

Radioactive Waste Management

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# **The Regulator's Evolving Role and Image in Radioactive Waste Management**

**Lessons Learnt within the NEA Forum on  
Stakeholder Confidence**

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NUCLEAR ENERGY AGENCY  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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## FOREWORD

Institutions involved in the long-term management of radioactive waste are facing a rapidly evolving environment stemming from such influences as societal changes, new information technology and new roles for the media. This is taking place at the same time as some national programmes evolve from research and development to site selection and implementation of a repository, whilst others are reviewing and defining their policies in the waste management area. As in many environmental areas, a demand for public participation in decision making leads to a need for new approaches to involve stakeholders.

The NEA Radioactive Waste Management Committee (RWMC) has identified public perception and confidence as one of the strategic areas where progress would be of most benefit to the further development of radioactive waste management programmes. The committee intends to promote common understanding amongst its institutional members and provide a basis for enhanced dialogue amongst all interested parties. In this light, the RWMC launched the Forum on Stakeholder Confidence (FSC). The FSC is intended to review the experience of its participating organisations in outreach programmes, to identify and examine stakeholder confidence issues and to help prepare the dialogue across institutional and non-institutional boundaries.

The FSC has carried out intense and fruitful activities since its inauguration in August 2000. The alternation of workshops with FSC plenary meetings to analyse the lessons learnt has proved to be highly efficient. For example, the FSC has gained a comprehensive picture of the Swedish situation through the views of the Swedish Nuclear Fuel and Waste Management Company (SKB), the Mayor of Oskarshamn and the Swedish Nuclear Power Inspectorate/Swedish Radiation Protection Authority (SKI/SSI), presented during the first FSC workshop in 2000. The Finnish case and Canadian case were explored in depth in the second and third FSC workshops held in 2001 and 2002 respectively. A comprehensive overview of the UK situation was received at the FSC plenary meeting in April 2002. The activities and free publications of the FSC can be consulted on the NEA website at <http://www.nea.fr/html/rwm/fsc.html>.

The FSC notes that amongst all the institutional actors in the field of long-term radioactive waste management, it is perhaps the regulatory authorities that have restyled their roles most significantly. This report presents some of the key FSC findings of relevance to the regulators and their roles within a robust and transparent RWM decision-making process. The intention is to provide a summary of the lessons learnt by regulatory authorities in carrying out their mission.

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## BACKGROUND

The Forum on Stakeholder Confidence has afforded the opportunity to examine the societal context of long-term radioactive waste management, and solid waste disposal in particular. Several features of this context have particular significance for regulatory authorities. As discussed in this section, modern societal demands on risk governance, and the widespread adoption of stepwise decision-making processes, have already produced changes in the image and role of the regulators. Legal instruments reflect and encourage a new set of behaviours and a new understanding of how regulators may serve the public interest.

### **Adapting to modern societal demands**

Changes in modern society, are shaping the context of long-term radioactive waste. These changes necessitate new forms of dialogue and decision making processes that include a large number of stakeholders. Values such as health, environmental protection and safety are increasingly important in our society, demanding new forms of *risk governance* in dealing with hazardous activities.<sup>1</sup>

The new dynamic of dialogue and decision making process has been characterised by the FSC as a shift from the traditional “*decide, announce and defend*” model, focussed exclusively on technical content, to one of “*engage, interact and co-operate*”, for which both technical content and quality of the process are of comparable importance to a constructive outcome (Kotra, 2000).

Consequently, the scientific and engineering aspects of waste management safety are no longer of exclusive importance. Organisational ability to communicate and to adapt to the new context have emerged as critical contributors to public confidence. Technical competence is necessary but not

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1. The “Mutual Trust Paradigm of risk governance”, as described by the EC TRUSTNET project, is characterised by broad involvement of stakeholders. Actions and decisions must be justified. Decision making is decentralised as much as possible.

sufficient: although safety concerns maintain highest priority, it is clear that the new context requires an extended set of attitudes and abilities.

Stakeholder confidence and trust in institutions are seen as key conditions for a successful societal decision-making process for radioactive waste management. This falls within the core role of the regulatory authorities as “guarantors” of public health and safety: to be fully effective in carrying out their mission, regulators need not only to be independent, competent and reliable, but should also strive to achieve the confidence and earn the trust of stakeholders and the public at large (OECD/NEA, 2001b).

