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Dealing with Interests, Values and Knowledge in Managing Risk

Workshop Proceedings
Brussels, Belgium
18–21 November 2003

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Radioactive Waste Management

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NUCLEAR ENERGY AGENCY
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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NUCLEAR ENERGY AGENCY

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The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

FOREWORD

The fourth workshop of the OECD/NEA Forum on Stakeholder Confidence (FSC) was hosted by ONDRAF/NIRAS, the Belgian Agency for Radioactive Waste and Enriched Fissile Materials. The central theme of the workshop was "Dealing with interests, values and knowledge in managing risk" within the Belgian context of local partnerships for the long-term management of low-level, short-lived radioactive waste (LLW). The four-day workshop started with a half-day session in Brussels giving a general introduction to the Belgian context and the local partnership methodology. This was followed by community visits to three local partnerships: PaLoFF in Fleurus-Farciennes, MONA in Mol, and STOLA in Dessel. After the visits, the workshop continued with two full-day sessions in Brussels. Nearly 120 registered participants, representing 13 countries, attended the workshop or participated in the community visits. About two-thirds were Belgian stakeholders; the remainder came from FSC member organisations. The participants included representatives of municipal governments, civil society organisations, government agencies, industrial companies, the media, and international organisations as well as private citizens, consultants and academics.

Workshop participants heard about the local partnership methodology originally developed by researchers from the University of Antwerp and the Fondation Universitaire Luxembourgeoise (FUL). These partnerships amongst representatives from potential host municipalities and the national radioactive waste management agency have the mission to develop an integrated facility proposal adapted to local conditions. Visits offered delegates an opportunity to learn about the history, the natural environment and the socio-economic circumstances of potential host communities, as well as the day-by-day experiences of local people involved in the partnerships. Visits also provided for interactions and exchange between local stakeholders and the FSC participants.

Invited plenary speakers, including local stakeholders and social scientists, gave presentations on how to integrate multiple interests, values and knowledge into joint risk management. Presentations provided a background to subsequent round-table discussions, which allowed local stakeholders and international delegates to interact and exchange in detail. A panel discussion took place which focused on the design of a repository and investigated how it could reflect a plurality of interests, values and knowledge. Two thematic rapporteurs evaluated the meeting from two distinct perspectives: that of urban and regional development, and of participatory decision making.

These proceedings consist of a summary, which gives an overview of the presentations and discussions that took place at the workshop and the community visits, an international perspective by the NEA Secretariat on the main lessons of the workshop, the texts that were presented and reports from the round-table discussions.

Acknowledgements

The FSC gratefully acknowledges the work of the members of the programme committee.

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Hugo Draulans	Chairman of the board, STOLA
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SUMMARY

Introduction

The fourth workshop of the OECD/NEA Forum on Stakeholder Confidence (FSC) was hosted by ONDRAF/NIRAS, the Belgian Agency for Radioactive Waste Management and enriched fissile materials. The central theme of the workshop was "Dealing with interests, values and knowledge in managing risk" within the Belgian context of local partnerships for the long term management of low-level, short-lived radioactive waste.

The four-day workshop started with a half-day session in Brussels giving a general introduction on the Belgian context and the local partnership methodology. This was followed by community visits to three local partnerships, PaLoFF in Fleurus-Farciennes, MONA in Mol, and STOLA in Dessel. After the visits, the workshop continued with two full-day sessions in Brussels.

One hundred and nineteen registered participants, representing 13 countries, attended the workshop or participated in the community visits. About two thirds were Belgian stakeholders; the remainder came from FSC member organisations. The participants included representatives of municipal governments, civil society organisations, government agencies, industrial companies, the media, and international organisations as well as private citizens, consultants and academics.

The four-day meeting was structured as follows:

Day 1 morning was devoted to introductory presentations. Information was given on the general radioactive waste management context in Belgium. Regarding the management of LLW, and in particular the search for a disposal facility site, the workshop heard about the local partnership methodology developed by university researchers of the University of Antwerp and the Fondation Universitaire Luxembourgeoise (FUL). These partnerships between the potential host municipalities and the radwaste agency have the mission to develop an integrated facility proposal adapted to local conditions.

Community visits took place on Day 1 afternoon and Day 2. Visits offered an opportunity for delegates to learn about the history, the natural environment and the socio-economic circumstances of potential host communities, as well as the day-by-day experiences of local people, involved in the local partnerships Visits also provided for interactions and exchange between local stakeholders and the FSC community.

During Day 3 the central theme of the workshop was addressed. Invited plenary speakers including local stakeholders and social scientists gave presentations on how to integrate multiple interests, values and knowledge into joint risk management. Presentations provided a background to subsequent round table discussions, which allowed local stakeholders and international delegates to interact and exchange in detail.

On Day 4 morning a panel discussion took place which focused on the design of a repository and investigated how it could reflect a plurality of interests, values, and knowledge. The rest of Day 4 was devoted to the feedback by two thematic rapporteurs. They evaluated the meeting from two distinct perspectives: that of urban and regional development, and of participatory decision making.

This Executive Summary gives an overview of the presentations and discussions that took place at the workshop and the community visits. The structure of the Executive Summary follows the structure of the workshop itself. Complementary to this Executive Summary and also provided with this document, is a NEA Secretariat's reflection aiming to place the main lessons of the workshop into an international perspective.

General introduction to the Belgian context

Jean-Paul Minon, Acting General Manager of ONDRAF/NIRAS, opened the introductory session. He welcomed the participants of the fourth FSC workshop, dedicated to stakeholder involvement within the Belgian context of local partnerships. He stated that, in his view, long-term management of radioactive waste is possible only if every key stakeholder is included in the decision-making process. Mr. Minon pointed out that in the case of the local partnership model, developed and applied in Belgium, the stakeholders take part as equal partners in every important decision.

Mr. Minon briefly outlined the programme of the following days. In the morning of the first day, the participants would attend a session on the history and the current situation of low-level short-lived waste management in Belgium. Then, in the afternoon, they would visit the PaLoFF local partnership established between ONDRAF/NIRAS and the municipalities of Fleurus and Farciennes. On the next day, they would visit the MONA local partnership in Mol in the morning, and the STOLA local partnership in Dessel in the afternoon. Mr. Minon expressed his hope that the meetings and discussions between the participants and the local partnerships would be beneficial for both parties.

Yves Le Bars, Chairman of the FSC, welcomed the participants on behalf of FSC. He recalled that this workshop was the third to deal with stakeholder discussion within the framework of the specific radioactive waste management processes of a given (host) country. In 2001, the central theme of the workshop organised in Finland was stakeholder involvement and confidence in the context of stepwise decision making. In 2002, the meeting held in Canada focused on identifying and addressing social concerns. The central theme of the present workshop concerns ways of dealing with diverse interests, values and knowledge in risk management.

Mr. Le Bars said that similarly to the preceding FSC workshops, this meeting too has four main components. The first is the presentation of the national context, followed by a visit to affected local communities. Round-table discussions are the third, the aim of which is to focus the dialogue between local stakeholders and FSC members on certain questions, first in small groups then in plenary sessions. Finally, thematic rapporteurs analyse, according to multiple perspectives, the radioactive waste management processes discussed within the framework of the workshop.

Sharon Baillie-Malo from Natural Resources Canada, speaking on behalf of the organisers of the 2002 FSC workshop, recalled that the workshop had been held at a very opportune moment. On the one hand, in 2001, the Canadian government launched a new community-driven process to manage historic waste, and, on the other, in the same year, it passed the *Nuclear Fuel Waste Act* which is a milestone in the management of spent nuclear fuel. The *NFW Act* was promulgated shortly after the workshop, in November 2002.

Ms. Baillie-Malo underlined that the 2002 FSC workshop had generated many thoughts on meeting social challenges and highlighted the importance of continuing to keep social and community perspectives a foremost consideration in radioactive waste management. The workshop provided an opportunity for community stakeholders to interact directly with FSC participants and be party to international perspectives on the initiatives they are involved in. This was very well received by them and strengthened NRCan's relationship with them. In sum, the workshop served to reinforce confidence in the policy path chosen. Ms Baillie-Malo applauded the opportunity to learn now from the Belgian experiences, and hoped the Belgian workshop hosts would experience the same benefits as were found in Canada.

Evelyn Hooft from ONDRAF/NIRAS outlined the context of the long-term management of low-level, short-lived waste. She stated that in Belgium all key decisions related to nuclear power production and radioactive waste management come under the jurisdiction of the federal government. Today, two commercial nuclear power plants operate in the country. One is located in Doel, in the Flemish (Dutch-speaking) northern half of Belgium. The other plant is located in Tihange, in the Walloon (French-speaking) southern area of the country. In 2003, the federal government passed a law according to which the production of nuclear energy will be phased out as of 2015. In connection with short-lived, low-level radioactive waste management, the government – learning from earlier failures – had ruled in 1998 that a technical concept, which is final, yet flexible and reversible, must be elaborated. The ruling restricted potential sites to the four existing nuclear sites (Fleurus and Mol-Dessel as well as Doel and Tihange) and other possibly interested localities.

Ms. Hooft pointed out that the local partnership methodology was developed by the researchers of the Department of Social and Political Sciences of the University of Antwerp (UIA) and the research group on Socio-Economic Environment Development of the Fondation Universitaire Luxembourgeoise (FUL) based on consultations with ONDRAF/NIRAS. According to this methodology, the interaction with various interests and values take place in the form of public dialogues, and the local partnerships, representing the various stakeholders, serve as the framework for these dialogues. Local partnerships have been formed with four volunteer communities: Dessel (STOLA created in 1999), Mol (MONA created in 2000), and Farciennes and Fleurus (PaLoFF created in 2003).

Anne Bergmans from the University of Antwerp introduced the local partnership methodology. A key feature of the methodology is that it would allow the potential host community to engage in negotiations with ONDRAF/NIRAS and to investigate all – technical, economic, environmental, social and aesthetic – aspects of hosting a repository, without committing itself to more than considering the possibility. The aim is to create a decision process that stakeholders consider fair, representative and transparent. The output of the local partnership is a project proposal integrating the social and technical aspects discussed and meeting safety requirements for the long-term management of LLW (or, a decision not to propose). The local partnership ceases upon remit of a proposal and/or a recommendation to the municipal council.

Ms. Bergmans described the organisational structure of local partnerships. The general assembly is the decision-making body comprised of the representatives of local stakeholder groups and organisations, and one representative delegated by ONDRAF/NIRAS. Local partnership management is the task of the executive committee. Working groups are organised to develop ideas on specific issues (including e.g., siting and design, environment and health, safety assessment and local development), and their members consist of representatives of local organisations (political, social, economical) as well as individual citizens. The working groups take into consideration the available data and research results, and may invite independent experts to support their work. While each of the above bodies is composed of volunteers, project coordination is carried out by two persons employed

by the local partnerships on a full time basis ONDRAF/NIRAS delegates one member each to the general assembly and the executive committee and provides for the annual budget of the local partnerships. Following a dialogue within the local partnership, as well as with the broader community, the general assembly has to decide whether or not to propose an integrated repository project, integrated in a broader local development project. The municipal council then has to make a formal decision, based on this proposal, to continue or not as a site candidate. These projects and decisions are handed up to federal government through ONDRAF/NIRAS. If there are multiple candidatures, it falls on the federal government to make the final decision.

The questions and comments after the two presentations concerned the following issues: (i) the involvement of neighbouring communities, (ii) the role of anti-nuclear groups and other critics; (iii) the legal framework for the local partnership, especially as regards the right to veto; and (iv) the expected balance between the needs of the local partnerships (e.g., local development projects) and the financial means of the federal government. According to Ms. Bergmans' and Ms. Hooft's answers, the local partnerships consist of representatives of the local community life, though neighbouring municipalities or non local organisations can be invited to participate as an observer or expert.

As a local partnership is intended to represent the local community life, anti-nuclear groupings or opponents can participate in the local partnership if they are active locally. In fact, representatives of local environmental NGOs are actively involved in some of the local partnerships.

The operation of the local partnerships has no legal constraints, but is covered by a governmental decision (1998) This provides for great flexibility Although municipal councils are not formally guaranteed the right to veto (Belgian law contains no such provision), the model works on the basis of a "gentlemen's agreement", which is a fundament of confidence and legitimacy. As regards local requests and federal possibilities, the federal decision will probably be preceded by a prolonged negotiation process.

Visit to the local partnership of Fleurus-Farciennes

In the afternoon of Day 1, the delegates were taken by bus to Fleurus and Farciennes (two French-speaking communities in Wallonie), where they visited the site of the planned disposal facility. Afterward, the participants attended a series of short presentations held in an auditorium on the Institut National des Radio-éléments (IRE) site. This was followed by a reception at which FSC visitors were able to taste traditional and new local specialties and talk with members of the local partnerships.

First, **Henri Bonet**, Director of IRE, welcomed the participants of the FSC workshop. He noted that IRE, a nuclear medicine production company, with some waste conditioning activities, has been operating in Fleurus for the past 30 years. Therefore, he argued, low-level short-lived waste disposal would be in line with the company's day-to-day activities. He also pointed out that most people in the nearby communities had not been aware of the presence of nuclear industry until a few years ago when the federal government included the area among the four nuclear candidate sites. This information caused anxiety among the people. The local partnership is very useful because it gives people a chance to hear also the answers of independent experts to their questions on safety issues.

Mr. Bonnet recounted that this had been a coal-mining district until about 30 years ago when the mines were closed because production became unprofitable. This marked a turning point in the region's economy as coal-mining was gradually replaced by hi-tech industries, e.g. biotechnology and the nuclear industry. The waste disposal facility would fit into this direction of development.

Pol Calet, the Mayor of Fleurus and President of PaLoFF, welcomed the participants on behalf of the local partnership. He said that setting up PaLoFF was preceded by a four-year period of exploratory work. After the 1998 governmental decision, due to strong local opposition the two communities did not give a positive answer regarding the acceptance of waste, nor did they reject it. Between 1998 and 2002, ONDRAF/NIRAS carried out a technical feasibility study in the area, the validity of which was also verified by independent experts. During this period, the site investigations were followed up by a local information committee. Then in 2003, the municipal councils of Fleurus and Farciennes decided to set up the local partnership PaLoFF

Mr. Calet highlighted that today there are 80 volunteers who work in four working groups, and it is expected that in 18 months all major questions will be answered. People expect an answer to the question not only of whether or not the facility would be safe, but also what socio-economic benefits they can expect from the project. The municipal governments will approve the siting of the facility only after having obtained the population's consent.

Gwenaëlle Verjans from FUL introduced the socio-economic characteristics of the two municipalities. She said that earlier Fleurus had been a wealthy community whose main source of income was from the coal mine, but since its decline it has struggled with high unemployment. Farciennes' economy was more diverse, and is, therefore, in a better position today. Then, Ms. Verjans recalled the implementation of technical feasibility studies, which in the beginning was accompanied by distrust between IRE and the local opposition, but which was subsequently replaced by a dialogue. In this dialogue local knowledge was taken into account, new technical evaluation criteria were introduced, and a mutually agreeable concept of long-term safety and acceptable risk has emerged.

Ms. Verjans presented the main steps of the establishment of PaLoFF. The decision to create a local partnership was made by the two municipal governments in October 2002. Since then, the organisation has been set up and working groups have been created that deal with Technical Concept and Safety, Land Use, Health and Environment, Local Development in Fleurus, and Local Development in Farciennes. Ms. Verjans suggested that the key conditions for an effective dialogue include a combination of local official representation and voluntary commitment, continuous active involvement from the very first stage, and the possibility for local authorities to stop or continue at any stage of the process.

The paper by **Barbara Weis** and **Franco Delvecchio,** project coordinators of PaLoFF described the functioning of the local partnership. Besides working out the concept of the repository and planning the local development project, the local partnership's main aim is to facilitate an exchange of knowledge between ONDRAF/NIRAS and the local residents. Key elements of this approach include informing the public and letting them develop their own opinion, taking local knowledge (e.g. on the location of galeries in the coalmines, or on cracks) into consideration, integrating public concerns, and restoring trust between the residents and the decision makers.

According to **Marie-Chantal Nicaise**, chairperson of the Working Group on Technical Concept and Safety, most members of her working group have no expertise in nuclear matters, nor in safety matters. What speaks in their favour, however, is that they know the place where they live. Up to now, their meetings have been devoted to the definition of aims, the clarification of concepts, the study of possible sites, the selection of the potential site, the definition of the technical concept, and the question of safety. Together with the Land Use, Health and Environment working group, they have studied the various transport possibilities, i.e. transport by water, rail, road, and air.

Bernard Jonckers, chairperson of the Working Group on Land Use, Health and Environment, pointed out that his working group has compiled a list of environmental impacts for every decision-

making and implementation phase-study, construction, operation, closing, monitoring, abandonment. A similar procedure was followed in the case of health impacts. The latter is all the more important as in this region many people are suffering from the long-lasting health effects of coal-mining. The working group proposed that in the future, in addition to nuclear safety, the health condition of the residents also be monitored.

Carine Thiry, chairperson of the Working Group on Local Development in Farciennes, described the two local development projects proposed by her working group. One deals with the rehabilitation of an ancient mine tower, the so-called Roton tower, the other with the restoration of the 17th century castle in Farciennes. The working group will prepare feasibility studies for these projects, estimate investment costs, and plan the steps of implementation. The group's other task, which it plans to carry out together with other working groups, is to forecast socio-economic impacts that may be expected if and when the disposal facility is put into operation.

Francis Piedfort, chairperson of the Working Group on Local Development in Fleurus, recalled that the starting point of their work was a survey determining the socio-economic situation of the community and identifying the most vulnerable social groups. On the basis of the survey they came to the conclusion that it would be important to design projects that would improve the situation of people under 25 and over 50 and the underskilled. Before deciding on the specific projects, the working group tries to determine the needs of these groups through various methods, including questionnaire surveys and meetings.

The presentations were followed by questions and answers. Questions included the following:

1. How did two communities with very different socio-economic characteristics manage to cooperate? How will the results be integrated?
2. On what basis will municipal governments decide whether or not to support the proposals prepared by the local partnerships?
3. Is there a competition between PaLoFF and the two other local partnerships? Do they consult with each other?
4. Has PaLoFF interacted with the regulator? What interactions have taken place between the local partnership and the NGOs?
5. Was there any communication between PaLoFF and the neighbouring communities?
6. Currently the waste is stored in Mol, which is far away. Aren't the transit communities protesting against the transportation of waste?
7. Benefits affect the outcome of the popular referendum. What benefits are expected?
8. What are the perceived disadvantages? Has anyone tried to quantify them? Are property values expected to decrease?
9. Is there any moral concern about the consent of people who are yet to be born?

