency of messages, media, language, and type of records facilities

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## Project goals 2010-2011 (Phase 1)

- A survey will be carried out of the literature.
- A reference glossary to the project will also be proposed (Nov. 2010)
- A collective statement (January 2011) on fundamental questions will be drafted in order to build agreement amongst technical specialists and organisations in the waste area.
  - This two page text, should eliminate/address some of the ambiguities by identifying the important questions/topics and providing the current answers, fully recognizing that some/many of those will require further development. The CS, will also introduce/describe the current international project. The CS will be discussed in the 1<sup>st</sup> workshop of the project (see Item 3) [work by e-mail and teleconference]

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## Project goals 2010-2011 (Phase 1)

- Phase-1 workshop of the project **23-25 February 2011**.
  - It will be used to check and improve on the CS
  - It will take advantage of the literature review
  - It will be the basis of further project work
- Updating of CS for discussion at RWMC-44 meeting in March 2011. Finalisation by June 2011. Publication.
- *More on outputs and initiatives until 2013 is in document NEA/RWM(2010)9/Prov of 30 June, 2009 (Vision Document)*

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## PHASE-1 WORKSHOP

- **INTRODUCTORY SESSION**
  - The International NEA Project
  - The draft Collective Statement
    - Presentation of principles
- **A common language: terms and timescales associated to the topic of long-term preservation of information and memory**
- **General objectives of long-term preservation of information and memory**
  - A philosophical and/or theological view on information preservation

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## PHASE-1 Workshop

- **Session on REQUIREMENTS and NEEDS**
  - Existing national and international requirements for long-term (intergenerational) preservation of information and knowledge
    - What information is and will be needed to meet the requirements (e.g., inventories, waste characteristics, repository layouts, markers and their messages, etc.) , potential gaps in both information and requirements, different audiences over different timescales
    - Discussion of principles
  - Safeguards requirements/practices for disposed nuclear materials that can also serve the purpose of memory preservation
  - National and international needs (one objective of the session could be to try to formulate a list of the common needs, both at national and international levels )

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## PHASE-1 Workshop

- **Session on “HISTORICAL” STUDIES IN INFORMATION MANAGEMENT**
  - Case studies (panel?, inside/outside WM, going beyond the legal framework)
  - Findings of “Nordic Study” 1993, Huete-Konzept (CH), experience in decommissioning of nuclear facilities, etc.
- **Session on CURRENT PRACTICES AND CHALLENGES OVER THE DIFFERENT TIMESCALES**
  - Practices and supporting information to the existing requirements (literature review)
  - Changing information needs and/or audiences over time and how these changes will be captured and addressed. It may be reasonable to conduct a review of information needs, including technology changes and improvements, and target audience on a routine basis to confirm that the available information continues to meet requirements
  - The review process should capture the concept of how and when to address deficiencies

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## PHASE-1 Workshop

- **Session on INFORMATION PRESERVATION TOOLS (Shouldn't that be discussed specifically for different phases/timescales?)**
  - How the information can be preserved in the long-term (including both raw data as well as meta data)
  - Identification of different technologies and recommendations available such as micro-engraving, platinum/sapphire techniques, and the concept of surface markers, including the time frames where these are deemed to be effective
  - Possibly carry-out additional technical work in this area

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## PHASE-1 Workshop

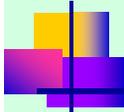
- **Compromising information continuity (Session on ASSESSMENT OF POTENTIAL INCIDENTS)**
  - Identification of **incidents** that could compromised information continuity (wars, significant social/political changes, significant environmental changes, etc.)
  - **Non-incidental loss of information continuity (Marcos Buser pointed out the risk to focus on major incidents while there is also a risk for information loss as a result of malfunction of the administration of the information for example the lack of interest for the topic after a couple of generations)**
  - Assessment of consequences of the **loss of information continuity**. Measures to limit their impact (such as provision of redundancy).

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## PHASE-1 WORKSHOP

SESSIONS on

- Review of collective statement
- Main messages and recommendations



Paris, September 14, 2010

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Swiss Federal Office of Energy  
Research Programme  
State-of-the-art Report on  
**Marker Systems for Radioactive Waste Repositories**

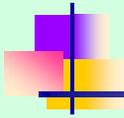
Marcos Buser, Gutachten&Projekte, Zürich  
Author and presentation



## Background

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- EKRA 2000 recommends the use of **markers**
- **Responsibilities** are defined in the Swiss Nuclear Energy Law 2003, art. 40, and in the Nuclear Energy Ordinance, art. 69
- Federal Office of Energy requests R&D-Programme on **marker systems**
- The report provides an **overview based on a literature survey**
- The work was performed in close contact with the **nuclear authorities** (SFOE / ENSI)
- Realisation: 2008 / 2010

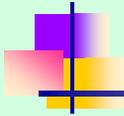


## Goals of the “Markers Report”

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### Aims and objectives

- Based on a survey of published literature, the report should present the current status of marker development programmes
- It should serve as a basis for further discussion on the development of marker systems in Switzerland
- It should be presented at international conferences