### **Decision-making process and implementation of waste management arrangements**

It is broadly recognised that a stepwise decision-making process with discrete and easily evaluated steps facilitates the traceability of decisions, allows feedback from stakeholders and the public and promotes public and political confidence in the safety of long-term waste management arrangements.

Basic features of any stepwise process include clear definition of the steps, and clear division and definition of the roles and responsibilities of each stakeholder along the different steps, based on a legal framework.

In order to build confidence in the process it is important that it can be explained and, even more important, that it can be understood as being open, transparent, fair and broadly participatory.

To achieve **openness and transparency** there must be appropriate procedures in which stakeholders and the public can participate and validate claims of **trust, legitimacy** and **authenticity**. It should be possible to obtain an understanding of what is expected at each step and of how facts, expert judgements and value judgements interact to form the basis for a decision. Actions and decisions must be justified.

Public participation is a way to ensure that public values and ethical understanding are represented, lending fairness, stability and legitimacy to decisions.

The public examination of alternatives and options can serve as an important way to increase the legitimacy of process. Consideration of alternatives may take place during the definition of waste management options and strategies (as carried out today in France or planned in Canada for high-



level waste or spent fuel). Another forum for weighing options and alternatives may be created in connection with the Environmental Impact Assessment (EIA) of a specific project (as in Finland and Sweden) such as the development of a geological repository.

The EIA may provide a useful framework for public and stakeholder involvement with regard to a specific project at a local level. For decisions on general policies and strategies, however, the concept of Strategic Environmental Assessment (SEA), as developed in the EU context, may be more appropriate. This involves a potentially broader spectrum of stakeholders at both national and international levels. In either case, each stakeholder needs to have a clearly defined and well-communicated role both at national and international level, including the relevant regulatory authorities.

Experience in repository implementation shows that progress rests on:

- A clear strategy for the long-term management solution and sound support by the government and policy makers, based on the recognition of responsibilities and needs.<sup>2</sup>
- A flexible decision-making process, which allows the accommodation of public and stakeholder needs (smaller steps in implementation, reversibility, etc).
- The commitment of all involved parties, including affected municipalities and the appropriate regulatory authorities.
- A well-structured process of dialogue/interaction between implementer, regulators, political decision makers and the general public.

### **The waste management system: Defining the regulators' roles**

Generally speaking, the nuclear regulator's responsibility is (i) to define radiation protection and safety requirements, (ii) to issue guidance on safety assessment methodology and documentation, (iii) to review the implementer's safety analysis as a basis for licensing of waste management and disposal activities and facilities, (iv) to inspect and review construction, operation and closure of nuclear facilities to ensure compliance with licensing

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2. For example, with their Decision-in-Principle on the final disposal of spent fuel, the Finnish Parliament considered that the geologic repository solution was "in line with the overall good of society".

conditions; and (v) to provide information to political authorities, the public, and others as needed.

Depending on national legislation and regulations the licensing process may begin with some kind of decision on the site selection or site authorisation or with the construction permit. However, the process of siting is lengthy and at the same time a key and sensible element in the development of a repository from the point of view of public concerns and the implication of decision-makers at national and local level.

Successful experiences in facility siting have shown that active regulatory involvement is needed and is also possible without endangering the independence and integrity of the regulatory authorities. In particular, in the Nordic countries, the regulatory authorities have come to be seen by the municipalities as “*the independent expert of the public*” (Carlsson, 2000) and “*competent and responsible supervisors of the safety*” (Lucander, 2002) thanks to their early involvement and commitment at the local level.

The level of involvement of regulators in *pre-licensing activities* and their potential influence in a repository programme and a decision-making process is greatly affected by how the role of the regulator is defined in the national legal framework. Thus, in Sweden, there is a legal requirement for SKI to review the R&D waste management programme every three years. In the US, the USNRC is required to review the site selection and characterisation programme and make preliminary findings early in the process. By contrast, in other countries (e.g., UK and Spain), the current legal framework does not define a role for the regulators in these early phases of siting process (OECD/NEA, 2003b).

