



Supplement of

Transdisciplinary research on the topic of long-term near-field monitoring of a geological repository with a view to building trust

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TRANSDISZIPLINÄRE FORSCHUNG ZUR ENTSORGUNG
HOCHRADIOAKTIVER ABFÄLLE IN DEUTSCHLAND

Transdisciplinary research on the topic of long-term near-field monitoring of a geological repository with a view to building trust

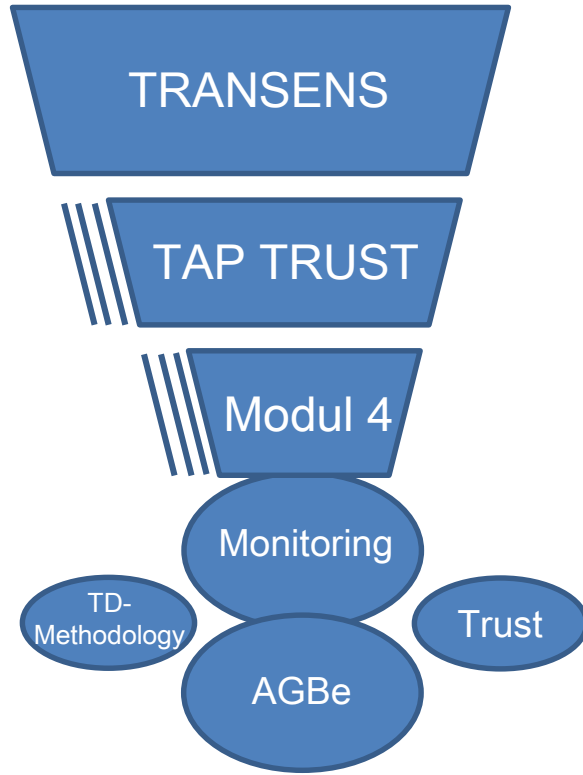
- Overview of the first AGBe-workshop in TAP TRUST / Modul 4 -

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safeND, 12.11.2021

Thematic setting – Our research in the project TRANSENS

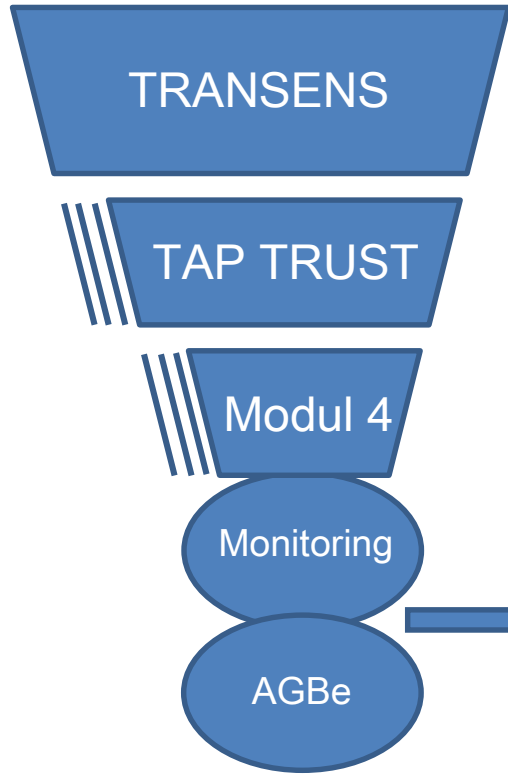


Transdisciplinary research on the disposal of high-level radioactive waste in germany