The answers were briefly:

1. It is hard to integrate the plans for the two communities since they are very different. They have different histories and only few contacts with each other. However, in both communities there are similar political majorities, and this helps integrate the proposals.
2. The municipal government of Fleurus announced that a public consultation would be organised, but in Farciennes no official statement has been made yet.

3. There is a good relationship between PaLoFF and the two other local partnerships. PaLoFF's work has not yet reached the phase that the other two local partnerships have.
4. The local partnership is in daily contact with the new safety authority. The NGOs have also been invited to join the local partnership and contribute their suggestions, but they do not wish to take part.
5. The local partnerships are open to the residents of the neighbouring settlements, who may participate in the debates as observers without the right to vote. Currently, only Charleroi is sending regularly an observer.
6. Various methods have been investigated for the transportation of waste. Transport by water (using the extensive Belgian canal system) is considered the best way. Transit settlements are not expected to protest, since even today nuclear materials arrive here daily.
7. As far as benefits are concerned, they mean more than just money. The partnership would like to inject new life into the communities and encourage people to create something new. Participation is very important, because people outside the partnerships should know what they are saying "yes" or "no" to.
8. It is very hard to quantify economic impacts. For example, it is possible that the development that accompanies the building of the repository will exert a positive influence on real estate prices. It is also possible that the value of land will increase in some locations and decrease in others.
9. The partners do not want to shift the burdens of waste management on to future generations. On the other hand, they believe that some risks may cause greater anxiety for future generations than this repository (e.g., military nuclear installations).

Visit to the local partnership of Mol

The visit to Mol (a Dutch-speaking community in Flanders) in the morning of Day 2 began with a series of presentations, which were followed by questions and answers with the members of the local partnership.

Paul Rotthier, the mayor of Mol, gave an overview of the community. The large municipality has about 32 000 inhabitants of 66 different nationalities and consists of 12 settlements. Its most important economic sectors are sand excavation, the glass industry where the sand is processed, and tourism that shows dynamic development due to the fact that the municipality is rich in green areas, ponds, rivers, and historic monuments. Nuclear activity first came to Mol in 1952 with the establishment of the Belgian nuclear research centre (STK, now SCK•CEN). Both high- and low-level waste have been stored in Mol. In 2000, the MONA local partnership was established between the municipality and ONDRAF/NIRAS to investigate the possibility of establishing a disposal facility for low-level and short-lived waste. The MONA local partnership will submit its report to the municipal government in 2004.

Liesbet Vanhoof and **Bert Meus**, project coordinators of MONA, outlined the structure and operation of the local partnership. The General Assembly membership includes, besides the ONDRAF/NIRAS delegate, the representatives of the municipality council, business, and civil society organisations, including anti-nuclear groups. Four working groups operate within the framework of the local partnership: one deals with Siting and Design, the second with Environment and Health, the third with Safety Assessment, and the fourth with Local Development questions. The concepts for both

surface and deep geological disposal have already been designed, sites have been selected, impact studies have been completed, and the socio-economic study is nearing completion.

Ms. Vanhoof also explored the issue of communication with the local population, which, in the case of a community of this size, is a difficult task. She mentioned a number of communication tools which have been used by MONA, including an information counter, a newsletter, a website, a calendar, and a game. (The game has been implemented 50 times, and each time allows a group of players to learn about MONA and LLWM and to discuss and express themselves afterwards.) She acknowledged the big effort volunteers were willing to put into this exercise, the smooth cooperation between individuals of diverse backgrounds, and the open and direct dialogue with ONDRAF/NIRAS. At the same time, she mentioned some weaknesses of the process, for example, the considerable time and effort required of volunteer members and the difficulty of finding independent experts.

The questions raised by the participants concerned the following main subjects:

1. Why are women so underrepresented in the General Assembly?
2. How can it be ensured that the repository design will contain a solution that is also acceptable to the regulators?
3. On what grounds will the municipal council decide whether or not to accept the report submitted by the local partnership?
4. What are the guarantees that ONDRAF/NIRAS would respect the local partnership's decision should Mol reject the repository?
5. Does the local partnership know what the local public sentiment is regarding the repository? How are contacts created and maintained with the people of Mol?
6. Has the creation of the local partnership polarised the pro- and anti-nuclear groups? Will the strife between these groups continue after the decision?
7. What about the possibility that a deep geologic facility could become a high-level waste repository?

The answers were:

1. The University of Antwerp conducted a study that identified the main actors of the community, and the members of the General Assembly represent these actors. Since most issues that have been investigated by MONA are perceived as of a technical nature, men have been more interested in participating in this work. A look at other voluntary organisations in Mol shows that women are similarly underrepresented.
2. In order to find a licensable design MONA has been advised by the regulator (Federal Agency for Nuclear Control) and other experts.
3. The municipal council agreed to accept the report of MONA as it is, including all of the proposals.
4. There is a "gentlemen's agreement" between MONA and ONDRAF/NIRAS that if Mol says no to the repository, ONDRAF will respect this decision.
5. In the past year, MONA spent significant efforts to address the question of how close they are to the local pulse. The local partnership investigated in a baseline public opinion poll what ratio of the residents are aware of the existence of MONA, what ratio has its communication efforts reached, and what the public attitude is concerning the local

partnership and the questions of radioactive waste management. They also plan to conduct follow-up research to examine the changes in public opinion. The representative structure of MONA means that individual members carry messages to and from their "home" socio-cultural associations.

6. Anti-nuclear groups were protesting earlier, now they are a part of MONA. There is some confidence that because of this inclusiveness, the broader population will recognise that a democratic decision has been taken, whatever the outcome.

7. A "cautious" answer was given. MONA is limited to tackling only the LLW issue, but there is thought now about how to continue the local partnership in some form. After the decision on LLW, it is the problem of HLW disposal which is likely to come to the fore. All partners wish to have a say in the HLW decision, but today they are convinced that that discussion will take place on a "very different level".

Visit to the local partnership of Dessel

The participants were taken by boat from Mol to the neighbouring Dessel. During lunch, served on the boat, they had a chance to converse informally with the local partnership members. Lunch was followed by presentations in Dessel.

After greeting the delegates, **Michel Meeus**, Dessel's mayor, introduced the municipality of Dessel. The municipality has 8 500 inhabitants. Its most important sectors include construction, excavation of white sand, and the nuclear industry. Recreation and tourism are also important, since Dessel has large green areas, paths for cycling and walking, lakes, rivers, and historic buildings. Nuclear industry activities started here in 1952, and currently 7 nuclear companies operate here. They are involved in research on nuclear energy (SCK•CEN), research on reference materials and measurements (IRMM, Geel), treatment and storage of nuclear waste and dismantling of installations (Belgoprocess), production of fuel elements (FBFC International), production of MOX fuel (Belgonucleaire), services in nuclear companies (Tecnubel), and transporting nuclear materials (Transnubel). In 1999 the STOLA local partnership was created to investigate the possible disposal of LLW in Dessel.

Katleen Derveaux, project coordinator of STOLA, addressed the question of the involvement of the local population in STOLA. The local partnership has 70 members (1% of the adult population), including interested inhabitants and representatives of various political, socio-cultural and economic organisations. In order to find out what people know and think about the nuclear activities in the region, the possible disposal of low-level waste in Dessel, and about STOLA, a public inquiry was carried out. The study concluded that people are used to the presence of nuclear facilities but are concerned about the risks. According to the inquiry, the low-level waste disposal facility would be accepted if it is safe and compensated. The study also revealed that people know STOLA and consider it a useful initiative, but suspect that it represents the interests of the nuclear industry.

Ms. Derveaux reviewed the communication activities of STOLA, which included a newsletter, media coverage, a web site, an office, an exhibition and school competition, and a series of other local events. She emphasised the importance of future communication and indicated that a communication centre on nuclear energy matters would be set up. Finally, she pointed out that two 3-D animated films had been prepared to make the STOLA-concept for both surface and deep disposal understandable for the local public. After Ms. Derveux' presentation, the two films were shown.

The most important questions of the participants were as follows:

1. Which concept will the local partnership choose in the end, surface or deep disposal?
2. Which local development projects will they propose to finance?
3. Since both Mol and Dessel plan to site the disposal facility close to their common boundary, shouldn't they work out a joint proposal?
4. Are there any risks, and how will they be communicated?

The answers were:

1. The local partnerships will work out both concepts and propose them as alternatives. The federal government will make the final decision.
2. Two local development projects are proposed. One is a communication centre and theme park on nuclear energy matters, which is expected to increase the community's touristic value. The second is establishing a fund for a sustainable Dessel which will address the needs of future generations.
3. Since the two communities differ greatly in size, and they also have had political differences, they have decided to submit separate projects at first. It is possible that later on they will start negotiations about sharing both the burdens and the benefits of waste disposal in building a joint facility.
4. The risks are examined by the Working Group on Safety, which has investigated a number of scenarios, even extreme ones like a terrorist attack. It does not deem the repository to be risky.

The questions and answers were followed by a site visit and sightseeing tour in Dessel, then a reception and informal conversation with the members of the STOLA and MONA local partnerships.

Workshop opening session

In the morning of Day 3 the second part of the workshop started. **Jean-Paul Minon**, Acting General Manager of ONDRAF/NIRAS called to order the opening session. He expressed his hope that the community visits had created a platform for in-depth interaction and exchange on day-by-day experience of local involvement in the decision-making process on LLW management. He explained the structure of the workshop and wished participants an interesting learning experience.

Hans Riotte, Head of the Radiation Protection and Radioactive Waste Management Division of OECD/NEA welcomed participants on behalf of NEA. He spoke of NEA activities related to stakeholder dialogue, with special emphasis on the FSC. Mr. Riotte stressed the importance of the fact that in addition to practical questions, theoretical concepts (e.g., who is a stakeholder?) are also discussed within the framework of FSC workshops.

Yves Le Bars, Chairman of the FSC summarised the programme of Day 3. First, brief feedback on the community visits would be given by three FSC rapporteurs. This would be followed by Sessions 1 and 2, both including invited plenary presentations and round table discussions. Mr. Le Bars explained the organisation of round tables and the role of moderators.

Elisabeth Gray, Scottish Executive, UK presented her observations regarding the PaLoFF local partnership. She emphasised that a lot has been done in the short time the local partnership has been set up. By involving local politicians, unions, individuals, and the affected nuclear company, significant local knowledge has been brought into the process.

Ms. Grey observed that some conflicts are likely to emerge. For instance, it may be a source of conflict when two communities with rather different approaches and interests join the same local partnership where one may agree to a site while the other may not. It may also cause a conflict that in Fleurus people who live very close to the site have not yet been involved in the local partnership, or that some NGOs have not been participating. One of the fundamental questions to be resolved in the future is how working groups could enlist new members and get other communities involved.

There are some unresolved issues related to the decision-making mechanism and communication. For example, it is not clear if all working groups have equal status, or if the General Assembly can override the views of the groups and reject their proposals. Also, there is no evidence of the regulator's active involvement. The public communication strategy of the local partnership is not apparent, although it will be critical to the decision process.

Timo Seppälä, Head of Communication of Posiva, Finland summarised the main lessons learned in the course of the visit to STOLA. He observed that in Dessel – similarly to Eurajoki, the host municipality for Finland's future spent nuclear fuel repository – people are accustomed to living near nuclear facilities and there is a strong reliance on nuclear industry, and therefore, the majority of the inhabitants seem to be willing to accept the waste. Regarding the achievements of the local partnership, he judged the strong involvement of local people and the big variety of the applied communication tools (events, seminars, exhibitions, newsletters, etc.) as most important. It is problematic, however, that safety has not been an issue and has not been much discussed, and the role of the regulator has been unclear throughout the process. Another problem is that two alternative concepts for disposal have been developed and displayed and this may cause confusion among the broader public.

Mr. Seppälä commented on the benefits and drawbacks of the disposal facility for the community. Benefits include a communication centre, the real estate tax revenue for the local government, and an annual compensation from the government. The main drawback is that acceptance of the low-level waste repository maybe the first step in a process aimed at siting also the high-level waste repository in Dessel.

Carmen Ruiz Lopez of CSN, Spain, provided feedback on the visit to MONA. She acknowledged that the work programme has been effective and a lot of progress has been made towards final objectives. Two work zones for surface disposal and one for deep geological disposal have been selected, with a preference for one work zone for surface disposal and one for deep disposal. The disposal concept has been developed by modifying the ONDRAF/NIRAS design. Among other strengths of the local partnership she emphasised that group members have been highly motivated, and confidence in technical experts has significantly increased.

Ms. Ruiz Lopez spoke about the difficulties of achieving broad outreach and pointed out that earlier surveys showed little awareness of MONA activities among the broader population. She noted that the absence of gender balance and the conflicts between the supporters and opponents of the repository represent further problems. Finally, Ms. Ruiz Lopez pointed to several open issues. For example, the results of the ongoing socio-economic studies, particularly the potential impacts of the repository on the development of tourism, are not known yet. On the other hand, the local

development project needs to be better defined. She also emphasised that in case the repository project is accepted, the future role of MONA needs further exploration.

Workshop Session 1: Dealing with interests and values in managing risk

Marc Mormont, Professor, Fondation Universitaire Luxembourgeoise, described how the local partnership methodology is helping handle conflicting interests and values. He recounted that this methodology is based on the assumption that interests and values are not pre-defined but are generated by the exploration of future scenarios related to a new technological object. Professor Mormont showed that the methodology has three key components. The first component is the simultaneous investigation of the technological concept and the site, which may bring new ideas, unknown values and interests to the surface. The second component is opening a discussion on knowledge and technical issues, i.e. moving from the rhetoric of fear to a dialogue on risk. Finally, the third component is integrating the siting process in a development process, preferably in such way that the repository project itself serve as a tool for development.

Professor Mormont used the existing local partnerships as examples to illustrate the difficulties of implementing the methodology. For example, in Fleurus and Farciennes, the simultaneous discussion of the technological concept and the site led to significant changes in the project. PaLoFF also exemplifies that it is simpler to design development projects that would compensate for general socio-economic weaknesses than projects that would enhance the value of the repository and could be integrated into the socio-economic fabric of the community.

Catherine Zwetkoff, Professor, University of Liège, Department of Political Science and Public Administration, analysed the difference between the concepts of legality and legitimacy, and focused on the role of the latter in policy making. She made three important propositions. First she pointed out that although legitimacy has been a fundamental and constant preoccupation since the formation of the modern state, it is more frequently present on the political agenda than ever before since the decision-making context has become more complex, interdependent and uncertain. Second, Professor Zwetkoff highlighted that although the essence of legitimacy of public policies remains the same, the conditions and criteria evolve. She showed that most criteria of legitimacy, including those of procedural fairness and distributive justice are highly context-sensitive. Third, she demonstrated that the evolution of the conditions and criteria for legitimate decision, modify the decision-making mechanisms of representative democracy and put participatory decision making on the political agenda.

Finally, Professor Zwetkoff raised a few critical questions related to public involvement. She reflected on a number of issues, such as representativeness, faithfulness, level of involvement, degree of stakeholder influence, and flexibility vs. control. She concluded that in the case of a specific policy decision, a combination of theoretical questioning and empirical studies is needed to define the conditions for legitimacy.

Anna Vári, Professor, Hungarian Academy of Sciences Institute of Sociology, spoke of fairness issues in waste management decisions. She highlighted the difference between the fairness of a decision process and its outcome. There exist multiple legitimate views and ethical principles concerning outcome fairness and there is no meta-theory that could help decide which of the competing views should be considered valid in a concrete case. Experience suggests that decision outcomes meeting multiple ethical principles – so-called robust outcomes – have a better chance for getting broad societal support than those which meet only one principle. On the other hand, Professor Vári demonstrated that views on process fairness are less ambiguous: a fair process is seen as equivalent to a pluralistic, deliberative process. Since in fair processes it is the stakeholders who are

seeking a compromise between divergent ethical principles, such processes may be key to identifying robust strategies.

Professor Vári pointed out that since the local partnership methodology follows a deliberative approach, it is likely that a robust waste management strategy (concept, site, and benefit package) will be agreed on. She also observed that this methodology has been instrumental in strengthening relations between the implementer and the potential host communities and suggested that this community relations approach be maintained during the whole lifecycle of the facility.

Jacques Helsen, Chairman of the Board of MONA, explored the main factors of perceived fairness and legitimacy of the decision process. He claimed that a balanced composition of the General Assembly and the working groups, acceptance of the technical concept by members of the local partnership and local inhabitants, independence from the nuclear sector and politicians, and an appropriate budget and time frame are key factors in the public perception of the decision process as fair and legitimate. It is similarly important for the local partnership to have access to good and objective information, to hear the pros and cons, to be able to communicate with scientific experts without knowledge of technical jargon, and to be able to explain scientific issues to the broader public. In addition, Mr. Helsen emphasised the importance of clearly specifying the limits of the mandate of the local partnership, for example, that it does not extend to tasks related to HLW siting.

In connection with the future, Mr. Helsen observed that people will find it fair and legitimate if the work of MONA will lead to a decision by the community council, ONDRAF/NIRAS, and the federal government within a short time. In his view, it is advisable for members of the local partnership to carry on the dialogue even after the termination of MONA's mandate. He stressed the need for community monitoring and control of subsequent phases in the LLWM process. Finally, he recalled that good leadership, high-quality information, and effective communication are key components of a fair and legitimate process.

Session 1 round table discussions (moderator: **Michael Aebersold**, Federal Office of Energy, Switzerland) addressed the following questions:

- Accepting or refusing a person, an institution or a grouping as a legitimate stakeholder – who makes the decision and how?
- How are the local partnerships built and organised?
- How to obtain community support for the local partnership's legitimate decisions/findings?
- Experience teaches that no decision is reached solely by formal and legal processes. What role do informal processes play?
- How can the informal procedures be accepted? Do they need to be made explicit?

Participants agreed that, in principle, everyone who could be affected by the decisions, should be allowed to participate in the debate. The only exclusion criteria should be the disrespect of the local partnership rules or of other participants.

Members of the round tables emphasised that the structure and organisation of the local partnerships has been based on the recommendations of a university group. Professional organisation, a high degree of autonomy and intensive interaction with ONDRAF/NIRAS have been key features of this arrangement. A number of speakers commented on the absence of federal policy makers, which may have advantages and disadvantages alike. On the other hand, some elected local representatives

are members of local partnerships, which raises questions on possible tensions between the local partnership methodology and the institutions of representative democracy.

Most were of the opinion that in order to reach legitimacy, different interests and groups should be represented in the local partnerships and their views should be reflected in the outcomes. Processes should be transparent while outcomes should be clear and understandable to all concerned. Information, communication and dialogue are key to legitimacy. To avoid that local partnerships be seen as a "club of experts", a rotational arrangement was recommended.

