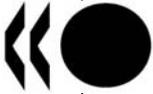


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**NUCLEAR ENERGY AGENCY  
RADIOACTIVE WASTE MANAGEMENT COMMITTEE**

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**Forum on Stakeholder Confidence (FSC)**

**DISPOSAL OF RADIOACTIVE WASTE: THE FORMING OF A NEW APPROACH IN GERMANY**

**Summary and international perspective**

**FSC Community Visit and National Workshop  
Hitzacker, Hamburg, 5-8 October 2004**

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## INTRODUCTION

The fifth workshop of the OECD/NEA Forum on Stakeholder Confidence (FSC) was hosted by the Federal Office for Radiation Protection (BfS) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the authorities responsible for implementing and regulating radioactive waste management in Germany, respectively. The central theme of the event was “the forming of a new approach to radioactive waste management in Germany”.

The three-day event started with a community visit in Hitzacker, which included a one-day meeting with community representatives and other stakeholders. This was followed by a tour to radioactive waste management facilities in Gorleben, and then the national workshop, which took place in Hamburg.

Sixty-five registered participants, from 13 countries, attended the event. About 60% were German stakeholders, the remainder came from FSC member countries and international organisations. The German stakeholders included local actors, academics, and representatives of state and federal governments, NGOs, waste producers and other companies. The international audience consisted of FSC, typically affiliated with national regulatory bodies, government, or implementing organisations, plus other delegates and academics.

The event was structured as follows:

The introductory session (Day 1 morning and early afternoon) took place in Hitzacker and explored the historical context and the current situation of radioactive waste management in Germany. It entailed plenary presentations by key actors of policy making processes and discussions focusing on stakeholder concerns about trust and confidence.

Three sessions took place in Hamburg and addressed the topics “The new proposed approach to site selection, with emphasis on basic premises” (Day 1 late afternoon), “The new proposed approach to site selection, with emphasis on stakeholder involvement” (Day 2 afternoon), and “The new approach to responsibilities and cooperation with emphasis on policy aspects” (Day 3 morning). Each of the sessions started with short plenary presentations by representatives of various stakeholders’ interests and focusing on a pre-defined set of questions. Participants were then divided into roundtable discussion groups that examined similar questions. Outcomes of each roundtable discussion were reported in follow-up plenaries.

The final two sessions (Day 3 afternoon) included two thematic reports, final feedback from participants and conclusions. Thematic reports addressed the topics “Long-term robustness of the proposed decision making process” and “Roles and responsibilities of the various institutional players: clarity and coherence”.

This Executive Summary gives an overview of the presentations and discussions that took place at the community visit and the workshop. It is followed by the NEA Secretariat’s reflection placing the main lessons of the workshop in a wider perspective. Five presentations – three keynote papers and two thematic reports – are provided in the appendix of this document.

## COMMUNITY VISIT

The opening session of the community visit took place in the morning and early afternoon of Day 1 in Hitzacker. Part I was devoted to explaining the historical context and the current situation of radioactive waste management in Germany. The objective of Part II was to meet local actors and hear their views about past decision making processes and recent developments.

### **Part I: Briefing of the FSC and other workshop participants**

**Hans Riotte**, Head of the Division of Radiation Protection and Radioactive waste management of OECD/NEA, opened the Hitzacker workshop. He briefly introduced OECD NEA and its radioactive waste management committee's (RWMC) goals and main activities. He emphasised the societal aspects of radioactive management and pointed out that a stepwise approach with broad participation and democratic inclusion appears highly promising in this field. It has been recognised that stakeholder confidence in policy makers and implementers are key factors for the successful implementation of radioactive waste management programmes. In recognition of this, the RWMC created the Forum on Stakeholder Confidence (FSC).

Mr. Riotte pointed out that the FSC focus is on decision making processes. He recalled similar, earlier workshops in Finland, Canada, and Belgium and outlined the general structure of these meetings, where the role of FSC delegates is to participate in discussions, and provide observation and feedback for national stakeholders. Finally Mr. Riotte expressed his thanks to the Federal Office for Radiation Protection (BfS) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for hosting the workshop.

**George Arens** from the Federal Office for Radiation Protection welcomed the participants on behalf of BfS. He briefly spoke about the roles and responsibilities of his office in radioactive waste management and recent developments in Germany, including a new „political wind”, new nuclear energy policy, and new guiding principles for radioactive waste management. He expressed his office's support for the AkEnd approach, and suggested that the workshop should focus on the feasibility of, and issues raised by, this approach. Mr. Arens also briefly outlined the program of the following day, when FSC delegates had the opportunity to visit the Gorleben site, including the underground facility and the above ground conditioning and pilot storage facility.

**Detlef Appel** from PanGeo-Geowissenschaftliches Büro, gave an overview of the institutional and historical background of repository projects in Germany, with special emphasis on the Gorleben site. He outlined the roles and responsibilities of key institutional actors in the field of radioactive waste management: the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) is the regulator and supervisor, the Ministries of the Environment in the states of Lower Saxony and Sachsen-Anhalt are the licensing authorities, and the Federal Office for Radiation Protection (BfS) is the applicant and operator of the facilities.

By recounting the history of radioactive waste management, Mr. Appel distinguished between three periods, which can be characterised by different approaches to the selection of options and sites: (i) the 1950s-1960s, (ii) the period between 1970 and 1983, and (iii) the period between 1983 and 2000. In the 1950s-1960s, a combination of reprocessing, interim storage and geologic disposal was chosen as the preferred radioactive waste management option and salt domes in Lower Saxony became the main target area for siting. In this period merely technical and demographic criteria (e.g., population density and land use) formed the basis for choosing potential siting areas.

In the 1970s, a mix of technical and social criteria (e.g., seismic activities, farming and transportation issues) was considered in site selection. Focus shifted to three salt domes in Lower Saxony, but local populations were not involved in policy decisions, which created local resistance. In 1976 the government of Lower Saxony asked that site investigations be stopped until they could identify a site on their own. In 1977 the government of Lower Saxony identified the Gorleben salt dome and the Federal Government accepted this decision. Neither a systematic decision-making process nor a wide site investigation preceded the designation of the Gorleben site. The decision resulted in strong local and regional opposition to the project. In 1977 the PTB (the predecessor of BfS) filed an application to start the licensing procedure. Surface-based investigations started in 1979 and a decision on underground investigation was made in 1983, in spite of the fact that several non-institutional experts found the site unsuitable due to some unexpected hydrogeological findings (particularly the so called „Gorleben channel“). In 1985 underground investigations started and an exploratory shaft was built by 1996. The first section of the underground area was studied until 2000, when investigations were interrupted<sup>1</sup> as part of an agreement between the Federal Government and the utilities about phasing out of nuclear power.

Mr. Appel identified several reasons for the failure of the German approach in implementing the Gorleben site. Namely, that (i) until 2002 there had been no attempt to involve the broader public in radioactive waste management decisions; (ii) since the late 1970s the Gorleben site has been heavily criticised by non-institutional experts for technical reasons, while institutional experts have continued defending it, and (iii) after the Chernobyl accident the issue of nuclear energy came to the fore and resulted in conflicts between political parties. Since then, the issue of radioactive waste has become increasingly politicised.

**Heinz Jörg Haury** from the GSF National Research Centre for Environment and Health introduced the AkEnd committee (Committee on a Site Selection Procedure for Repository Sites) - its mandate, its composition – and the proposed site selection process including technical and social criteria as well as the involvement of stakeholders.

A key milestone in the history of radioactive waste management in Germany was the 1998 decision of the Federal Government to phase out of nuclear energy and to establish a deep geological repository for all types of radioactive waste by 2030. In 1999 the AkEnd Committee was created by the BMU to develop a siting procedure based on a set of technical selection criteria that are independent of the rock characteristics. The Committee included a range of experts with different backgrounds and different views. They followed a new approach by sharing information with the public: they organised public workshops and fora, established a web-site, gave lectures, and published their decisions, including the minority opinions. AkEnd recommendations were published in 2002 (end of Stage 1), and a public discussion and review phase (Stage 2) was planned to take place in 2003-2004.

The procedure proposed by AkEnd consists of five consecutive steps. It starts with a „white map of Germany“ and each step includes a set of criteria that help narrow down the number of potential sites. In the first step, geoscientific criteria are used to exclude areas that are obviously not eligible for a repository. The objective of the second step is to limit the remaining areas to smaller partial areas with particularly favourable geological conditions (geoscientific weighing). In the third step, at least three siting regions are selected based on both geoscientific and socio-scientific criteria. Willingness to participate in the subsequent steps of site selection on behalf of the affected communities is a key exclusionary criterion. The main tasks in the fourth step are surface explorations and the selection of two sites for underground exploration. Willingness to participate is measured a second time. In the fifth step, one repository site – for all types of waste - is selected by the German Parliament, based on the geoscientific data found by underground site investigations and the results of public surveys/votes in the affected communities.