Trust in the context of technology, uncertainties and complexity

Development of a socio-technical based monitoring concept

Thematic setting – Our research in the project TRANSENS



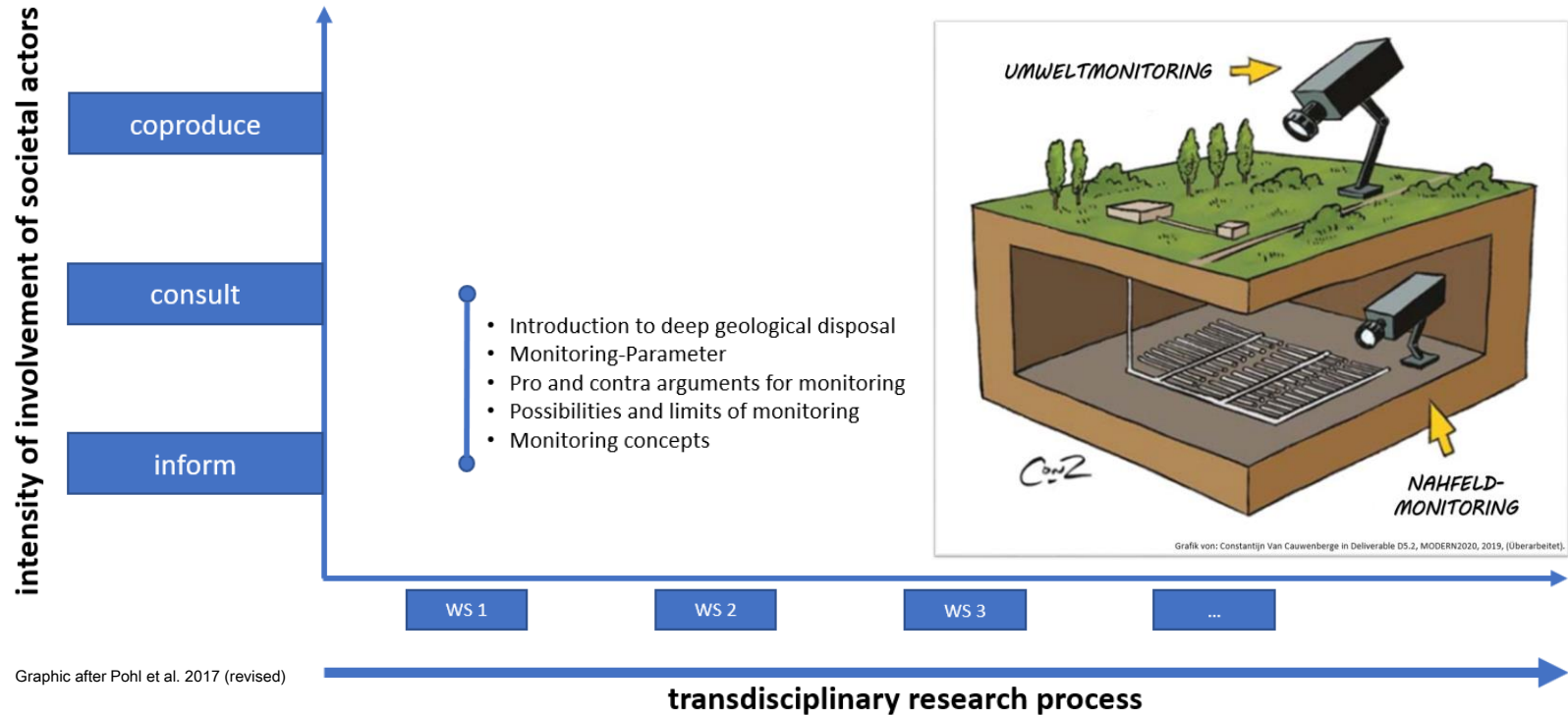
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Overview of the first AGBe-workshop in Modul 4

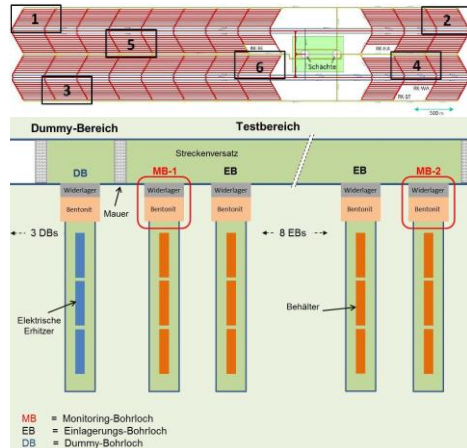
Thematic setting – thematic areas and level of involvement



Graphic after Pohl et al. 2017 (revised)

Thematic setting - Monitoring concepts

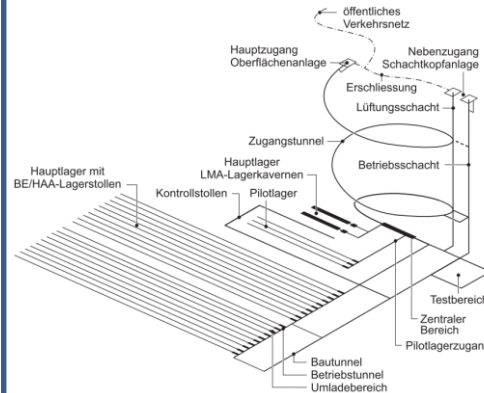
Concept MONTANARA¹



"Hope for the future development of measurement technology"

¹ Jobmann, M. (2019): Monitoring von Endlagern für hochradioaktive Abfälle mit Blick auf die Langzeitsicherheit und im Kontext der Partizipation, MONTANARA, BGE TEC.

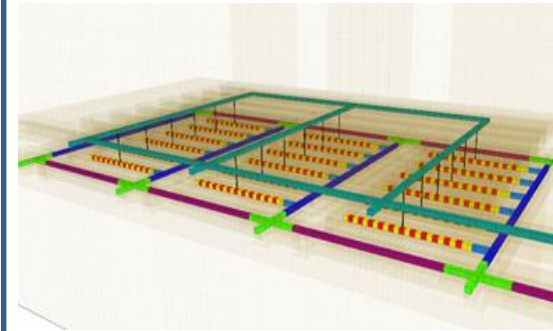
Concept pilot facility²



"Is the knowledge transferable?"

