



Interdisciplinary
research symposium
on the safety of nuclear
disposal practices



BUNDESGESELLSCHAFT
FÜR ENDLAGERUNG

Section 14 StandAG – Identification of siting regions and associated challenges

Interdisciplinary research symposium
on the safety of nuclear disposal practices 2021

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Section 14 StandAG – Identification of siting regions and associated challenges



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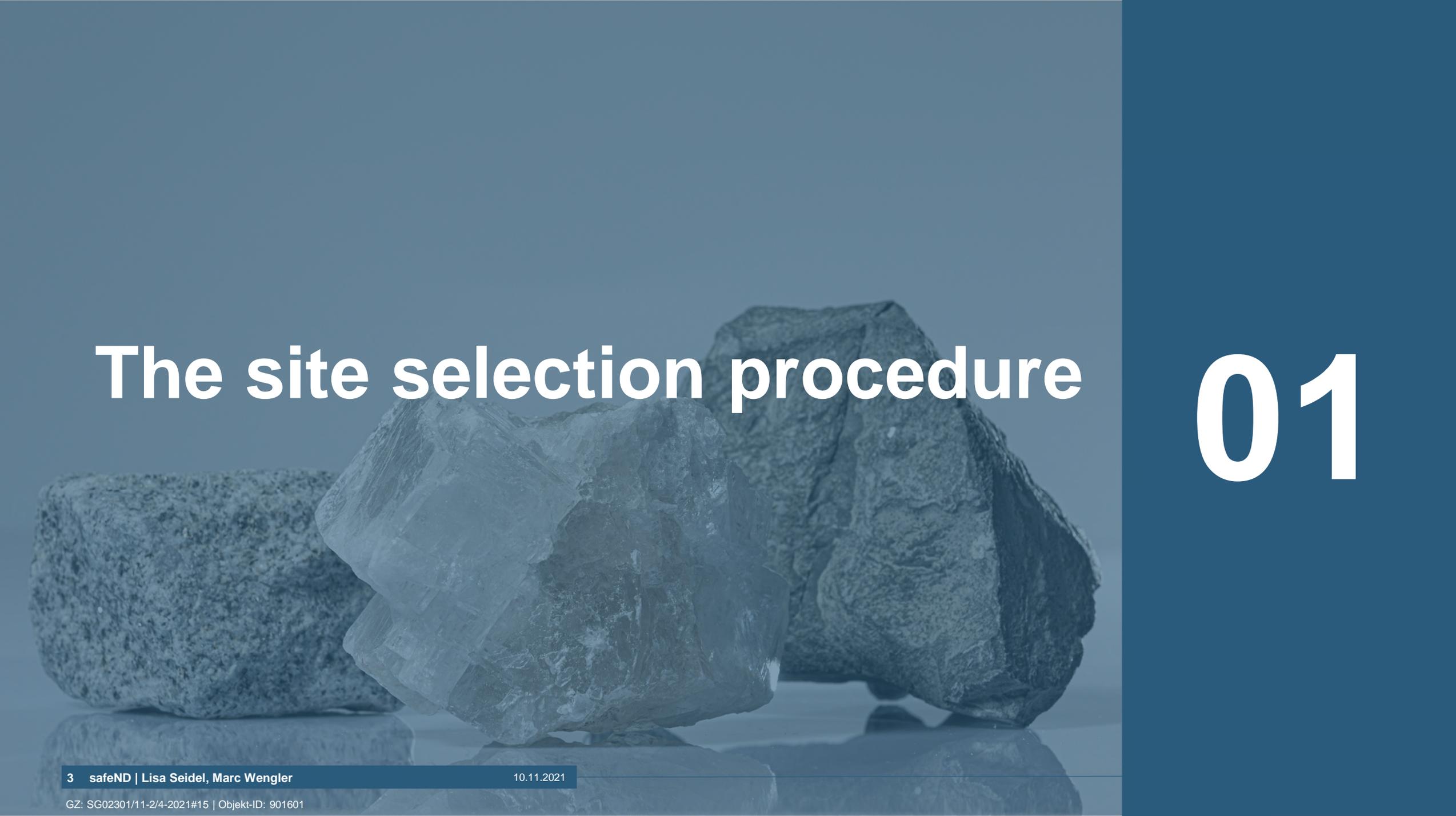
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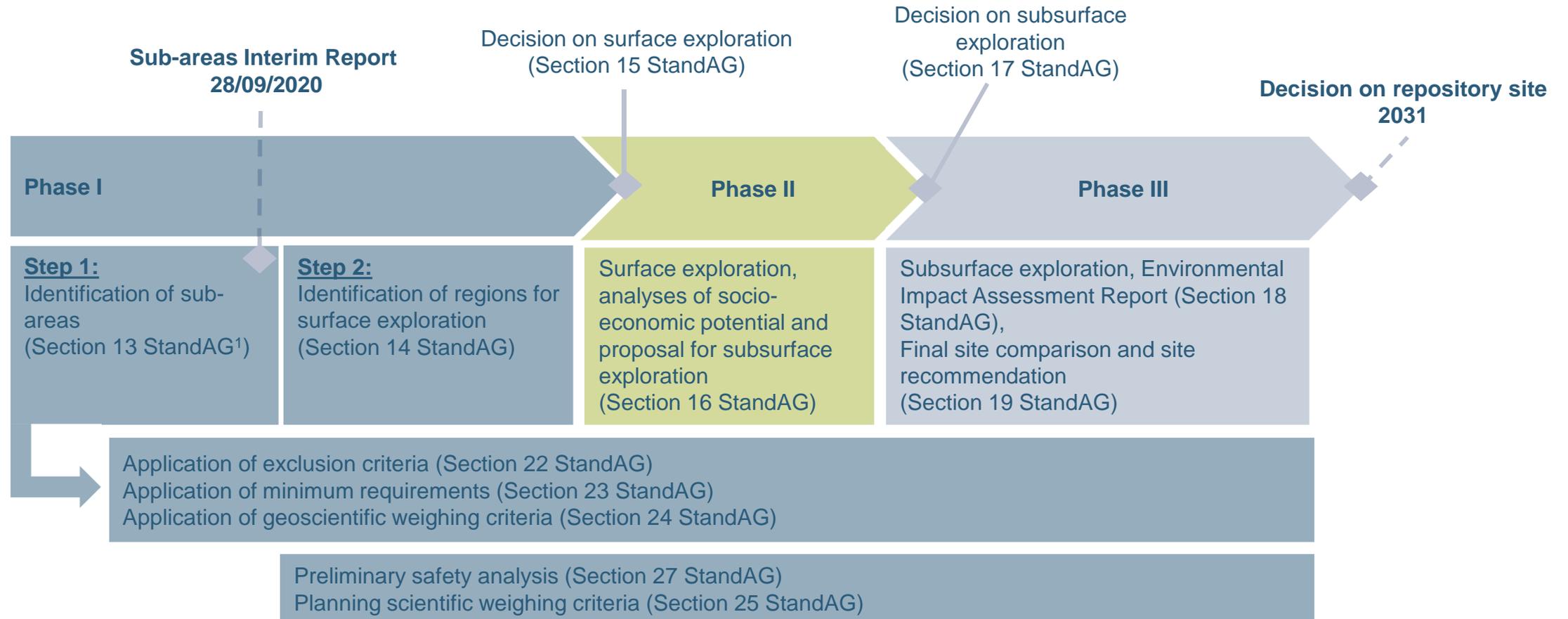
Outlook