As the Finnish experience has shown, regulatory feedback may, in all cases, be fruitfully ensured during the siting process by creating some reporting-review milestones. This model of “informal” dialogue between implementer and regulators requires strong social trust in the regulatory authorities. It also requires a well-defined interaction process that secures public confidence and ensures that decision-making in regard to licensing is not subsequently constrained or compromised in the legal or “quasi-judicial” sense (Ferch, 2002).

## SUMMARY OF KEY LESSONS

The meetings and workshops of the FSC to date have allowed regulators and other stakeholders to reflect on their mutual experience. Lessons of significance are discussed in this section. They are organised into four areas: role of regulatory authorities, characteristics of the regulatory process, attributes that contribute to public confidence, and regulatory communication approaches.

### **Role of the regulators: A mission in service of the public**

Since the responsibility of regulators is to protect the public health and environment, *regulators have a mission in service of the public* (Melin, 2001b). It is important that regulators, representing the interests of the public safety, be involved early in the siting process and collaborate with the potential host community/ies to the extent that this is legally compatible with the statutory regulatory regime.

Independence, competence and effectiveness are crucial to public trust and confidence in the national radioactive waste management programme, especially in the high level waste (HLW) disposal programme (OECD/NEA, 2003b).

Regulators have an important role in the overall decision-making process of the national waste management program, in ensuring its credibility, and therefore in favouring confidence in the system. Regulators need to act and be seen as independent overseers of the quality of the work and the integrity of the decision-making process.

Ideally, and subject to any legal constraints as described above, the regulators should be “guarantors” of safety and the “peoples' expert”, acting as an accessible resource to stakeholders addressing safety concerns. Regulators should thus establish good contact with the different stakeholders. Open channels of communication should be maintained with the general public, implementers, government departments, parliament, concerned action groups and others. Appropriate mechanisms of dialogue must be found with the different stakeholders.

## **Regulatory process: A job of gradual progress and public involvement**

*A stepwise decision-making and implementation process implies a stepwise regulatory process:* From a regulatory point of view, the step-wise approach for implementation of repository programmes is essential since, at each step, it allows for evaluation of steps taken so far and to check the appropriateness of the next step (Westerlind and Hedberg, 2001).

This kind of process facilitates the development of regulations in a gradual way, starting from very general principles and ending with the guidance applicable to a licensing review. In this way the job of regulating is intrinsically one of gradual learning and refinement. Accordingly, rules set at one step may be modified or updated at later stage, although “regulators must clarify the reasons and basis for changing regulations at later stages of repository development” (Nies, 2001).

In order to preserve flexibility within a decision-making process that could last decades, regulators should strive to avoid overly prescriptive rules too early. This attitude implies, in turn, a well-structured and formalised interaction process between implementers and regulatory authorities that secures societal trust as described above. At present, there are a wide variety of regulations in the OECD countries in terms of scope and criteria specified and level of detail set down in regulation (OECD/NEA, 2002b). Two philosophies can be distinguished; each of them may have advantages and disadvantages as follow:

- Detailed requirements:
  - provide clear messages to both the implementer and the general public;
  - if unduly restrictive may hamper the development of techniques and procedures within the radioactive waste management system.
- No detailed requirements:
  - provide more opportunity for a constructive dialogue between regulator and implementer; could be beneficial for the development of technical procedures;
  - leave too much to interpretation and perhaps give the impression of insufficient control by the authorities.

A potential issue that could emerge is whether the level of knowledge is adequate to provide the necessary input for the technical and societal decision

at each stage in the stepwise development process. A pragmatic response to this question was provided by STUK during the FSC Turku workshop: “in the Decision-in-Principle<sup>3</sup> stage, no definitive conclusion on the safety of the proposed disposal concept was required. Only a preliminary safety appraisal was needed stating that nothing had been found that would raise doubts about the possibility to achieve the required safety level” (Lääksonen, 2002).

Measured participation in this type of long-term process demands that regulators have a good overview of the whole decision-making process as well as a clear definition of what is required or expected at each step.

*Involvement of the public when the “rules of the game” are defined:* The process of rule making and its application to facility site selection and licensing should be transparent and comprehensible. This implies an open process in which the public and other stakeholders can comment on the approaches used by the regulators. Accordingly,

- the “rules of the game” for the regulatory process should be known as soon as possible and in any case in advance of a licensing application;
- ideally the general public should perceive the overall system of regulation, including the formulation of relevant policy by government, as being impartial and equitable.

