

# **WG 2 – Geological disposal**

**First Plenary Meeting of HIDRA II  
– TM-51533 –**

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**IAEA**

International Atomic Energy Agency

# Participants

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- Lei Shizhong, Canada
- Weiming Chen, China
- Thomas Beuth, Germany
- Jürgen Wollrath, Germany
- Jarkko Kyllonen, Finland
- Cecile Castel, France
- Jean de Meredieu, France
- Eva Andersson, Sweden
- Thomas Hjerpe, Sweden
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# Objectives

- Provide forum for exchange of information of handling of IHI in safety cases for geological disposal facility
- Develop working examples to demonstrate the methodology identified in HIDRA phase 1 for evolution steps in the life cycle of a geological disposal facility and where appropriate suggest improvements to the methodology.
- Produce a generic list of what information regarding IHI that could be considered when producing regulatory framework, and to produce a customized regulation.
- Discuss how features, measures and processes affect potential for and consequences of IHI.
- For the working example effective communication and consultation, and knowledge management related to IHI should be addressed.

# Scope

**Develop working examples to demonstrate the methodology identified in HIDRA phase 1 for evolution steps in the life cycle of a geological disposal facility and where appropriate suggest improvements to the methodology**

- Make up a generic country that is relevant for studies of geological disposal. Actual numbers can be used in the example country for illustration. Even if numbers could be taken from present countries and disposal facilities, the country applied in the example is generic.
- In the example it is assumed that the facility is going to be properly operated and closed.
- Customize regulations from general list for our working example.
- Customize the IHI scenarios from HIDRA report
- Discuss consequences for IHI but not necessarily conduct quantitative calculations (e.g. dose calculations) for the identified IHI scenarios. Instead we will discuss where in the decision making process calculations could be helpful. References to existing calculations of consequences from different countries can be made.
- Discuss, test and evaluate and improve the procedure and measures database from phase 1.
- Apply the HIDRA methodology including at least one loop of implementation step (See Figure 5-1 in the HIDRA report).
- Document the process, discussion and questions raised during the working example.

# Scope cont.

**Discuss how features, measures and processes affect potential and consequences of IHI.**

- The effects on IHI should be discussed also for other variances than used in our example, e.g. different host rock and disposal concept.
- This discussion does not need to be complete but could be used to illustrate sensitivity for IHI

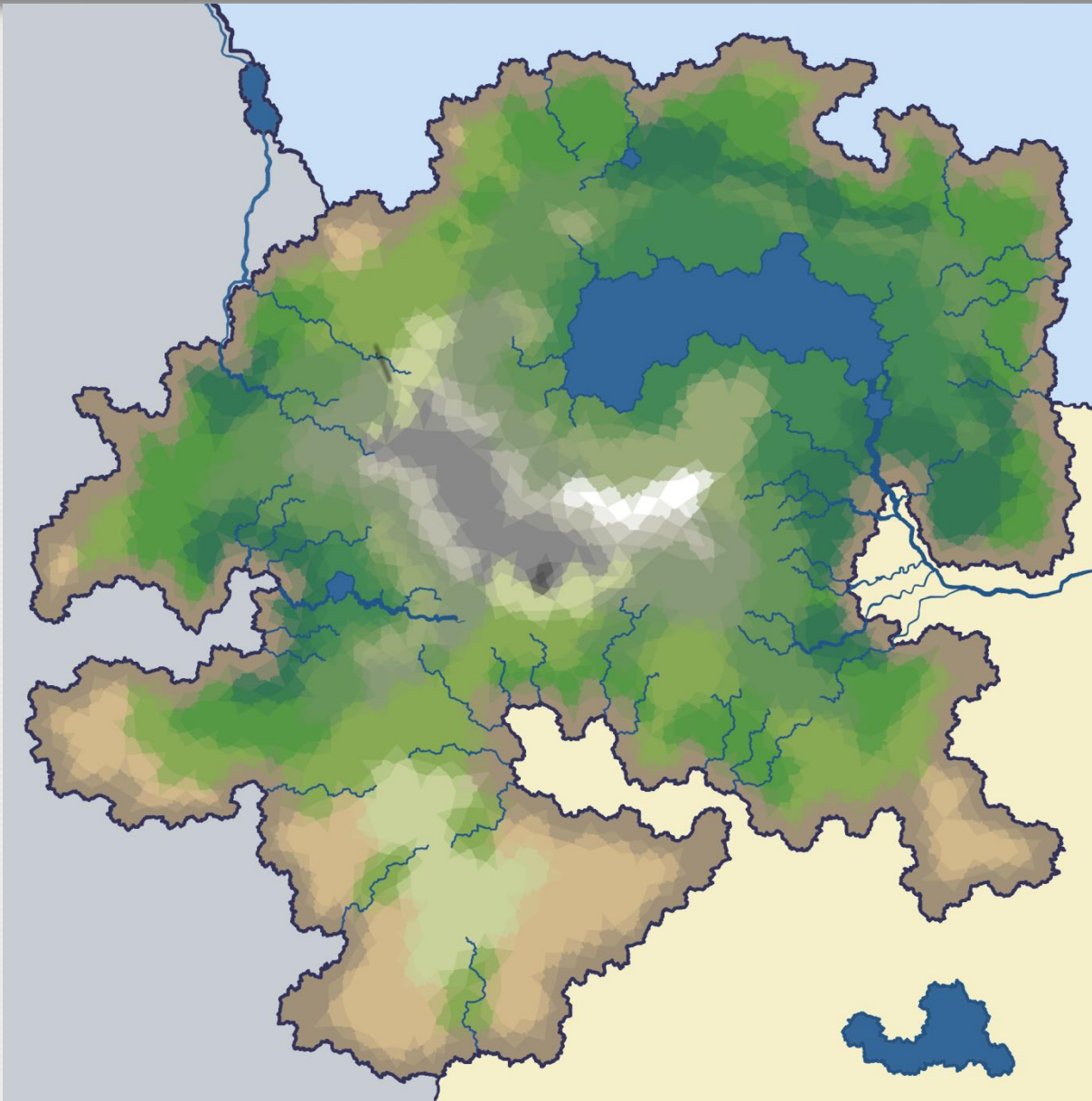
**Effective communication and consultation, and knowledge management related to IHI should be addressed**