Participants agreed that informal procedures, being outside the "political framework", can help facilitate public involvement and build trust. It was pointed out, however, that even in case of informal procedures a clearly defined framework is needed. As the local partnerships function outside the formal legal procedures, they can function in a more flexible way. On the other hand, local partnerships can be instrumental in building confidence for taking legally binding decisions at the local level.

It was again noted that although the local partnerships make recommendations, it is not clear what the government will do with these recommendations. It was also argued that the process may cause conflicts between neighbouring communities. The importance of the right of veto of the community was stressed, although this may cause a conflict between technical suitability and social acceptance. It was repeatedly emphasised that access of the community to the local partnership is necessary. Finally it was accepted that time is needed to explain the recommendations to the community before any decisions are taken.

Workshop Session 2: Dealing with knowledge in managing risk

Karin Knorr Cetina, Professor, Sociology Department of the University of Konstanz, introduced the process in the course of which the natural and technological sciences drew away from laboratory science and became a so-called interface science. The main characteristics of interface science are: the main objective of research is problem solving, the social structures of knowledge production are unstable, research is transdisciplinary, a contextualisation of research takes place, the academic monopoly on the assessment of the quality of research no longer exists, and there is a diversification and de-institutionalisation of knowledge diffusion activities. Professor Knorr showed the reciprocity between the transformation of science and social changes. In today's so-called knowledge society, knowledge is generated in the context of immediate application. The result of accelerated innovation is that society is used as a testing ground for uncertain knowledge, and the immediate application of scientific results has a number of undesirable effects.

Professor Knorr pointed out that under these circumstances society is not only a recipient of research results, but it must actively participate in the production of knowledge. Legitimation of science comes from its active engagement with society. The main challenge facing knowledge society is to find the institutional arrangement within which experts and the public may enter into a dialogue.

Hugo Draulans, Chairman of the Board of STOLA, spoke of the experiences of his local partnership on the dialogue with experts. He described STOLA as a structured study group which represents all actors of the community of Dessel. Most members of STOLA are highly trained and/or have a technical background, but have no specific knowledge on disposal technologies. Since they had to evaluate the alternative disposal concepts offered by ONDRAF/NIRAS, they needed basic knowledge about technologies, radiation and safety, and the socio-political context. To meet these

needs, transfer of knowledge from experts (in-house experts of ONDRAF/NIRAS and independent experts) to STOLA members has been taking place over the last four years.

Mr. Draulans described the main difficulties of this knowledge transfer. For local actors it has often been difficult to understand the technical jargon used by the experts. On the other hand, experts were often insufficiently informed on STOLA and its tasks, and most of them were not sufficiently skilled in communication. However, the most serious problem was that the perception of local actors on a waste management facility is radically different from that of technical experts. In spite of these problems, Mr. Draulans judged that cooperation between local actors and experts has improved, confidence in nuclear experts has increased, the experts' influence on the selection of the technical concept has diminished, and social impacts of the facility are taken more into account.

Peter De Preter of ONDRAF/NIRAS analysed the impacts of the local partnership methodology on the organisational culture of his agency. He compared the former technical-authoritarian approach taken by ONDRAF/NIRAS with the recent local partnership approach and emphasised that the agency had to develop a fundamentally different mode of operation. Recently ONDRAF/NIRAS representatives play three different roles in the local partnerships. In the General Assembly they are a partner amongst other partners, in the Board of Management they help integrate various aspects of the project, while in the working groups their primary role is to provide technical information.

Mr. De Preter observed an evolution from a closed and defensive attitude towards a very open-minded one in the ONDRAF/NIRAS team. However, this evolution has been accompanied by new challenges. One challenge is to find a balance between an approach where all technical choices are made by nuclear experts and the other extreme where everything is open and can be changed by the local community. Another challenge is that technical experts have to acquire skills of dialogue and communication. A third challenge is to maintain a high degree of flexibility but avoid chaos. The latter requires a strict organisation with clear and well defined responsibilities and a strong coordination team.

Pieter De Gelder, Division Head of AVN, spoke of the role of the safety authority in the local dialogue. He recalled that in Belgium a safety authority in the modern sense of the word was only founded in the mid 1990s. The safety authority is a federal agency (FANC), while AVN is a private company, a contractor of FANC.

Mr. De Gelder highlighted that the regulators are not formal members of the local partnerships and do not attend meetings in a regular manner. However, from time to time, local partnerships invite experts from FANC and AVN to give presentations on specific topics. In particular, they have provided information on their roles and activities in the process, on legal and authorisation procedures, and on the evaluation of ONDRAF/NIRAS dossiers. Mr. De Gelder observed that they found a very motivated local audience and they have committed themselves to continued interaction with the local partnerships. Finally, he stressed that this type of interaction is totally new to the regulator.

Session 2 round table discussions (moderator: **Saida Engström**, SKB) addressed the following questions:

- Do local stakeholders have, internally or externally, all the expertise they need in order to address the issues raised by radioactive waste management projects?
- Do institutional stakeholders have all the expertise they need to take local impacts into account?
- What kinds of expert input are sought and attained by the different stakeholders?

- Were any formal methods used to aid local partnerships perform technology assessments? Or other types of assessment?
- How to maintain the knowledge and expertise achieved by the stakeholders?

Participants pointed out that radioactive waste management is multi-dimensional and that therefore, very different types of knowledge and expertise are implied. This is especially clear in the Belgian approach, where it is required that both technical and socio-economic factors be taken into consideration.

Round tables found that in general, local stakeholders do not have all the expertise they need in order to address all relevant issues, but the local partnership process enables them to get it. The main sources of technical expertise include ONDRAF/NIRAS, the regulator, and independent experts. Also, there are many community members who are professionals in relevant fields (e.g., nuclear industry, civil engineering).

It was also found that institutional stakeholders do not have the expertise they need to take local impacts into account and this is one of the main reasons why local partnerships were formed. Local stakeholders provide knowledge on socio-economic circumstances, interests, and priorities of the communities, but sometimes also on physical characteristics (e.g., local hydro-geology). It is not only the lack of specific knowledge, but also the predominantly technical orientation of the institutions that can be a barrier to understanding local concerns. Therefore, a willingness to learn and a commitment to address local impacts is necessary on the part of all local partnership members.

Stakeholders have sought expert input in a variety of fields (e.g., technical, social, economic, cultural, political, legal, procedural, communicational, local development, safety), but it is not clear if satisfactory expertise was received in each case. It was noted that local members of partnerships perceived health risk to be relatively low, and therefore, expertise in radiation protection and public health were not the most solicited.

In certain cases “interface experts” are needed to “translate” technical language and help local stakeholders understand the impacts of radioactive waste management projects. The importance of the capability to audit technical issues by using “independent expert” support was also emphasised.

It was observed that it is difficult for local stakeholders to find technical experts outside the nuclear industry. More generally, the question was raised about how to get truly independent, unbiased information. Even university experts are sometimes funded by corporations which may create pressure towards certain conclusions. It was suggested that sufficient resources be provided for verifying information, e.g., by requesting multiple opinions.

Few formal methods for technology or other assessments appear to have been applied by local partnerships (only scenarios were mentioned). Typically, working groups formulate questions and invite experts to give their opinion. Partners felt that the use of group decision-making methods would have facilitated working group discussions, and training in this area would be useful.

It was recognised that maintaining the knowledge and expertise achieved by local partnerships would be very important. A number of methods were mentioned, for example, oral history, information technology, cataloguing, and mentoring. Documents will be archived and a computerised knowledge management system will be developed. MONA points to the need to establish a knowledge centre near a repository site for future generations.

Round tables agreed that community involvement should continue in the subsequent stages of the radioactive waste management programme. Some suggested that local partnerships should be mandated to continue, or at least an advisory board consisting of several local partnership members should be set up by the communities. It was felt that, in any case, communities should benefit from the large investment placed in the local partnerships.

Workshop Session 3: Building a relationship to a concrete waste management project based on interests, values and knowledge

The final day of the workshop started with Session 3. This session was aimed at exploring the artistic and aesthetic aspects of the waste management process and the relationship among the stakeholders, particularly the affected local communities and those who might help develop both the products and processes associated with implementation. The session, which was moderated by **Thomas Isaacs** of Lawrence Livermore National Laboratory, U.S., included two presentations followed by a panel discussion.

Cécile Massart, Professor and Artist, has been focusing on issues associated with the management of radioactive wastes for some period of time. She operates from the understanding that a proper role for art in such projects can help change the view of waste disposal by stakeholders and the broader public. She has investigated both the artistic aspects of waste management facilities themselves as well as artistic visions of themes associated with radioactive waste.

For the past ten years, Professor Massart has been working on a project titled, "An archived site for alpha, beta, gamma." Working with computer graphics, Professor Massart has been obtaining access to appropriate radioactive waste sites, making photo and video reports and leaving copies of documents and exhibit projects with those in charge of the sites she visits.

Professor Massart explored three separate topics in which using art as a vehicle for communication offers an alternative and perhaps improved method for communicating over the more "traditional" verbal and written communications almost always favoured by technical and programmatic individuals. The first was to portray radioactive decay not by measurements or comparisons to other risks, but to use the gradual lightening of colours to depict the gradual and natural decay of radioactivity with time in an artistic piece. Second, she demonstrated the possibilities for art to help maintain archives for the future, a key knowledge preservation activity for a programme that will span generations. Third, she showed the possibilities for art to influence markers that would ultimately be placed at waste management sites, preserving the continuity of knowledge regarding such sites. Finally, Professor Massart showed examples of how art can influence the look and feel of waste management facilities, helping to reflect and then realise the vision of the local population.

Erik Van Hove, Professor of Sociology (retired), spoke of the valorisation of a repository in an added value project. He pointed out that though local stakeholders may lack technical expertise, they consider their personal interests very carefully and projects affecting such interests are taken quite personally. This provides caution but also opportunity for such projects to be conducted in ways that can help, though not guarantee, better acceptance by local stakeholders. Professor Van Hove mentioned three attributes. First, while engineering projects tend to be thought of as mono-functional (e.g. dispose of waste), building flexibility into the project to reflect the interests of the local stakeholders can measurably improve stakeholder satisfaction. What the implementer may see as a single-purpose project may indeed provide additional, desirable capabilities to a creative local population. Second, while engineering projects, particularly waste management projects are often designed and built in uninteresting, utilitarian ways, a more creative design and implementation can

add a sense of enjoyment and pride on the part of the local stakeholders. And third, while engineering projects are often conducted a manner closed to their environment, a more transparent, inclusive process may draw local stakeholders more intimately into the project. All of these features can help by providing inviting borders, by valuing the beauty and aesthetic dimension of the project and by building the project so that it has an appropriate place in the memory of society.

Professor Van Hove emphasised that people show great ingenuity in adapting uses and functions beyond those originally intended. The extent to which local stakeholders can help provide the vision and then the reality of such waste management projects can significantly improve their sense of ownership of the project and their ultimate acceptance.

Professor Massart and Professor Van Hove were then joined in a panel discussion by **Antoine Debauche** director of IRE and member of PaLoFF, **Jacques Helsen** from MONA, **Frans Dumoulin** from STOLA, and **Jean-Paul Boyazis** from ONDRAF/NIRAS. Each made important remarks reflecting and reinforcing many of those made earlier as appropriate to their individual circumstance. This was followed by a discussion. One of the questions debated was whether a waste management facility should be highlighted as an artistic expression and symbol for the local population or whether it should be designed to blend in as much as possible with the natural environment and not call undue attention to itself. Many communities might see such a project as a mechanism to help revitalise the local area and may desire to create an artistic vision that will help bring a sense of interest and uniqueness to the local community. There was also the sense that the most important was to work intimately with the local stakeholders to help assure that whatever is developed reflects the vision and desires of that community.

A number of comments and questions followed from the broader FSC participants. Two common themes emerged. The first was that for the artistic and aesthetic aspects to succeed, there must be a sense of trust and responsibility among the partners, including those brought into the project to lend an artistic or aesthetic view. The second point was that to be successful, such a project must be transparent and that through this transparency, people must be able to see that the local stakeholders can indeed influence the project in meaningful ways.

Workshop Closing Session: Dealing with interests, values and knowledge in managing risk

In this session, reports from two thematic rapporteurs observing the workshop were presented. These were followed by a discussion and feedback from participants.

Detlef Ipsen, Professor, University of Kassel, Department of Architecture, Urban- and Landscape Planning focused on issues of public participation and regional development. He introduced the principles for active and intensive public participation, which had been developed by the designers of the AkEnd process aimed at finding a solution for the radioactive waste disposal problem in Germany. These principles include an interactive approach, a transparent and strictly controlled process, a fair allocation of competence between the actors, the recognition that participation in siting a disposal facility means participation in shaping the region's future, and the assumption that participation means responsibility.

Professor Ipsen presented the organisational arrangement for participatory regional development, as suggested by AkEnd. The main components of this arrangement include a citizen forum designed to organise active citizen participation, a centre of competence which supports the citizen forum by providing expertise on technical, political, legal, social and communication matters, and a round table which brings together all relevant stakeholders to negotiate a mutually acceptable project. Professor

Ipsen outlined several principles recommended for the realisation of a regional development concept. First, he stressed that financing of the concept should have a legal basis. Second, the concept should be developed by those living in the region. Third, benefits and payments should be within defined limits and funded by waste producers. Fourth, the development concept should be realised in a stepwise fashion, closely linked to the planning and implementation of the waste disposal programme.

Finally, Professor Ipsen emphasised that the success of a radioactive waste management planning procedure is contingent upon the population's active participation in all phases of decision making and implementation. On the other hand, intensive public participation is one of the most important prerequisites for ensuring that the siting of a disposal facility does not prevent sustainable development in the affected region.

Thomas Webler, Professor, Antioch New England Graduate School, U.S., evaluated both the workshop and the local partnerships from the perspective of analytic-deliberative processes and public participation. He judged that the workshop successfully diversified deliberation by drawing on a number of tools, including, for example, small group work (round table discussions), informal venues, stimulating short presentations, rapporteurs, and community visits. One shortcoming of the workshop was that it did not display sufficient continuity with previous workshops, while a second shortcoming was that it invoked a very singular dimension of risk (to human health) without spending adequate attention on the other dimensions.

Professor Webler drew a distinction between participatory democratic theory and pluralism in order to point out that local partnerships exemplify the latter. Therefore, he argued, this methodology is susceptible to the main shortcoming of pluralism: namely, stakeholders may become a club of experts, distant from the individual citizens.

However, Professor Webler found that local partnerships performed well in many ways. He observed genuine commitment by local partnership staff and leadership to involve all stakeholders, some self selection of the participants, widespread education and outreach, a flexible timetable, genuine commitment from ONDRAF/NIRAS to see the process through, and a clear, capable, and respected leadership.

A handful of more critical observations were made about the local partnerships as well. First, the near absence of women indicates that women may not feel comfortable participating; when one societal group systematically does not participate, it suggests that more efforts must be made to facilitate their presence. Then, there was a single way to participate, discriminating against people who wanted to take part without committing to a high workload. Furthermore, the strong hierarchical leadership might discourage some forms of participation or input. Professor Webler suggested that future local partnerships might benefit from public involvement in the problem definition or the process design activities themselves. In regard to the solidly strong consensus about the positive nature of the local partnerships, he asked whether possible shortcomings are being ignored. Finally Professor Webler emphasised that the local partnerships are an extremely positive example of how experiments in democracy are necessary in order to deal with complex, non-routine technical risk decisions. The local partnerships can serve as teaching examples for future situations in which "social learning institutions" are needed.

Reports by the thematic rapporteurs were followed by participants' feedback. It was concluded that the visits and the workshop were very useful for local stakeholders and the FSC community. Participants noted that Belgium's case exemplifies that local communities, if suitably motivated, will act responsibly in facing the problem of waste management and that local teams are capable of highly creative work if allowed to design the facility and the local development projects themselves. Some

pointed out that by building on the experiences of the previous workshop, this meeting also focused on community-based processes and ethical aspects. At the same time, this meeting offered other countries abundant experiences on the implementation of a community-based approach.

Jean-Paul Minon of ONDRAF/NIRAS responded to questions concerning the future of the local partnerships. In his view, the dialogue between the municipalities and the local partnerships should continue even after the formulation of the recommendations. In his words, the operation of the local partnerships is an "ongoing experience". Responding to comments concerning the very low-profile activity of the regulator within the local partnerships, Mr. Minon noted that the regulator wanted to remain impartial.

Yves Le Bars of the FSC expressed his belief that the Belgian example may help resolve a number of pressing questions such as, for example: How can experts regain their credibility? How can the image of nuclear waste be changed? He talked about the importance of the fact that members of the FSC community and the Belgian communities were able to discuss such questions openly. Mr. Le Bars found the workshop very successful and expressed his thanks to the organisers.

Hans Riotte of the NEA deemed it a novel feature of the workshop that it dealt with the question of how radioactive waste and its management could be fitted into the everyday life of people. He pointed out that the analysis of the radioactive waste management issue from the perspective of community and regional development was another new and interesting theme of the discussions. Mr. Riotte also expressed his thanks to the organisers, and outlined the FSC plans for 2004.

INTERNATIONAL PERSPECTIVE

NEA Secretariat

The members of Belgian local partnerships invited the delegates of the international community to participate as partners in the discussions and showed great openness in sharing their problems, achievements, and concerns. Similarly to the Finnish and Canadian workshops, the meeting in Belgium represented a highly instructive experience for the FSC community. The FSC workshop broadened mutual learning around the Belgian local partnerships to an international level.

Stepwise approach with communities taking an increasingly more central role

In Belgium, the management of low-level short-lived waste follows a stepwise approach implemented as an iterative process consisting of a series of reversible decisions. After the suspension of sea disposal, a decision was made on the interim storage of LLW and a centralised storage facility was established in Mol-Dessel in the 1980s. After a failed attempt aimed at finding a technically superior site outside the nuclear areas for a long-term radioactive waste management facility, in 1998 the government prescribed a new procedure to find a solution which would focus primarily on the nuclear areas and which would meet both technical and social requirements. Local partnerships between potential host communities and ONDRAF/NIRAS were established to formulate integrated proposals addressing at the same time technical safety and local development. The proposals by the local partnerships are non-binding and municipal governments will have the final say at local level. The ultimate decision on selection of a site, disposal option and design, and local development package will lie with the federal government. The latter may have to select one final candidate in case of multiple proposals.

In order to provide for additional flexibility during the implementation phase, retrievability of the waste was also prescribed in the 1998 government decision. This requirement is similar to that in other countries, including, for example, Finland, France, Sweden, Switzerland, the UK, and the USA

Community-based methodology, fair and competent process

The Belgian partnerships realize a bottom-up, community-based methodology, with similarity to the Port Hope (Canada) case studied by the 3rd FSC Workshop.[1] Activities in local partnerships successfully combine analysis and deliberation: the General Assembly, representing various local stakeholder groups, including politicians, frames questions for the working groups where interested citizens and experts from specialty fields carry out the necessary analyses together.

