

STEPWISE APPROACH TO THE LONG-TERM MANAGEMENT OF RADIOACTIVE WASTE



At one time the development of a facility for the long-term management of radioactive waste was viewed as if it were a relatively short-lived and straightforward activity to be completed in the time span of perhaps a single generation. The goal was seen as to provide a facility that could safely contain radioactive waste without any further action or intervention by future generations.

Today, the implementation of a long-term radioactive waste management project has come to be viewed as an extended and incremental process, perhaps taking several decades to complete. This changing vision still values the protection of future generations. Additionally, it assumes that future citizens will be involved in the decision making process, and considers that we should preserve their ability to exercise choice.

The new view of decision making focuses on designing a phased, staged, or stepwise process, composed of incremental steps that are to some extent adjustable and reversible. Such a phased approach is not limited to radioactive waste management. Today national and local governments increasingly apply the stepwise approach to policy development and implementation for many issues, technical and social, large and small.

The NEA Forum on Stakeholder Confidence (FSC) supports stepwise decision making and makes the following observations.



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What are the ideal features of a stepwise decision making approach?

- § A plan lays out policy development and implementation by steps or stages. If necessary these may be revisited and adjusted, within the limits of feasibility.
- § Within each stage, problem definition and analysis, policy formulation, implementation and monitoring are carried out in turn, in a cyclical process.
- § Main stakeholders are involved at each step and also in review of the results of decisions taken in previous steps.

What are the advantages of the idealized stepwise approach?

- § Research, policy making and stakeholder input are linked in a cycle of shared learning. This allows involved actors to build more familiarity with and control of the issue at hand.
- § Making choices by stages facilitates adaptation to inevitable changes in legal, economic, social, technical or political conditions. This is useful in a lengthy project.
- § The stepwise plan provides clarity to all stakeholders about the stages of the programme, the roles of those involved, and their opportunities to influence the outcomes.

What are the requirements for applying a stepwise approach?

- § Actors must enter the decision-making process with an open attitude towards its precise timing and its final outcomes.
- § Existing policy or legislation must permit such flexibility, or must be adjusted to accommodate the outcomes of an incremental, cyclical process.

What are the challenges in the formulation and implementation of a stepwise approach?

- § Agreement must be achieved on the desirability of the stepwise approach and on potential decision sequences. Rules must be established for balancing between the need to revisit decisions and the need to «bank» progress and move forward.
- § Platforms must be built to support the participation of all actors and reinforce their willingness to participate, e.g., by catering for the information needs of the different publics. This requires tools (legal instruments, funding arrangements, consultation methods...) and research means, and also commitment to consider inputs if they meet quality criteria (which must be defined and agreed).
- § Relevant stakeholders must be identified, and interaction must be established amongst them. Room and time must be provided for non-institutional stakeholders to learn new roles, build up knowledge, examine choices and communicate with their constituencies.
- § A «driver» must keep the process moving. The needed platforms and institutions must be protected and focus must be kept on the long-term goals and the decisions at hand.

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What are the recent experiences in the long-term management of radioactive waste?

A stepwise approach to decision making is commonly adopted in NEA member countries.

§ In both Canada and the UK, it was decided to re-examine national long-term management policy with a first step consisting of orderly consultations and reflections. The outcome was to define a new programme which could enjoy societal support, to move forward (again stepwise) to a final management solution. The next stages involve both technical and societal steps. On the technical side, interim solutions give time to build confidence in a permanent solution. An “adaptive phased management” concept has recently been adopted by Canada, combining the elements of final placement of the used fuel in a deep geological repository, with flexibility in the pace and manner of implementation including provision for an optional step of shallow underground storage. Similarly, in the UK, the “phased geological disposal” option, i.e., interim storage to be followed by final disposal, has recently been proposed as a preferred technical approach. On the societal side, steps are being worked out to build up solid partnership arrangements with potential host communities.

§ In France, a modern stepwise approach to the long-term

management of long-lived radioactive waste was adopted by Parliament in 1991. Complementary research avenues were set up over a period of 15 years accompanied with requirements for continued societal and technical review, followed by national debate to define a new phase of work. A new law was adopted in 2006 providing a reference schedule towards implementing geological disposal of wastes and identifying intermediate decision points. Parliament, with input from national debate, will define the operational concept of reversibility.

§ In the United States, a stepwise approach to final repository development and licensing was defined by law in the early 80's. The process has been refined and extended in order to allow for the implementation of new technical design, evolution in the regulatory arena, and various stakeholders' inputs.

§ In Finland, clear milestones were identified at an early stage of the programme for spent fuel disposal. In addition to the original decision points, new ones have been added in order to adapt to stakeholder demands and regulatory reviews. The original technical design was also changed following technical and regulatory considerations. Similar considerations can be seen in Sweden.

What does the FSC observe in the field of long-term management of radioactive waste?

The way stepwise decision making is handled varies from country to country in line with the legal and democratic frameworks specific to each one. There is no «one size fits all» solution, and even when staged programmes are designed they may not be acceptable to all stakeholders, or partial failures to move forward may occur. However, stepwise decision making has led to decisions that are viewed as legitimate and can be more easily sustained. This approach can, and has, allowed stakeholders - especially local ones - to gain familiarity with and a degree of control over radioactive waste management technologies and institutions. In particular, accepting technical options or volunteering as a candidate host community are shown to be easier when communities can move through stages that

allow them to become well informed and progressively more committed, instead of being obliged to accept «all or nothing». The last decade or so has seen an evolution in the roles and number of the actors considered to have a legitimate part to play in radioactive waste management. This results in a greater call for stepwise decision making to manage the additional complexity introduced in defining and implementing an agreed long-term radioactive waste management solution. Legal instruments, such as the Environmental Impact Assessment (EIA) process regarding proposed installations, facilitate the involvement of a wider set of actors, and a variety of arrangements and techniques today support an effective interaction between the key players.