² Nagra (2016): Technischer Bericht 16-01, Entsorgungsprogramm 2016 der Entsorgungspflichtigen, Schweiz.

Concept 2-level repository mine³



"Flexible and robust information acquisition, with today's technology - tolerable safety loss?"

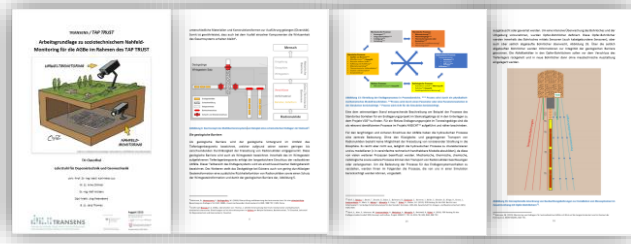
³ Lux et al. (2017): ENTRIA-Arbeitsbericht-07 „TH2M-basierte multiphysikalische Modellierung und Simulation von Referenz-Endlagersystemen im Salinar- und Tonsteingebirge ohne bzw. mit Implementierung einer Möglichkeit für ein direktes Monitoring des längerfristigen Systemverhaltens auch noch nach Verschluss der Einlagerungssohle“.

Thematic setting - TD research using the example of monitoring / building trust

- **Why?** In order to draw conclusions on the support of the future disposal path based on the joint reflection (involved science / civil society) on the topic of repository monitoring.
- **How?** With the active involvement of members of civil society in our own research process. This is done with the help of the ArbeitsGruppeBevölkerung (AGBe), which is a group consisting of 16 people from civil society – none of them are stakeholders with regard to the topic of final disposal –.
- **What exactly are we investigating?** Aspects of monitoring concepts for long-term monitoring of the near field area of a repository with regard to trust / confidence building? We work on the following research questions:
 - *Does long-term near-field monitoring contribute to trust in the safety of the final disposal of radioactive waste?*
 - *Which aspects of monitoring concepts increase trust in the implementation of near-field monitoring and which do not?*

AGBe-workshop "Monitoring and Trust" - preliminary work

- Conveying basic knowledge
 - Focused
 - Structured
 - Objective
 - Alternative
 - Actual
- Structure of content for target-oriented information (didactic reduction)
 - **Reports on:**
 - Deep geological disposal
 - Repository processes and their simulation
 - Socio-technical monitoring
 - **Website on:**
 - Deep geological disposal
 - Multiphysical processes
 - Generic simulation results



AGBe-workshop “Monitoring and Trust” - sequence

- Online-workshop
- 3 discussion formats
- 10 scientists
- 12 AGBe-members

Nr.	Time (4h50min)	Topic
1	10:00 – 10:10 (10min)	Welcoming
2	10:10 – 10:30 (20min)	Brainstorming
3	10:30 – 11:10 (40min)	Input Monitoring
4	11:10 – 11:40 (30min)	Question round
5	11:40 – 12:00 (20min)	Break
6	12:00 – 12:45 (45min)	Small group discussion
7	12:45 – 13:20 (35min)	Presentation of the results from the small group discussions
8	13:20 – 13:50 (30min)	Break
9	13:50 – 14:30 (40min)	Common discussion
10	14:30 – 14:45 (15min)	Questions / orders
11	14:45 – 14:50 (5min)	End



Spontaneous changes from prepared also to unprepared questions of present AGBe-interests for common discussions. New impulses by questions about:

- Information acquisition vs. security loss
- Area-wide vs. spatially limited monitoring

AGBe-workshop “Monitoring and Trust” - results

Central aspects of the AGBe: information and communication

In order to satisfy these aspects, information about **monitoring concepts, monitoring measurement technology, monitoring knowledge, monitoring processes, options for action, and those involved in monitoring** should be communicated **open, transparent, understandable, comprehensible, practical, independent, and timely.**

For communication formats such as **social media, schools, information events, local newspapers, local environmental houses, weekend workshops, television, and traveling exhibitions** are called.