The local partnerships strive to create a balance between the requirements of process fairness (equal opportunity to participate for anyone who feels potentially affected) and competence

1. NEA (2003), *Public Confidence in the Management of Radioactive Waste: The Canadian Context.* Workshop Proceedings, Ottawa, Canada, 14-18 October 2002. ISBN 92-64-10396-1. Paris: OECD.

(construction of the most valid understandings and agreements possible). Not everybody may actively participate in the discussions, but people may still listen and form their opinion on what they see and hear.

Process fairness – and also the legitimacy of decisions – is enhanced by the partnerships action plans aiming to carry on a dialogue with the broader community, to strive to measure acceptance by public opinion polls and/or local enquiries, and to base municipal government decisions on the acceptance by the broader public. The question of how and when to include in the decision-making process stakeholders from outside the host communities (e.g., neighbouring communities, transit communities) is also related to the problem of process fairness, and attempts have been made to involve those communities in the process.

Perception of no significant hazard

One of the observations of the Secretariat is that, on the whole, the members of the local partnerships spoke very little about environmental or health hazards. Moreover, when asked specifically about them, they emphatically stated that they cannot perceive any significant hazards. Also, local partners encountered in Mol-Dessel are of the view that the disposal facility would be safer than the present interim storage facility. Similar perception of insignificant risks was noticed in the Eurajoki and Port Hope cases.

The low perceived level of health risk might be attributed to the combination of a number of factors. The first is an acknowledged familiarity with the hosted nuclear facilities in two of the three local partnerships. The second is that the good safety record of the Belgian nuclear industry has resulted in a certain level of trust in the institutions operating and supervising this industry. Third, the residents of potential host communities do not question the equity of hosting the disposal facility if it is safe and compensated by the benefits expected from local development projects. Fourth, and perhaps most important, the local partnership methodology greatly increases both the community's familiarity with the safety of the project – because the safety details are studied and decided together in technical working groups with participation of the local stakeholders – and the community's control over the decisions – because it is only the partnerships' decisions that will be carried forward.

Other factors of sustainability of the decision-making process

As of today, the Belgian decision-making process appears to benefit from support among the full range of stakeholders. This indicates that it is a sustainable process. Factors that may have played an important role in developing this support may be:

- In Belgium, a law phasing out nuclear energy production by 2015 was adopted in January 2003. This is expected to facilitate disposal or management-related decision processes, as it was observed in the case of the Dutch storage facility and the Swedish waste disposal programme for long-lived waste. On the other hand, the law is not influential on the functioning of the local partnerships, if one considers that the partnerships of Mol and Dessel were created before the phase-out law was discussed and voted in Parliament.
- During the community visits it also appeared that the population – or at least those living in the communities involved in the local partnerships – generally, do not question the importance of the problem of LLW management and the necessity of finding a long-term solution. Also worth of note is that during the discussions people acknowledged their

responsibility for the waste both as beneficiaries of the nuclear industry and as consumers of electricity.

- Another factor that facilitates acceptance of a repository solution is that the aims of the LLW management programme are clearly defined. For instance, it is explicitly stated that the current siting process is limited to the management of low-level short-lived waste.
- An important element of the support is that the communities themselves have been developing the proposals on designs, sites and local development projects. The proposals show great technical variety (deep, subsurface, and surface repositiories each with their own specificities) and are adjusted to the special needs and character of the communities. For example, in Fleurus, which struggles with the problems of widespread unemployment, the aim is to invigorate the community. In Dessel, a nuclear industry centre, the partnerships aim is to establish a community centre that would show the public what nuclear research and production are about and would provide sustainable knowledge and local "memory" of nuclear issues.
- A further element of the Belgian process facilitating acceptance is that its goal is to identify a licensable technical design and a licensable site, both of which enjoy community support, rather than to try to find a technically best design or site. It is understood as well that optimisation of design will take place in the project phase, in interaction with the local partnership and safety authorities. This approach is recognised as legitimate by most local partners. It is worth to note here that there is a general international agreement that site and design are complementary to one another and that there is no one "best" site and design, but only a number of safe-enough and licensable sites and designs in communities that are willing to play host. The fact that the Belgian local partnerships are able to propose alternative designs at the same site is further confirmation that it is not fruitful to search for a "best" site and design.
- Community support appears to be improved by the existing, informal agreement according to which communities are allowed to withdraw from consideration at any time.

Mutual learning at different levels

An important result of the local partnership approach is that it facilitated mutual learning between the various stakeholders and experts. The composition of the local partnerships meets an ideal of plurality, with the peer representation of many different interests and types of knowledge. The importance of this learning process, the need for mutual trust and for careful listening, were repeatedly emphasised by workshop participants. In both the mature and the new local partnerships, all participants express high satisfaction in the shared process of learning and building trust in which they have been engaged.

As highlighted in Session 2 of the workshop, dealing with different types of knowledge requires time. The MONA and STOLA local partnerships were originally planned to last two years, but had to be doubled in duration. Similarly, in the Finnish and Canadian communities visited by preceding FSC workshops, periods of several years were needed for deliberation, research, and also, changing attitude as the facts changed. Time spent preparing a decision is also time spent evolving towards an agreement.

A new community resource has been created

In the view of also the local partners, the Belgian local partnership methodology has built up a new resource for communities. Some suggest that radioactive waste management would be well-served by extending the life of the local partnerships in some form, to deal with future phases. Others point out that the methodology can be adapted to any other controversial issues requiring community decision. One future issue to which this methodology might be applied is on finding solutions for the long-term management of HLW in Belgium. Structure and organisation would inevitably have to be adapted in order to deal with timescales of decades for the disposal programme of HLW.

Mutli-functionality of engineering projects and the perspective of visual arts

A novel and highly stimulating element of the workshop was that technical and social science perspectives were complemented by the perspective of building a relationship with the waste and the perspective of visual arts. While engineering projects tend to be conceived as being mono-functional (e.g. dispose of waste), building flexibility into the project to reflect the interests of the local stakeholders can measurably improve stakeholder satisfaction. What the implementer may see as a single purpose project may indeed provide additional, desirable capabilities to a creative local population. Also, waste management projects are often designed and built in uninteresting, utilitarian ways. A more creative design and implementation can add a sense of enjoyment and pride to the local stakeholders. Finally, while engineering projects are often conducted in a closed manner to their environment, a more transparent, inclusive process may draw local stakeholders more intimately into the project.

General Introduction to the Belgian Context

CONTEXT OF THE LONG-TERM MANAGEMENT OF LOW-LEVEL, SHORT-LIVED WASTE

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Until the international moratorium of 1983, Belgium relied on sea disposal for its low-level waste. Since then, ONDRAF/NIRAS, the Belgian radioactive waste management agency, has launched studies to look for land-based solutions. These studies, which are still going on, have gone through various phases. The sometimes harsh reactions in public opinion and the recommendations of independent experts, however, progressively led ONDRAF/NIRAS to question its work methodology.

On 16 January 1998 was a milestone in Belgian's nuclear waste management. On that day, the Belgian federal government opted for a final, or potentially final, solution for the long-term management of short-lived, low-level radioactive waste, a solution that also had to be progressive, flexible, and reversible. At the same time, the government entrusted new missions to ONDRAF/NIRAS – in particular that of developing methods to enable the integration of final repository project proposals at a local level – and restricted the number of potential sites for final disposal to the four existing nuclear sites in Belgium and to possibly interested local districts.

The government's decision of 16 January 1998 forced ONDRAF/NIRAS to change its strategy. The agency set up a new work programme and worked out an innovative methodology. This new methodology aims to generate, at the level of the interested towns and villages, draft projects for a final repository supported by a wide public consensus.

Belgium in short

Belgium is a small country with a surface area of 32 545 km^2 and 10 263 414 inhabitants; its 315 inhabitants per km^2 make it a very densely populated country. Belgium has evolved over the last decades from a Unitarian state towards a federal state. As laid down in the constitution, Belgium is today a federal state composed of communities and regions. The power of decision no longer lies solely with the federal government and the federal parliament. Governance of the country is now in the hands of various partners, who exercise their powers autonomously in their fields.

The redistribution of powers and responsibilities revolved around two main axes. The first axis concerns language and, in a broader scope, everything relating to culture. That is how the Communities came into existence. The concept of "Community" refers to the people who make up such a Community and to the bond that unites these people, namely their language and culture. Belgium has three national languages: Dutch, French and German, and hence three Communities: the Flemish Community, the French Community and the German-speaking Community. These Communities therefore correspond to the population groups.

The second axis of the state reform historically was inspired by economic interests. The Regions, which strove for more economic autonomy, reflect these interests. The latter resulted in the establishment of three Regions: the Flemish Region, the Brussels Capital Region and the Walloon Region. The Belgian Regions are to a certain extent comparable to the American States and the German "Länder".

The country is also divided into 10 provinces and 589 communes, each with their own powers.

The federal state, however, retains major powers, including foreign affairs, national defence, justice, finance, social security, parts of public health and home affairs, etc. In addition, everything connected with nuclear energy, including the management of radioactive waste, falls within the competence of the federal state.

Nuclear Belgium in a nutshell

Belgium has a long nuclear history, starting with the creation of the Belgian nuclear research centre (SCK•CEN) in 1952 in Mol. Between 1956 and 1964 five research reactors were put into operation. At that time, SCK•CEN was the largest producer of radioactive waste, together with the Union Minière refinery in Olen, the world's largest producer of radium for years, created in 1922. To be able to take care of the waste produced, several facilities were built by SCK•CEN Waste Department for processing and conditioning. In the early sixties, Eurochemic, an experimental spent nuclear fuel reprocessing plant, was put into operation. In 1972 the radioisotope department of SCK•CEN became the Institute of Radioelements (IRE). This Institute, which supplies radioactive sources to industry and the medical world, is still located in Fleurus. Also in the seventies, the first commercial nuclear power plants were commissioned. At present, seven PWR units are being operated, grouped in two NPP located in Doel and Tihange. Together they have a capacity of approximately 5.7 GWe, covering about 55% of Belgium's electricity production. On 16 January 2003 the Belgian federal parliament voted in favour of a bill that aims at gradually phasing out the use of nuclear energy in the country from 2015 onwards, when the first of the four existing nuclear units of the Doel nuclear power plant commissioned in 1974 (the first ever in Belgium) will be closed down after its 40-year lifetime.

Besides the power plants, Belgium has two fuel manufacturing plants: FBFC-International, a uranium fuel manufacturing plant created in 1960 and Belgonucleaire, a MOX fuel fabrication plant created in 1957. Both plants are located in Dessel. In 1974, Belgium decided to close down the Eurochemic pilot reprocessing plant. Since then, some of the spent fuel from the Belgian nuclear power plants is reprocessed in France by COGEMA under a contract concluded by Synatom. New reprocessing contracts have, however, been suspended by the government and the final destination of spent fuel still has to be decided upon. In the meantime, spent fuel is stored at the nuclear power plants.

Radioactive waste in Belgium

Since 1980, the radioactive waste has been managed by ONDRAF/NIRAS, the Belgian Agency for radioactive waste and enriched fissile materials. By creating ONDRAF/NIRAS, the Belgian authorities wanted to entrust the management of radioactive waste to a "single body under public control to ensure that the public interest prevails in all the decisions taken in this field". The missions and functioning of ONDRAF/NIRAS are laid down in laws and royal decrees. In practice, ONDRAF/NIRAS is entrusted with developing a coherent and safe management policy for all the

radioactive waste that exists on Belgian territory. This management includes the quantitative and qualitative inventory of radioactive waste, its removal and transport, its processing and conditioning, and its interim storage and long-term management. In addition to this main mission, ONDRAF/NIRAS is also responsible for the decommissioning of closed nuclear facilities, the management of historical waste, and the management of enriched fissile materials. ONDRAF/NIRAS is also legally required to ensure the long-term financing of its activities. All of its services, including short-term and long-term management, are paid for at cost by the waste producers.

Most of the radioactive waste comes from routine industrial, scientific or medical activities. An increasing share, however, will be generated by the decommissioning of closed down nuclear facilities. Routine radioactive waste comes for about 80% from the electronuclear sector, primarily from the operation of the seven nuclear reactors of Doel and Tihange. Radioactive waste is also produced by fuel manufacturing (by Belgonucleaire and FBFC International), Belgian spent fuel reprocessing (by the French company COGEMA, on behalf of Synatom) and nuclear research (by SCK•CEN, the universities and the Institute for Reference Materials and Measurements). The remainder arises from the production of radioisotopes by the National Institute for Radioisotopes (IRE), and from the use of such isotopes in the health sector, industry and private laboratories. At the end of 2002, Belgium's stock of conditioned waste was as follows: 16 583 m^3 of category A waste (low- and medium-level short-lived waste), 3 908 m^3 of category B waste (low- and medium-level long-lived waste), 236 m^3 of category C waste (high-level long-lived waste). All this waste is safely stored at Belgoprocess, the industrial subsidiary of ONDRAF/NIRAS located in Mol-Dessel. ONDRAF/NIRAS estimates the total volume of waste that will be produced until 2060, i.e. the end of the dismantling activities, at 72 000 m^3 of category A waste, 8 900 m^3 of category B waste and between 2 100 m^3 (if all current and future spent fuel is reprocessed) and 5 000 m^3 (should the option of reprocessing be completely abandoned) of category C waste. This estimate is based on the complete dismantling of each of the seven Belgian nuclear reactors after their operating period of forty years. It also assumes that non-nuclear industry and the medical world will continue to use radioelements at the present rate.

Day-to-day management of radioactive waste is now fully under control, while its long-term management is still in the research and development stage. The solution currently under examination by ONDRAF/NIRAS for the long-term management of category B and C waste is its disposal in a suitable geological formation. This is the subject of a separate research and development programme. In this paper we will focus on the long-term management of category A waste, in which the choice of the type of repository – on the surface or in the underground – remains open.

Twenty years of low-level waste management

ONDRAF/NIRAS started working shortly after its creation on the long-term management of short-lived low-level waste. Practiced on a regular basis in Belgium until the early eighties, the acceptability of sea disposal of conditioned low-level waste had indeed become very uncertain in 1984, when Belgium decided to adhere to the international moratorium of 1983 between the signatory countries of the London Convention on sea pollution.

This decision prompted ONDRAF/NIRAS to launch studies to look for another solution, which would be safe and technically acceptable, for the final disposal of this type of waste on Belgian territory. These studies, which are still going on, have gone through various phases. The sometimes harsh reactions in public opinion and the recommendations of independent experts, however, progressively led ONDRAF/NIRAS to question its work methodology.

One of the agency's first actions after sea disposal had been suspended, was the development and implementation of a methodology for waste processing and conditioning, to ensure the stabilisation of short-lived low-level waste. At the same time, the agency began the construction of interim storage buildings. All these activities are concentrated on the site of Belgoprocess, the industrial subsidiary of ONDRAF/NIRAS, located in Mol-Dessel. Once the short-term management of the waste had been ensured, ONDRAF/NIRAS was able to concentrate on the development of solutions for the long-term management of this waste.

ONDRAF/NIRAS' first study on the final disposal of short-lived low-level waste considered three options: disposal in former charcoal mines or quarries, shallow-land burial, and deep geological disposal. The corresponding final report, NIROND 90-01 published in 1990, concluded that shallow-land burial was the most promising of the three proposed options in terms of technical feasibility, safety and cost. It rejected the mines or quarries option, which was in fact no more than a type of deep disposal, because of a risk of aquifer contamination. It furthermore mentioned that the studies on Boom Clay carried out in Mol had demonstrated the need for additional research on the chemical compatibility of the waste with deep underground geologic characteristics. ONDRAF/NIRAS therefore decided, after approval by its regulatory authority, to focus its efforts on surface disposal.

The studies carried out between 1990 and 1993 aimed to assess the technical feasibility of building a surface repository on various types of geological formations. The results were recorded in 94-04, published in 1994. This report concluded on the feasibility of disposing of at least 60% of the short-lived low-level waste produced in Belgium at surface level, while strictly following the recommendations of the various relevant international organisations. It also identified 98 zones in Belgian territory as potentially suitable, according to the bibliographical survey carried out, for hosting a surface repository for short-lived low-level waste. The multidisciplinary scientific advisory committee set up by ONDRAF/NIRAS' Board of Directors to examine the report issued an overall positive evaluation, but recommended extending the research to fields related to economics and human sciences.

However, far from going unnoticed the 1994 report was rejected unanimously by all the local councils on the list. To its surprise, ONDRAF/NIRAS had caused a general outcry. And yet, had it not been given the responsibility to develop and propose, through an objective and rational approach, a safe solution to the radioactive waste problem? Neither the political authorities nor ONDRAF/NIRAS had realised in due time the implications in the field of public consensus when it turned out to be necessary to look for favourable geology outside the existing nuclear sites. As a result, the publication of the NIROND 94-04 report in April 1994 lead to a public deadlock.

When technique is confronted with local sensitivities

The working method applied in the past by o ONDRAF/NIRAS aimed to select the future disposal site for short-lived low-level waste on the basis of a scientific approach that had been carefully worked out by its experts. At that time, ONDRAF/NIRAS thought – maybe rather naively – that the actual setting up of a repository would cause no problems once it had been proven that the chosen site was one of the best possible choices from a technical point of view. ONDRAF/NIRAS looked for a solution for the radioactive waste problem in an objective and rational manner. Gradually, the agency realised that important parameters were missing in its mathematical model. Setting up a disposal infrastructure would inevitably have economic, social and ecological consequences. Also, the public's reactions confirmed the validity of the committee's recommendations regarding the necessity to take into account the socioeconomic aspects of setting up a final repository on the national territory. ONDRAF/NIRAS therefore progressively started to develop an adequate methodology to select,

according to objective criteria, the best surface disposal sites among the 98 formerly identified zones. In addition to the expected geological, hydrogeological and radiological aspects, this methodology included environmental and socioeconomic factors. Unfortunately, these last parameters were impossible to model in a satisfactory way.

In 1995, in an attempt to break the stalemate, the government commissioned a study by ONDRAF/NIRAS on the possible alternatives to surface disposal. The final report, NIROND 97-04 published in 1997, compared surface disposal with deep disposal and extended interim storage. It recommended that the government should base its decision on ethical considerations. Indeed, ONDRAF/NIRAS supports the view that the current generations are responsible for ensuring that future generations will not have to actively manage the radioactive waste they will have inherited.