The AkEnd proposed various forms of public participation in the individual steps. These include a public information platform, a citizens' forum, a centre of competent experts, a round table of stakeholders,

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<sup>1</sup> “moratorium” on Gorleben for a minimum of three to a maximum of ten years

preparation of regional development concepts, and votes by the citizens and the local councils. However, the communities that decide to participate in the process, do not have a right to veto in steps 4 or 5.

**Peter Hocke-Bergler** from the Institute for Technology Assessment and Systems Analysis at Karlsruhe Research Centre (ITAS) spoke of an independent evaluation of AkEnd activities by ITAS. Evaluation instruments included public opinion surveys, interviews with workshop participants, media analysis and participating observation. Results of the evaluation were predominantly positive, but several deficiencies were also found. For example, there was little media coverage, only the liberal segment of national press reported on AkEnd. The process did not manage to bring stakeholders together and decrease conflict or find a compromise. Similarly, interested public were not really involved, they saw limited chances for discussion, and they found it especially difficult to reflect on the social and political decisions and frameworks AkEnd was working within.

Mr. Hocke-Bergler concluded that there has been a generally positive view of AkEnd, although views are divided along pro- and anti-nuclear lines, since radioactive waste management is seen as a sub-topic of nuclear energy. Another important finding is that the public assigns a high importance to safety-related criteria. There is a need to mobilise and extend the interested public, but for this, professional PR work and significant resources will be needed in the future.

**Claudio Pescatore** from OECD/NEA Secretariat presented the review of the AkEnd recommendations by the International Commission on Nuclear Technology (ILK), an international standing expert committee set up by three German federal states (Baden-Württemberg, Bayern, Hessen). The ILK disagreed with two of the preconditions that were set by BMU. First, it questioned that AkEnd should start with a „white map” of Germany and ignore existing and potential sites, i.e., the licensed final repository for low- and intermediate level waste in Konrad, and the comprehensively explored Gorleben site. Second, ILK questioned the objective of finding one single repository for all types of waste, because this would likely make site selection very difficult as different waste types raise different technical problems. To this effect they observed as well that a one-site policy is not in line with international practice.

According to the ILK review, important elements are missing from the AkEnd proposed public participation process. Accordingly, it suggested that responsibilities should be defined more clearly. For example, public participation does not guarantee that consensus will be achieved; therefore, final responsibility should rest with the Federal Government and Parliament. At the same time, the proposed independent „control committee”, which is supposed to monitor the site selection procedure, was found to have a too diffused role, which would not allow it to build credibility and trust. ILK supported the AkEnd suggestion that licensing authorities accompany site selection from the very beginning and be involved from the start of the information exchange. The Committee also supported the suggestion that clear role be attributed to a decision-making body and an implementer. ILK is of the opinion that both the Konrad and Gorleben sites may satisfy the high safety requirements, in spite of the fact that they were not selected on the basis of contemporary site selection criteria. The Committee suggested that the AkEnd recommendations should be reviewed by both international and German experts and a more realistic timetable should be developed.

In later discussions, it became evident that the AkEnd itself had asked for its findings to be reviewed internationally, but that Government had not adhered to this recommendation.

**Rolf Wernicke** of BMU outlined a political roadmap towards developing and operating a deep geologic repository. Fundamental principles underlying the decision-making process include (1) safety first, (2) geological disposal as the only feasible option, (3) national responsibility (i.e., no export from or import to Germany), and (4) responsibility for today’s generation. Accordingly, the proposed siting process will look at the whole of Germany, starting with geological criteria to identify potential sites. The siting process is designed to use a range of stakeholder involvement tools.

Mr. Wernicke recalled that public participation has been a high priority throughout the AkEnd process. In Stage 1, as part of the AkEnd work, three important annual workshops served as platforms to present and

discuss the proposed procedure with stakeholders. For Stage 2 a national debate on the AkEnd results had also been planned, but several stakeholders, for example representatives of nuclear industry and the opposition coalition parties, refused to participate. BMU particularly endorses meetings with stakeholders and experts within the framework of international organisations, such as the OECD/NEA/FSC, EC/COWAM and the OECD/NEA Meeting of Advisory Bodies to the Government.

BMU is considering to change the existing institutional arrangements. Responsibility for siting, developing, operating and closing future radioactive waste management facilities would be transferred from the government to private waste producers, who would then establish a new association for these purposes. This would change the current situation, where the regulator and the implementer belong to the same government agency. Based on the AkEnd report and the proposals of BMU-BfS, a new piece of legislation is being drafted. BMU plans legal implementation by 2006, when the siting process should start. Conflicts with the nuclear industry in this matter are possible.

## **Part II: Stocktaking from meeting with local stakeholders from Gorleben and Konrad areas**

This session aimed at meeting local actors and learning about their concerns regarding trust, confidence and fairness in decision making for radioactive waste management in Germany. Five statements were made by representatives of local stakeholders from the Gorleben and Konrad areas. Based on these statements, the session Chair and Co-chair helped identify the major questions to be taken out for further discussion with the audience.

**Ulrich Flöter**, farmer from Gartow, who has been involved in community policy for about 25 years, spoke of his experience regarding decisions on the Gorleben site. He pointed out that Gorleben was suggested for mining and resources reasons, and that, in the debates, party politics has received more weight than science. The community would be willing to accept the facility if science showed that it is safe, but local support can only be achieved through involving the local public. Unfortunately, the local community has not been actively involved in the AkEnd workshops. Presumably, the Stage 2 public debates will not take place either, which is very regrettable.

Mr. Flöter judged that 2030 is not a realistic date for a disposal facility to be operational. He suggested that Gorleben should be included in site investigations and be compared to other potential sites.

**Ursula Schönberger** representing AG Schacht Konrad recalled that the Konrad mine was proposed by the local community as a disposal facility. It was put forward as the regulator had given its view on its safety. It was originally planned for medical waste, but it has been expanded to hosting utility wastes as well: nowadays, only about 2% of the Konrad- designated waste would originate from hospitals and universities. The initiative against Konrad started already in 1979. The local opposition group took the proposals to court, but in order to do this, they had to raise a significant amount of money. Over the years, the Konrad site has become a political toy, whereby attitudes change with changing politicians.

Ms. Schönberger judged that AkEnd was a positive development, but she also expressed her concerns that many of AkEnd's recommendations will not be transferred to legislation. Finally, she warned that nothing should be done under time pressure.

**Andreas Graf Bernstorff**, land owner from Gartow emphasised that Gorleben was not chosen in an open and transparent way and politics played a key role. He had refused selling his land for a reprocessing facility, and he did not sell his mining rights either. He lost trust in the process because Gorleben was chosen in spite of the fact that the geological conditions are insufficient: the channel that exists in the Gorleben salt dome calls safety into question.

Mr. Bernstorff said he supports AkEnd, and agrees that the site should be reconsidered in light of the new criteria. He also recognised that a radioactive waste management facility has to be established and decisions have to be made now. However, he expressed doubt whether the new law can achieve what it is aiming for.

**Francis Althoff** of Bürgerinitiative Umweltschutz confirmed that in past decisions, as well as in recent debates, politics has been more important than science, and science seems to be overpowered by „power“. He judged that although large sums of money have been spent already, this does not justify pursuing Gorleben. He spoke about recent conflicts; even transporting the waste from France to Gorleben every November is very difficult and needs a large police presence.

Mr. Althoff expressed his support for a new siting process and the search for an alternative repository site. He emphasised that the public needs to be involved in the new process.

**Eckhard Kruse**, Church pastor from Gartow explained the main reasons for the public losing trust in the institutions and actors. He spoke of the lack of dialogue with the public, the mismatch between the words and the actions of the authorities, and the misuse of power during waste transports. He also claimed that radioactive waste management institutions have no trust in the citizens.

Mr. Kruse suggested that a new approach should be found, whereby the responsible authorities trust citizens and involve them in their decisions. He pointed out the importance of transparency, clear site selection criteria and dialogue, and emphasised that the AkEnd proposals are promising. In addition, AkEnd has opened an important discussion on ethics. Finally, Mr. Kruse suggested that waste transport to Gorleben should be stopped.

## Discussion

Based on the above presentations, **Anna Vári**, Professor, Hungarian Academy of Sciences (session Chair) and **Peter Hocke-Bergler** from Karlsruhe Research Centre (session Co-chair) identified the following questions to be discussed with the audience:

- Should the sites selected earlier (Konrad and Gorleben) be kept among the alternatives to be investigated?
- How should geologic, economic, social, and political criteria be balanced?
- What should be the roles of the different actors, particularly of governments, authorities, experts, utilities, and the (local and broader) public? How should responsibilities be shared?
- How should transparency and an open dialogue be maintained? How to resolve the conflict between the need for a time-consuming public participation (e.g., exploring the decision criteria with the public) and the time pressure (radioactive waste management is the responsibility of the current generation)?
- What should be implemented? Nothing? The proposal of AkEnd? A compromise?
- Which political way of solution? Take a break? Find a solution? Do stakeholders want to go a new way?