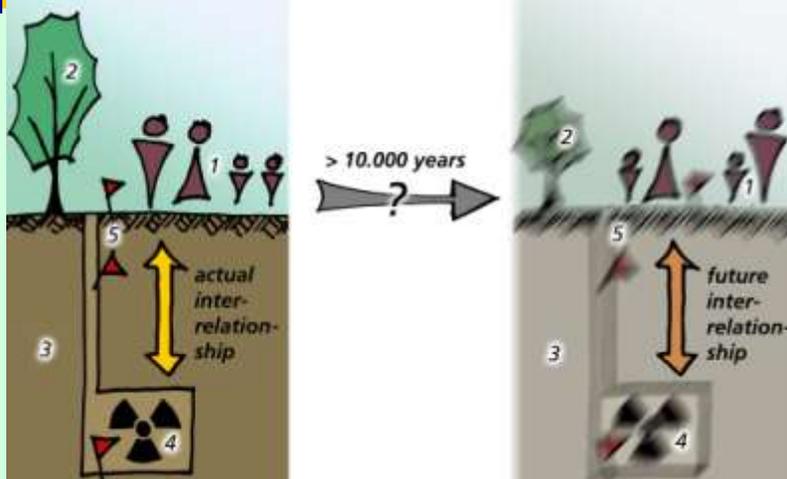


## Approach

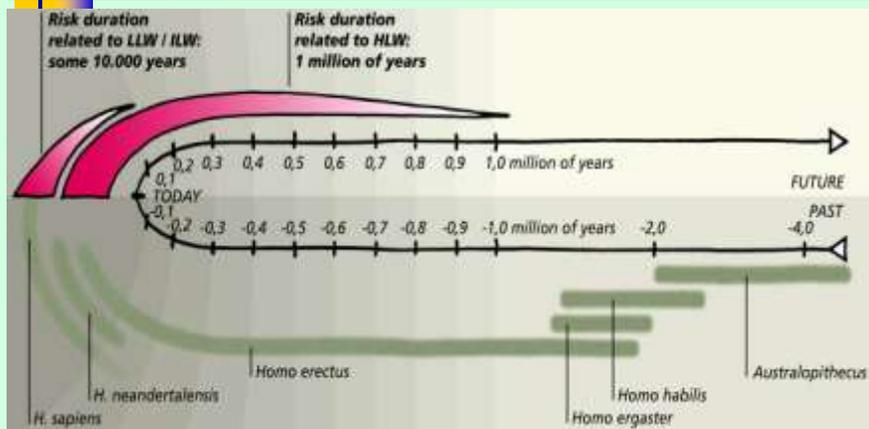
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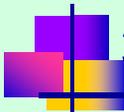
- Evaluation of published literature
- Synthesis of knowledge on markers
- No recommendations on further actions

# 1 System and timeframe



# 2 Timeframe





## 3 Contents of the report

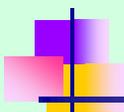
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Interdisciplinary approach involving natural sciences and technology as well as social and political sciences, aimed at answering some basic questions

- 0-Questions: Basis questions on marker strategies (6)
- Questions on sub-systems
- A-Questions: man and society (6)
- B-Questions: environment and geology (4)
- C-Questions: underground structures (e.g. shafts, tunnels and galleries) (4)
- D-Questions: technology used for markers and information transfer (4)
- E-Questions: risks (4)
- Total: 28 questions

Approach for answering the questions:

- Issue definition; analysis of published literature; appraisal

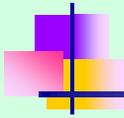


## Examples of questions

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Basic questions on the goals of marker systems

- 01 What are the arguments for and against the use of markers?
- 02 Is it possible to address warnings to future generations or societies?
- 03 Can marker systems be developed with realistic efforts?
- 04 How far should we go towards the protection of future generations and society?
- 05 What should be transmitted to future generations?
- 06 Have the potential for manipulation and errors in marker systems been identified as major issues?

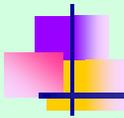


## Examples of answers (1)

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01 What are the reasons for marking the site? Or: Which arguments are used to justify or support marker systems or to dismiss them?

- Definition of issue: dangerous waste needs to be confined for very long periods of time (up to 100.000 - 1.000.000 y). This justifies the use of markers, but could markers also pose a danger to repositories?
- Literature: markers have warning functions, but misuse cannot be excluded
- Appraisal: societal preferences and risks cannot be predicted far into the future, i.e. it is not possible to take a final decision on the implementation of marker systems. It should be defined in each particular case what has to be marked and for what purposes.

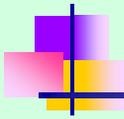


## Examples of answers (2)

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C2 What intrusion scenarios should be considered for repositories (risk analysis) and what protection strategies through marker systems can be imagined in this context? Which technologies are available to protect the underground facilities and the waste from intrusion, intended destruction or waste retrieval?

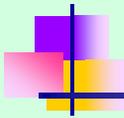
- Definition of issue: Is intrusion intended or not? What type of marking techniques can be considered for the different scenarios?
- Situation in Switzerland: Marker systems are requested in order to ensure retrievability. Protection against vertical intrusion (drilling) is easier to achieve than protection against lateral intrusion (tunnelling, e.g. swiss-métro); surface or sub-surface protection barriers are well developed (e.g. capillar barriers, asphalt seals). Care should be taken to avoid areas where geothermal, oil & gas prospection, etc. could take place).
- Appraisal: marker systems are necessary; a solution should be found to the issue of lateral intrusion.



## Examples of answers(3)

C4 Should waste packages (e.g. canisters) and disposal tunnels be used as components of the marker system?