On the basis of this report the Belgian federal government opted on 16 January 1998 for a final or potentially final solution for the long-term management of short-lived low-level waste. The government also wanted this solution to be implemented in a progressive, flexible and reversible manner. With this decision, the prolonged interim storage option was abandoned in favour of either surface disposal or deep geological disposal.

At the same time, the government entrusted new missions to ONDRAF/NIRAS, to enable the government to make the necessary technical and economic choice between surface disposal and deep geological disposal. ONDRAF/NIRAS was assigned to develop methods, including management and dialogue structures, necessary to integrate a repository project at a local level. Furthermore, ONDRAF/NIRAS had to limit its investigations to the four existing nuclear zones in Belgium, namely Doel, Fleurus, Mol-Dessel, and Tihange, and to any local towns or villages interested in preliminary field studies.

Introducing social sciences in nuclear waste management

Early 1998, ONDRAF/NIRAS set up a work programme on the basis of a new work methodology. The idea of local partnerships was developed to ensure that every party liable to be directly affected by a collective decision has an opportunity to express its opinions. The local partnership project is an attempt to address the low-level waste disposal siting problem through both technical research and concept development, and interaction with the (local) stakeholders. The partnership concept was developed by researchers from the Department of Social and Political Sciences (PSW) of the university of Antwerp (UIA) and the research group SEED (Socio-Economic Environment Development) of the university of Luxemburg (FUL), on the basis of intense dialogue with ONDRAF/NIRAS. The concept was then discussed with different local stakeholders and, on their recommendation, adapted to meet local needs.

The partnership concept stems from the presumption that collective decision making in a democratic environment is always a process of negotiation. Different interests, opinions and values are thereby weighed one against the other. This weighing of interests is something that should be done **by** the stakeholders and **not for** them. The mere technical aspects of building and safeguarding a low-level waste repository are but one element in the negotiations that inevitably precede decision making. Other elements such as the socioeconomic context of the community concerned, the values, interests and, why not, emotions of different stakeholders, all play a part in the decision-making process.

At present, partnerships have been formed between ONDRAF/NIRAS and the municipalities of Dessel (creation of STOLA in 1999), Mol (creation of MONA in 2000) and Farciennes and Fleurus (creation of PaLoFF in 2003).

ENGAGING LOCAL PARTNERS TO ESCAPE A DECISION-MAKING DEADLOCK IN NUCLEAR WASTE MANAGEMENT: THE LOCAL PARTNERSHIP METHODOLOGY

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Compelled by both experience and a governmental decision, in 1998 ONDRAF/NIRAS changed its strategy and opted for a voluntary siting process. Social acceptance became a prerequisite for technical feasibility. The objective was no longer to look for the optimal site. Instead, ONDRAF/NIRAS started looking for a suitable site, and for a community willing, as well as able, to host a repository for low-level and short lived radioactive waste. But how do you find such a willing community?

The partnership approach

Simply asking a municipality if it would be so kind to host a low-level waste repository did not seem to be the most effective approach. Therefore, two research teams of the universities of Antwerp and Luxemburg developed a methodology that would allow a potential host community to engage in negotiations with ONDRAF/NIRAS and to investigate thoroughly all aspects of hosting a repository, without committing itself to more than considering the possibility. In this way, a municipal right to veto was introduced into the process, in spite of the fact that such a right does not formally exist in Belgian legislation.

The idea of the partnerships is based on the assumption that:

a) the acceptability of a decision depends on the extent to which the people actually affected by the decision feel they can take part in the decision-making process;

b) "take it or leave it" situations are to be avoided;

c) in order to make a repository facility acceptable, one needs to get rid of its LULU (Locally Unwanted Land Use) image.

This means that the concept of the repository project must be kept open for negotiation with the potential host community and that it should consist of more than just a repository project. It should strive for a win-win situation in which the local community does not simply receive a "nuclear dump", but participates in building a broader project that is designed to fit its environment and brings added value to the community.[1]

1. This aspect is extensively treated by Prof. Dr. Erik Van Hove in his presentation on "Valorisation of a repository in an added value project", these Proceedings.

In order to develop such a broader added value project that would fit the local and social environment, it was considered vital to engage in the decision-making process a broad variety of (local) stakeholders, of parties directly affected. Finding a solution for the nuclear waste problem, a so-called problem of general interest, necessarily means finding a local solution that will affect directly a particular community. In order to be able to attain a sustainable and socially acceptable solution, this must be a shared solution among all (or at least as many as possible) stake(holder)s. The partnership approach therefore aims at attaining a shared problem definition and a common interest in addressing this particular problem between the nuclear waste manager and the potential host community.

The idea was to create a body representative of the different stakeholders involved in this decision-making process. On the one hand this is necessary to obtain a complete picture of the viewpoints, interests, needs and values that are at stake in this particular community, regarding this particular issue. The general interest of the community will be the outcome of a process of dialogue and discussion among these different stakeholders. Furthermore, this set-up should provide the key to creating an inclusive, transparent, flexible and stepwise decision-making process that can be considered to be sustainable and fair by all parties. Even if, in the end, not everybody is completely happy with the outcome of the process, the fact that it was seen as fair, representative and transparent still can make the outcome an acceptable one for the entire community.

Key features of a local partnership

First discuss, then decide

The partnership approach means turning upside down the classic Decide-Announce-Defend policy strategy. This means engaging the affected public from the early stages of the decision-making process. Experts from the nuclear waste management organisation were not to go out and just defend their repository project in order to "sell" it to the locals. The locally affected populace was also given the possibility to raise its voice during the actual planning phase. Interaction between administrators, technical experts, politicians, radical opponents and representatives of different parts of the general public, through the engagement of organisations forming civil society, is the "core business" of a partnership. Together, these parties decide what the actual problem or issue is, and how they want to deal with it. Together they try to develop a repository project acceptable for all parties , embedded in a broader added-value project. Together they decide finally on the desirability and acceptability of the whole integrated project, before casting the formal decision making back to the political arena (firstly the municipal government, that decides whether to actually put forward the municipality as a potential host community, and secondly the federal government that politically has the final say on where the repository will be located).

These intensive discussions are not only a key element in the development of a (possible) integrated repository project, but are just as important in the setting-up phase of the actual partnership. What the partnership should look like, how the local community will be represented, what the agenda of the negotiations should be, etc. is itself the result of discussions with the affected community.

Participation through representation

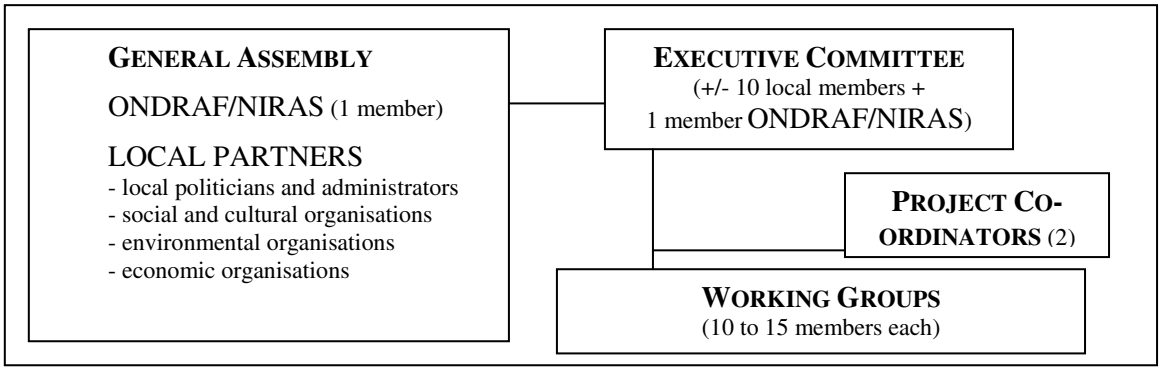
The partnerships are intended to bring the decision-making process closer to the public and to lower the threshold for active participation. As many stakeholders, with as many different backgrounds and opinions as possible, should therefore be invited to participate in the partnership.

Local partners should represent different political, economic, social, cultural and environmental movements or organisations within the community.

Discussing in depth the pros and cons of a low-level nuclear waste repository in the surroundings, however, is not something that can be done practically through public hearings with several hundred people attending. A local partnership should therefore be considered as a representative democracy on a micro level. Overseeing the whole "operation", a *general assembly*, uniting representatives of all participating organisations, decides on the main course and sets out the beacons for the actual discussions. The general assembly appoints an *executive committee*, in charge of the day-to-day management of the organisation. The committee is, amongst many other things, responsible for the co-ordination of working group activities, decision making on budget spending and the supervision of the project co-ordinators. In several *working groups* all different aspects of the implantation of a low level waste repository in the community are discussed. Here all relevant existing research is taken into consideration, the need for additional studies is evaluated and independent experts are invited to participate in the debate. The working groups report regularly to the executive committee. The working groups are composed of both representatives of the organisations that founded the partnership, as well as individual citizens who expressed an interest in participating actively in this discussion forum. Since all these people participate on a voluntary basis, at least two full time *project co-ordinators* need to be employed by the partnership. These project co-ordinators take care of administrative and communication tasks and support the working groups both logistically and scientifically.

By opening the process to selected stakeholders with whom the community can identify itself, public participation can be enhanced without making the process either too superficial or too complex. The participants in the partnership should therefore be recognised as representatives of their community by their neighbours, voters, co-members of their local organisation, relatives, friends and acquaintances. Since the participants only represent a fraction of the total number of stakeholders, openness to the community at large is crucial. In order to make sure that the requirements for openness and transparency are met, the partnership has to exercise an active and open, preferably highly interactive, communication policy. Throughout the process, the members of the community that are not directly involved in the partnership have to be kept informed. Consequently, it is the task of all participants to "spread the word", to communicate what the partnership is all about, what items are being discussed and by whom. This is best realised through communication channels both formal (communication of the partnership as an organisation, directed at certain target groups or at the community as a whole) and informal (direct communication from the participants to their peers).

Figure 1. **Organisational structure of a local partnership**



Located "on site"

It was considered important that the partnership should have its seat in the heart of the community concerned. A partnership is not an ONDRAF/NIRAS field office, but an independent local organisation in which ONDRAF/NIRAS participates as the only non-local partner amongst a multitude of local stakeholders. This location "on site" gives the partnership a "face". A clearly visible presence in the community creates awareness amongst the not-participating citizens and the premises of the partnership can serve as an open forum where citizens can come with their questions, remarks or concerns. On a practical level, this on-site location also facilitates the meeting of local participants in the discussions, for the simple reason that they do not have to travel too far.

Arena and facilitator for open dialogue

A local partnership is both the arena and the facilitator for an open dialogue between all stakeholders on the possible siting of a low-level radioactive waste repository in a community. This implies that the partnership is an active organisation, embedded and clearly visible in the local community, properly equipped to serve as a platform for the interaction between ONDRAF/NIRAS and the local stakeholders. The necessary infrastructure for the project co-ordinators and the working groups and other bodies to assemble, should be available at the seat of the organisation.

Through dialogue, all interested parties are invited to express their interests, concerns, fears and values, to listen to the views of other parties and to come to terms on what this particular group of citizens, in this particular community, at this particular point in time defines as a common goal. In this way, ONDRAF/NIRAS, in its role of project developer, enters into direct dialogue with the local community interested in hosting the project. Experts from ONDRAF/NIRAS are given a forum to explain what, in their view, a low-level radioactive waste repository should look like and why they consider that to be a safe and healthy solution given the characteristics of the site in question. The members of the working groups can then question the ONDRAF/NIRAS experts directly and/or invite other experts whose opinion they consider relevant. By entering into dialogue with the local community, the concept-designers have an opportunity to better explain their project to the local stakeholders. Questions and reactions from the public, however, may require them to be more creative and to rethink certain aspects of their initial concept or project.

Independence in decision making and budget spending

Until the partnership has made its final proposal to the municipal council on whether, and under which conditions, a repository facility in the community would be acceptable, the partnership is the only body where decisions with regard to the potential repository are taken. There will thus be no question of parallel negations on other (for instance purely political, or more regional) levels. Since ONDRAF/NIRAS has only one member in both the general assembly and the executive committee (albeit with a veto on technical feasibility), it is the local community itself that decides on both technical and social feasibility.

In order to allow the partnership to work independently, each partnership receives an annual budget from ONDRAF/NIRAS. This budget is managed by the executive committee. It serves to cover general expenses such as the salary of the project co-ordinators and all "operational costs" (stationary, telephone bills, mailing, electricity…), as well as logistical support for the working groups. This "logistical support" should be interpreted in the broadest possible way. Apart from serving the volunteers coffee and biscuits during their working group meetings, it also allows them to invite the

experts of their choice, to order the studies they think necessary and to pay for site visits or other relevant trips or conferences.

The fact that the partnership budget can be used to order research or studies does not mean that all research activity is paid for by the partnership. ONDRAF/NIRAS pays for all necessary research with regard to the technical and safety aspects of the repository facility. The partnership, however, can decide that they are in need of some additional research in certain areas or that they do not have full confidence in the ONDRAF/NIRAS results and want a second opinion. All non-repository-related research is paid for by the partnership.

Mutual project development

The partnership does not only decide (or at least advise the community council) on the repository concept and where a repository should (or should not) be implanted. Perhaps the most important and probably the most innovative aspect of the approach is that, through the partnership, the local community can decide on what they consider to be the necessary conditions (technical, environmental, aesthetic, etc.) for hosting such a repository. Furthermore, within the partnership, an accompanying local project that seeks to bring added value to the community will be developed. The final outcome of the discussions in the partnership should therefore be either a "thanks, but no thanks" (i.e. based on all the information gathered, the community decides against the repository project for technical, safety or other reasons) or an integrated project, carried by both local stakeholders and ONDRAF/NIRAS.

Both the repository project and the accompanying local project are developed and discussed in depth within the partnership. All pieces of the puzzle (individual remarks, concerns and ideas from brilliantly innovative to absurd and not to the point; expert reports and interventions; interests of stakeholders; etc.) are brought together. When finally, all, or at least a majority of the parties involved come to an agreement on what their puzzle, their integrated project, should look like, this is presented to the municipal council. In the end, it is the council that will, with or without an additional public consultation round, decide whether or not to put the municipality forward as a potential host for a low-level nuclear waste repository facility. Since the final word in this matter lies with the municipal council, it is also essential that council members be fully aware of the implications of their decision. To avoid the risk of encountering, late in the process, conflicting interests between local politicians and the other members of the community, an active involvement of the representatives of the political arena is hence encouraged.

Opening of the Workshop

CEREMONIAL OPENING

Jean-Paul Minon
Acting General Manager ONDRAF/NIRAS, Belgium

Good morning Ladies and Gentlemen,

For those of you who participated in the visits to the local partnerships, welcome back to Brussels. For those who join us today, welcome to the Belgian FSC Workshop 2003. I am very pleased that so many of you are interested in learning about the Belgian partnership methodology.

On Tuesday morning you were introduced to the Belgian context, process and actors. Tuesday afternoon and yesterday were totally dedicated to the four involved municipalities. These community visits created a platform for in-depth interaction and exchange on the day-by-day experience of local involvement in the decision-making process on the long term management of low-level short-lived waste.

Over the next two days this interaction and mutual learning will continue during the workshop sessions. The central theme of this fourth FSC Workshop is: *Dealing with interests, values and knowledge in managing risk.*

Radioactive waste management appears to be the first case in history in which the consequences of an activity over an extremely long time period are taken into account. In modern society, awareness of risks – collective risks in particular – as well as the importance attached to these risks and their management has grown and is still growing.

In the context of this workshop, the scope of risk is understood to be all negative consequences of radioactive waste for mankind, from a multidimensional point of view (including for example, public health, economics, reputation…). Recognising the wide scope of risk leads to a positive evolution in managing risks, but necessarily implies greater complexity in decision making: modern society has to deal with a larger spectrum of risks and a larger spectrum of stakeholders, of interests, values and knowledge. During this workshop you will take a look at how these constraints can be accommodated in order to achieve decision making and acceptance on waste disposal projects.

The central theme of the workshop will be addressed in three workshop sessions. Invited plenary speakers will offer stakeholder perspectives on integrating multiple interests, values and knowledge into joint risk management. Their short presentations are intended to stimulate subsequent discussion.

This morning's workshop Session 1 will be dedicated to *Dealing with interests and values in managing risk.* This afternoon the item of discussion will be *Dealing with knowledge in managing risk.* And tomorrow morning's session will focus on *Building a relationship to a concrete waste man-*

agement project based on interests, values and knowledge. In this session a multi-stakeholder panel will, in interaction with the audience, reflect on how to build a relationship to a disposal project in the goal of producing guidance on how to make a disposal project interesting, attractive and acceptable. It seems to me that we have a very interesting but busy schedule ahead of us. So let's get down to business. I am already looking forward to hearing the results of the workshop sessions. I wish all of you an interesting learning experience for the rest of your stay in Belgium.

WELCOME TO PARTICIPANTS IN THE 2003 FORUM ON STAKEHOLDER CONFIDENCE BELGIUM WORKSHOP[1]

Yves Le Bars
Andra, France
Chairman of the FSC

Yves Le Bars, Chairman of the FSC, welcomed the participants on behalf of FSC. He recalled that this workshop was the third to deal with stakeholder discussion within the framework of the specific radioactive waste management processes of a given country acting as host. In 2001, the central theme of the workshop organised in Finland was stakeholder involvement and confidence in the context of stepwise decision making. In 2002, the meeting held in Canada focused on identifying and addressing social concerns. The central theme of the present workshop concerns ways of dealing with diverse interests, values and knowledge in risk management.

Mr. Le Bars said that similarly to the preceding FSC workshops, this meeting too has four main components. The first is the presentation of the national context, followed by a visit to affected local communities. Round-table discussions are the third component, the aim of which is to focus the dialogue between local stakeholders and FSC members on certain questions, first in small groups then in plenary sessions. Finally, thematic rapporteurs analyse, according to multiple perspectives, the radioactive waste management processes discussed within the framework of the workshop.

1. Drawn from the Executive Summary of these Proceedings.

OPENING REMARKS FROM THE HOSTS OF THE 2002 FSC CANADA WORKSHOP

Sharon Baillie-Malo
Natural Resources Canada

Natural Resources Canada, the department of the Government of Canada responsible for developing national policy for the management of radioactive waste, had the great pleasure of hosting the Forum on Stakeholder Confidence workshop last year in Ottawa. At that event we looked at the Canadian context and public confidence in the management of radioactive waste. We focused on identifying and addressing social issues and exploring opportunities for community development in association with the siting of waste management facilities.

The workshop itself took place at an opportune time in Canada's policy development and advancement of solutions to resolve key waste management issues facing our country. The two case studies that were examined were:

- The Port Hope Area Initiative – Launched in 2001, this initiative is a community driven and locally developed approach for the local long-term management of the vast majority of Canada's historic low-level radioactive waste which occurs in the Port Hope area of Ontario.