The main outcomes of the discussion were summarised by the Chair and Co-Chair as follows:

- Local confidence in actors responsible for previous site selection processes has seriously been shaken in affected areas. The evaluation of the AkEnd approach is more or less positive, but this new attempt of site selection will take place in a context of negative earlier experience.
- Authorities and political actors have been strongly criticised for their top-down approach, which is unsuitable for conflict management. They are asked to be more open to local interests.
- Stakeholders express their wish for finding a safe site and would welcome a comparative approach. However, this could be problematic in the presence of the Gorleben moratorium.

- The role of expertise needs to be considered and the quality of expertise needs to be improved. The possible role of „counter-experts” is a controversial issue.
- The main reason for losing trust and confidence was that earlier decision-making was not seen as being fair. There is a need to rebuild confidence while trying to find a solution.
- A process that is seen as being fair by stakeholders and affected public needs to be developed. A key factor of fairness and confidence is the management of the existing conflicts. AkEnd is seen as a good starting point for developing such an appropriate process.

## WORKSHOP

### Session 1: The new proposed approach to site selection, with emphasis on the basic premises

Session 1 of the workshop took place in late afternoon of Day 1 in Hitzacker. First, short presentations by national, regional and local actors and representatives of industry and NGOs addressed the basic premises of the German approach. These were followed by roundtable discussions. Presentations and debates were structured by the following questions:

- Is there shared understanding that the status quo needs to be changed?
- Is there shared understanding that disposal in deep geological formations is the only option for all waste types?
- Is there shared understanding that one disposal facility is sufficient and operable for all types of waste?
- Is there awareness that emphasis is placed on geology and not so much on engineered barriers?
- Is there agreement on a hierarchy of values to be implemented?
- Is there agreement and shared understanding of what a 'relatively best' site is?

According to **Ursula Schönberger** (AG Schacht Konrad), it has been widely recognised that the status quo is not acceptable, but there is no common understanding as to how the status quo must be changed. In any case, terminating the use of nuclear energy in the foreseeable future is, in her view, a precondition for developing a radioactive waste management process.

In principle, the option of deep geological disposal is accepted, but the issue of retrievability has been discussed. Regarding the desirable number of disposal facilities, Ms. Schönberger indicated that her group does not have the scientific background to respond this question, although it seems that one repository site with two shafts and two concepts could be sufficient for all types of waste. She felt that unless a single site for all waste was developed, some would be inclined to export certain waste types to international facilities, if such facilities became available.

Ms. Schönberger stated that the importance of geology relative to other barriers is accepted in Germany, but it is recognised that technical barriers are to provide additional safety. There is no general agreement on the hierarchy of values. Safety should be the first priority, but it should not be used to exclude public involvement. German experience shows that when „safety first” is said, it may mean „economy first” in reality. It is very hard to define the meaning of the 'relatively best' site.

**Renate Backhaus** representing the Association for Environmental Protection (BUND) viewed that safety, scientific clarity and sustainability are key aspects for changing the status quo. She welcomed the AkEnd process and felt that AkEnd proposals, i.e., openness, polluter pays principle and a new siting process were feasible. However, phase-out of nuclear power needs to be completed before BUND will engage in the site selection process.

The concept of deep geological disposal is accepted, and there is no support for export or import of waste. One facility for all waste types is considered to be sufficient, but volumes of waste need to be defined carefully and safety should be assured for 1 million years.

Ms. Backhaus suggested that the siting process needs public involvement, and site selection criteria should be finalised by legislation. Finally, she expressed her concerns about the loss of trust, but also her hope that a new process would lead in the right direction.

**Dorothea Steiner**, member of the Green Party of Lower Saxony recognised that the status quo of decision making needs changing. She welcomed the AkEnd recommendations because the proposed approach is aimed at defining transparent criteria for a new siting process. All stakeholders should participate in defining siting criteria, including the industry. She emphasised that the fact that large sums of money have been spent on one site does not automatically imply that no more work is needed.

According to Ms. Steiner, there is a basic consensus that deep geological disposal should be implemented and there is no need to investigate the option of storage or retrievability. A single repository would be sufficient and geological formations are of key importance. She suggested that Stage 2 discussions on the AkEnd approach should still be undertaken and the law should reflect these debates.

**Karin Bertholdes-Sandrock**, Christian-Democrat Member of Parliament of Lower Saxony, pointed to the need for mutual respect to move forward. There is a broad understanding that an essential change has to be brought about. There is a national responsibility for the radioactive waste management problem, and a generation's worth of time has already been wasted.

According to Ms. Bertholdes-Sandrock, it is widely agreed that deep geological disposal is a good solution. She recommended establishing two repositories because this solution would allow disentangling and simplifying the radioactive waste management problem. Safety – and related „scientific” criteria - should be in the foreground and acceptance should be of less importance.

Ms. Bertholdes-Sandrock viewed that AkEnd has been disappointing so far as its recommendations do not seem to lead anywhere. Gorleben should be continued to be investigated. Criteria need to be developed on the basis of available science. Sound science will build public confidence.

**Enrique Biurrun**, representing Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe (DBE, the BfS contractor that operates the Gorleben exploratory mine) agreed that the situation in Germany needs to be changed, but he warned that real change will not occur any time soon. There is shared understanding in the German society that deep geological disposal is the best option for all types of radioactive waste. Although, the reality of Germany is that large volumes of waste from uranium mining are disposed of at the surface.

Mr. Biurrun pointed out that the disposal of all types of waste in a single facility is a political objective that contradicts safety goals and technical considerations. There is no other country that follows such a policy. On the other hand, the focus on geology or engineered barriers depends on the geology of the country. In Germany good salt rock can be found, therefore, engineered barriers are of minor importance. However, if we move to other host rock formations, e.g., clay or granite, engineered barriers will become very important.

Mr. Biurrun claimed that in principle there is a general agreement at the federal level that safety is the primary criterion, however, as radioactive waste is piling up at interim storage facilities all over the country this goal is not being fulfilled. The concept of a 'best site' is ambiguous, because it reflects subjective evaluation criteria and incomplete scientific knowledge. Therefore, a suitable rather than a best site should be sought.

### **Roundtable discussions**

(Moderator: Claudio Pescatore, OECD/NEA Secretariat)

#### ***Is there shared understanding that the status quo needs to be changed?***

Most roundtables referred to Germany as being in a stalemate situation, where many people prefer doing nothing because this is the cheapest solution. Some of the roundtables felt that more public involvement is needed and more chances for the public to influence the process need to be assured in order to take the process forward. The siting process needs to be more open and transparent and clear criteria should be developed and applied. An appropriate balance between science and politics should be re-established. A 'neutral' body is needed to rebuild confidence in way forward.

One roundtable suggested that in addition to changing the procedure and style, substantial changes are also needed, including the cancellation of the Gorleben moratorium. It was felt that legislation could offer an incentive to all stakeholders to come together and reach consensus. Konrad could be an issue for negotiation as well.

#### ***Is there shared understanding that disposal in deep geological formations is the only option for all waste types?***

All roundtables agreed that deep geological disposal is a widely accepted option in Germany. Some pointed out, however, that this consensus is political rather than technical. Several groups felt that issues of monitoring, controllability, retrievability, and adaptability of deep geological disposal need to be widely discussed. Also, there are several safety and technical issues to be debated because of the long time it will take to develop a repository.

#### ***Is there shared understanding that a disposal facility is sufficient and operable for all types of waste?***

Reports by individual roundtables indicated lack of agreement on the desirable number of repositories. Some felt that one facility would be sufficient. Others suggested the development of two repositories for scientific and technical reasons, since different waste types have different requirements. The two-repository option was also supported by the argument that Konrad has already been licensed. Some viewed that having one facility is a political objective (one repository is easier to defend on political ground), and there have not been any investigations about the practical implications of this solution. Such implications would include, for example, a demand for interim storage for low- and intermediate level waste for about 30 years, which would be costly.

One roundtable suggested that, although one facility for all waste types appears to be only a political requirement, the advantages of multiple sites still need to be documented. They added that for many stakeholders two repositories would mean putting the Konrad facility into operation and this would not be acceptable for them.

Another roundtable emphasised the advantages of the multiple-facility option. They reminded the audience of the safety disadvantages of the one-facility option and stressed that ongoing waste disposal will be needed in the future, even after the phase-out, because of continuing generation of medical and other non-utility waste. Finally, participants concluded that „you can go forward agreeing to disagree”.

***Is there awareness that emphasis is placed on geology and not so much on engineered barriers?***

There appears to be a predominant view that geology is more reliable than engineering. Engineering relies on humans and there is always a chance for error, while there is historical evidence for geological stability over time. Most of the groups concluded that multi-barrier systems are needed where both geology and technical barriers play a role, although more reliance should be placed on geology.

