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Organisation de Coopération et de Développement Economiques
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MOVING FORWARD WITH GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE:

AN NEA RWMC COLLECTIVE STATEMENT

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Why is geological disposal appropriate for high-activity, long-lived radioactive waste?

- Radioactive waste is associated with all phases of the nuclear fuel cycle and with the use of radioactive materials in industrial, medical, research and defence-related applications. All such waste must be managed safely and in a manner that protects humans and their environment.

- The most hazardous and long-lived radioactive wastes, such as spent nuclear fuel and high-level waste from fuel reprocessing, must be contained and isolated from humans and the environment for many tens of thousands of years.

- Whatever the future of nuclear power in the different countries, it is universally recognized that safe and acceptable disposal solutions must be pursued for existing and projected inventories of high-activity, long-lived radioactive waste from current practices.

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- A geological disposal system provides a unique level and duration of protection for high-activity, long-lived radioactive waste. The concept takes advantage of the capabilities of both the local geology and the engineered materials to fulfil specific safety functions in complementary fashion providing multiple and diverse barrier roles.

- The overwhelming scientific consensus world-wide is that geological disposal is technically feasible. This is supported by the extensive experimental data accumulated for different geological formations and engineered materials from surface investigations, underground research facilities and demonstration equipment and facilities; by the current state-of-the-art in modelling techniques; by the experience in operating underground repositories for other classes of waste; and by the advances in best practice for performing safety assessments of potential disposal systems.

- Disposal can be accommodated in a broad range of geological settings, as long as these settings are carefully selected and matched with appropriate facility design and configuration and engineered barriers.

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Where do we stand with geological disposal in OECD countries?

- Having taken into account significant public and stakeholder involvement, many countries have adopted geological disposal as the reference long-term management solution for their high-activity, long-lived radioactive waste.

- Progress towards implementation is evident in a number of countries. For countries that have faced challenges and setbacks with respect to implementation, geological disposal still remains the reference option.

- With the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Safety Standards of the International Atomic Energy Agency, and the recommendations of the International Commission on Radiological Protection there is now a common framework that guides national regulatory oversight and implementation of disposal.

- For programmes that are most advanced, implementation of geological disposal builds on a strategy that accommodates continuous learning and includes a willingness to incorporate evolution in technical advances and societal requirements.

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Where do we stand with geological disposal in OECD countries?

- The search for, and selection of, a site is a critical step that has proven to be politically and socially challenging. Recent successes show the benefit of open and transparent processes that allow sufficient time and include a concerted effort to assure that there is meaningful involvement of all stakeholders in the decision-making processes by following a flexible and adaptable strategy.

- Ethical aspects, including considerations of fairness to current and future generations, are important for the development of disposal programmes.

- Cultural, societal, and geographical similarities and differences have resulted in a variety of paths towards implementing national disposal solutions, but a common safety and security objective underlies all these paths.

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Challenges and opportunities in practical implementation

- Regulators, implementers and policy makers have increasingly become aware that confidence by the technical community in the safety of geological disposal is not, by itself, enough to gain public confidence and acceptance.

- There is consensus that a broadly accepted national strategy is required. This strategy should address not only the technical means to construct the facility but also a framework and roadmap allowing decision makers and the concerned public the time and means to understand and evaluate the basis for various proposed decisions and, ultimately, to gauge whether they have confidence in the level of protection that is being indicated by the implementing organisation and evaluated by the regulator through its independent review.

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Challenges and opportunities in practical implementation

- Reversibility and retrievability are considered by some countries as being important parts of the waste management strategy. Reversibility implies a disposal programme that is implemented in stages and that keeps the options and choices open at each stage, and provides the capacity to manage the repository with flexibility over time under specified conditions. Retrievability is the possibility to reverse the step of waste emplacement. There is general recognition that it is important to clarify the meaning and role of reversibility and retrievability for each country, and that provision of reversibility and retrievability must not jeopardise long-term safety.

- Technical development and implementation of disposal projects may demand decades to realize. The long implementation times afford opportunities for programme adaptation and enhancement. The related challenge is to maintain the support at both local and national levels, the necessary infrastructure, and human resources for knowledge preservation and transfer.

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Challenges and opportunities in practical implementation

- Phased decision-making has come to the fore as the preferred approach to deal with the long implementation times. Besides allowing for continued research and learning, phased decision-making provides the opportunity to build broad societal confidence in the concept and to develop constructive relationships with the most affected regions. The related challenges are to maintain the processes and relationships, integrate advances, and ensure forward momentum.

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Broad expectations on further development of geological disposal

- Collective experience and knowledge transfer have been helpful in facilitating development. International cooperation and sharing of research projects, experiences and lessons learnt should continue.

- Delaying work on geological disposal – i.e. by adopting a "wait and see" strategy – would require increasingly more demanding care for the waste and its storage facilities. Moving forward with implementation of geological disposal is, thus, desirable from the point of view of both ethics and safety. Sufficient information now exists to take the first steps and put a plan in place commensurate with the current generation's responsibility.

Traditional and evolving roles and responsibilities of main actors

Stakeholders	Traditional expectations for roles and responsibilities	Evolving expectations for roles and responsibilities
Policy makers 	Defining policy options, investigating their consequences under different assumptions, making policy choices.	Informing and consulting stakeholders about policy options, assumptions, anticipated consequences, values and preference. Setting the “ground rules” for the decision making processes. Communicating the bases of policy decisions.
Regulators 	Defining regulatory options, investigating their consequences under different assumptions, making choices regarding regulatory options. Communicating the bases of regulatory decisions.	Maintaining open and impartial regulatory processes. Providing stakeholders with understandable explanations of the mechanisms of regulatory oversight and decision making, including explanations of the opportunities available for stakeholder participation therein. Serving as a source of information and expert views for local communities.
Scientific experts, consultants 	Carrying out scientific/technical investigations with integrity and independence. Advising institutional bodies such as safety authorities and implementing agencies on technical issues in relation with safety concerns with the view to providing balanced and qualified input for decision making.	Acting as technical intermediaries between the general public and the decision makers. Providing balanced and qualified input for all stakeholders and encouraging informed and comparative judgment.

Traditional and evolving roles and responsibilities of main actors

Implementers 	Finding a solution for the radioactive waste management problem, implementing the solution.	Co-operating with local communities to find an acceptable solution for radioactive waste management. Co-operating with local communities in implementing the solution. Interacting with policy-makers and regulator
Potential host communities 	Accepting or rejecting the proposed facility.	Negotiating with implementers to find locally acceptable solutions for radioactive waste management that help avoid or minimize potentially negative impacts and provide for local development, local control, and partnership. Interacting with policy-makers and regulator

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