- *The Nuclear Fuel Waste Act*, a new piece of Canadian legislation that came into force in November 2002 and that provides the legal framework for arriving at and implementing a solution for the long-term management of Canadian nuclear fuel waste.

These initiatives are cornerstones of Canada's approach to resolving two of its most pressing radioactive waste management issues. Hosting the Forum on Stakeholder Confidence (FSC) gave Canada the opportunity to share its approach and the challenges ahead with FSC members and other participants.

This was very a useful experience. We received insightful feedback from a diverse and knowledgeable range of participants that served to reinforce our confidence in the policy path we are taking. It also generated much food for thought on the importance of meeting social challenges inherent in resolving waste management issues today and on the importance of continuing to keep social and community perspectives a foremost consideration as the programmes we have initiated unfold. Further, the FSC provided an opportunity for community stakeholders to interact directly with FSC participants and be party to international perspectives on the initiatives they are involved in. This was very well received by them and strengthened our relationship with them.

I want to thank the Belgian National Agency for Radioactive Waste Management (ONDRAF/NIRAS) for hosting this year's FSC meeting. The Belgian context and community partnership approach to low-level radioactive waste issues are particularly interesting to Canada and I am looking forward to a most fruitful, informative and enjoyable experience over the next few days.

I also want to encourage my fellow participants in the workshop to take advantage of this excellent opportunity to fully appreciate the lessons learned here in Belgium. And I hope that our Belgian hosts experience the same benefits that we realised from last year's FSC workshop in Canada.

FEEDBACK ON THE FSC COMMUNITY VISITS TO THE LOCAL PARTNERSHIPS IN BELGIUM

Elizabeth Gray
Scottish Executive, United Kingdom

Carmen Ruiz Lopez
CSN, Spain

Timo Seppälä
Posiva Oy, Finland

The Forum on Stakeholder Confidence community visits took place during the first afternoon and second day of the Belgium Workshop event. Open to all workshop participants, they were not technically oriented, i.e. they did not include visits to the nuclear installations that exist today in the municipalities of Dessel, Mol, and Fleurus-Farciennes. Instead, the visits offered an opportunity for mutual learning through first-hand interactions between Belgian stakeholders and international delegates.

Personal, direct contact between local people and FSC delegates was favoured, so as to learn about their perspective and experience of the partnership methodology and approach (both positive and negative). These encounters were organised in public meeting halls serving the communities. FSC delegates also briefly toured the localities by road and by canal.

For each local partnership, FSC delegates heard very interesting and detailed presentations in several voices.[1] After forthright question-and-answer discussions, participants had a chance to sample local specialties.

An FSC delegate was chosen for each community visit to act as rapporteur in order to collect and briefly report impressions during the first session of the formal workshop. Notes from those reports are presented below.

Visit to PaLoFF in Fleurus-Farciennes

Context

PaLoFF is a partnership of two French-speaking communities in the south of Belgium: Fleurus and Farciennes. Fleurus has a population of 22 000 and Farciennes has 10 000. Although there is currently a nuclear zone in their area, most of the people in the communities reportedly did not know

1. Information on the stakeholder presentations heard in the local communities is given in the Executive Summary of these Proceedings.

about it before the project began. The major company in the zone is IRE (Institut National des Radio-éléments), manufacturing radioactive sources for medical and industrial uses. The potential LLW repository site is on opposite sides of a road and the proposal is for four silos but it has not yet been decided whether the project would include two on each side or three and one. Houses are seen along one border of the site.

Structures

PaLoFF has a management structure similar to that of the other local partnerships which are considering accepting a storage site. This includes a General Assembly, a Management Board and four working groups. The two communities have different approaches and issues, reflected in the fact that there are two socio-economic development groups (one for each community) but they are working together in the other two groups looking at matters of Safety or Environment (the latter group also considers health). Members of the groups (totalling 80 people) are from different parts represent different types of stakeholders: local politicians; unions; local associations; economic organisations; local inhabitants; inhabitants of an adjacent municipality; ONDRAF/NIRAS; IRE. The partnership also has financial (250 000 euros) and technical support from ONDRAF/NIRAS. The partnership employs two fulltime staff members.

Methodology and communication

The community authorities decided that that they wanted to investigate the technical feasibility and options before engaging people more widely in a formal partnership. The local knowledge of people in this former coal mining area was brought into the technical working groups looking at issues such as geology and hydrology. Discussion with ONDRAF/NIRAS representatives was open and it was clear that there was no generic option being proposed; this allowed the community to develop its own. They also engaged directly with the engineers and were able to directly express their views and concerns, for example, on health issues. Surveys were undertaken, local meetings were held and information leaflets issued.

Following the survey the communities agreed to the setting up of the partnership. It has done a great deal in the short time since it was established and it was clear that those involved are very motivated. The involvement of local people in the technical studies appears to have given people confidence in the options. It may also be that past experience of coal mining means that people have a better understanding (and possibly acceptance) of risk. PaLoFF is trying to stimulate interest and to give information to the communities by using local radio and visiting schools but there is not yet a strategy for communication. It is likely that public communication will be a critical factor in the decision-making process.

Observations

The fact that IRE makes products for health care – the waste is produced in a good cause – appears to get a positive reaction, but it was not clear what the community view may be about waste from other sites (and processes) being stored in the locality. PaLoFF recognised that waste would be transported to the site but its members do not perceive the transport itself as a problem. It was not evident what benefits the communities thought the site would bring, such as employment or new socio-cultural opportunities, and perhaps identifying them might assist in the process. Some members

view that the local development groups could also act as a catalyst to encourage citizens generally to engage more in other activities in their communities.

The people whose houses are on the boundary of the site and those who live on the road that divides it have not yet been involved in the process. There was also no obvious involvement by regulators or non-governmental organisations; although the latter had been involved earlier in the process this was no longer the case. However, it was clear that the process is allowing different views to be expressed and this may allow long-standing concerns to be resolved.

Future

PaLoFF will consider how to involve neighbouring communities and also how they can engage more people in Fleurus and Farciennes than the eighty currently in the groups. The decision making process is yet to be agreed. Fleurus is proposing a referendum but what information voters will be given, and how that information will be delivered is yet to be determined. Farciennes has not yet decided how it will take the decision. It has also to be decided what the outcome would be if the two communities take different decisions. In the opinion of visitors from the FSC, there are some issues which PaLoFF may want to consider such as the effect of the project on future generations and property values. They may also wish to consider discussing with MONA and STOLA about their experiences so far, as those partnerships have existed for longer.

Conclusion

The FSC members were grateful for the time the PaLoFF members gave to explain the work they were doing. FSC members also recognised the considerable enthusiasm, energy and commitment which PaLoFF members were giving to the project and hoped that this would be maintained as the project developed.

Visit to MONA in Mol

Main characteristics of Mol

Mol, a Dutch-speaking community in Flanders (northern Belgium), has 32 166 inhabitants and a high population density (280 hab/km^2). It is a historical nuclear site: the research centre SCK•CEN has been in operation since 1952, now employing 600 inhabitants; other nuclear industries are located in nearby municipalities. Therefore the population is very familiarised with the nuclear issue. Other remarkable aspects of this context are the international character of the municipality (including 66 different nationalities) and the development of tourist activities.

MONA ID card

MONA is the partnership between ONDRAF/NIRAS and the municipality of Mol. It is a non-profit organisation founded in February 2000 by legal instrument. The objective is to work out an integrated social and technical project proposal concerning a possible repository of LLRW in Mol.

The duration of this initiative was initially 2 years; that has been extended for 2 years more in order to finalise the work.

MONA receives an annual budget of 250 000 Euros from ONDRAF/NIRAS. However, in accordance with the legal instrument of its creation, the partnership is independent in the decision-making process and budget spending.

Management structure of MONA

A structure with broad representation of local community provides for integration of all the different stakeholders. The general organisational structure is similar for the three local partnerships although the size of the municipality is reflected in its composition.

- *General Assembly (GA)*: determines the general policy. It is composed of 35 members (15 governmental, 12 social, and 8 economic actors). Meets twice a year.
- *Management Committee*: daily policy, communication, budget decisions. It is composed of 12 members (same proportional representation as GA). Meets monthly.
- *Project co-ordination*: 2 council employees
- *4 Working Groups (WGs)*: 3 technical WGs (Siting and Design, Environment and Health, Safety Assessment), 1 social WG (Local Development). WGs meet monthly.

Work methodology

The WG on Local Development analyses socio-economic issues and projects, formulates prioritisation criteria and modalities for the realisation of projects.

The Technical WG's work has been structured in 3 phases: phase 1 aimed at general information, phase 2 aimed at specific information concerning the siting and overall concept, and phase 3 aimed at specific topics for a disposal concept.

Communication initiatives

Initial tools for communication were an Information Counter, Newsletter, and Website. A survey during 2002 and 2003 (800 interviewed) showed little awareness of MONA activities. Consequently creative additional initiatives were taken: a stand in the annual market, being present at local events, an interactive educational board game played between MONA members and interested residents, beer mats, bread wrappers, and finally a calendar with basic information about radioactive waste, disposal concepts, and MONA activities presented with handsome pictures of Mol. A new follow-up survey is planned for next months to learn the impact of these efforts.

Progress towards final objective

From the technical point of view, potential repository sites have been selected (2 surface disposals, 1 deep geological disposal) and a final disposal concept has been agreed which modifies the original ONDRAF design, introducing the retrievability concept.

The environmental impact studies have been finished, including the study on transportation impact. The socio-economical studies were ongoing and the final report is foreseen for mid-2004.

The further foreseen decision making process would include the following steps: submission of the report to the Municipal Council, communication of the municipal decision to NIRAS and submission to the Federal Government.

Summary of the main items of interest addressed during the visit (Q&A)

The main items of interest for the FSC members, focus of questions and additional information were the following:

- *Decision-making process in regard to MONA's project recommendation*. An important aspect in this process is that the final report is not binding for the Municipality Council. However, since Members of the Municipality Council, as well as of the opposition, are members of MONA, the Municipality Council expressed its confidence in MONA's activity.

- *Pro and anti nuclear voices, particularly on how active the groups are, and their polarisation*: According to MONA members' information: some trade unions are against, but representatives of some opposing groups participate in the WGs. The impassioned discussions have been held in the WGs, and have been very useful for learning from others. Opponents will continue to express themselves, but residents may recognise that decisions have been democratic.

- *The role of the regulatory authority,* which in this period has been limited to attending some meetings of the WGs, in order to maintain its independence.

- *Reasons for incorporating retrievability in the disposal design*, which may be summarised as follows: Imposed by the Government, due to sociological factors, it is considered as a balance between safety and social concerns.

- *Logic behind information tools, such as the calendar*: Information means reaching the majority of the population.

Main findings and observations

The FSC members expressed their positive impression of the partnership initiative, remarking the following aspects:

- *Very effective work programme*: the communication tools, particularly the board game and calendar, were perceived as a good educational media especially for the young. Interest was expressed on the future results of public opinion follow-up.

- *Highly motivated group members*: the partnerships are based on a group of volunteers who do not receive remuneration. The enthusiasm with which the inhabitants of the municipality participate is outstanding.

- *Progress has been made towards the final objective* of developing an integrated repository project. Moreover, the process has increased confidence in technical experts.

As open issues or issues that will deserve further consideration, the following were pointed out:

- Need for a broader and clearer definition of the social and economic development project.
- *Definition of the next steps of decision-making process*: the partnership initiative as a "bottom to top" initiative may serve to stimulate the decision-making process on higher levels of government.
- *Future role of the partnership* in case of acceptance of the integrated repository project.

Visit to STOLA in Dessel[2]

Key features of Dessel

Dessel is a small Flemish community of 8 500 inhabitants. Like Mol, its close neighbour, it has hosted nuclear activities since 1952. Seven nuclear companies are located in the municipality. All the LLW produced in Belgium is currently stored at Dessel, and some of the HLW as well.

Basis for public acceptance of the repository project development process

The rapporteur outlined perceived similarities between the community of Dessel and that of Eurajoki, the Finnish community visited by the FSC in 2001 and which has accepted the principle of a deep repository for spent nuclear fuel. In neither community is active opposition against nuclear energy seen. There is a strong economic reliance on nuclear technology. People are accustomed to living with the waste, and it would seem that a majority of inhabitants are willing to accept waste disposal.

Communicational aspects

STOLA has spent significant efforts to reach out to local people (events, seminars, exhibitions, newsletters, etc.). The repository concept has been displayed in a concrete way through an animated film presentation. The rapporteur asks whether the presentation of two alternative concepts for disposal might be confusing for residents, giving room for speculation.

Safety appears to have receded into the background as an issue. Although within the partnership the appropriate working group has given it attention, the subject was not much discussed during the presentation to the FSC. A number of local partners stated that they have come to believe that the LLW covered by their mandate is not objectively dangerous.

The Belgian programme does not give a clearly defined, central role to the regulator during this phase of integrated repository concept development. Delegates learned that in legal terms, the regulator cannot provide an opinion before being approached with a licensing request. FSC visitors compared the situation with that seen in other NEA countries where the regulator takes a higher profile by e.g., publicising safety guidelines early in the process.

2. Adapted from the brief PowerPoint presentation heard at Session 1 of the Workshop; further input by the NEA Secretariat.

Observations

The local partnership process requires time. STOLA was the first local partnership to be formed and was originally scheduled to last two years. Members found the need to extend their mandate to four years. This reflects the demands of the task, and has serious implications for the individual participation of its volunteer members, as well as for process management and funding.

Benefits of a repository

The need to remedy a deficit of information and interaction between the nuclear facilities and residents of their host communities is at the heart of the local development project put forward by STOLA. Acceptance of a LLW repository, in their scheme, is conditional upon the construction of a permanent public information/science learning centre. Beyond providing a regional tourist attraction this installation would guarantee continuing openness by the nuclear industry and continuing community awareness of their risk context.

Aside from this lasting contribution, benefits of accepting a repository in Dessel would include annual compensation from the government and tax income (real estate tax).

Drawback of a repository

If the LLW repository is accepted – or even if it is not – is the repository for HLW going to be the next step? Some STOLA members anticipate pressure from the government on this score.

Session 1

Dealing with Interests and Values in Managing Risk

Chair: Mitsuo Takeuchi

HANDLING CONFLICTING INTERESTS AND VALUES: HOW IS THE LOCAL PARTNERSHIP METHODOLOGY HELPING TO ACHIEVE IT?

Marc Mormont
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Abstract

What the local partnership deals with is not the unavoidable conflicts between interests and values, but the way and the processes by which a new reality (waste disposal) can come into existence. This perspective is in line with other contemporary problems of "coming into existence" of technical objects (GMO, cellular antennas, windmills, new drugs) that are alleged to induce dramatic social impacts. The local partnership methodology has three specific characteristics:

a. it puts the emphasis on local capacities to integrate the siting process in a development process: this implies a priority given to local actors;

b. it opens discussion on knowledge and techniques: this implies moving from the fear rhetoric to science (or risk) communication;

c. it considers necessary trust not as a condition of the process but as a result of the process: this implies a new distribution of roles and leadership.

As in any ongoing social innovation process, success cannot be promised, but some lessons can be drawn from what we may call social learning.

As the objective is to arrive at a concerted choice that takes different values and interests into account, the technical object can be evaluated solely in terms of scenarios illustrating the constraints and the potentialities, technical and societal, offered by the object. These scenarios are collectively generated through discussion, and their characteristics can be revealed only through a process of exploration such as that facilitated by the local partnerships.

In this perspective, a purely technical discussion could not lead to the identification of a perfect, or optimal, technique: such an approach could only lead to a Decide-Announce-Defend situation that today is no longer considered acceptable. On the other hand, no democratic procedure alone of deliberation or communication can resolve the conflicts of value and interest that are presented by the technical object. Only by treating in a single process the technical project, its emplacement in a given physical environment, and its possible integration in a socio-economic fabric can we hope to decide for the best on a coexistence with a radioactive waste repository.

Introduction

La sociologie a quelquefois la possibilité d'intervenir directement dans le champ social. C'est le cas quand, comme dans la méthodologie proposée en Belgique, le sociologue intervient dans un processus de discussion et donc indirectement dans un processus de décision. Dans ce cas, il est crucial de savoir quel langage on emploie : la question du vocabulaire et de la conceptualisation du problème devient particulièrement aiguë. En effet les concepts employés, les théories mobilisées sont une manière d'anticiper les processus avec lesquels on va interagir.

D'une part les acteurs, ceux qui vont être convoqués au débat ou à qui le débat va être ouvert, disposent eux-mêmes d'un vocabulaire et de catégories avec lesquels ils vont s'efforcer de comprendre le problème, la démarche et les propositions qui leur sont faites. On pourrait dire qu'ils disposent eux-mêmes d'une sociologie, même rudimentaire, de la situation dans laquelle ils sont introduits.

D'autre part les concepts que va mobiliser le sociologue pour penser cette même situation, dans la mesure où ils sont traduits dans des dispositifs organisationnels, des procédures, des modèles d'action, ces concepts sociologiques vont en quelque sorte cadrer l'action, l'informer, donner un sens à l'action et chaque acteur.

Tout étudiant de première année en sciences sociales sait ce qu'est l'effet Pygmalion, ou le pouvoir créateur des prédictions. Quand l'instituteur considère de manière constante et active son élève comme un élève intelligent, cet élève tend à devenir un bon élève. Quand tous les informateurs sont persuadés que la situation économique se dégrade, qu'ils l'annoncent dans tous les médias, les investisseurs hésitent, les consommateurs retardent leurs achats, et la situation se dégrade effectivement. Je prends cet exemple sciemment pour indiquer que l'effet de prédiction créatrice a évidemment lui-même des limites. Le sociologue ne peut pas faire la réalité… Et la question se pose alors de savoir comment il peut l'éclairer sans ajouter de confusion et d'illusion aux connaissances spontanées de la réalité sociale.

Il ne s'agit donc pas de croire que le sociologue ou le prévisionniste « font » la réalité. Mais les concepts employés, les hypothèses de travail, dès qu'ils sont communiqués ou mis en œuvre dans l'action ont une influence certaine sur les processus sociaux et sur les acteurs à qui ils donnent des manières d'interpréter les situations.

Il faut donc s'interroger de manière critique sur les concepts avec lesquels nous décrivons et analysons la question compliquée des processus de décision. C'est pourquoi je voudrais me livrer pour commencer cet exposé à un regard critique sur le vocabulaire des conflits d'intérêts et de valeurs dans le cas des processus de choix d'implantation auxquels nous avons affaire.

