

KYT Closure Workshop



From Presentations

- Regulatory requirements and specifications for Closure are not (yet) firmly defined in Finland.
- For LILW repositories in Finland, existing Closure EBS concepts roughly define materials, systems and locations.
 - Crushed concrete is being considered for tunnel closing due to its availability and abundance (from decommissioning) and development of a high pH-environment beneficial to other engineered barriers.
 - Post-closure concepts (monitoring strategies, etc.) are less evident.
- For the HLW repository in Finland, Closure EBS concepts and designs are relatively mature with demonstrations having been performed and shortcomings identified.
 - Post-closure concepts (monitoring strategies, etc.) are less known.

From Presentations cont.

- Monitoring concepts in EU and other international projects focus on the repository operational phase.
- Monitoring is viewed as a quality control measure in that overall monitoring periods (pre- and post-closure) will be short relative to repository performance lifetimes.
- The oil and gas industry is searching for alternatives to cement-based plugs and seals due to cost, carbon footprint and durability concerns.
- Interwell P&A has developed the Rocksolid™ concept which employs a thermite reaction to reinstate host rock integrity over well cross sections.
- Similarities exist between the closure and backfilling of mines and radioactive waste repositories; key learnings are applicable to WMOs.
- Challenges include the use of excavated material and questions regarding sustainability and economics.

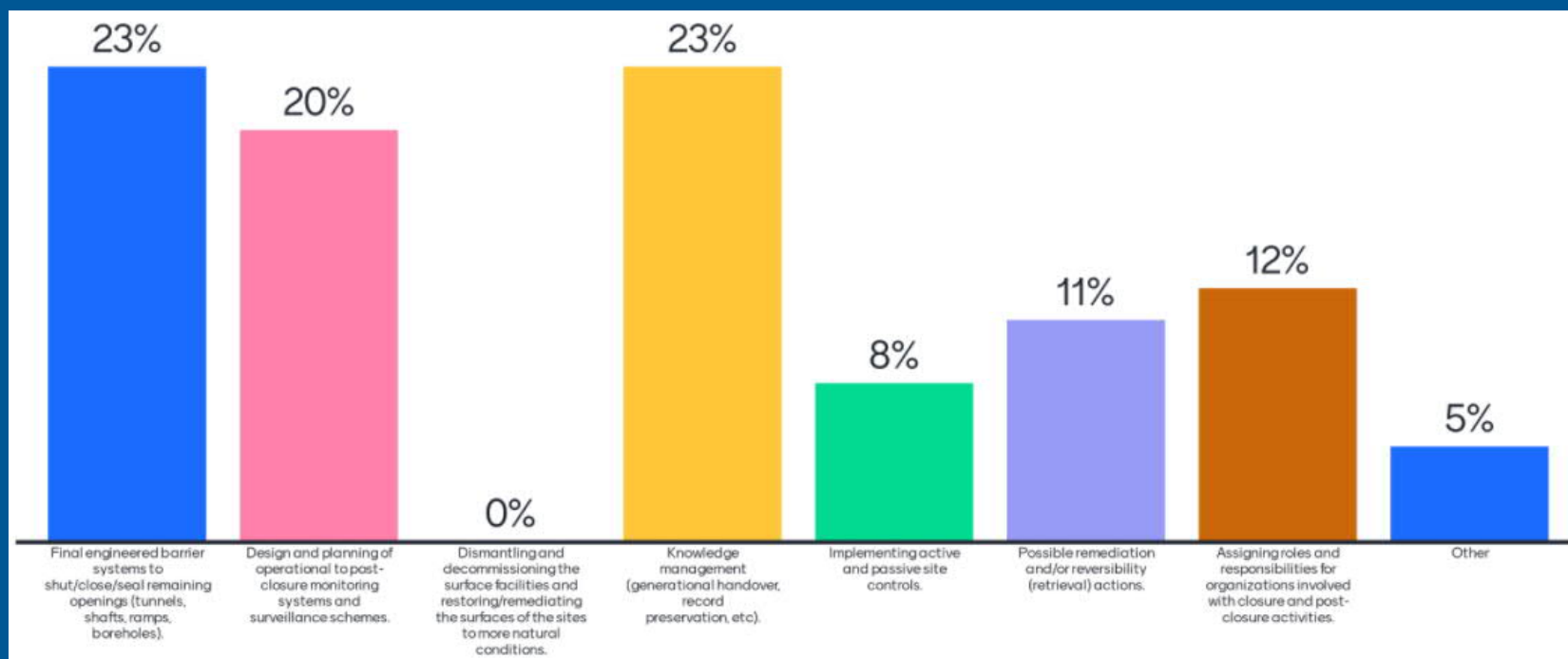
From Breakout Rooms

- The biggest challenge to repository closure at present may be the lack of detailed requirements which makes it difficult to design and assess any aspect. Of specific note were the long-term performance of structures and materials.
- Meaningful dialogue between implementers and regulators will be needed to iterate closure requirements.
- Where does the closure phase officially begin and end, and who are the responsible parties at each of these milestones?
- Repository closure has been developed somewhat independently of other repository phases; there may be significant economic and risk-reduction benefits for treating closure more integrally.

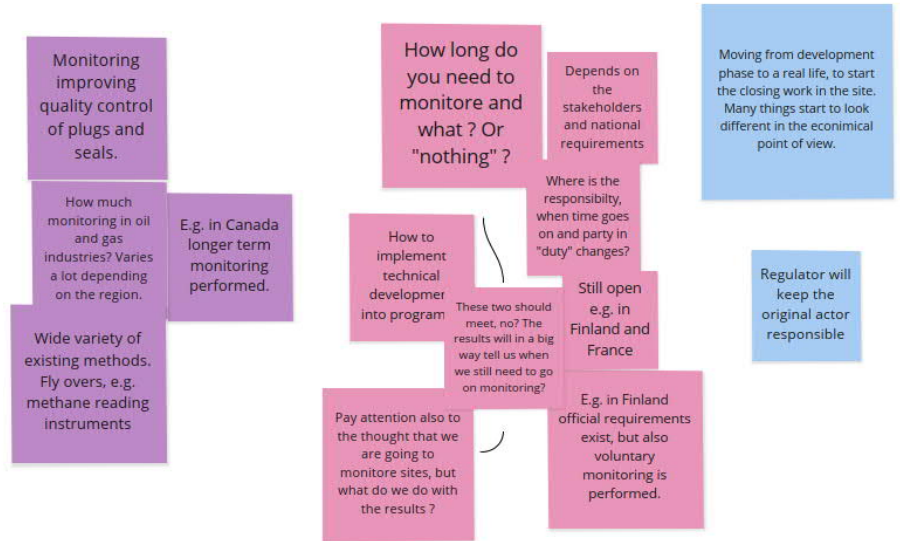
From Breakout Rooms cont.

- Monitoring objectives and strategies should be clearly and holistically defined to meet Closure requirements.
- The Rocksolid™ concept should be explored for repository borehole sealing given its potentially greater long-term stability and safety.
- Can backfilling and tunnel closing actions be combined with other concerns (e.g., CO₂ storage) to increase sustainability?
- Although polling identified (see next slide) knowledge management as a major challenge area in repository closure, this topic was not specifically addressed in the workshop and should be taken into further consideration.

Where are the biggest challenges in radioactive waste repository closure?



What are the biggest challenges regarding Closure activities for repository programs?



Which challenging aspects of Closure would most clearly benefit from further development, innovation or optimization?