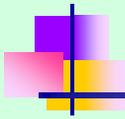
- Definition of issue: This makes sense in the case of highly developed societies, but is questionable for „primitive“ societies.
- Literature: many proposals (e.g. large magnets; radioactive markers; echo producing devices [would only work while the tunnels are not backfilled], rubber-mats on the ridges of galleries in order to prevent the intrusion through Rotary-drillings, filling tunnels with metallic waste or construction rubble; colorants in backfill materials; pictograms and labelling of canisters)
- Appraisal: many ideas exist for the marking of subsurface repositories, but have not been fully developed (many contradictions and often unrealistic)



## Examples of answers (4)

E1 What can lead to communication breakdown in the future? Can risk catalogues collect and describe all possible hazards?

- Definition of issue: knowledge drift or loss of knowledge over time, no continuity in the construction of „reality“,
- Literature: many elements and processes involved in information and memory loss have been identified (language evolution; use of wrong media; social and historical interruptions, etc.), but have not been analysed in a systematic way
- Appraisal: contextual changes (and understanding of such processes) are a key factor for the „survival“ of a message, analysis of knowledge loss in the area of communication is necessary

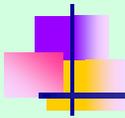


## Conclusions (1)

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### General findings

- It is necessary to gain an overview over both issues and proposed solutions
- Basic contradictions in the aims of marker systems and their technical realisation must be addressed or resolved
- Integral approach: inter- and trans-disciplinary approaches are needed in order to develop marker systems that can effectively be implemented; proposals made by specialists of a single domain are often wrong (metallic markers and corrosion in host rock; economic value of resources [canister materials] and recovery or tomb robbery etc.)
- The system must be developed as a whole



## Conclusions (2)

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### Specific findings

- Research on possible motives for intrusion will be crucial for decision making on marker systems
- Previous work must be taken into account (technically as well as globally), international solutions should be developed
- The findings of semiotics regarding the identification of “weak links” in information transfer as well as sources of misinterpretation will be a key element of the future marker development strategy

# **Consideration of Social Scientific Aspects in a Safety Case for a Geological Repository in Germany – Results of a Research Project**

**11th Session of the FSC, Topic 7b**  
14-16 September 2010, Issy-les-Moulineaux

Beate Kallenbach-Herbert  
Oeko-Institut, Darmstadt, Germany

Research project financed by:



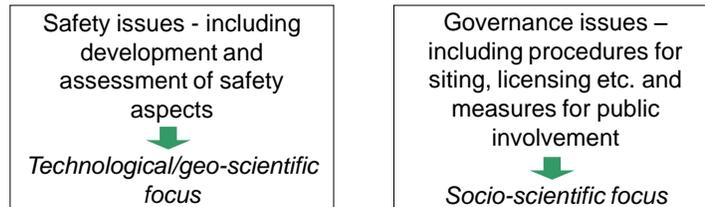
## **Outline**

- 1. Background**
- 2. The framework and preconditions**
- 3. Model for describing social scientific issues**
  - Important input to a systematic description
  - Overview of social scientific issues and social scientific contexts
  - Example
- 4. Recommendations for the design of the SC**
- 5. Discussion**

## Background

Safe planning and implementation of geological repositories:  
Affects various scientific disciplines

but: Rather limited interdisciplinary exchange so far



Comprehensive safety concept → consider contributions of technology, organisation, personnel and social environment in a well balanced way

Research project “Consideration of socio-scientific aspects in a Safety Case for a geological repository in Germany” financed by Ministry of Economics and Technology

→ Foster exchange of scientific disciplines

→ Support an enhanced understanding of repository safety

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## Background

- The Safety Case is...
  - ... a collection of arguments and evidence to demonstrate the safety of a facility;
  - ... developed stepwise during the different stages of planning, implementation and closure and post closure of a repository;
  - ... used as a basis for major decisions in the different stages of the process;
  - ... a contribution to enhancing transparency and traceability;
  - ... a statement of robustness and reliability of the repository and of the safety assessments.
- Consideration of **planning, financial, economic and social issues** in the disposal process is recommended (e.g. IAEA)
- But: until now **no systematic concept** or recommendation for treatment of non-technical issues in the safety case

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## The framework and preconditions

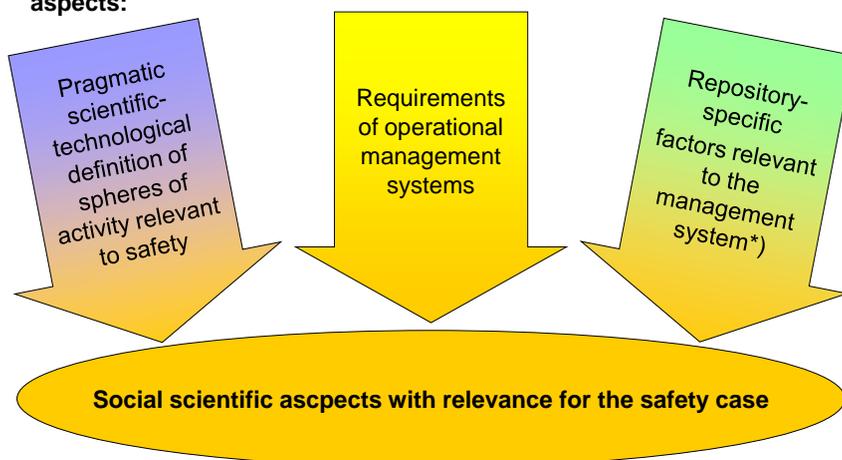
Existence of the following *framework* and *preconditions* was assumed:

- Societal and political agreement on the chosen final waste management option
- Confidence in organisational structures, regulatory framework and development steps
- A suitable governance procedure which covers the whole disposal process and considers the national and the regional level
- Adequate involvement of relevant actors and other stakeholders during all steps of Safety Case preparation and development

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## Model for describing social scientific aspects

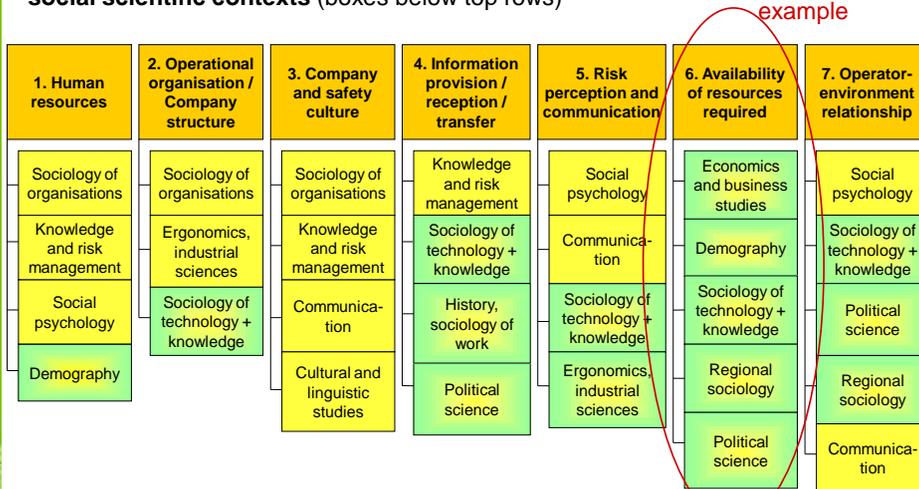
Important input to a systematic description of relevant social scientific aspects:



\*) e.g. the long-term aspect of the repository project, limited options for intervention due to passive safety strategy <sup>6</sup>

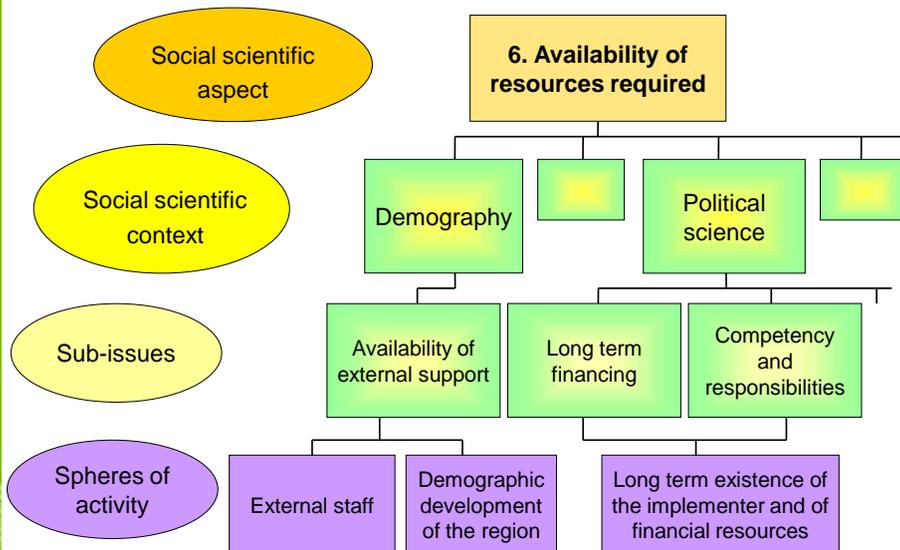
Model for describing social scientific aspects

Overview of **social scientific issues** (top row, orange boxes) and **social scientific contexts** (boxes below top rows)



**yellow boxes:** social scientific contexts already part of modern management requirements  
**green-yellow boxes:** additional priorities with disposal specific relevance

Model for describing social scientific aspects



**These recommendations cover**

- **Extent and content of the safety case**
- **The documentation of the safety case**
- **Stepwise development of the safety case**
- **Consideration of social scientific issues**
  - in the different stages of SC development
  - in a way that reflects a safety-oriented combination of scientific-technological, human resources and organisational factors
- **Options and methods for addressing the social scientific issues** (depending i.a. on the planning timescale and on the implementer's influence relevant factors)

**Discussion**



**Social scientific issues and safety communication with the public**

**Issues of discussion at a project workshop:**

**May the implementation and communication of a „comprehensive safety concept“ which includes safety relevant social scientific issues influence public trust in geological disposal?**