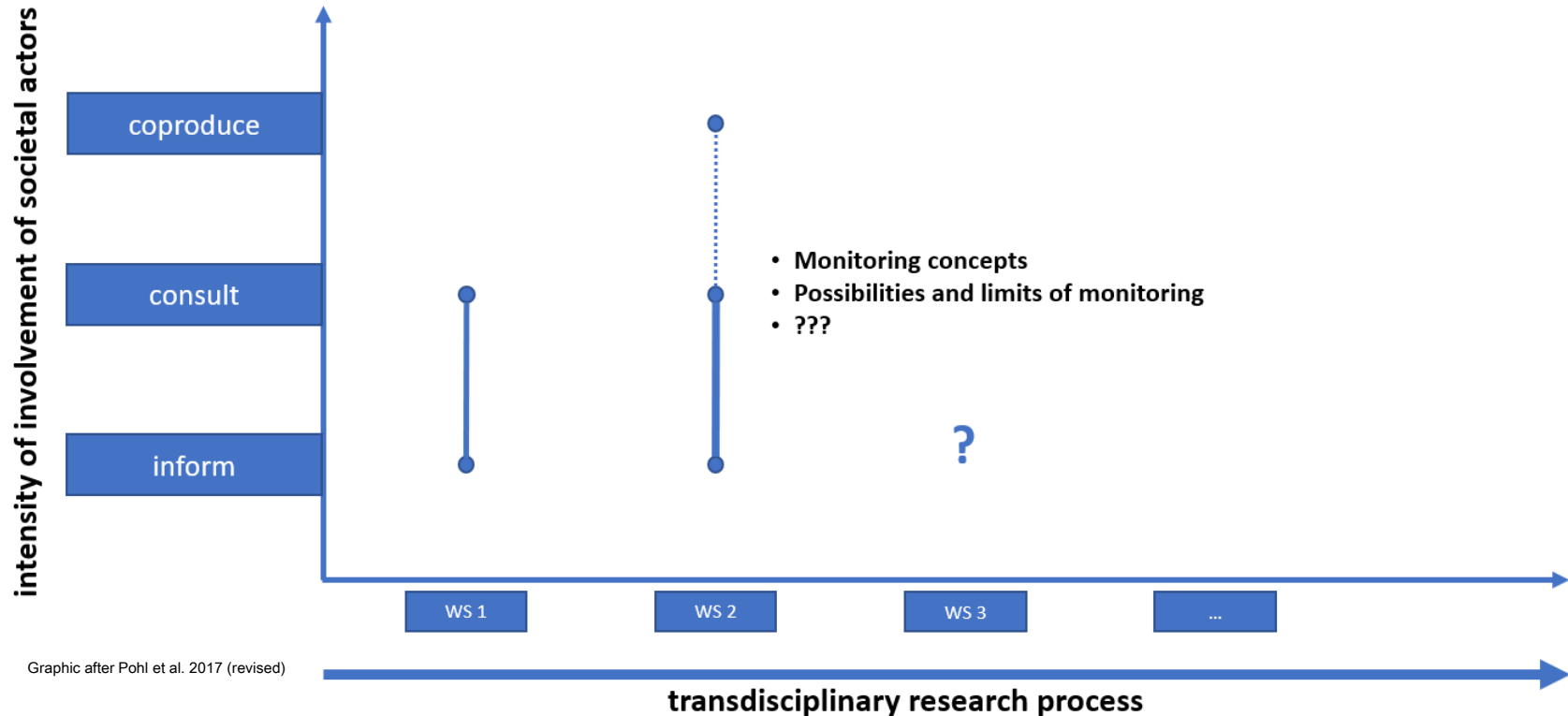
AGBe-workshop “Monitoring and Trust” - results

- Long-term near-field monitoring is generally seen as trust building.
- The integration of citizens (representatives of civil society) and communities (local administration) is seen as trust building.
- A flexible monitoring concept that starts at the earliest possible point of time, but offers the possibility of reacting to new technical achievements and findings is required.
- No closed discussion on the relation of information acquisition and safety loss to monitoring:
 - The AGBe requires further information in the form of an evaluation matrix in order to be able to evaluate monitoring options with regard to the acquisition in information and the loss of safety.
 - The determination of a change in the attitude of the AGBe towards monitoring already during the workshop: The initially strong weighting of an acquisition in knowledge by monitoring was considered increasingly differentiated taking into account the aspect of a safety loss that could not be excluded.

AGBe-workshop “Monitoring and Trust” – „lessons learned“

- A technically based transdisciplinary discourse requires:
 - target-oriented information of the AGBe,
 - expertise, objectivity, credibility, and flexibility on the part of science,
 - high willingness on the part of the AGBe to deal with the topic.
- Statements of the AGBe are always to be seen and evaluated in the context of the current state of knowledge of the AGBe.
- The discourse with the AGBe requires time and flexibility in order to address the interests of the AGBe and is to be understood as an iterative process.
- The added value of our transdisciplinary processing are
 - the acknowledgment of the key aspects considered to be relevant by the AGBe in the topic
 - as well as the knowledge of our own communication skills / possibilities for imparting knowledge to the interested public (represented by AGBe).

Next AGBe-workshop “Monitoring and Trust”



Graphic after Pohl et al. 2017 (revised)

Thank you for your attention!

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

Gefördert im
Niedersächsischen Vorab der Volkswagenstiftung



Förderkennzeichen: 02E11849A-J