One roundtable argued that a focus on geology may be inherited from the past, when a number of geologists were involved in siting processes. Others pointed out that an emphasis on geology could strongly limit the number of potential sites and that focus should be on the protection of humans and the environment rather than geology. This means that investigations should not be limited to salt domes, but that granitic and clay formations should also be considered according to a multi-barrier concept.

Some of the roundtables felt that engineered barriers are questionable if we plan for millions of years, but on the other hand, geology provides little flexibility. Some expressed the view that a balanced approach is needed. For example, retrievable disposal, which is also an engineered solution, should be examined, but at this point it is not considered as an option at federal level.

***Is there agreement on a hierarchy of values to be implemented?***

All roundtables emphasised the priority of the 'safety first' principle. Once a certain, high level of safety has been achieved other aspects, such as regional development may also become important. If it can be shown that one option is safer than another, then the safer one should be chosen.

One roundtable reminded that due to the strong emphasis on safety, retrievability is not a major issue in Germany. However, monitoring and observation of the facility should be assured for up to 50 years after closure. They also warned that the hierarchy of values may change over time, and financial aspects may come to the fore.

Some roundtables argued that safety should be interpreted more broadly. For example, transportation risks should also be considered. Another issue that emerged was related to expertise: how do we know which option is safer? We should rely on experts' opinion, but can we believe them?

One roundtable defined safety and sustainable development as the key guiding principles, but added that other values, including fairness, openness and transparency should also be considered. They reminded that the needs of both present and future generations should be taken into account.

***Is there agreement and shared understanding of what a 'relatively best' site is?***

The concept of the 'relatively best site' appears to be highly debated. Some of the roundtables were of the opinion that all sites for which safety can be demonstrated, should be viewed as 'good' sites, and that one important aspect of site selection is the trust in the people who are responsible for selecting a site. Other

roundtables emphasised the importance of trust in the site selection process itself. Procedural justice was suggested as a key factor of confidence. Regarding the outcome of the process they too argued that a safe, licensable and suitable site should be sought, rather than trying to find a 'best' site.

Several roundtables, however, felt that the 'relatively best' site is a reasonable target, which could be identified through a systematic assessment and comparison of alternative locations in terms of a pre-defined set of criteria. Supporters of this view tend to interpret the notion of a 'relatively best' site as the best among the alternatives considered. However, it was acknowledged that the concept of 'relatively best' is about values, therefore a process aimed at finding such a solution will inevitably lead to conflicts.

### ***Social dinner and visit to the facilities of Gorleben***

Day 1 ended with a social dinner in Hitzacker where FSC members and German stakeholders met in an informal atmosphere. Next morning FSC delegates had the opportunity to visit some facilities in Gorleben. They could choose to visit either the transport-container storage facility plus the pilot-conditioning plant operated by the Brennelementlager Gorleben (BLG) or the exploratory mine developed by the Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe (DBE). Delegates visiting the BLG site were first briefed about the tasks of the company, then took part in a guided tour of the above facilities and a related exhibition. Delegates choosing the exploratory mine heard a presentation on the geology of the Gorleben salt dome and then visited the mine. Both groups were invited to a lunch by DBE where they had a chance to converse with local stakeholders from Gorleben.

## **Session 2: The new proposed approach to site selection, with emphasis on stakeholder involvement**

Session 2 was organised in the afternoon of Day 2 in Hamburg. In Part I, feedback on the earlier community visit was provided, while Part II included stakeholder presentations and roundtable discussions.

### **Part I: Feedback on the community visit**

**Janet Kotra** from US Nuclear Regulatory Commission provided feedback on the Hitzacker community visit. She structured her presentation around four major observations:

- Trust and confidence have been seriously damaged by previous actions
- National policy is in transition
- AkEnd offers a new approach
- Parties can choose to adopt the behaviour that can help the process

Ms. Kotra identified several reasons for damaged trust. The basis for selecting the Gorleben site remains unclear and local stakeholders have not been engaged in the decisions. In addition, heavy-handed police actions have taken place in the community. The inventory for disposal at Konrad has been changed without any public discussion on this issue. Absence of two-way communication and the discrepancy between official words and actions have further aggravated the situation.

Ms. Kotra reminded that important changes in national policy have taken place recently to rebuild public confidence. Decision on phasing out of nuclear power has proved necessary for engaging the broader public. The operation of the Konrad facility - although licensed earlier, - has been on hold and a

moratorium on the Gorleben site investigations has been put in place. The AkEnd Committee was established, which has set out fundamental principles and a process to be developed into law.

AkEnd offers a new approach on which most stakeholders are cautiously optimistic. Although they want to believe in the new process many are also sceptical about its implementation. It is key to bring all stakeholders to the table and enable them to participate. Stakeholders have the desire to change the status quo. There is little evidence of stakeholders waiting to change themselves, but they are clear on the changes needed in others.

Ms. Kotra put forward potential ways to proceed, such as:

- Work with potentially affected communities as partners
- Create open process for establishing site selection and regulatory criteria
- Replace propaganda with two-way communication
- Funding mechanism, which includes polluter pays principle and provision for oversight and opportunities for research by the affected government
- Selection and development of a safe site will require safe transport of the waste – allow this to happen
- Act with the same level of integrity and respect to all members of the process that you expect to be treated with
- Set, and abide by, agreed upon ground rules

Finally, Ms. Kotra listed some reasons for optimism. There is a strong desire for changing the status quo and the government has made significant changes and appears willing to make more. AkEnd offers a vision and the outline of a new approach. Finally, she assured German stakeholders that many other countries face similar issues.

## **Part II: Eliciting and discussing opinions of stakeholders on the approaches to public participation, regional development and implementation of the proposal**

Presentations and roundtable discussions focused on the following questions:

- Who are the recognised stakeholders?
- Does the role of actors (e.g. Parliament, authorities, regulators, implementer, waste generators, local communities, NGO's experts) need to be made clearer?
- What are the objectives for the dialogue, and how should the public be involved in various decisions (e.g. site selection, reorganisation of institutional arrangements) and implementation?
- In what way can a disposal site be good for a community or region?

- What kind of flexibility does the process need to implement?
- What are the stakeholder involvement aspects that make the process more robust and sustainable in the long term?
- Does an informal or formal right of veto help communities deliberate and make the process smoother – albeit more uncertain to run?

**Ursula Schönberger** from AG Schacht Konrad described the industry, environmental organisations and church groups as recognised stakeholders. In terms of who has to participate, local stakeholders who are near the facility should also be included. Trade Unions at all levels of Germany need to be involved: local, regional and national.

The roles of the actors need to be defined before the decision-making process starts, so people can debate about their own roles and how they can be involved. A facility is a burden for a community, so they need a role in the process and compensation needs to be discussed.

Concerning the objectives for the dialogue and the method of public involvement, Ms. Schönberger explained that not only the representatives of a community, but the population itself should be included. It needs to be two-way communication and the population has to be engaged directly in the decision-making process.

In terms of a community power of veto, a community should have the opportunity to say no at different stages of the process. If not, it would not be a good idea for a community to participate. At the moment there are limits for a community involvement, which does not build confidence in the process.

**Klaus-Jürgen Brammer** from GNS Gesellschaft für Nuklear-Service described the German situation as rather complicated – the country has a licensed low-level waste site (Konrad) and a potential facility for high-level waste and spent fuel (Gorleben). The energy industry defends the Konrad site and hopes the facility will be operated. Germany does not have interim storage capacity for low-level waste beyond 2012. Therefore the industry needs Konrad, otherwise new storage facilities will have to be built. Gorleben investigations need to be completed to confirm the suitability of the site, in line with the views of the Federal Government. Other sites should only be investigated if Gorleben is proved unsuitable.

The industry rejects the AkEnd process because:

- The best possible site is being sought, and it can never be proved that another site is not better, so the process would never end;
- The process will result in a significant time delay. If the time for the licensing procedure and all the investigations were added up, the total timescale would be unacceptable. It is also at odds with the 2030 timeline mentioned by AkEnd. Most likely, the burden will be passed to future generations.
- Money is an issue. The new process would mean that previous expenditure is wasted and made in vain. It is doubtful whether new sites could be investigated to the level of Gorleben without extensive further costs. It is an important issue for the German economy as the bill may come to several billion Euros.

Concerning the ways of stakeholder involvement, Mr. Brammer emphasised the institutions of representative democracy. Opinion polls and public surveys should not be used instead of the democratic process; otherwise the Government would lose its power. Citizens can take part in the community council meetings and exercise their rights by vote. Communities have control of the planning process in their area and citizens also have an opportunity to participate in the decision-making process.

Objections raised by stakeholders have to be considered in the licensing process, so they can influence the procedure. If an objection is ignored they can go to court. Mr. Brammer viewed that this process provides sufficient opportunity for people to input into the process.