**Which measures would be necessary to support such an approach?**



## Interplay Among Stakeholders for the Definition of the Detailed Geological Survey Zone in the Meuse/Haute-Marne

*FSC - Experience in Stakeholder Involvement in Selected Cases*

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FSC - Issy, 14-09-2010



### Deep Reversible Repository Project

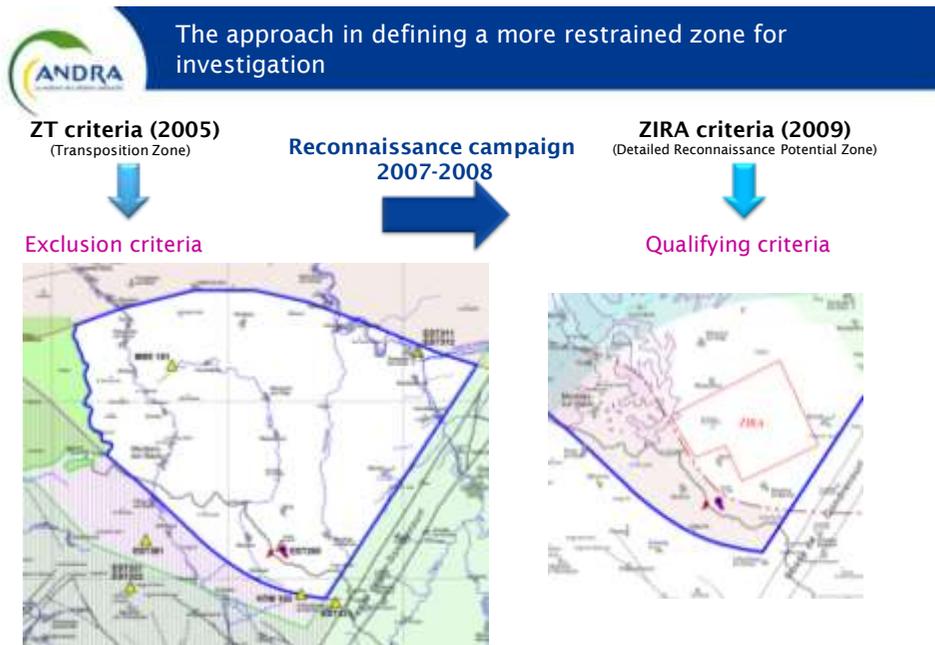


2012: Public debate

2015: Filing the request for authorisation to proceed, and attendant due process

2025: Industrial commissioning (if authorised)

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**ANDRA**

Substantial, ongoing dialogue

Discussions and work sessions were held year-round throughout 2009 and they mostly involved:

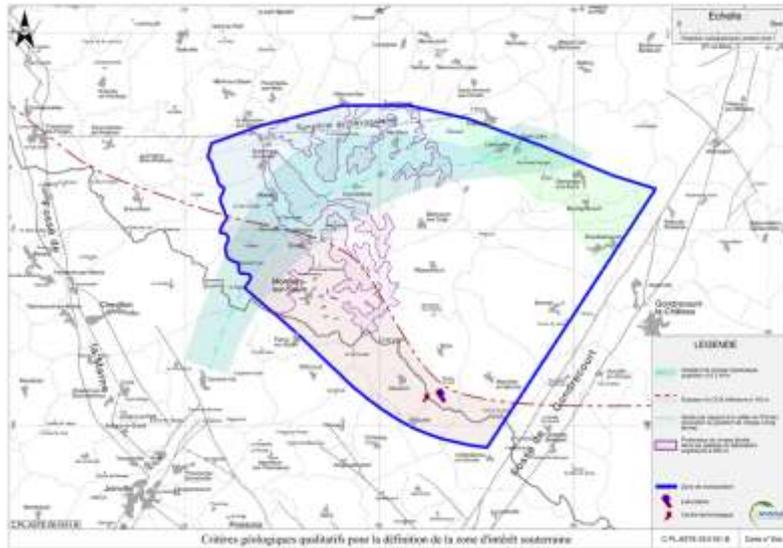
- Local elected officials: Mayors and County Council Members
- Municipality Partnerships (*Communauté de Communes*)
- County Councils (*Conseil Général - Départements*)
- The Local Information and Monitoring Committee (CLIS) and its commissions
- Public Authorities' Joint Ventures (*Syndicats Mixtes*)
- Business Groups Authorities (*Chambres Consulaires*) (Chambers of Commerce and Industry, Chambers of Agriculture)
- Associations (Lions-Rotary clubs, Energic 52/55, Meuse Nature Environnement, etc)
- The general public (Open-door days, travelling exhibitions, the press, Internet)

Lastly, Andra has been working closely with Government departments.

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## Presentation of scientific and technical criteria



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## Articulation of local players' expectations

### Consensus on choosing the ZIRA:

- ✓ Technical criteria relating to safety and geology were considered as decisive in choosing the ZIRA
- ✓ Keep on involving the various Municipality Partnerships

### Significant requirements regarding the area's development:

- ✓ Establish the entrance to the package access ramp within an area touching on the Meuse/Haute-Marne so as to ensure both *départements* remain involved in the project
- ✓ Encourage the setting up of facilities and services required to host the project
- ✓ Enhance the potential of existing transport infrastructures
- ✓ Make sure that economic benefits are equitably distributed