Intérêts et valeurs en conflit

Saisir les problèmes d'implantation à travers le vocabulaire des conflits d'intérêts et de valeurs se fait d'autant plus facilement que c'est le vocabulaire même qui vient spontanément à l'esprit des acteurs eux-mêmes. Il est normal, dans une société démocratique, que chacun s'interroge sur les intérêts de l'autre, sur ses raisons d'agir; il est également normal que chacun tente de justifier son action en se référant à des valeurs qui permettent aux intérêts des uns et des autres de subir un examen avant d'être admis à la table de discussion. Il est donc normal, dirais-je, que les riverains s'interrogent sur la légitimité d'un projet et qu'ils se livrent de leur côté à des interprétations quant aux intérêts

défendus par ses promoteurs, également normal qu'ils cherchent dans le répertoire des valeurs sociales légitimes (le développement durable, la protection de l'environnement ou des générations futures) de quoi argumenter leurs réticences ou leurs craintes.

Le vocabulaire du conflit prendra d'autant plus d'importance et se justifiera d'autant plus qu'on a souvent affaire à des processus de décision qui semblent peu transparents, où les arguments avancés peuvent très bien cacher des stratégies d'influence. Le vocabulaire des intérêts et valeurs en conflit constitue alors un cadre d'analyse assez pertinent en ce sens qu'il permet aux acteurs d'interroger avec force des processus qui ne donnent pas clairement à voir, de manière complète, le sens de l'action qui est en cours. Ce vocabulaire a alors une fonction claire : c'est qu'en interprétant la réalité en termes d'intérêts et de valeurs il force à expliciter les raisons des choix et des options qui sous-tendent les projets et les prises de décisions. L'interprétation spontanée en termes de conflit se justifie donc d'autant plus que ceux-ci sont peu clarifiés par le processus d'étude et de préparation de la décision.

Cependant ce vocabulaire « politique » épuise-t-il la réalité des processus auxquels nous avons affaire ? Mon hypothèse, et c'est une des hypothèses qui sous-tendent cette méthodologie qui est mise en œuvre en Belgique, est que non. La raison fondamentale en est qu'une interprétation en termes exclusifs de valeurs et d'intérêts suppose qu'on se trouve dans une situation où intérêts et valeurs peuvent être identifiés et sont donc relativement stabilisés, suffisamment stabilisés en tout cas pour lier de manière claire des acteurs. Et cela même suppose que l'objet dont on parle – en l'occurrence le dépôt de déchets, en ce compris tous ses impacts, soit un objet complètement défini, bref que dans l'ordre du réel il y ait une sorte de définition claire de ce dont il s'agit.

Comment faire exister ?

Or ce n'est pas exactement la situation dans laquelle nous nous trouvons. L'implantation d'un dépôt de déchets nucléaires de type A appartient plutôt à un type de processus qui est devenu très courant dans notre société. Il s'agit en effet d'un objet technique qui n'existe pas et, ce dont il s'agit c'est de le faire exister, de lui donner une existence et un mode d'existence qui lui sera particulier. Il en va ainsi d'autres objets techniques, d'autres artefacts : que ce soit les OGM, les antennes de téléphonie cellulaire, ou demain les aliments fonctionnels ou encore d'autres, ce à quoi nous avons affaire, et qui donne lieu à des questions effectivement, c'est de la mise en existence d'objets techniques qu'il s'agit en quelque sorte de faire entrer en société. C'est donc de l'entrée en société d'artefacts qu'il s'agit.

Or dans ce type de situation je pense qu'une question centrale est bien sûr de savoir quels sont les intérêts et les valeurs en jeu, mais la définition des intérêts et des valeurs dépend de celle de savoir ce que peuvent et ce que ne peuvent pas faire ces objets techniques qui, même après de longues études et recherches fondamentales, même après des années de R&D, ne sont encore qu'au seuil du monde des humains et ne sont pas complètement configurés. Dans ce contexte intérêts et valeurs sont bien présents mais ils sont largement incomplets puisque nous ne savons pas encore exactement quelle sera leur place, qui s'y attachera, quelle coexistence nous pourrons établir avec eux.

C'est un peu le drame de la production de certains de ces objets techniques. Car devant cette incertitude du devenir social de ces objets, il arrive trop souvent que leurs concepteurs, de bonne foi sans doute, mais ignorants souvent, affichent des prétentions excessives, les parent de vertus incomparables mais invérifiables. Et ceci ne peut que renforcer une interprétation quant aux intérêts cachés qui les motivent… et donc un doute sur les institutions qui les portent.

Or s'il s'agit d'un « venir à l'existence » d'objets nouveaux, ce qu'il s'agit de faire c'est bien de mettre en œuvre un processus de mise à l'épreuve de cet objet au fur et à mesure qu'il se présente en candidat à vivre avec nous, au fur et à mesure des étapes de son entrée dans le monde social.

Une méthodologie

La méthode que nous avons proposée et qui est expérimentée dans les cas dont vous entendez parler dans ces journées, est précisément une méthode qui se propose explicitement d'explorer et de conduire ce processus de « venue à l'existence » d'un objet technique. Cette méthode, de ce point de vue, est donc une méthode d'exploration quant à la coexistence possible d'un dépôt de déchets nucléaires et d'une ou de plusieurs collectivités locales.

Quand un être vient à naître, il est évident que les choix qui ont présidé à sa conception relèvent d'arguments qui peuvent se raisonner en termes de valeurs et d'intérêts, et que cette naissance ne sera heureuse que si quelque chose de cet ordre est partagé par ceux qui ont pris la décision. Cependant le devenir de cet être c'est précisément d'échapper, au moins en partie, à ce projet partagé. Venir à l'existence c'est précisément sortir des arguments de l'origine pour en venir à exister avec ses propres potentialités, ses propres relations à autrui, de construire son propre monde. Il n'en va pas autrement, oserais-je dire, des objets techniques. Ce qui doit donc conduire la méthode c'est la visée d'un processus d'exploration et de reconstruction de cet objet. Et cela ne peut se faire bien sûr que sur le fond d'une communauté partagée, ce qui n'exclut aucunement une affirmation forte des souhaits de chacun.

C'est, je pense, la première composante de la méthode. Elle pose d'abord des fondements d'un point de vue partagé sur le processus qui va suivre. Et ce fonds commun c'est une double reconnaissance : d'une part la méthode pose le problème comme problème commun, en ce sens que les déchets sont bien une réalité qu'il faut gérer, qu'il faut assumer socialement. C'est un principe de réalité qui guide ceci. On ne peut refuser ce principe que pour des raisons stratégiques. D'autre part un second élément fonde le partage possible de l'expérience : c'est l'idée centrale d'un processus d'exploration qui est sous contrôle de toutes les parties. Ne sachant pas encore comment ce projet peut exister, on ne sait pas, ou pas complètement, quels sont les intérêts et les valeurs en jeu. Je dois dire ici que la méthode aurait, de ce point de vue, plus de force s'il y avait un engagement politique fort sur ce processus qui est actuellement porté par l'ONDRAF dont on sait qu'elle ne sera pas le décideur final. Mais on se donne comme contrainte commune de mettre le processus d'exploration sous contrôle de tous les intérêts et de toutes les valeurs qui potentiellement peuvent avoir à coexister avec cet objet[1]. C'est je pense le sens même d'une méthode « participative » dans la conduite des études du projet.

Il est clair, et l'exemple de Fleurus-Farciennes l'illustre parfaitement, que cette étape est un préalable[2]. C'est seulement à partir du moment où l'auteur de projet se place et où les acteurs se placent délibérément dans cette posture d'exploration, et dans un dispositif qui leur permet de s'y placer (soit un dispositif de partenariat où les intérêts a priori plus faibles ont un poids très grand dans la gestion du processus), c'est seulement à partir de ce moment que le travail peut commencer.

1. C'est en quelque sorte une contrainte de citoyenneté imposée à l'entrée de l'objet technique dans le monde social. Et cela pose des problèmes difficiles pour une entreprise publique qui doit ainsi gérer plusieurs contraintes de citoyenneté.

2. En l'occurrence ce fut un préalable assez long, mais qui a nécessité une longue exploration du terrain d'accueil possible de cette technique et la confiance n'a pu se créer que par l'attention portée par l'auteur de projet aux faiblesses du site.

Trois lignes méthodologiques

En procédant ainsi on a suspendu la question des intérêts et des valeurs en conflit en mettant au premier plan un intérêt commun pour une manière de conduire la démarche (pour une procédure donc) : les intérêts et les valeurs restent bien présents mais ils sont déplacés vers l'intérêt dans une procédure qui a valeur démocratique et qui va leur permettre de se confronter à cet objet encore mal connu qu'est le projet de dépôt de déchets nucléaires de faible activité. À partir de là trois grandes démarches se déploient, qui forment en quelque sorte l'armature de cette méthode.

De la rhétorique de la peur à la communication du risque

Face à un objet technique nouveau, dont la présence lui est ou pourrait lui être imposée, l'individu s'interroge spontanément. Ce que j'appelle rhétorique de la peur, c'est la dynamique de discours qui peut se développer sur cette interrogation. Non pas que la peur soit négative, au contraire, mais le discours qui est produit sur un fond de peur entre facilement dans un jeu où rassurer et inquiéter, dénier le danger ou l'hypostasier deviennent des stratégies de persuasion et de ralliement. Les acteurs se constituent en communautés morales irréconciliables sur un dilemme de la sécurité ou du danger.

Dépasser cette rhétorique de la peur ne peut se produire que si on traite les facteurs qui l'entretiennent :

- la communication via les réseaux de la quotidienneté priment sur celle via les médias ;
- les autorités notamment locales mais aussi associatives sont traitées comme des interlocuteurs ;
- le mode de discussion et de prise de décision est mis au centre ;
- le temps et d'autres moyens sont donnés pour une exploration de l'objet technique.

Une exploration partagée transforme l'objet

Comme je l'ai montré dans une communication antérieure[3], la discussion simultanée sur le concept technique et sur le terrain d'accueil, telle qu'elle a été menée à Fleurus et Farciennes, a eu pour effet de transformer le projet technique. D'un concept générique on est passé à un concept spécifique, articulé et modelé par les contraintes du terrain, du site et des questions posées par les populations locales.

Rappelons brièvement les mécanismes qui ont guidé cette transformation du projet technique :

- D'une part, une transformation par adaptation physique aux contraintes propres au milieu d'accueil : cela a supposé non seulement des études mais aussi le recueil d'informations locales, l'identification de nouvelles contraintes et le recours à d'autres modèles techniques. Il y a donc une sorte de dialogue entre le site et le projet, les deux se transformant mutuellement.

3. Mormont, M. (2003), « Dialogue local sur l'installation d'un dépôt de déchets faiblement radioactifs », COWAM, Cordoba (voir www.cowam.com).

- D'autre part, il y a une prise en compte par le projet des attentes ou des systèmes de valeurs locaux dans la vision qu'on a par exemple de la sécurité, les acteurs locaux mettant plus que les ingénieurs l'accent sur les facteurs sociaux et humains de la sécurité, ce qui est une approche différente de la manière habituelle dont les ingénieurs pensent la question.

Or la transformation du projet technique, je ne peux ici que l'évoquer brièvement, a un effet aussi bien sur la formulation des valeurs que sur la définition des intérêts. Il apparaît ainsi que le milieu local loin d'être un espace vierge est un environnement qui mérite attention. Le projet peut-il être un moyen d'une meilleure prise en compte des ressources en eau ? Tel est le type de question qui, en régénérant la valeur de l'environnement, condui(rai)t à redéfinir les intérêts liés au projet.

L'exploration simultanée du projet technique et du milieu où il s'insérerait modifie en même temps le projet et le milieu, révélant des problèmes critiques imprévus, mais aussi des potentialités nouvelles. Il va de soi qu'une telle exploration n'est possible que si :

- le projet technique n'est pas « bouclé » et qu'il conserve un caractère générique suffisant pour se plier à des adaptations ; cela suppose une grande disponibilité des ingénieurs ;

- les compétences locales sont fortement mobilisées aussi bien dans la connaissance de l'environnement que dans la discussion des hypothèses techniques (qui sont habituellement peu explicitées par les ingénieurs).

Comment coexister dans un projet de développement ?

Le troisième pilier de la démarche proposée consiste bien à susciter la mise au point d'un projet de développement local. C'est ici la question la moins tranchée du processus en cours.

Le point de vue adopté par la méthode consiste, avec l'idée d'un « projet intégré », à explorer les priorités et projets de développement des collectivités locales, de telle manière qu'un bilan total du projet de dépôt et d'investissements d'accompagnement soit positif pour ces collectivités.

Idéalement, pour moi, il devrait s'agir de valoriser les potentialités du projet de dépôt lui-même de manière à en faire un outil de développement : offre-t-il des possibilités de création d'emplois indirects, des possibilités d'attirer de nouvelles entreprises, des possibilités d'aménagement du territoire ? L'idée serait de faire en sorte que se développent des activités qui valorise le dépôt et l'intègre dans un tissu socio-économique plutôt que d'en faire un élément ajouté mais étranger.

Il faut bien reconnaître aujourd'hui que les communautés locales de Fleurus-Farciennes ne se situent pas exactement ou pas complètement dans cette perspective et qu'elles réfléchissent plutôt en termes d'activités et de projets qui viendraient compenser d'autres faiblesses socio-économiques d'une région fortement touchée par le déclin industriel et minier.

Cette difficulté est réelle et je pense que nous devons y réfléchir. Elle tient peut-être à une tradition socio-politique où on a peu l'habitude de raisonner les complémentarités entre les projets. Elle tient peut-être aussi à un souci des représentants de la population de ne pas trop s'engager dans un processus de négociation du projet. Toujours est-il qu'il est indispensable, à mon avis, de développer de nouvelles initiatives dans le sens d'un projet de développement plus global de la région concernée.

Conclusions

Cette communication a voulu insister sur la méthode qui est actuellement expérimentée en Belgique. Cette méthode ne nie pas les divergences d'intérêts et de valeurs qui peuvent survenir dans l'analyse et l'évaluation d'un tel projet. Mais elle s'inscrit dans un contexte plus large qui est celui de l'entrée en société des objets techniques. Or celle-ci ne peut à mon avis se négocier sur la base d'une définition stabilisée des intérêts et des valeurs.

S'agissant de faire un choix concerté qui prenne en compte valeurs et intérêts différents, l'objet technique ne peut être évalué qu'en fonction des scénarios qu'on peut élaborer collectivement sur les contraintes et les potentialités que cet objet technique offre, et qui ne peuvent se révéler que dans un processus d'exploration.

Il n'y a donc à mon avis pas d'un côté une discussion technique qui pourrait trancher a priori de la technique parfaite, ou optimale : cette option, qui conduirait au schéma « Decide-Announce-Defend », n'est plus acceptable aujourd'hui. Mais il n'y a pas non plus d'un autre côté des procédures démocratiques de délibération ou de communication qui pourraient trancher les conflits de valeurs et d'intérêts. C'est en traitant ensemble le projet technique, sa mise en place dans un environnement, et son intégration possible dans un tissu socio-économique qu'on peut espérer décider le mieux possible d'une coexistence avec un tel dépôt de déchets nucléaires.

LEGALITY, LEGITIMACY AND FORMAL AND INFORMAL DECISION-MAKING PROCESSES: WHEN DOES A DECISION BECOME LEGITIMATE?

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Introduction

A few words on the purpose of this paper are given by way of introduction. A brief analysis will be made of the relationship between legality and legitimacy in relation to decision-making processes and within the context of the policies concerning the public management of technological risks.

The aim is to raise questions and outline some reflections based on the theory of the state, from the perspective of the conditions of the institutionalisation of power.

I shall first clarify a few conceptual points.

The notion of legality refers to the notion of compliance with legal standards, that is to say, with the law. Is the decision made by a person empowered by law so do to (legal competence)? Is it taken in compliance with legal procedure? And are the effects implicitly in keeping with the spirit of the law?

The legitimacy of the power of those who govern, or the legitimacy of their decisions, is not determined solely by legal standards but rather, is a matter of individual and social representation or view. As Hobbes [1] says, in essence, to govern is to convince: to convince people of the rightfulness of the source of the power of those who govern and of the action or public policies that they formulate.

The paper is organised around three propositions:

1. The role of the legitimacy or social acceptability of public policies has always been an element of the way all political systems function. This role, however, occupies an increasingly important place on the political agenda in a societal decision-making context that has undergone irreversible changes.
2. Although the essence of the social legitimacy of public policies remains the same, the conditions, mechanisms and criteria evolve.
3. The critical centrality of social legitimacy, together with the evolution of the criteria for legitimate decision, today modify the decision-making mechanisms that were established in response to the requirements of classical democracy. We observe a political organisation in the making, a political laboratory evolving towards governance.

1. The legitimacy or social acceptability of public policies *is now more than ever* on the political agenda

In other words, this proposition is twofold:

1.1 Legitimacy, particularly in its legal form, has been a fundamental and constant preoccupation since the formation of the modern state

In the first place, how can the emergence of governments be explained? What is it that causes a person, at some point in time, to say, "I am the leader and you will obey me"?

And next, how can the voluntary docility of those governed then be explained? Why do people consent to obey?

This last question, which we are addressing today, was raised by La Boétie in his "*Discourse of Voluntary Servitude*" [2]. What La Boétie says is that power does not come from the governor, nor exist in its own right. In other words, you give power to him. Political power can only be considered in terms of relationships. Policy is not the prince or the state, but rather the state and you, us.

Clearly, La Boétie raises the key question, one that has fascinated and continues to fascinate all historians, jurists and anthropologists who have worked on the birth of the modern state. Their approach is of interest to us as the process of the institutionalisation of the power of those who govern helps us to understand the connection between legality and legitimacy.

Work by anthropologists such as Jean William Lapierre [3] shows that institutionalised power rests on two pillars that have far greater appeal than the mere physical force of those in power. These are the *pre-eminence of legal order* as a source of power and logic of action and the *rationality* of action taken by those who govern, as well as that of the obedience of those governed.

If we accept that physical force when exerted in respect of legal standards is more likely to make the people governed obey the people in power, it is even easier to accept that they will obey a power that they deem to be necessary, even desirable. Domination brings service. Here we are in the register of rationality.

This idea is in fact shared by some anthropologists who propose the following hypothesis. The appearance and institutionalisation of power relationships between those who govern and those who are governed would be seen in societies in which those in power take charge of the management of catastrophic natural risks in return for the obedience of those governed. The institutionalised domination of those who govern would therefore be the fruit of co-operative mechanisms shaped around the management of those risks. In this respect, this domination would obey a form of rationality. Consent to domination would derive from a belief in the "need" for those who are dominated to serve those who serve them. This domination is taken in return, even if unequal, for a service deemed beneficial.