**Petra Wassmann** from the Association for Environmental Protection (NABU) reminded that radioactive waste management is a very complicated issue and has associated risks. It cannot be compared to the building of a motorway, therefore new decision-making processes are needed to address this important issue. A range of environmental groups should be involved as stakeholders because they do not have a special interest.

In terms of the roles of the actors, the tasks that need to be taken, the sequence of the process and who is to do it, clarity is needed. People want to see their views reflected; there will need to be communication with those representing stakeholders' views in the process. Opinions will develop over time and time needs to be available to enable this.

In terms of whether a disposal site can be good for a community or region, a community could benefit from infrastructure and compensation. Having a waste management facility could give financial opportunities. It is difficult to estimate perceived or real disadvantages and this would need to be done to be able to work out what compensation should be given to a community.

The decision-making process needs to be flexible and a dialogue needs to be undertaken to identify the flexibility needed in the process and to develop ways to achieve this. To develop a more robust and sustainable process in the long term, finances need to be available to enable stakeholders to be involved in the long term and to involve a wide range of stakeholders. Technical and social competence needs to be demonstrated.

In Germany confidence has been destroyed, and much needs to be done to re-build it. The right of veto should be available to communities; freewill must be the rule throughout the process. There is no alternative to dialogue and participation.

## **Roundtable discussions**

(Moderator: **Elisabeth Atherton**, Nirex)

### ***Who are the recognised stakeholders?***

Several of the roundtables were unclear about what the word 'recognised' means. It was also unclear how people could become 'recognised' stakeholders. Some of the participants felt that there is a lack of respect between some of the stakeholder groups in Germany and that some people who are stakeholders are not recognised as such by other stakeholders. One of the roundtables felt that some of the stakeholders are not clearly defined, although they are grouped together under one stakeholder heading. For example the 'Government' is not a monolith, it is made up of various ministries and 5-8 Federal States all with potentially different views.

Some of the roundtables wondered who should be recognised as stakeholders in the area of radioactive waste management. Some groups felt that all stakeholder interests need to be taken into account. Suggested stakeholders included:

- Government and political parties
- Industry
- Scientists

- Campaign Groups at the local level
- Local people and groups

Some of the roundtables felt it is very important that local people have a voice in the process, especially at the beginning of the process before ‘representative’ groups are set up. It was felt important to give local stakeholders the power to influence the decision-making process. It was recognised that some campaign groups will not participate in the debate until the phase-out of nuclear power happens in Germany. Some of the groups felt that academics do not appear to be playing a role in the process, for example, in providing independent reviews of results. However, it was questioned whether they are being missed.

It was felt important to have a flexible process to allow ‘later’ stakeholders to enter the process. Some of the groups felt that some stakeholders who will be affected by long-term radioactive waste management had not realised that they are stakeholders or had not found their voice yet. It was felt that pro-active efforts are needed to reach out to these groups.

***Does the role of actors (e.g. Parliament, authorities, regulators, implementer, waste generators, local communities, NGO’s experts) need to be made clearer?***

All the roundtables who answered this question agreed that clarification of roles is needed, although some stakeholders felt they do understand the roles at the moment. It was felt important to clearly define the decision-making process and to articulate it to all stakeholders. Then it would be possible to clearly define the roles of the actors and make people aware of them, including what people do, how they do it and who they are. It was recognised that implementing a radioactive waste disposal facility will take a long time and therefore actors’ roles may change over time and may need to be clarified.

The distribution of responsibilities within the BMU was a particular area that people highlighted needs clarification. It was felt that there is lots of overlap and possible conflicts of interest because their roles include:

- Regulation
- Research
- Instructing the proponent
- Instructing the licensing authority
- BfS, being in the portfolio of BMU

Some of the participants felt that the decision-making process and the distribution of roles need to be changed (possibly via legislation) and then the outcome needs to be disseminated so that it is understood by the widest range of stakeholders. It was felt that improvements could be made.

One of the roundtables felt that the role of the industry must be more than just ‘paying the bill’. It was questioned whether they should become the developer as this could bring positive and negative outcomes. The groups suggested that incentives should be considered to bring the industry into the process and encourage them to fulfil their role. It was recognised that it will be difficult to go forward if the industry, who is paying for the process, will not engage.

It was felt important to give a clear role in the decision-making process to local people whose daily lives will be profoundly affected by the decisions about radioactive waste management, especially those communities that currently have the waste. They were affectionately called ‘stuckholders’ and it was felt that they should have a special place of honour at the negotiating table. Although engaging local political representatives was recognised as being important it was felt that processes that go over and above the

democratic process are needed. This will enable the involvement of opinion leaders and concerned citizens.

***What are the objectives for the dialogue, and how should the public be involved in various decisions (e.g. site selection, reorganisation of institutional arrangements) and implementation?***

It was felt that the objectives would be the same as those for the decision-making process to find a 'better', legitimate solution to the long-term management of radioactive waste in Germany. The dialogue should enable the use of the best quality science and scrutiny of the science and that it should build confidence in the decisions made. It was felt important to have a stepwise process with a legal status that is transparent and open to all, fair to the implementer and stakeholders and highlights any hidden agendas. Fairness was seen to be very important.

It was felt important that the dialogue enables two-way communication, unlike the past where there was very little of this type of communication. The dialogue should also encourage mutual respect, trust and hopefully reach a compromise or consensus about the way forward.

One of the roundtables identified some issues that should be discussed:

- What the public think the burdens of radioactive waste management are, including the burdens of getting involved;
- What type of process the public want, linked to how they think a legitimate solution can be developed;
- What the public think the problem is;
- What solutions the public think can be used (it was recognised that the public often suggest good solutions).

It was felt important to be honest with people about the limitations of public involvement and their ability to influence the decision-making process or the stage beyond which they cannot have an influence.

***In what way can a disposal site be good for a community or region?***

It was pointed out by several groups that the AkEnd proposal contains suggestions about how the project could enhance the regional development of the site chosen. One group suggested looking at non-materialistic benefits, for example, not having national service. Examples of benefits in other countries - Sweden and Finland - include improved regional development, improved infrastructure, jobs and reduced taxes. The benefits and disadvantages will depend on the local community, how they perceive the facility and their fears. It was felt that the facility could be seen as an opportunity to look to the future and that some communities in Germany may see benefits from hosting the facility.

It was felt very important to have a fair, open, stepwise process in which 'benefits' are discussed. This will enable communities to consider the pros and cons and help to ensure any benefits are not perceived as bribes. One group felt it was important to consider the fact that communities at nuclear power plants are being forced to accept interim storage facilities because a long-term solution has not been developed.

***What kind of flexibility does the process need to implement?***

Some of the groups felt more flexibility needs to be built into the decision-making process, especially in terms of time. It was felt that time needed to be available to enable interaction between stakeholders and

their participation so they can influence the process. Time to have open reviews was also suggested. A stepwise approach to decision making was suggested as this enables flexibility to be built into the process.

One of the groups noted the German bias towards ‘what is planned must be done’. They felt it was important that plans and processes build in the ability to adapt to new facts and realities. However, they recognised that Germany cannot start from square one again. It is important not to throw out the good work and effort that has been invested in existing sites and a way to build on this work needs to be found.

One group felt there needs to be flexibility in relation to the different types of wastes. Each waste type has different issues that need to be addressed and they could also have different timetables and solutions. It may not be possible to deal with all the wastes together in one facility in one process.

***What are the stakeholder involvement aspects that make the process more robust and sustainable in the long term?***

Several of the groups identified principles or characteristics that the process should embrace including:

- A stepwise approach with clear decision points that will continue over time;
- Clear and stable procedures that are developed through dialogue;
- Democratic legitimacy, the democratically elected representatives need a role in the process and they may have to make decisions, rather than leaving decisions to self appointed public groups;
- Financial support to enable public involvement over time (to pay expenses to hire experts, to compensate for time given up);
- Clarity about the opportunities to influence the process;
- Clear evidence that stakeholders have influenced the process;
- Transparency so people can see what is happening;
- Openness;
- Clear presentation of information to avoid misunderstanding;
- Access to the facilities being developed;
- Clear links to the legal and political process to ensure that things happen;
- Clear definition of the waste to be managed in the facilities, i.e. currently predicted arisings.

One of the groups identified that there is a lack of confidence in the decision-making process and those involved because of events that happened in the past. They recognised that confidence needs to be restored and maintained to enable a sustainable process. They felt that this could be helped by:

- Having an international review of the process as it goes forward, including the scientific results and issues raised by stakeholders;
- Bringing new people into the organisations involved who can give answers to people’s questions and mediate between different stakeholder groups;
- Bringing stakeholders together to develop joint objectives for moving forward and working together.

***Does an informal or formal right of veto help communities deliberate and make the process smoother – albeit more uncertain to run?***

The roundtables that discussed this question felt a veto right was important. They felt voluntary entry into the process should also mean voluntary exit. However, it was recognised that the question about who should have a veto right (local or regional) is a difficult issue to resolve.