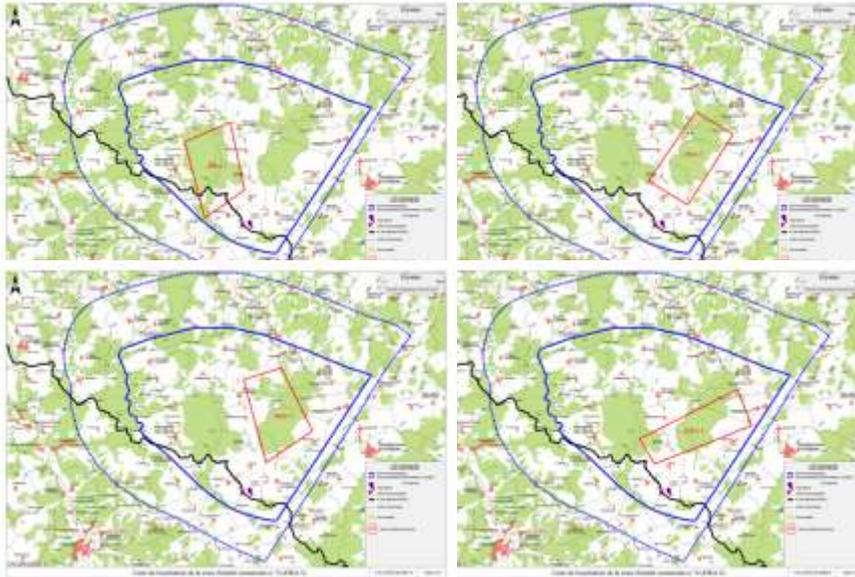
### Expectations regarding the project's local insertion:

- ✓ Take part in the area's economic and social growth
- ✓ Protect the living surroundings and pay attention to the insertion into the environment
- ✓ Curb any disturbances to local residents and foster the development of rail and fluvial transport
- ✓ Protect surface and underground waters
- ✓ Pay attention to how the stockpiles are inserted

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## Initial scenarios proposal



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## A statement by the CLIS regarding those initial scenarios

**ZONE D'INTERÊT POUR UNE RECONNAISSANCE APPROFONDIE (ZIRA)**

**Clis**

Le CLIS a été créé en vertu de la loi n° 1033 du 10 août 2007 relative à la gestion des déchets nucléaires. Il a pour mission de donner son avis sur les projets de reconnaissance approfondie (ZIRA) et de faire connaître les conclusions de ses travaux.

Le CLIS est composé de membres élus par le Parlement et de représentants des pouvoirs publics, des universités, des associations de citoyens et des professionnels du secteur nucléaire.

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## Main opinions expressed during the dialogue phase (1 of 4)

Notre second sentiment concerne le futur emplacement du lieu de stockage HAVL.

Il nécessite une réflexion conjointe avec nos amis meusiens du canton de Montiers sur Saulx car c'est avec eux que nous avons réussi à mettre en place le laboratoire de recherche. De plus les Départements de la Meuse et de la Haute-Marne ont depuis créé administrativement une zone interdépartementale afin d'accueillir des activités complémentaires à celles de l'ANDRA.

Dans le prolongement de cette réussite commune pour les recherches dans le laboratoire, nous voyons une opportunité, un lieu unique qui s'offre à nous : la forêt domaniale de Montiers sur Saulx d'une superficie de 1500 hectares. Les installations de surface et les accès pourraient se situer à quelques kilomètres, sur le territoire de Saudron ou conjointement sur la frontière, dans l'environnement de Bure Saudron.

Nous souhaitons vivement que cette solution soit étudiée prioritairement.

Les infrastructures d'accès pour la Haute-Marne existent pour l'essentiel et peuvent être développées, gare de Joinville, départementale 60. De la même manière, des accès existent au nord, côté Meuse.

La maîtrise foncière va être un enjeu très important dans l'avenir, notamment pour les élus de proximité qui sont des agriculteurs pour une grande partie. Des difficultés pourraient apparaître sur ce point, nous le présentons.

*Opinion by the Poissons  
Municipality Partnership (March 09)*

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## Main opinions expressed during the dialogue phase (2 of 4)

Ayant pris connaissance des propositions d'implantation de ZIRA (Zones d'Intérêts de Recherches Approfondies) à l'intérieur de la zone de transposition par l'ANDRA (réunion du 25 mai 2009), une majorité de maires, réunis au sein de la Communauté de Communes du Val d'Ornois, signataires de la présente, émettent les remarques suivantes :

- le choix de la ZIRA devra répondre aux conditions scientifiques et géologiques répondant à une sûreté optimale ;
- le choix de la ZIRA devra prendre en compte les voies de communication existantes : voie fluviale, voie ferroviaire, liaisons routières (proximité de la RN4) ;
- le choix de la ZIRA devra également prendre en compte le bassin de vie le plus important (de Gondrecourt-le-Château à Ligny-en-Barrois) capable de se mobiliser autour du projet.

Pour l'ensemble de ces éléments, le choix de la ZIRA 2 ou 3 proposé par l'ANDRA, nous semble le plus adapté à la poursuite des recherches.

*Motion by the Val d'Ornois  
Municipality Partnership (June 09)*

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## Referral to the Ministry

Following Andra's proposal, the Government has referred the matter to the National Assessment Commission (CNE), the Nuclear Safety Authority (ASN) and the Local Information and Monitoring Committee (CLIS) for consideration.

The CNE and the ASN have expressed a favourable opinion and the CLIS has just requested a third-party assessment of Andra's document.

On the basis of both those opinions and of the CLIS' initial comments, the Government has approved the zone suggested by Andra in March 2009.