- Discuss for each implementation steps for a disposal facility what information related to IHI that could be communicated
- Identify relevant factors from regulatory and proponent perspective
- Document questions that might be raised during discussions

**Produce a generic list of what information regarding IHI that could be considered when producing regulatory framework for geological disposal facilities**

- Document the process, discussion and questions raised

# Work so fa: HIDRANIA



- located inland, i.e. footprint always a terrestrial area.
- prevailing temperate conditions
- there are large cities
- technologically advanced with nuclear power producing HLW and long-lived ILW
- suitable geological salt, clay and hard rock formations exist
- ground water resources and other mineral resources exist

# Work so far

- Produced **generic list** of what information regarding IHI that could be considered when producing **regulatory framework**
- Gone through our **example for the conceptual design stage** of the facility life cycle. Conclusion that we only use part of the HIDRA methodology since the safety framework is incomplete at this stage. However, different aspects of HI should be considered at this stage and we have documented examples of what could be considered
- Started to look into the **design and siting stage** of the life cycle of the disposal facility. Then more/all? of the HIDRA methodology can be applied.
- Identified **couplings** to other projects and documents that should be considered in the process of examining the example

# Work so far continued

- Continued to discuss objectives and scope
- Decided to use examples from actual sites/assessments to have a starting point for our discussion. Decided to use specifics from different countries, although the combinations should be feasible
- Defined what data are needed from the contributing countries
- Made a work plan and preliminary time shedule



# Work plan

- Customize regulations
- To create a clear picture of our generic site.
- Identify inherent measures from the concept
- To create a clear picture of concept and design. Decision is made to have disposal concept and data from our participants.
- Test the Methodology of HIDRA
  - Discuss frame safety framework in IHI aspect
  - Customize scenarios / Identify initial sets of measures
  - Assess the scenarios
  - Review/evaluate measures (make sure it does not affect normal evolution, see figure 1)
  - communication and consultation and knowledge management
  - Proceed to next implementation step
- The effects on IHI should be discussed also for other variances than used in our example, e.g. different host rock and disposal concept. Could be reviewed after the methodology has been tested
- Synthesis (report) with suggestions of improvements to the methodology and measures database

# Work plan – time schedule

## This plenary

- Work plan
- Started to outline our example
- General list for regulations
- IHI considerations for the concept stage were discussed
- Identification of information needed: specifics from different countries to be used for our general example
- Provide forum for exchange of information of handling of IHI

# Work plan – time schedule

## Directly after plenary

- **List of site- and design information** needed for the description of our general site are to be distributed among WG members – Thomas H (18 January)
- Identification of more data needed – all member (25 January)
- Information from countries added - contributors in the list (May)
- **Text produced during the meeting** gathered in one document and distributed - Eva (30 January)
- Comments on the text – all WG member (28 February)

## WG meeting (end of Aug/Sept)

- **Customized regulations**
- **Finalise description of general site**
- **Identify inherent measures from the concept**
- Customized scenario
- Initial measures to be considered

## 2nd plenary, 3rd plenary

- Continue according to workplan

# Couplings to other work groups/ projects and documents

- WG near surface
- HIDRA 1
- NEA RK&M (knowledge and markers)
- NEA scenario development initiative
- IAEA initiative intermediate level waste
- ICRP 122

***Thank You***