It was also pointed out that a veto right should not give the right to leave the process at any stage for any reason. There would need to be a clear description of what the right of veto entailed. A stepwise approach to a veto power was suggested by two groups and it was recognised that the right of veto could change over time both in terms of the issue it related to and the amount of commitment it entailed. It was also recognised that the veto may have a deadline, for example, in Sweden and Finland the local communities can only exercise their veto power up to the point that the decision is made to carry out detailed investigations at one site. One group felt that the veto power needed to be built into a binding agreement or law to make it clear and give it legitimacy.

**Session 3: The new approach to responsibilities and cooperation with emphasis on policy aspects.**

Session 3 was organised in the morning of Day 3 in Hamburg. Whereas Session 1 and Session 2 focussed on specific recommendations of the AkEnd Committee on decision-making processes and site selection criteria, Session 3 was to focus on broad policy aspects, particularly on the respective responsibilities of the general stakeholders, i.e., the industry, the government and the public.

The AkEnd Committee made the general recommendation that a new approach was needed for making progress on the disposal of radioactive waste in Germany. It recommended that the nuclear industry should be first responsible for implementing and paying for all waste management activities and operations, taking care to specify at the same time that industry activities should fall under sufficient state control. The government should ensure that a public discourse on the procedure for selecting a repository site is carried out fairly, and that the developed procedure be enshrined in legislation for maximum legitimacy.

Session 3 objective was to focus on the justification of the new approach with respect to responsibilities and cooperation among stakeholders, and how the proposed approach responds to the values of efficiency, transparency and credibility in this regard. Questions addressed in Session 3 included the following:

- Does the new distribution of responsibilities contribute to increase credibility and transparency of decisions related to disposal?
- Is the new distribution of responsibilities appropriate to provide for less lengthy decision procedures?
- Are financing arrangements available, clear and transparent?
- Which arrangements/actors will keep the process going („engine”) and which ones will help it stay focused („driver”)?
- Is the State control and steering of the process sufficient in the new system?
- Is the new system with a Federal Authority and a group of consulting experts sufficient to meet the required public control of the process?

**Heinz Jörg Haury** from GSF National Research Centre for Environment and Health outlined the AkEnd recommendations for community involvement. The AkEnd Committee made policy recommendations on independent decision-making processes for local communities. They recommend support (with

government or industry funding) for the formation of a citizens' forum including a centre of competence with experts of their choice so that communities may be able to make decisions based on information they had gathered themselves. They also recommend (a) establishing an independent control committee including media representatives to monitor the progress of the procedure, (b) setting up a round table on regional development followed by a multipartite negotiation group, and (c) carrying out a final vote, which may serve the Parliament as an orientation guide for its decision.

AkEnd also asked for a sociological investigation to be made in the affected region. The data would serve as a baseline to be identified before the facility makes an impact on the region. Also, they would elicit stakeholder views on how they see their area developing and how the facility could help them.

**Alexander Nies** from the Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) introduced the current plans of the Ministry. The BMU plan supports many of the AkEnd Committee recommendations and promotes a legislated decision-making process with the industry as the operational and financial implementer under federal control. In contrast to the past, when the industry only had to pay, the new approach would bring together payment and undertaking the work. Economic rationality would be the primary driver for the waste producers since they want efficient, quick progress, while throughout the process, legislation and supervision by authorities would prevent unjustified cost cutting. In Phase 1 (site selection), federal authorities would determine the siting process and criteria, as well as oversee the site selection process. In Phase 2 (licensing), the licensing authority would be the Federal Office for Radiation Protection.

Mr. Nies explained that although the proposed concept is striving for regional willingness to be involved in the process, this is not a veto right. Deep disposal is the only option and this needs to be done in Germany, so there can be no veto. Also, it is not a voluntary process for which the government is striving to gain approval. The degree of regional acceptance would be asked, but it would be the Federal Parliament that will make the final decision.

**Susanne Ochse** representing Greenpeace, reflected that credibility of the process will not increase because the industry is against the new process, and transparency will depend on the final form of legislation. The process would be more robust, if it were more cooperative.

Ms. Ochse viewed that the law and the need for a solution for radioactive waste will be an „engine” for the process. BMU, BfS and the Parliament will be the „drivers” through oversight of the process.

**Renate Backhaus** representing the Association for Environmental Protection (BUND), repeated that BUND will not engage with siting until phase-out of nuclear power starts, because they believe that further production of nuclear waste is irresponsible. They support the AkEnd process and agree that the polluter pays principle should apply. They believe that more campaign groups need to be involved in the debate. They see themselves as watchdogs, and the public has confidence in them.

Safety is their first priority and this needs to be established in the law. Economics should not be put before safety. They are suspicious, but will give the law a chance: a sustainable process must be developed and everyone should be aiming for a safe repository.

**Christoph Ewen** from Team Ewen reminded that local resistance to certain land-uses is always linked to a history and previous experiences. The dialogue is often unbalanced as local people have fewer resources than the institutional counterparts. To move forward, internal papers from the past need to be published. New studies could be undertaken to address sensitive issues. It is important to deal with the history and people's concerns. There need to be clear roles, and those of the producer, controller and communicator should be separated. It must also be made clear what is compulsory and what are the issues where choices are to be made.

Mr. Ewen emphasised that public perception of the new roles will be important. Public perceptions can change quickly, since emotions, feelings and rumours may influence views. Rumours can be decreased by openness, transparency and scientific review.

## **Roundtable discussions**

(Moderator: **Carmel Létourneau**, Natural Resources Canada)

***Does the distribution of responsibilities contribute to increase credibility and transparency of decisions related to disposal? Is the State control and steering of the process sufficient in the new system? Is the new system with a Federal Authority and a group of consulting experts sufficient to meet the required public control of the process?***

Although most of the participants agreed that the new approach would likely result in greater transparency of the next steps towards waste disposal, it was difficult to be certain about that since the specifics of the government approach were not yet known. Two points were highlighted and made more transparent: who makes the final decision? And, do communities have a veto right? BMU explained that although voluntarism was encouraged and sought, and that extensive efforts would be spent to find a community that is ready to accept the waste, the community would have no official veto rights. Nevertheless, in lieu of such rights, some participants expressed that more informal agreements between the government and local communities could be considered.

It was emphasised that transparency was not as easy as it could first appear since it often involves difficult cultural changes in organisations. Some participants thought that the 2030 deadline was not credible if the role of government and the public were meant to be carried out thoroughly. Participants worried whether state controls would be sufficient and supported the establishment of independent controls either at the local level (e.g., centres of competence including monitoring and research activities), the national level (e.g., greater participation of non-governmental organisations), or, at the international level, through peer reviews.

Although some participants remained sceptical that industry should be primarily responsible for the implementation of next steps towards the disposal of radioactive waste, most tended to acknowledge that if sufficient controls were put into place, and if the necessary resources were given to local communities to be able to make independent assessments, then legislative changes proposed by the government could be a good step. However, since the specifics of the proposed legislative changes were not yet known, participants could not conclude on whether the new policy approach of the government would stimulate greater confidence.

***Is the new distribution of responsibilities appropriate to provide for less lengthy decision procedures? Which arrangements/actors will keep the process going („engine”) and which ones will help it stay focused („driver”)***

Some participants at the roundtable discussions thought that the new approach would increase efficiency in moving ahead on the issue of disposal of radioactive waste since the “driver” or prime mover would be the government backed by legislation, with the industry acting as the “engine” for implementing operations and the source of financial resources. It was hoped that legislation would help the stability of decisions by surviving political changes.

Others believed that placing the main responsibility for implementing the process with industry involved conflict of interests and was tantamount to dereliction of duty by the government. Although most participants applauded the greater participation of the public formalised in the proposed legislation, some worried that greater participation by the public would result in a longer time frame for site selection, which could potentially lead to passing the burden to future generations.

***Are financing arrangements available, clear and transparent?***

Participants were of the view that the financing arrangements are clear, but not transparent. The oversight of fund and its regulation still needs to be developed. It is not clear where the money is or whether it will

be available when needed. The fund is tax free and it is expected to be sufficient. It is clear that the utilities will have to pay, but there seems to be a lack of accountability to ensure this happens.

Some expressed concerns that the industry will have to pay extra costs to cover the new site selection process. If costs are higher than expected, industry will just increase the levy on the energy users. Others suggested that money should be refunded to the industry to cover costs already spent, and similar guarantees should be given for future processes.

#### **Session 4: Thematic reports**

Session 4 was organised early afternoon of Day 3. It comprised two thematic reports.

**Eric van Hove**, Professor, University of Antwerp (Belgium) focused on the factors of long-term robustness. First, he analysed the term 'stakeholder' and differentiated between two main groups: those who are stakeholders through a (presumably mutually beneficial) contractual arrangement, and those who are only affected by the activities of a firm without agreeing to it ('stuckholders'). Not all such groups are affected to the same degree („not all stakeholders are born equal”), therefore, special attention needs to be paid to local residents living in the neighbourhood of a facility.