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## The scope of the reconnaissance campaign underway

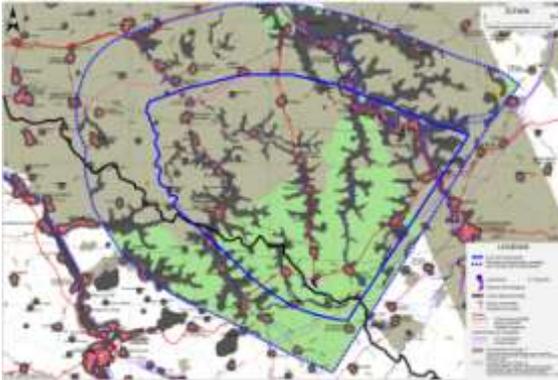


As a result, Andra was able to conduct the reconnaissance campaign within the ZIRA (37 km<sup>2</sup>) from May to July 2009.

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## Proposals regarding the surface facilities



### Technical criteria:

- The shafts' installation is interdependent with the disposal's underground architecture
- The shafts must therefore be located within the ZIRA's hold

### Criteria relating to area development:

- There is strong support for the access ramp to be installed within an area touching on the Meuse/Haute-Marne

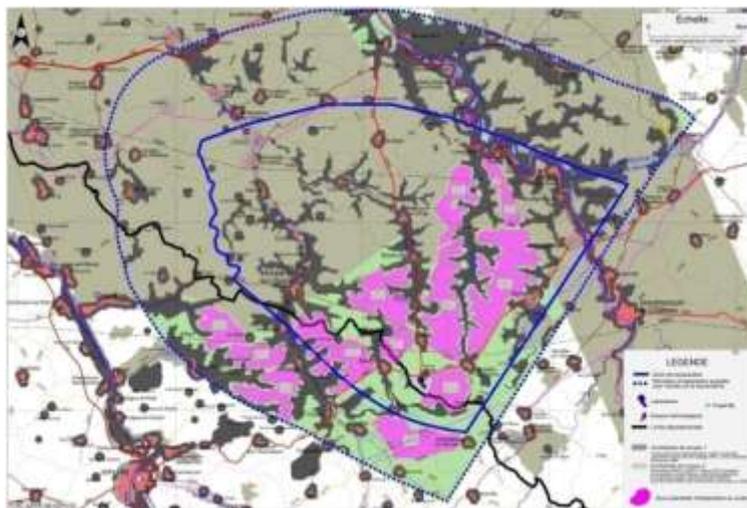
### Method used in determining the proposed zones

- Take into account the surface constraints and those pertaining to the installation sector chosen earlier around the transposition zone
- Take into account any potential future urbanisation around the villages
- The sector's surface must be at least 200 hectares
- The zones must be all in one piece

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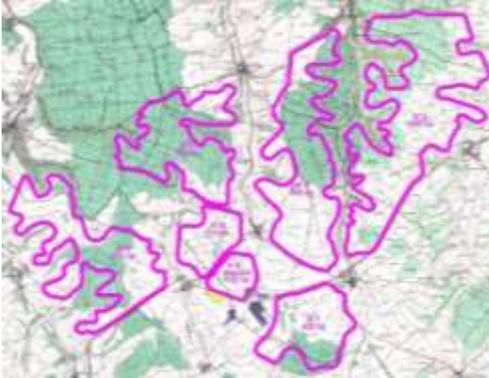
## Proposals regarding the surface facilities



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## Prolonging the studies and preparing for the public debate



The 6 ZIIS (Surface Facility Installation Zones) chosen by Andra and proposed to the Government for proceeding with the installation process are currently undergoing engineering studies to help determine their sector limits, their access to thoroughfares, etc.

In 2011, the ZIIS may possibly undergo slight geological investigations required for the pre-project studies.

New dialogue will begin with local players starting October 2010 in order to initiate discussions about several surface facility installation scenarios, and to help develop the area project in relation to the deep disposal project. A detailed introduction to these scenarios will be presented within the context of the public debate to be held in late 2012.

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## Preparing for dialogue



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## **Regulatory Guidance on Retrievability**

David Brazier  
Nuclear Waste Assessment Team

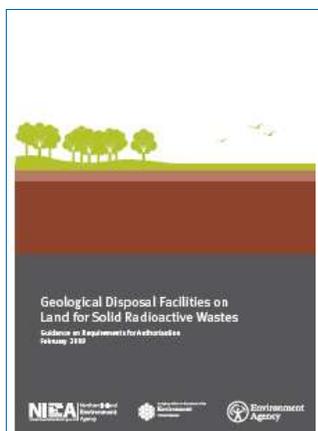
11<sup>th</sup> Forum on Stakeholder Confidence  
OECD NEA, France, September 2010

## Regulatory Responsibilities

- ➔ **HSE Nuclear Directorate (ND)** is responsible for regulating nuclear safety, including the safe management, conditioning and storage of radioactive waste on nuclear licensed sites
- ➔ **Environment Agency** regulates discharges to the environment and disposal of solid radioactive waste on or from nuclear licensed sites in England and Wales. Scottish Environment Protection Agency (SEPA) regulates such disposals in Scotland



## Regulatory Guidance



Separate guidance on requirements for authorisation for

- Near Surface Disposal Facilities
- Geological Disposal Facilities

<http://www.environment-agency.gov.uk/business/sectors/99322.aspx>



## Applying the Guidance

- ➔ Guidance applies only to disposal of solid radioactive waste and **not** to storage of waste
- ➔ In this context, 'disposal' means placing waste in a facility without intent to retrieve it later
- ➔ Developer may choose to design a waste disposal facility in a way that makes it easier to retrieve waste
  - ➔ If the intention from the outset is to retrieve waste at a later date, the facility is a waste 'storage' facility
- ➔ HSE/ND regulates storage on nuclear sites