However, since there are issues that are the exclusive responsibility of the regulatory authorities, the FSC recognises that regulators should determine and inform in advance when, where and how public and other stakeholders input can be accommodated. At a minimum, they should communicate the basis of their decisions (Nies, 2000).

Public involvement in the regulatory process is a usual practice in some cases (e.g., the USNRC), and is being incorporated by other regulators (e.g., the CNSC, HSK, SKI and SSI). Approaches differ among countries varying from open public and stakeholders' comments to open licensing meetings and hearings. This is an area of continuing learning, where new experience may offer valuable lessons (OECD/NEA, 3b).

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3. See footnote 2.

### *Attributes of regulators that build confidence and earn public trust*

Public trust is based both on track record and on perceived morality and values. A good track record would suggest, from experience or evidence, that certain future events would occur as expected. A perception of reliability, honesty, veracity, fairness, strength, etc. of a person or institution, would further allow a certain degree of delegation to be given. Public trust is thus necessary to further legitimate the mission and role of the regulators, in the eye of the public

A number of organisational and behavioural features appear essential to building confidence and meriting public trust. Among these are:

- ***Openness:*** Being active in providing information about decisions, policies and questions related to safety. Openness is also a matter of being prepared to answer questions, to discuss and to exchange views with the public or organisations. Communications need to be open and honest. Open channels of communication must be maintained.
- ***Clarity:*** Regulators demonstrate their commitment to openness through their efforts to communicate in ways that are clear and understandable to the broader public they serve. Use of plain language to explain safety, institutional and procedural concepts is essential for fostering the understanding and transparency necessary for building trust.
- ***Accountability:*** Regulators must be prepared to have their actions and decisions probed and questioned in public fora.
- ***Independence:*** Regulators need to be independent of organisations of the nuclear energy industry in regard to licensing decisions, and of any other organisations likely to be affected by such decisions. Independence has to be demonstrated by visible actions.
- ***Competence:*** Competence is both statutory and effective. Statutory competence is granted by the mandate defined for regulators in the national programme. It is a prerequisite for legitimacy and action. Effective competence relies on the training of regulatory staff and the resources of their institution. The regulatory staff must have the required expertise and sufficient resources for careful scrutiny of the implementer's proposals and arguments. Achieving and maintaining adequate effective competence within regulatory authorities means they must be able to attract and retain capable staff.

### **Dialogue and interaction: A culture of openness, learning organisations and active collaborative attitude**

In order to gain public confidence and trust, all the relevant regulatory authorities, including government, need a long-term strategy for public communication as well as for interaction with other stakeholders.

A prerequisite in defining the communication strategies with stakeholders and to address issues of real interest is to listen to their concerns and expectations. This has been the objective of STUK in Finland, for instance. In order to increase public confidence in their mandate, the regulators must understand the social concerns and how to address them, as public concerns have turned out, in many cases, to be different from what the technical experts regard as the most relevant concerns.

The starting point in addressing regulatory public information and defining stakeholders communication strategy should thus be studies and research on social concerns. Risk perception, values and interests of the public and different stakeholders have been areas of research by regulators, such as the CNSC of Canada, STUK in Finland, and SKI and SSI in Sweden (OECD/NEA; 2003 b).

Since local authorities are key decision makers in the overall repository siting process (even more if the municipalities participate on a voluntary basis, or have veto rights, as in Sweden and Finland), they are natural intermediaries for dialogue with the technical regulatory authorities for waste disposal. In the first instance, the technical regulators' role should be one of collaboration, acting proactively on the side of municipalities. The regulators in both of these cases are good examples of a proactive attitude in communication and learning organisations. The objective is not to gain public acceptance of a project but to build up the regulator's credibility and gain public confidence as well as to provide national and local decision-makers with the necessary information on safety matters.

Then a series of questions emerge: Who can take the role of communicator in each organisation? What skills are needed? What training is needed to ensure those skills? What criteria can guide the selection of the right staff for each context? Working methods differ among national safety authorities. In the cases of the Nordic regulators, all staff is considered to be a potential communicator (Viktorsson, 2001). In the Finnish case, STUK representatives from the level of directors to the level of inspectors were frequent guests in communities, and appeared as well in local and national media (Varjoranta, 2002).

