



Making the final disposal of radioactive waste safe and transparent

There is no alternative to the final disposal of high-level radioactive waste in deep geological formations that is safe and ethical in the long term. Today, there is consensus on this in research and broad sections of the public. Safe final disposal is necessary in order to keep the radiation emitted by nuclear waste out of the biosphere for thousands of years.

In the search for a suitable repository site, it is essential to consider not only geoscientific and technical but also social aspects. Repository selection projects can fail due to resistance from the local population, as examples from Germany and other countries show: at Wellenberg in Switzerland, public protests against the construction of a repository for low- and intermediate-level radioactive waste led to two cantonal referendums; the plans were finally shelved as a result of political pressure. A similar situation arose in Gorleben in Germany. To date, no repository for high-level radioactive waste has come into operation anywhere in the world.

The early involvement of the public and a transparent, stepwise approach are therefore key features of a consensus-oriented process, as recommended, for example, by the OECD Nuclear Energy Agency's Forum on Stakeholder Confidence (FSC). In Germany, the Repository Site Selection Act (Standortauswahlgesetz – StandAG) goes as far as to stipulate that the site selection decision should be based on a broad social consensus, with the public actively involved in the process.

The Commission on the Storage of High-Level Radioactive Waste and the Site Selection Act

The German Commission on the Storage of High-Level Radioactive Waste, comprising representatives of politics, science and research, environmental associations, industry, trade unions and faith communities, conducted a critical appraisal of the first version of the Repository Site Selection Act adopted in 2013. One of the Commission's key recommendations was that the search for a repository site should be inclusive and science-based. The purely formal opportunities for participation provided for in the original legal text did not go far enough.

The new version of the Act, adopted in 2017, therefore expressly calls for a self-reflecting, learning and reversible procedure. The prerequisites for this are reflection, cooperation and participation. In that sense, the Act involves very much more than the public consultation provided for in German procedural law; among other things, the Act identifies formats and structures to safeguard this approach.

Whereas participation was previously informal and voluntary, stakeholders now have the right to take part in the formal procedure via the information platform, regional conferences, technical subarea conferences and a Council of Regions. In practice, all these innovations have yet to be operationalised. This is new territory for everyone involved – the requirements for a learning process and a learning organisation often bear little relation to past experience and mechanisms previously deployed.

Citizen participation in site selection: co-design goes beyond information and consultation

Participation and transdisciplinary methods are therefore becoming an increasingly important aspect of the repository site selection process. However, participation does not just mean the straightforward provision of information to the public. Rather, it requires representatives from politics, the public authorities and civil society to engage in dialogue. An inclusive process offers a range of opportunities for civil society involvement.

Genuine participation also requires a willingness to engage in two-way self-reflecting learning. Rather than information flowing in one direction only, all stakeholders should have an opportunity to share their expertise. In an ideal scenario, shared reflection generates collective knowledge and facilitates joint planning of further processes (co-design).

Research project: Public participation in the repository siting procedure (BASE)

On behalf of the German Federal Office for the Safety of Nuclear Waste Management (BASE; formerly the BfE), a team of researchers at the Oeko-Institut analysed the challenges of public participation in the siting procedure for a final repository for high-level radioactive waste in Germany. The Institute for Technology Assessment and Systems Analysis (ITAS) at the Karlsruhe Institute of Technology (KIT) and team ewen GbR from Darmstadt were also involved in the interdisciplinary project group.

As their main research question, the team looked at how a dialogue-oriented civil society participation process should be designed. In this context, it is essential not to lose sight of the overall goal, namely to reach a site selection decision that is acceptable to the whole of society.

Similar challenges have arisen in participation processes for other major projects which have now ended, such as large-scale pipeline or rail track construction. This allows conclusions to be drawn on citizen participation in the site selection procedure and provides a basis for developing recommendations. From this starting point, the research group is developing policy recommendations and considering how the legal requirement for a self-reflecting and learning process can be fulfilled. The project also looks at visions for the future as a means of fostering constructive social debate.

[Public Participation in the Siting Procedure for a Final Repository: Challenges of a Cross-generational, Self-reflecting and Learning Procedure: Oeko-Institut research project for the BfE](#)

Transdisciplinary Research on Radioactive Waste Management (TRANSENS)

In the search for a repository site for high-level radioactive waste and, indeed, for the interim storage facilities that are also required, purely technical research strategies do not go far enough. With funding from the German Federal Ministry for Economic Affairs and Energy (BMWi), Oeko-Institut

researchers are therefore sharing their expertise in a collaborative project which brings together research partners from various universities and other institutions, as well as expert practitioners.

In addition to the scientific and technical aspects, political and social dynamics pose a major challenge in site selection. The research team is therefore investigating various questions relating to the socio-technical dimension of the waste management pathway. Specifically, the Oeko-Institut is examining potential spatial impacts of a repository and how participation rights are likely to affect the preparation and implementation of policy decisions. This serves as a basis for the development of management strategies that support a flexible and stepwise approach.

As the findings of the predecessor project (SOTEC-radio) showed, there is considerable interplay between the technical and the social dimensions. The current TRANSENS project aims to identify ways of improving the quality of decision-making.

Further information

[TRANSENS website](#)

[Teaching material on final storage](#)

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