## Current regulatory guidance on retrievability

- ➔ We do not require waste to be retrievable after the act of disposal, i.e. emplacement of the waste
- ➔ If a developer makes provisions for retrievability, these should not unacceptably affect the environmental safety case
- ➔ Operator would need to demonstrate that safety of people and the environment was not affected unacceptably by keeping a disposal facility open solely to ensure waste remains retrievable



## Closing thoughts

- ➔ If a safety case cannot be made for waste retrieval - the waste will not be retrieved
- ➔ Be clear about the inventory to be 'disposed'
- ➔ We welcome the NEA's R&R work
  - ➔ We provided comments on the draft report
- ➔ We understand reasons behind legal and policy requirements for retrievability



## Our Objectives – Solid Waste Disposal

- ➔ We will provide sound, independent regulation
- ➔ We have strong technical capabilities in regulating radioactive waste disposal
- ➔ We will work with communities, Government, NDA and other stakeholders
- ➔ We will operate openly and aim to build public confidence and trust



**Sogin engagement process 2010**  
*Focus on involvement of economic operators as a part of the local community*

11th Session of the FSC  
Issy-les-Moulineaux,  
Paris,  
September 14-16, 2010

2

**Agenda**

- **The company profile**
  
  - **Changes in to the Italian energy policy**
    - Italian Parliament decree n° 31/10
    - The technological stores
  
  - **Sogin approach to stakeholder engagement**
    - The vision
    - Building confidence by the engagement process
    - Economic operators as a part of a local community
  
  - **The process of stakeholder engagement**
    - Steps and activities
    - Facts and figures
    - 1H10 Highlights
-



- The company profile

- Changes in to the Italian energy policy

- Italian Parliament decree n° 31/10
    - The technological stores

- Sogin approach to stakeholder engagement

- The vision
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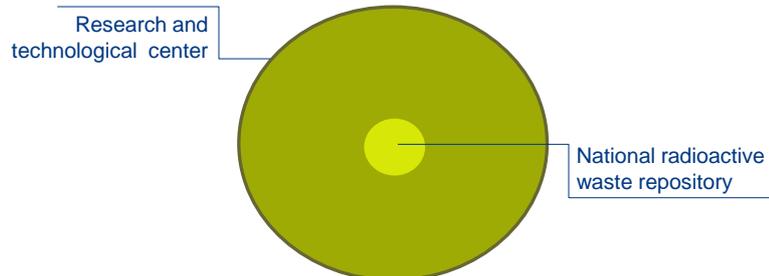
- The process of stakeholder engagement

- Steps and activities
    - Facts and figures
    - 1H10 Highlights

Since 2009, the Italian Government has decided to start again producing energy resulting from nuclear source, thus contributing to re-build the nuclear supply chain.

*D. Lgs 31, February 15th 2010:*

- It calls for greater responsibilities in the decommissioning as well as in the radioactive waste management of the new power plants;
  - It charges Sogin with the responsibility for locating and implementing the technological stores;
  - It deals with the need from the local community to be involved by the nuclear operator on the way in which activities are conducted as well as the plants are managed, through ad hoc information and communication campaigns.
- 



- **The company profile**
  
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  - The technological stores

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  - The vision
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- 

Moving back into nuclear energy power, doesn't mean (only) to build a "new" nuclear power plant, neither per-form high technological skills. It means, first of all:

- to reshape the governance and reform a valuable system of laws, procedures and rules, aligned to the best international practices;
  
  - to train in and develop a new generation of technical skills and managerial abilities, strongly impoverished along the last two decades, both in the private and the public sector;
  
  - to manage a complex network of influent public actors and stakeholders whose confidence is a critical issue to face.
-

- Such as for any other industrial operator, confidence is a strategic issue for Sogin: it can not be asked for, but day by day achieved thanks to a strong leadership in the different contexts.
- Building a strong leadership means to act as a catalyst of interests raising from different stakeholders within a local community.
- The main aim of a stakeholder engagement process is to gather stakeholders' material expectations in order to identify the best solutions to address them.
- The development of stakeholder engagement processes helps to identify strategies, policies and actions aimed at guarantee higher and higher levels of satisfaction, thus matching different stakeholders interests and expectations.



Bottom up and step by step approach

- **The company profile**
- **Changes in to the Italian energy policy**  
Italian Parliament decree n° 31/10  
The technological stores
- **Sogin approach to stakeholder engagement**  
The vision  
Building confidence by the engagement process  
Economic operators as a part of a local community

- **The process of stakeholder engagement**  
Steps and activities  
Facts and figures  
1H10 Highlights



- **Work in progress**

- ✓ 8 Employers Associations involved
- ✓ 4 workshop planned and organized in the different territories
- ✓ About 100 companies involved within the territories
- ✓ Press coverage at local level, great participation from local institutions



Issues	Solutions proposed
Knowledge of the programs and/or company's supplying orders	✓ "Suppliers conferences"
Spreading information, raising awareness on the qualification process and providing support through out all the process	<ul style="list-style-type: none"> <li>✓ Mailing list and newsletter thanks to the Local Employers' Associations</li> <li>✓ training sessions in cooperation with Local Employers' Associations</li> <li>✓ Help line</li> </ul>
Qualification system adjustment	✓ Simplification of the qualification system
Goods, services and general supplying buying process adjustment	✓ Buying policy review



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