The background of the slide features three distinct mineral specimens resting on a reflective surface. The specimen on the left is a dark, rectangular block with a rough, porous texture. The central specimen is a large, clear, faceted crystal with sharp edges and a complex geometric structure. The specimen on the right is a dark, angular rock fragment with a rough, crystalline surface. The entire scene is set against a dark blue gradient background.

The site selection procedure

01

Implementation of the German site selection procedure

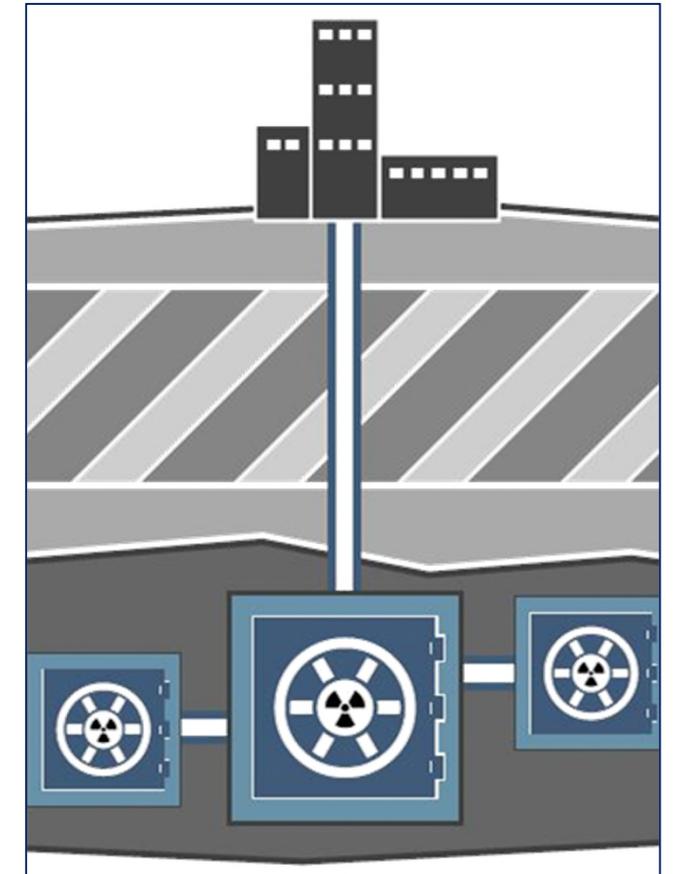


Source: BGE

¹StandAG: Standortauswahlgesetz vom 5. Mai 2017 (BGBl. I S. 1074), das zuletzt durch Artikel 1 des Gesetzes vom 7. Dezember 2020 (BGBl. I S. 2760) geändert worden ist

Regulatory framework

- Repository must be located within the Federal Republic of Germany.
- Participative, science-based, transparent, self-questioning and learning procedure.
- Deep geological disposal considering three host rocks: rock salt, claystone and crystalline rock.
- The best possible safety for a period of one million years.
- Retrievability during operating phase of the repository.
- Recoverability for 500 years after closure of the repository.
- Disposal of low- and intermediate-level radioactive waste shall be permissible, provided that the same best possible safety of the site is ensured as for the disposal of only high-level radioactive waste.



Source: BGE

The background of the slide features three pieces of translucent, faceted crystals, possibly quartz or a similar mineral, resting on a reflective surface. The crystals are arranged in a cluster, with one large, prominent crystal in the center foreground and two smaller ones behind it. The lighting creates highlights and shadows, emphasizing the geometric facets of the crystals. The overall color palette is a range of blues, from light to dark, creating a professional and scientific atmosphere.