Professor van Hove argued that prominence should be given to economic costs and benefits because these are the best indicators of the negative and positive effects ('externalities') that stakeholders experience. He suggested that stakeholder involvement should include (i) the involvement of those stakeholders clearly experiencing an economic cost or benefit, (ii) integration of those stakeholders into the core processes of the corporation, and (iii) honest brokerage to ensure benefits to all.

Regarding the German case, Professor van Hove praised the AkEnd procedure for being both comprehensive and balanced. He pointed out, however, that – although former decision processes have been criticised legitimately - the existence of the Gorleben mine and the vast efforts paid to develop it should not be ignored and the suitability of the site should be further investigated. He proposed that local stakeholders should be provided time and funding to become strong and independent partners, then a thorough and independent safety review should be prepared and its recommendations should be followed. He concluded that Gorleben should be given a chance before opening up again the site selection process.

**Sybille van den Hove**, Professor, Autonomous University of Barcelona (Spain) discussed the roles and responsibilities of the authorities, science and industry, with special attention to the clarity and coherence of these roles. She reminded that authorities are responsible not only for finding and implementing a socially and scientifically satisfying solution to radioactive waste management, but also for doing this in a democratic way. Government is also responsible for providing clarity and continuity on nuclear energy policy, and assuring coherence between it and its radioactive waste management policy.

Due to the complexity of the radioactive waste management problem, scientific research in this field has to deal with uncertainty, indeterminacy, ambiguity and ignorance. In addition, science is not neutral: values, interests, and beliefs play a key role in formulating and resolving problems. To address the above difficulties, quality assurance processes should be reinforced, by carrying out interdisciplinary and international peer reviews, and by involving stakeholders, non-institutional experts and the public (the so called „extended peer community”) in scientific discourses. The interface between science and policy is another important issue. Due to the dynamic development of knowledge, a continuous interaction is needed between scientists, policy makers and stakeholders.

Concerning the role of industry, Professor van den Hove emphasised that if the responsibility for waste disposal is transferred to waste producers, a new dilemma will emerge. In this new role industry has to face a conflict between economic rationality (profit maximisation) and ethical rationality (implementing a safe solution). Another question is if liability is also transferred to industry, because liability for very long time

periods would be problematic in the private sector. In any case, corporate social responsibility built on transparency, accountability, and participation should be considered by industry as a key element of their policy.

Professor van den Hove concluded that in radioactive waste management processes the irreconcilability of certain values should be recognised and compromise solutions rather than a consensus should be sought. To find a compromise, interests, values, and hidden agendas have to be revealed. A change of attitude by key actors is also needed: they should focus less on specific solutions and more on problems and uncertainties, in an atmosphere of mutual trust and respect.

### **Session 5: Conclusions**

Session 5, taking place in the afternoon of Day 3, included final addresses by FSC Chairman and workshop organisers.

**Yves Le Bars**, Chairman of the FSC evaluated the workshop as a very stimulating meeting. Local and national stakeholders and FSC members were involved in interesting discussions, and participants were open to each other's arguments. The FSC workshop methodology was demonstrated, once again as adaptable to various situations and cultures.

Mr. Le Bars observed that a significant amount of new information has been collected. It is especially interesting how history and past trauma have to be taken into account in developing a new process, in shaping the role of industry and scientific experts, in defining the role of the "driver" and the "engine" of the process, in addressing the requirements of robustness and flexibility, and in elaborating a robust financial scheme. He expressed his hope that German stakeholders would find the workshop also useful. Finally, Mr. Le Bars expressed his thanks to the NEA, BMU and BfS for their organisational efforts.

**Alexander Nies** from BMU reflected that he was proud and grateful that FSC came to Germany. The meeting was very fruitful and it was especially important to hear the recommendations of FSC before the new law is drafted. He also expressed his gratitude to German stakeholders for their ideas and suggestions.

**Gerhard Stier-Friedland** from BfS expressed his thanks for the good presentations and the stimulating discussions over the past few days. He also thanked the organisers and the staff for their efforts.

**Claudio Pescatore** from OECD/NEA Secretariat outlined future steps related to the publication and dissemination of workshop materials. He expressed his gratitude to German organisers, the interpreters, the presenters and the audience and closed the workshop.

## INTERNATIONAL PERSPECTIVE

### NEA Secretariat

Similarly to the Canadian workshop, the Hitzacker-Hamburg meeting took place at a time when the country's radioactive waste management policy has come to a critical point. German government authorities invited the delegates of the international community to participate in the discussions of a new, proposed approach. Stakeholders were willing to share their views and concerns with the international community, and – similarly to previous FSC local workshops – this resulted in important lessons for all sides.

#### Lessons from the German “stalemate” situation

In Germany there is strong agreement amongst the industry, NGO's, and the institutional actors that radioactive waste *of all kind* should be disposed of, permanently, deep underground. Germany has also a licensed repository (Konrad) for disposal of non-heat emitting waste<sup>2</sup>. The Gorleben salt dome is in an advanced state of underground investigation and important infrastructure to store, condition and dispose the heat-emitting waste is ready.<sup>3</sup> A central storage facility at Gorleben is licensed and already in use, and a pilot waste conditioning facility has been licensed. Also, the industry and government agree that the so far obtained geological findings “do not contradict the thesis that the Gorleben salt dome is a suitable site”.

On paper, Germany has thus progressed significantly in resolving the waste disposal issue for all types of radioactive waste. Furthermore, the country has a successful history of dealing with hazardous, and inherently very-long-lived, waste through disposal in geologic formations and the country energy policy of gradual phase-out of nuclear energy would seem to favour progress moving to an end-point in radioactive waste management. Finally, the amended Atomic Energy Act, based on an agreement between the industry and government, addresses most of the contentious points of current German waste management policy: reprocessing, waste transports and the Konrad and Gorleben facilities.

Yet, radioactive waste disposal has reached a stalemate situation in Germany. Current laws appear to enshrine an ‘armistice’ more than provide for a sustainable solution: at-the-reactor storage will temporarily ease the need for transportation of the spent fuel and reduce the number of necessary transports, but transportation will be needed once a repository is in operation; Konrad has a valid license, but will not operate until legal charges have been resolved, and its operation would be in contradiction to the one-repository policy of the current government; the Gorleben investigation is subject to a moratorium due to conceptual and safety related issues but without a clear process for finishing the moratorium. The necessity to select the relatively best site for the disposal of radioactive waste is in discussion.

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<sup>2</sup> basically the VLLW, LLW and some ILW

<sup>3</sup> HLW and spent fuel.

In this context, public and institutional dialogue to overcome the stalemate is hindered in Germany

1. by a decision making process that is very much at the mercy of current political agendas. It seems to be paying for one or another camp to wait for change in the political leadership and have previous decisions reversed;
2. by the very advanced state of the national waste management programme. Any change means renewing efforts and negotiations that have lasted many years already, as well as reopening previous “wounds”, and it is understandable that there is resistance to change, when the reasons for change are not clearly spelled out and there is no shared understanding of them.

Some lessons to be drawn *via-à-vis* the principles and action goals described in the FSC previous work on stepwise decision making<sup>4</sup> are as follows:

1. in a democracy all stakeholders count, and these include the industry. Also, for a decision-making process to be seen as legitimate, there is a need for all to keep to the spirit and letter of agreements. This includes government;
2. in order to be robust, a modern decision making process can no longer rely only – or mostly - on the political agendas of national parties and on a centralised decision-making. The local sphere should be given an important role in decision making. If local municipalities and siting regions do not feel threatened and feel that their interests are safeguarded, they are likely to temper potential swings in national sentiments;
3. a programme’s history creates trust or mistrust within stakeholder groups. It has been observed that, once lost, trust can be regained only slowly and by giving stakeholders increased levels of control. In Germany examples of mistrust are evident, but also evident is a strong desire to solve a national problem and to benefit from dialogues on a neutral ground – like the one offered by the FSC. The international community may play a useful role to help the German stakeholders achieve a greater shared understanding and consensus on the real issues. Many voices were heard during the workshop on the wish for international peer reviews, e.g., of the “Gorleben channel” issue and of the potential impact of policy decisions based on the AkEnd recommendations.

### **A white map of Germany?**

The predominant view amongst the German stakeholders appears to be that geology is the main and ultimate barrier for waste disposal. This is also the view emerging from the AkEnd considerations and recommendations.

The internationally-debated multi-barrier concept, whereby a role is also given to engineered features, does not seem to have had as wide repercussion in Germany as in other countries. Yet, issues of monitoring, controllability, retrievability, and adaptability of deep geological disposal would also benefit from a discussion of the role of man-made provisions in assuring long-term safety. This is especially so, if one considers that retrievability is one of the stated study items in the year 2000 agreement between the German government and the nuclear industry.