Communication with the public and the news media is a matter of particular importance, as they are both an audience in themselves and a channel for communicating with other audiences.

How to communicate with the public is not a simple subject because of the limitations in translating technical language for public understanding. In any event, communication requires the organisation's commitment to continuous learning: training in risk communication and in conducting public meetings is necessary. Thus, in addition to the regulatory control functions, *public information* should be a key function of regulators. In fact this is stated in legal instruments creating regulatory bodies (e.g., CNSC in Canada, CSN in Spain and SKI in Sweden) and it is included as a goal in regulatory strategic plans. The regulatory authority as a body with independent functions may provide **independent, neutral, balanced and factual information** about issues related to safety. Most of the regulators have the obligation to make regular or periodic reports but also to inform stakeholders when asked.

Consequently regulators have to be prepared to respond. This means that they should position themselves on questions of debate and issues of public interest (e.g. waste disposal alternatives and options, general feasibility of disposal, retrievability, etc).



## CONCLUSIONS

Changes in modern society demand new forms of *risk governance* in dealing with hazardous activities characterised by the involvement of the concerned stakeholders in associated decision-making processes.

The decision-making process in radioactive waste management and disposal should be seen in the context of a well structured dialogue/interaction between implementer, regulator, political decision maker and the general public. A necessary condition for a successful process is that institutions and decision makers gain and merit recognition as trustworthy and accountable.

Culture, politics, and history vary from country to country, providing differing contexts for establishing and maintaining public confidence. Therefore, what works in one may not necessarily be effective in another. Nonetheless, there appear to be certain elements that may be common to programs that are successful in gaining public confidence. These are:

- A clear strategy for the long-term management solution and sound support by the government and policy makers, based on the recognition of responsibilities and needs.
- A flexible decision-making process, which allows the accommodation of public and stakeholder needs (smaller steps in implementation, retrievability, etc).
- The commitment of all involved parties, including affected municipalities and the appropriate regulatory authorities
- A well-structured process of dialogue/interaction between implementer, regulators, political decision makers and the general public.

Among all the actors involved in the decision-making process, the sharpest change of role probably falls to the regulators. The traditional position worldwide has been that the regulators should not be too intensely involved with the waste management and disposal programme until the licensing process proper begins, since their independence might be legally compromised. This

position is gradually changing toward a more active and visible role in the pre-licensing steps. The regulatory authorities, representing the interest of the public safety, should be involved early in the siting process and collaborate with the potential host community/ies.

Regulators have a role both in developing safety standards and criteria to ensure public health and in evaluating whether these standards and criteria will be reasonable met by proposed facilities prior their licensing phases. An open, stepwise regulatory process led by a respected regulator can give confidence that the implementer's proposals are subject to the needed detailed technical scrutiny on behalf of the public.

The independence and public accountability of the regulatory authorities are crucial to public confidence in the national radioactive waste management programme, especially in the HLW programme. Regulators should consciously strive to be, and be seen as, independent overseers of the quality of the work and the credibility of the decision-making process.

Keeping the public informed is considered a key function of regulators. The goals of a regulatory authority in communicating with the public are to foster public understanding of the regulatory role and activities, to gain public trust as well as provide national and local decision makers with the necessary information on relevant matters.

The regulatory process is a part of a broader decision making system, the practical application of which has still to be better defined in some cases or to be improved in other cases, taking proper account of the national institutional framework and culture.

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## LIST OF ACRONYMS

CNSC	Canadian Nuclear Safety Commission
CSN	Nuclear Safety Council, Spain
FSC	Forum on Stakeholder Confidence of the OECD NEA
HSK	Swiss Federal Nuclear Safety Inspectorate
NEA	Nuclear Energy Agency
NRC	National Research Council of the United States Academy of Sciences
OECD	Organisation for Economic Co-operation and Development
RWMC	Radioactive Waste Management Committee of the OECD NEA
SKI	Swedish Nuclear Power Inspectorate
SSI	Swedish Radiation Protection Authority
STUK	Radiation and Nuclear Safety Authority, Finland
USNRC	United States Nuclear Regulatory Commission





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