Achievements of Phase 1 Step 1

02

Identification of 90 sub-areas

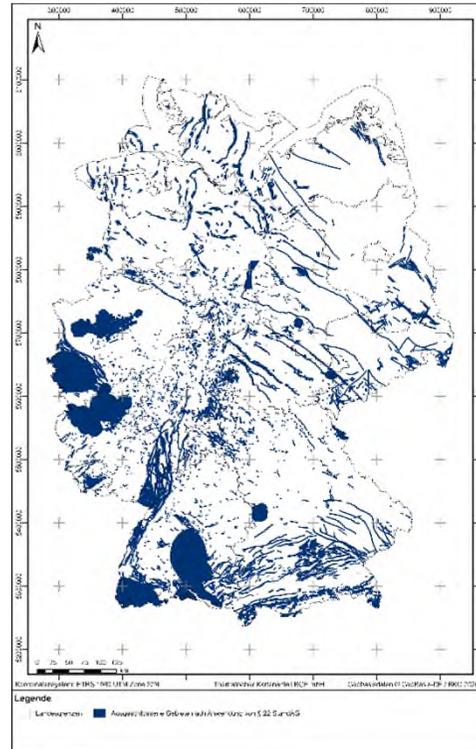
Blank map

Application of
exclusion criteria

Application of minimum
requirements

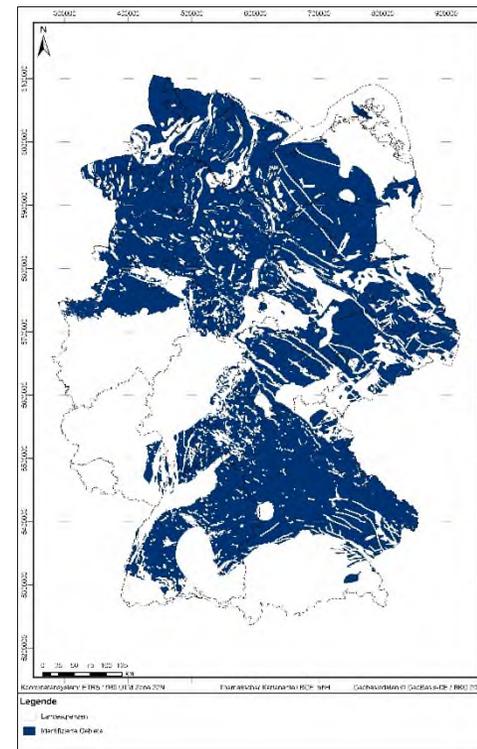
Geoscientific weighing criteria

Excluded areas



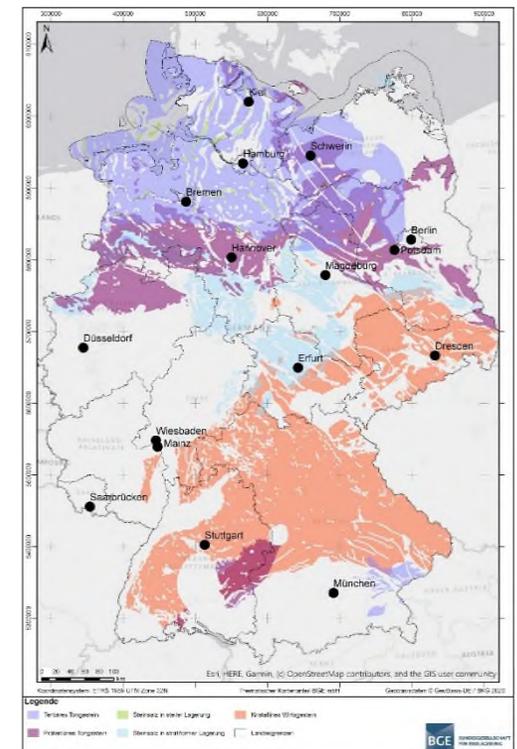
Source: BGE

Identified areas



Source: BGE

Sub-areas



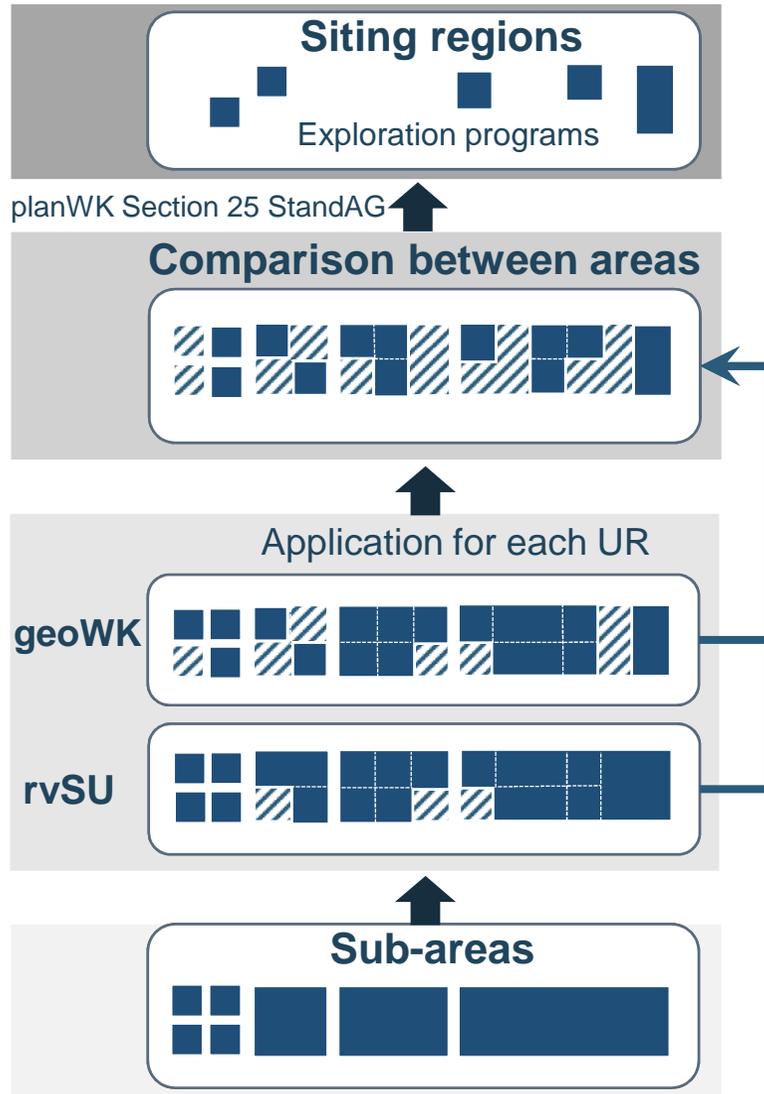
Source: BGE



Identification of siting regions pursuant to Section 14 StandAG

03

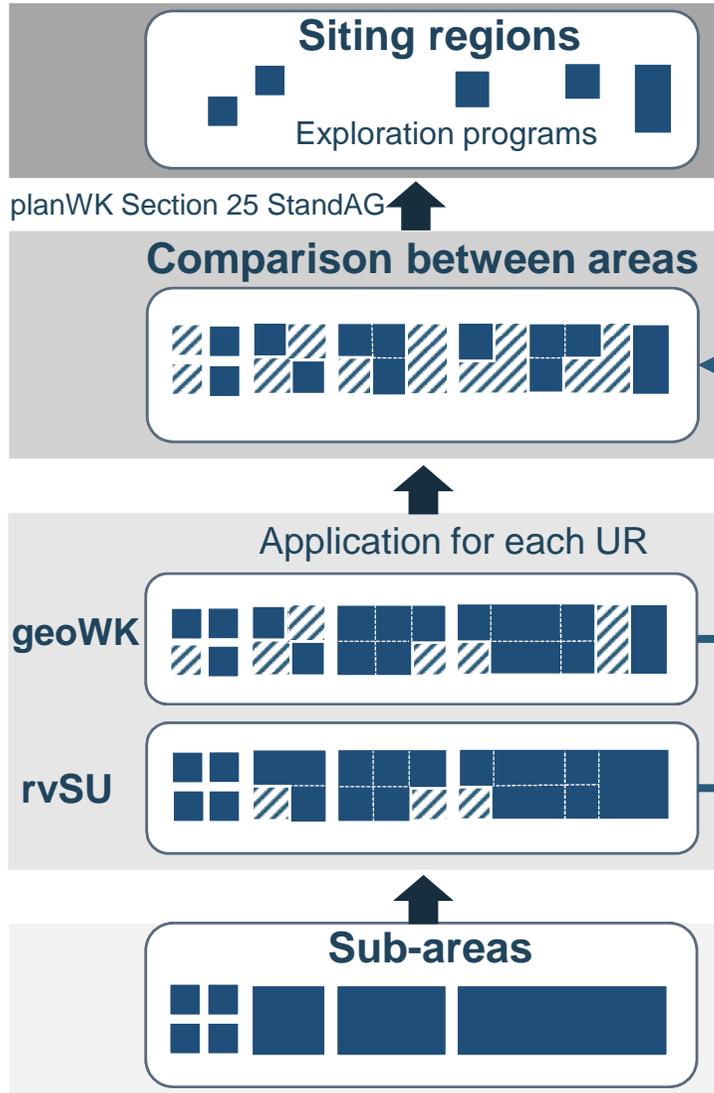
From sub-areas to siting regions (1/2)



Source: BGE

- Comprehensive and linear approach
- Geoscientific characterization for each sub-area → application of exclusion criteria (AK) and minimum requirements (MA)
 - Identification of investigation areas (UR)
- Application of the representative preliminary safety analysis (rvSU) to each UR
 - Parametrisation and evaluation of relevance of geoscientific weighing criteria (geoWK)
- Renewed application of geoWK to each UR
- Final comparison considering the results of the rvSU and geoWK, application of planning scientific weighing criteria (planWK) pursuant to Section 25 StandAG leads to a proposal of siting regions.

From sub-areas to siting regions (2/2)



Identification and proposal of siting regions for surface exploration, specific exploration programmes.
Hypothesis: less than 20 siting regions in total in the three different host rocks.



Final comparison considering the results of the rvSU and geoWK, potential application of planWK leads to a proposal of siting regions.



Renewed application of geoWK to each UR

- Evaluation of the overall geological situation
- Downsizing of areas is possible



Application of the rvSU to each UR

- If the rvSU shows that a UR is particularly suitable, a specific rvSU is carried out
- Binary result: UR is suitable in principle or not