Finally, it may be observed that an approach based on the pre-eminence of geology for the disposal safety case would not allow a “white map” of Germany to be investigated, as suggested by the AkEnd, but only nominally un-fractured geologic formations such as salt and clays.

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<sup>4</sup> See Ch. 4 in *Stepwise Approach to Decision Making for Long-term Radioactive Waste Management*, OECD/NEA (2004)

### Is safety first, the only policy principle?

Safety is certainly the universal principle that unites all waste management decision making processes world-wide. On the other hand, safety is established step-wise in a decision making process that may last decades, and it is well known that other values will intervene in making decisions. Important value choices are (a) not to cause undue burden to future generations as well to our generation, and (b) to allow for acceptance of management solutions to become firmly established. The process needs also to be flexible enough to accommodate political change as well as changes in main stakeholders and their values.

It would appear important for a decision-making process to identify the other main values ancillary to safety that will need to be adhered to, and to establish a hierarchy amongst them. As an example, the following hierarchy of values is at the basis of the Swiss waste management policy<sup>5</sup>:

1. *Safety of man and the environment.* Safety is necessary for an individual to be able to act, take decisions and make use of his/her freedom. Safety during the whole lifetime of the waste is paramount and should be addressed from today. Assuring safety should constitute as small a burden as possible on future generations.
2. *Fairness across generations.* There must be intra- and inter-generational equivalence of opportunities and protection. However, the timescales for radioactive waste management are so long that they exceed the possibilities of our society in terms of passing-on know-how and in terms of stability of political and social institutions. When considering management concepts, a distinction has to be drawn amongst time periods, namely the period that is within grasp of current society and the period during which safety cannot be assured through human presence or intervention.
3. *Individual and social acceptance.* At the time of construction and operation, the facility must be acceptable by the majority of the people, especially those in the siting zone. The facility should be designed in a way that it may be acceptable also to future generations. Individual and social acceptance plays a third role because by favouring, within decision making, the present or the immediate following generations, it infringes to some extent the principle of fairness across generations.<sup>6</sup>

Application of these principles, if widely agreed upon amongst stakeholders, would lead to a more consistent choice of management solutions. For instance, is it safer, and less burdensome, to coming generations to store spent fuel at interim sites near existing nuclear power stations or rather to interim-store the fuel at one or two centralised facilities in the country?

### Finding a widely supported policy

Three prototypical and contending policies emerged from the discussions of the Hitzacker-Hamburg meeting: (i) the continuation of the former radioactive waste management policy, (ii) opening-up the radioactive waste management process, and (iii) a holistic approach.

(i) Continuation of the former radioactive waste management policy. *This policy builds on former government decisions on deep geological disposal and the development of two repositories. The Konrad*

<sup>5</sup> Wildi, W., Appel, D., Buser, M., Dermange, F., Eckhardt, A., Hufschmied, P., Keusen, H.-R. and Aebersold, M. (2000), *Disposal Concepts for Radioactive Waste*, Final Report, Federal Office of Energy, Bern, Switzerland.

<sup>6</sup> Indeed, it is accepted that balancing fairly the risks, costs, and benefits across generations requires keeping to principles that are, to some extent, competing with one another. See *Deciding for the Future: Balancing Risks, Costs, and Benefits Fairly Across Generations*, National Academy of Public Administration, Washington DC.

*site would be opened to host low- and intermediate level waste, and the investigations in the Gorleben mine would be completed to confirm the suitability of the site for high-level waste disposal. Other sites would be investigated only if Gorleben were proved unsuitable. The main argument supporting this policy is that important resources in terms of money and time have been spent already for selecting and investigating the Konrad and Gorleben sites. This policy would maintain the current institutional arrangement where radioactive waste management is a task of the Federal Government while the waste generators' role is confined to the reimbursement of necessary expenses. It would follow the former top-down approach and would exclude direct public participation, using the argument that opportunities provided by institutions of representative democracy are sufficient for stakeholder involvement. Main supporters of this policy include waste producers and organisations involved in former site investigations (e.g., DBE, GNS, some government ministries, etc.).*

*(ii) Opening-up of the radioactive waste management process.* The second policy has emerged from strong criticisms of (i) the multiple (and conflicting) responsibilities of the Federal Government, (ii) the former decision processes, and (iii) the safety of the Gorleben site. This policy would transfer the responsibility for radioactive waste management to waste producers and confine the role of the Federal Government to licensing and supervision. It would provide for public involvement, but affected communities would not have a right to veto. Final decision on site selection would rest with the Parliament. This policy is aimed at re-starting site selection processes on the basis of several premises. First, since the present generation is obliged to take care of the waste, development of a disposal facility shall be started as soon as possible. Second, all kinds of radioactive waste shall be disposed of in deep geological formations within the territory of Germany. Third, one single repository is sufficient for all kinds of radioactive waste. Fourth, in order to identify the repository's location, several sites in different host formations shall be explored. The final decision will be based on the comparison of alternatives in order to make sure that the 'relatively best' site is chosen. Fifth, safety is the first priority in radioactive waste management, but at the same time, local acceptance will also be sought. Support will be offered to affected communities to elaborate and implement regional development concepts. The main proponent of this policy is the Federal Ministry for the Environment.

*(iii) A holistic approach.* The third prototypical policy is based on the view that the production of nuclear energy is unsustainable and it should be stopped. Supporters of this view would not engage in radioactive waste management processes until the phase-out of nuclear power is completed. According to this policy safety, scientific clarity and sustainability, as well as the polluter pays principle should be key aspects for changing the status quo. The concept of deep geological disposal is accepted and there is no support either for export or import. One facility for all waste types is considered to be sufficient, but there is no strongly held view on this. However, there is a concern that safety cannot be assured for 1 million years. According to this policy, the siting process would need strong public involvement. The right of veto should be available for the communities and voluntariness must be assured throughout the process. Opportunities for sustainable development should be provided for host communities. Proponents of this policy strongly reject the Konrad and Gorleben sites because these were not selected on a sound basis and their safety is questioned. Main supporters of a holistic approach include environmental organisations (e.g., BUND).

By analysing the workshop discussions, it appears that there is in Germany a *broad agreement on all fundamental principles for a safe waste management*, including the responsibility of today's generation, the national responsibility, the preference for deep geological disposal, the priority to safety, and the importance of offering a perspective compensation to affected regions. On the other hand, there are also strong disagreements among stakeholders, e.g., on the desirable number of facilities, the host rock formations to be investigated, the site selection criteria, the desirable degree of public involvement, and the desirability of a veto right. Some of the disagreements are not substantial, as they are generated or reinforced by a mutual lack of trust, e.g., the government is hesitating to provide a veto right because it fears that eventually no local community would accept a facility; some environmental groups are not

willing to participate in radioactive waste management processes because they do not trust that decisions on nuclear phase-out are not going to be reversed; the electricity generators object to the AkEnd process because they do not believe that the process will lead anywhere.

How could then a widely supported policy be agreed upon? The large number of divergent stakeholder views in the German case clearly indicates the need for a participatory, deliberative process that respects and builds upon the conflicting perspectives. The challenge is *to identify an intersection of these policy directions that could command a wide base of support*. The AkEnd Committee made a first attempt to finding a solution. It appears that the vast majority of AkEnd recommendations are supported by the Federal Government and most environmental organisations. However, waste producers – and others, which include Länder and national government ministries – reject the AkEnd process for several reasons, but primarily for economic reasons. The Secretariat views that *the most important precondition for finding a mutually acceptable policy would be the rebuilding of trust* between the key players. As concluded in FSC Phase-1, key components of building trust are the strong involvement of stakeholders, clearly identified roles and responsibilities, and sustained institutional commitment<sup>7</sup>.

Another observation is that since no agreement on key values can be expected, a *robust policy* needs to be sought that can be agreed by key stakeholders, *not necessarily for the same reasons*. Such robust policy element is, for example, the transfer of responsibility for siting and operating a radioactive waste management facility to the industry. This policy element is supported by government because it eliminates potential conflicts of interests, while environmentalists welcome it because it strengthens the polluter pays principle. Another robust policy element is offering means for regional development, which is promoted by the government for fairness reasons, while it is supported by industry as a means for helping gain local acceptance. These examples also confirm an FSC Phase-1 finding, e.g., that defining a robust policy is *much more than ensuring that, for each stakeholder, economic benefits are higher than costs*, since for several stakeholders economic benefits cannot balance environmental, health, social, etc. risks. Negotiations should, therefore, cover *all dimensions (e.g., safety, cost-benefit, fairness), which are of importance for any of the key stakeholders*, rather than focusing only on certain (e.g., economic) aspects.

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<sup>7</sup> NEA (2004) Learning and Adapting to Societal Requirements for Radioactive Waste Management. OECD NEA, Paris, France