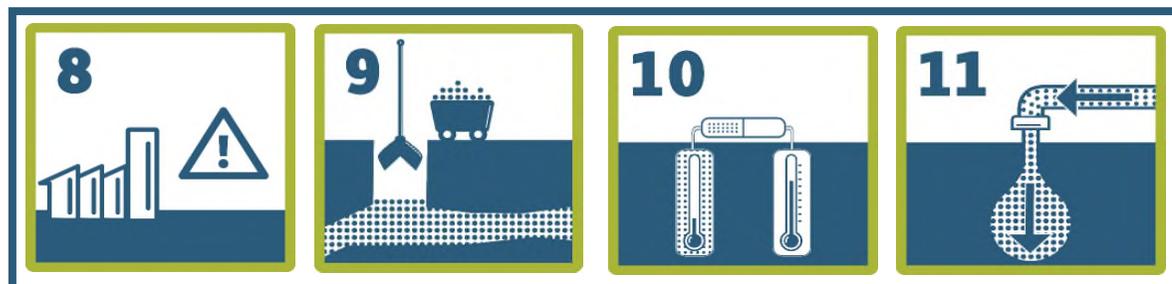
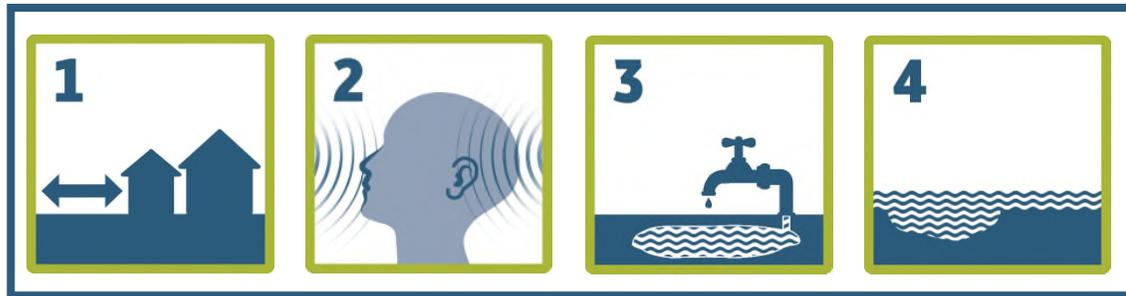
Geoscientific characterisation for each sub-area → application of AK and MA

- Identification of UR

Source: BGE

Planning-scientific weighing criteria - Section 25 StandAG

Appendix 12 in addition to Section 25 StandAG



Weighing group 1 (largest weighting)

- Protection of humans und the human health¹

Weighing group 2 (second largest weighting)

- Protection of unique nature and culture assets of irreversible disturbances¹

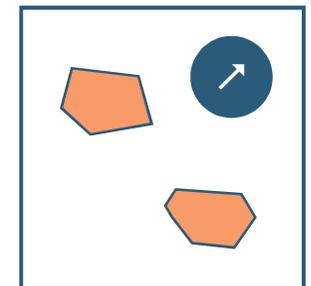
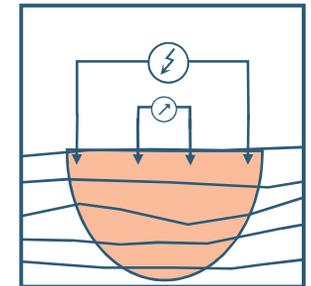
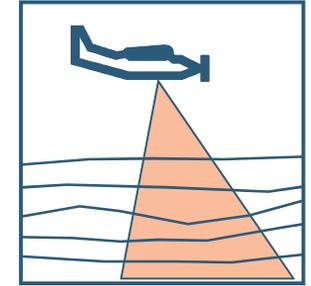
Weighing group 3 (lowest weighting)

- Other competing utilisation and infrastructure¹

¹K-Drs. 268: Abschlussbericht der Kommission Lagerung hoch radioaktiver Abfallstoffe. Kommission Lagerung hoch radioaktiver Abfallstoffe Berlin, 5. Juli 2016

Development of site specific surface exploration programmes

- The BGE shall develop **site-specific exploration programmes for surface exploration** in accordance with the requirements and criteria pursuant to Section 22 to 24 StandAG¹ and for conducting the further developed preliminary safety analyses pursuant to Section 16 StandAG.
- The BGE shall submit the proposal for the siting regions to be explored from the surface to the BASE including the grounds and the results of the participation in the interim report pursuant to Section 13 StandAG.
- With the proposal, the BGE shall present the site-specific exploration programmes for surface exploration to the BASE for specification.
- Pursuant to Section 12 EndlSiUntV² based on the identified geoscientific knowledge deficits in the investigation area, site-related exploration needs shall be identified, presented and prioritized with regard to their relevance to the safety of the disposal system.



Source: BGE

¹ StandAG: Standortauswahlgesetz vom 5. Mai 2017 (BGBl. I S. 1074), das zuletzt durch Artikel 1 des Gesetzes vom 7. Dezember 2020 (BGBl. I S. 2760) geändert worden ist

² Endlagersicherheitsuntersuchungsverordnung vom 6. Oktober 2020 (BGBl. I S. 2094, 2103)



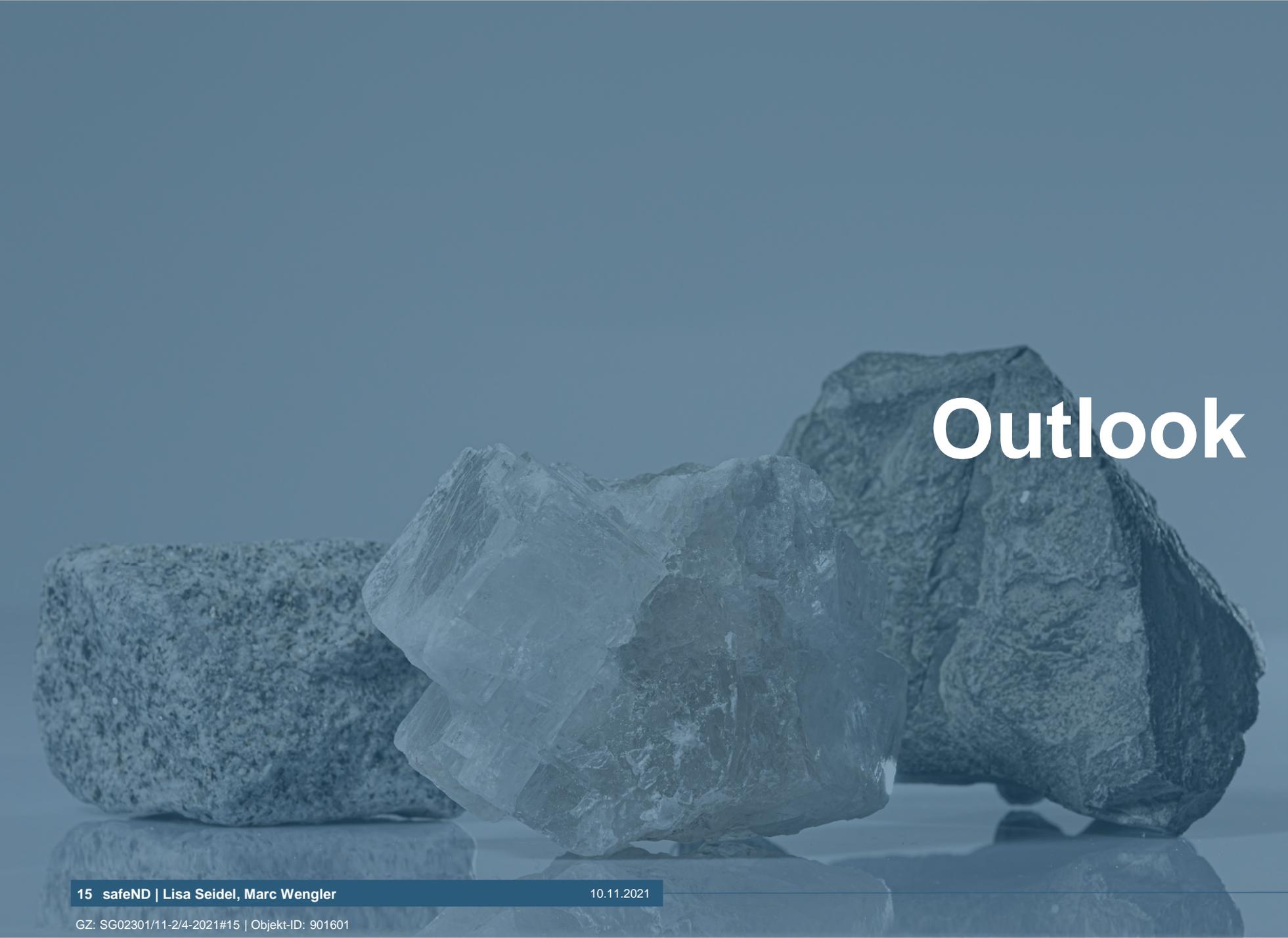
Section 14 StandAG – associated challenges

04

Associated challenges while implementing Section 14 StandAG



- The path to the siting regions for surface exploration can be accompanied by various challenges related to geoscientific, methodological and also societal questions.
- For example, the application of the rvSU may be more challenging in larger subareas compared to smaller ones as subsurface properties are likely to be more variable.
- Areas with little data coverage for example, and the treatment of these areas in the procedure may pose another challenge.
 - **Therefore, sound methodological concepts must be developed for performing the representative preliminary safety analysis as well as for applying the geoscientific weighting criteria.**
- The implementation of the participatory, science-based, transparent, self-questioning and learning procedure poses challenges to all stakeholders engaged in the procedure.

The image features three distinct mineral specimens resting on a reflective surface. The specimen on the left is a dark, rectangular block with a rough, crystalline texture. The central specimen is a large, clear, faceted crystal with sharp edges and a complex geometric structure. The specimen on the right is a dark, angular, and somewhat irregularly shaped piece. The background is a solid, light blue color, and the entire scene is reflected on the surface below.

Outlook

05

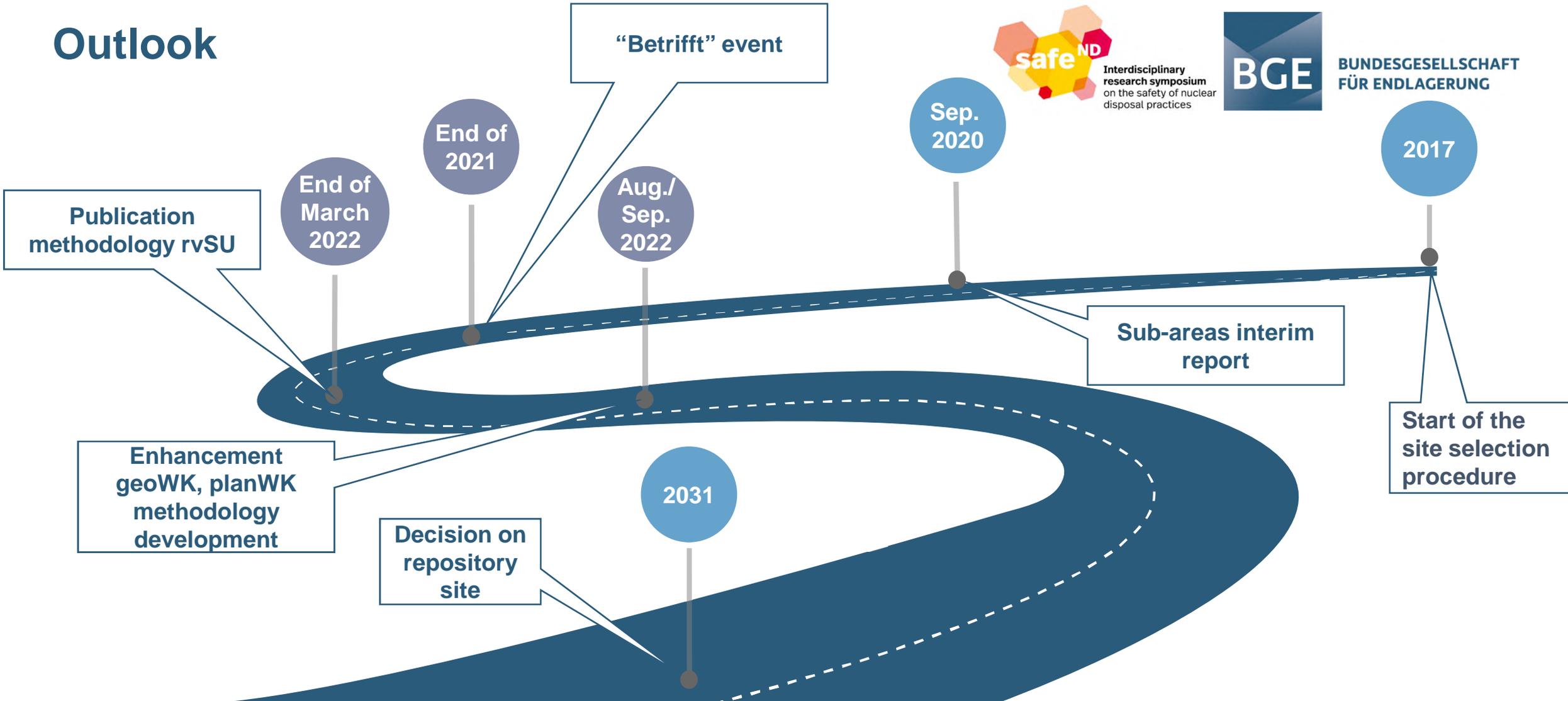
Outlook



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A robust scheduling of step 2 phase 1 is first possible after completion of the rvSU.



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