1.2 Legitimacy is also more frequently present on the political agenda than ever before since the decision-making context has become more complex, interdependent and uncertain

The basis for the legitimacy of public policies has acquired increased and renewed importance following a number of socio-political changes that affect the decision-making context.

As regards changes, by way of example, let us first mention the extension of the area of state intervention: *the move from the Police state to the Welfare state* – even if the latter is no longer what it was – and the change in the nature of state intervention inasmuch as it can no longer content itself with forbidding. By positive injunction it imposes or encourages above all the least proactive behaviour. The register of persuasion with its associated socialisation and social control mechanisms is necessarily added to the register of repression.

Social pluralism appeared through the *de facto* replacement of (classical) governed democracy with governing democracy. Taking account of the will of the people through its representatives is no longer legal fiction but a "reality" ever since the elective mandate became an imperative due, among other things, to the emergence of electoral marketing. The task of those who govern becomes more complicated as, with the threat of not being re-elected, it is no longer possible for them to dictate their decisions and to ignore the many forces and counter forces that confront one other.

Finally, we are witnessing *the advent of the risk society*, an idea developed by U. Beck [4].

These social-political changes, in turn, lead to the increasing complexity of the subject to be decided upon, the interdependence of those involved and the uncertainty (aggravated by social uncertainty) of the consequences of the decisions made.

Social acceptability conditions the effectiveness of decision making more than ever and implies the adoption of new individual behaviours. This is because the key to lasting behavioural changes is still the personal conviction of the individual of the rightfulness of the changes asked of him or her [5].

Without a certain degree of consensus in society, society becomes ungovernable. So benefiting from the various and specific support of the people is indispensable for "harmonious" operation of the democratic political system. This operation could not survive too great a degree of conflict (increased crises) simply because the limits of the system's capacity to deal with contradictory and exacerbated social demands would be exceeded.

2. The evolution of legitimacy criteria

Any established power aims to acquire lasting recognition based on both rational argument (power is necessary) and moral imputation (power is good, power serves common values). This has not changed. What have changed, however, are the criteria for legitimacy, that is to say, the postulates on life that the latter implies, and the values to which it relates. These values differ according to time, place, forms of social relations and specific group beliefs.

If we restricted ourselves to the legitimacy of an authoritative decision, the acceptance of those governed would depend on a number of interdependent conditions relating to the following:

- The understanding of the acceptor of the decision taken by those in power – its substantive contents and the way it was made.
- The belief on the part of the acceptor's leader that the decision is for the common good.
- The belief on the part of the acceptor's leader that the decision is also in his or her own interests.

- The belief held by the leader that the acceptor is mentally and physically capable of withstanding the distributive effects of the decision and, if necessary, of carrying out the "order received".

The two first conditions – intelligibility and being for the common good – are two major causes of the lack of legitimacy. The mirror conditions of understanding and consent have changed.

2.1 New conditions of understanding

Understanding the decision comes from understanding its contents and the way it was reached.

Understanding the contents: those responsible for policy will not deny that few areas of public policy can today pride themselves on their simplicity. However, few issues are as complex as so-called modern risks.

Understanding the way a decision is made: here, the difficulty in understanding stems from the large number of people involved in the decision-making process. This is a consequence of the increased complexity of the subject matter. These people are interconnected and become interdependent. The "network decision" model more faithfully reflects the reality than does the over-simplified image of governors to whom one would understandably attribute responsibility for their decisions. Yet it is, in fact, this simplistic view of decision making that conforms to written rules – the organisation of those involved into a hierarchy, and responsibility from the top down – that the media continue to disseminate among the general public, in spite of the reality and the transparency of a process that the governed are beginning to realise is far from being as simple as it seems. Distrust is the order of the day.

2.2 New conditions for consent

Clearly, the conflict concerning the management of technological risks is increasing and is a sign of active disagreement. Conflict may take place over the facts, the manner in which they are taken into account or even the values that underpin the various measures.

2.2.1 The centrality of the discourse of justice

Let us consider the value dimension of the conflicts that makes them so difficult to resolve, and the value of justice, in particular, for two reasons. This value is first of all systematically called upon in the context of conflicts of implementation. It then becomes the connection between the register of legality and the register of legitimacy, through questioning the rightfulness of the distributive effects of the decision as well as the rightfulness of the way it was reached.

The principles of distributive and procedural justice form the basis of both legal order and the sentiment of justice or injustice. It is this sentiment that gives rise among the general public to a decision based on the legal order that is supposed to confer legitimacy upon it.

The value of justice is central because it is both very general – it is universal – and significant for the individual and for the group. It possesses a dimension that is both reactive – it *recognises* rights – and strategic – it is sensitive to the harmony of the group as it establishes or perpetuates a certain

social order. It is because it is sensitive to individual rights and collective harmony that the argument of justice is central to the belief in the rightfulness and social legitimacy of a political decision.

2.2.2 The effects of the centrality of complex and variable discourse

Besides being central, the notion of justice is also complex and interpreted in many different ways. It is easier to understand that it can *establish or undermine the social acceptability of a political decision.*

A complex discourse

Let us deal first with complexity. According to H. Lasswell's well-known maxim, the formula "Who says what, in which channel, to whom, with what effect?" sums up the judgement of justice in relation to a political decision [6].

Who is at the source of what is said?

This question refers to the process of attribution, the search for the person responsible for the problem at the source of the decision or even of the problem created by the decision. We can see the difficulty created in this respect by network decision-making and, what is more, a network that is necessarily ad hoc in nature, adapted to the problem dealt with and therefore not immutable.

What is said and with what effect?

We will recall that the same "objective" is not assessed in the same way by experts and by the man in the street, or even by experts from different disciplines. It is easier to understand the difficulty of agreeing on the extent of a problem. This a well-known source of conflict among the authors of studies on foreseeable effects referred to as *"scoping*" [7].

To whom do we distribute the advantages and disadvantages related to a given risk?

Who are the people concerned? The definition of "stakeholders" ("victims" and "beneficiaries") is, here again (as is risk), a social edifice. The identity of those involved will depend on the negative and positive resources (losses and gains) that are taken into consideration.

According to what criteria is this distribution carried out?

What are the arguments, interests or discourse called upon by the various players during the debate? Do they refer to *principles of micro justice governing relationships of exchange between individuals* (equality or proportionality according to need, effort, merit or aptitude) and/or *principles of macro justice governing the structure of social order* (utilitarianism, libertarianism or even Rawlsian social justice, for example)?

How does one proceed with distribution?

And first of all, how is agreement with the manner of decision making reached?

Among criteria for procedural fairness, we can refer to the model proposed by Tyler [8]:

- The *control the citizen has on the decision-making process* (American understanding of "control") that is measured by the opportunity that the citizen has to present his or her point of view at more or less advanced stages of the decision-making process.
- The *citizen's control of the final decision* (information, consultation, participation with deliberative voice, and right to veto).
- The *quality of the decision* measured by the capacity of the procedure to produce, objectively, a high quality solution. This can be associated with the degree of contextualisation of scientific knowledge.
- The *neutrality of the procedure* measured by the capacity of the procedure to be unbiased, to ensure the decision is impartial.
- The *ethical character of the procedure,* in other words, the extent to which the procedure complies with the general criteria of moral justice.
- *Consistency,* in other words the extent to which the same type of problem is dealt with/resolved in a similar way.
- The *reversibility of the decision*, that is to say, the opportunity to correct an unjust or inadequate decision.

How important is compliance with the criteria of procedural fairness for social acceptance of the decision that is finally made?

Research into people's satisfaction with legal decisions that affect them show that the extent of their satisfaction depends on their perception of the fairness of the decision-making procedure, all things being equal, and in particular on the distributive effects of the decision [9].

These results explain researchers' interest in the procedural dimension of the sentiment of fairness when trying out new institutional decision-making tools. They are constructed around an accepted compromise between the various criteria for procedural fairness. In other words, the relative importance of each of the criteria and their optimum combination is determined on a case-by-case basis, as the difficulty stems from the fact that all these procedural criteria are perceived to be legitimate but cannot be found simultaneously in any single decision-making process. Some are totally contradictory (consistency and the citizen's control of the final decision, for example) or are inspired by different intellectual approaches (quality by the contextualisation of the decision and circumstance).

By way of example, a study [10] that took place about ten years ago – a survey carried out by means of written questionnaire – showed the co-existence of two types of social representation of procedural fairness. The first, which was prevalent, favoured consistency in decision making: the same type problem must have an identical solution no matter who is involved or where the geographical location, etc. might be. The second, which was in the minority, suggested a marked preference for the contextualisation of the decision and citizen control. In the first case, legitimacy is based on legality. The second case suggests the application of a participative process, giving not only an expressive voice but also a transformative voice to the different categories of players involved, including civil society.

Interpretation of justice

The notion of justice is complex. It is also open to many interpretations. The general public may contest the principle used, the rules used to carry it out or even the faithfulness with which the state apparatus makes use of them.

3. Opening up new decision-making mechanisms: Their benefits and costs – critical questions

The increased centrality of social legitimacy, in addition to the evolution of the criteria or conditions of a legitimate decision, call for an improvement in the decision-making mechanisms that have been legally established to meet the requirements of representative democracy. New decision-making processes based on the deliberative model are now on the political agenda.

The introduction of a device of this kind certainly responds to the inadequate performance of the system of representative democracy. Carried out effectively, it has advantages in terms of intelligibility and mutual consideration. It does, however, involve cost. At best, these are implementation costs. At worst, they are costs incurred by the counter-productive effects of modes of introduction that are not well suited to the participants and subject matter concerned.

3.1 Benefits

The subject of the benefits inherent to new decision-making mechanisms is vast. I shall limit myself to the context of the management of technological risk, which comes under the logic of precaution.

Besides the fact that the introduction of new decision-making mechanisms can contribute to enhanced knowledge of the problem, it can also provide an opportunity for solidarity, which will give rise to the co-construction of the political plan that will dictate the technological choices. It is one way of reducing the moral responsibility of the decision-maker who is placed in a new situation with new responsibility, thus making other players/participants responsible for their positions.

3.2 Costs

Political participation was at the heart of a great debate at the end of the 1950s. Some political scientists – described as "elitist" – concerned with both the necessity of social acceptability and the effectiveness of the political system, recommended active political participation limited to an elite representing the interests of the various factions within society monitored by watchdogs – the press for example – to ensure compliance with the decisions in pursuit of the common good [11]. Other analysts were concerned about the widespread political apathy of the citizens and ways to remedy this.

That debate is not over. Forty years on, we are seeing the effect of the increasingly destructive conflicts – in increasingly diverse areas – that have followed the emergence of the demand for participation within a context of social pluralism, confirming to some extent the gloomy predictions of the "elitists". So, opening up the means of decision-making to the *stakeholders* defending competing interests, projects of society that are incompatible, clearly does not guarantee the governability of a controversial problem. But neither does the opposite strategy.

I would like to end this paper with a few critical questions concerning procedural justice, as this seems to be such a determining factor. These questions are best asked before trying to open up the decision-making process in order to meet the expectations of those to whom they appeal and to minimise the risk of a counter-productive effect on the legitimacy of the result.

3.3 Critical questions

Should provision be made for an institutionalised and formalised mechanism to open up decision making or a flexible and adaptable process?

Any system must be sufficiently flexible to adapt to the context but also contain codified and standardised rules structuring the interaction between the people involved so that a degree of social legitimacy can be preserved.

Who are the people called upon to participate in the introduction of the system?

Either participation is based on a particular and intrinsic quality that establishes participation and makes it legitimate, or participation is on a voluntary basis and the competent person is the one who defines him or herself as such. In this case, the forum tends to be populated by citizen-activists and poses the problem of the representativeness of the proposed perspectives.

How can faithfulness be guaranteed between the actors and those on whose behalf the action is taken?

Participation often brings about a physical separation between individuals called to participate directly in the forum and the people they represent. How can the alignment of the positions defended in the forum and those of on whose behalf action is taken be guaranteed? This question is becomes all the more pertinent when the process has to operate over time and the member of the forum has a vested interest that those he is acting for are unaware of or even object to.

What is the role of an audience? When should it be provided for or avoided?

With respect to public procedures, in particular those given media attention, the best known research (surveys of the general public or parliamentary enquiry) shows that the presence of an audience makes an analytical approach to the problem difficult. This presence encourages declarations in terms of values and calls for indignation or even prosecution and punishment. This increases the likelihood of participants feeling they have been wronged and calling for the protection of their rights and for justice. They often apportion blame and seek to establish a guilty party in an effort to re-establish a degree of fairness.

Can the players be allowed the freedom to reformulate the problem?

To the extent that a problem is reformulated, the limits of the problem (in terms of area or competence) extend and the network of the actors increases. This increase is generally accompanied by the phenomenon of audience or popularisation through the mass media to appeal to a greater number of players and win their support.

Some processes favour reformulation and enlargement of problem domains (consider the Danish consensus conferences or focus groups), others tend to reduce their size in order to facilitate the negotiation process and organise arbitration, if necessary, between values that must first be made measurable.

Should the output be integrated into the final decision?

Of course, a political decision that would run counter to the broad popular vote or the conclusions of a consensus widely popularised through the media would not be well received. But most often the results of opening up a mechanism must still be reformulated and reframed by their decision makers. It is therefore necessary for modes of dialogue with the forum to be incorporated into the various decision-making stages, or to guarantee a degree of transparency with regard to the transformations that take place in the context of the decision making which, as we said earlier, is carried out in a network.

Conclusion

The question of legitimacy is as old as political science itself – there are without doubt enough works on the matter to fill the Alexandria Library – but the conditions of legitimacy are not immutable. A political player inevitably can hope to find only part of the answer in books or theoretical knowledge, however extensive the latter may be. The other part of the answer is necessarily contextual. It can only come through observation in the field. The two are, of course, complementary, which is why I consider theoretical questioning worthwhile and why I feel it is worth going back to the sources of institutionalised power to draw attention to the observation of the conditions of the legitimacy of a particular political decision.

References

[1] Hobbes, Th. (1974), *Leviathan,* trans. F. Tricaud, Sirey, Paris.

[2] La Boétie, E. (de), (1983), *Discourse of Voluntary Servitude*, GF Flammarion, Paris.

[3] Lapierre, J.W., (1968), "Essay on the basis of political power", *Gazette of the Annals of the Faculty of Letters*, Aix en Provence.

[4] Beck, U., (1993), "From industrial society to risk society", *Revue Suisse de Sociologie*, 19, 311-337.

[5] Weiss, C.H., (1987), "Evaluating social programs: What have we learnt?", *Society*, Nov-Dec., 40-45.

[6] Lane, R., (1986), "Market justice, political justice", *American Political Science Review*, 383-402.

[7] Directive 85/337/EEC and Directive 97/11/EEC.

[8] Tyler, T., (1988), "What is procedural justice?: Criteria used by citizens to assess the fairness of legal procedures", *Law and Society Review*, 22, 103-135.

[9] Tyler, T., (1984), "The role of perceived injustice in defendants' evaluations of their courtroom experiences", *Law and Society Review*, pp.51-74; and

Sunshine J., Tyler T., (2003), "The role of procedural justice and legitimacy in shaping public support for policing", *Law and Society Review*, Vol. 37, 3, 513-547.

[10] Allen, P., O'Hara, L., Sauvage, F., & Zwetkoff. C., (1995), *Measuring and Using Public Values in Decisions on the Siting of Hazardous Installations*, Final report under contract EV5-CT92-00729.

[11] Pateman, C., (1975), *Participation and Democratic Theory*, Cambridge University Press, Cambridge.

FAIR PROCESSES AND FAIR OUTCOMES: INVOLVING LOCAL STAKEHOLDERS IN RWM DECISIONS

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There is a general agreement on the requirements to be met by radioactive waste management strategies. One of the requirements is that both the outcomes of any decisions and the decision-making processes must be seen to be *fair.* However, there exist multiple legitimate views on fairness and there is no meta-theory that could help decide which of the competing views should be considered valid in a concrete case. Referring to the plurality of views on fairness, Linnerooth-Bayer (forthcoming) argues that the impasse in facility siting processes can be attributed to the failure to take adequate account of the diverse views held by the various stakeholders on fair processes and outcomes.

Three fundamental ethical principles have been derived from three basic ethical theories: *well-being* which is the central concept of utilitarian ethics, *justice* which is a key notion in egalitarian ethics, and *dignity* which is central to deontology (Bay and Oughton, 2003). According to *utilitarian ethics* fairness means that public welfare is maximised even at the cost of stakeholders' individual rights. Costs and benefits can be legitimately distributed in any way; only their overall balance has to be enhanced. In contrary, *egalitarian ethics* aims for a fair distribution of benefits and costs among stakeholders, while *deontology* acknowledges universal values of actions, e.g. the respect for individual rights, apart from their consequences. According to the latter ethics, fairness means that stakeholders themselves have the opportunity to learn about the benefits and costs of various options, and having considered them, decide on their position to accept them.

How do diverse views on fair decisions materialise in RWM debates?

Fairness in selecting radioactive waste management options

In recent debates, the options most frequently considered for the management of radioactive waste are: (i) geological disposal; (ii) long-term storage; and (iii) export of waste.

Geological disposal is the option that would be favoured by stakeholders following the principle of well-being. It represents the technically preferred option, in which health and environmental risks are minimised. This option is criticised by those adopting the justice principle since it is assumed that if disposal is applied, future generations will be at larger risk than the present generation which is producing the waste.

Those adopting the justice principle are paying special attention to the distribution of benefits and burdens between generations. Long-term storage is the option they would favour, since both the present and future generations have to monitor the facility, which imposes similar or less risk on future

generations than on the present one. The underlying assumption is that new RWM technologies – safer than present ones – will be available for future generations.

Export of waste to countries that are willing to accept it in exchange for benefits, is the option that would be favoured by those following the principle of dignity. It is assumed that acceptance of waste is based on a positive balance of perceived benefits and risks.

From recent debates in industrialised countries a compromise option seems to be emerging which to some extent meets all three ethical principles. That is retrievable geological disposal. It relies on technical criteria (well-being), whilst permitting risk-reducing decisions by future generations (justice). Also, similarly to storage, retrievable disposal leaves many options open, including that of future export (dignity).

Fairness in site selection

The main approaches being considered for the siting of RWM facilities are: (i) search for technically excellent sites; (ii) search for sites near nuclear power plants; and (iii) search for volunteer communities.

The first process of searching for technically excellent sites is that which would be favoured following the principle of well-being, which is reliant on technical criteria. The second process of searching for sites near nuclear power plants is that favoured following the justice principle, in that the responsibility for waste management will be borne by communities that benefit from the waste producing activities.[1] The third process of searching for volunteer communities would be favoured following the principle of dignity, with acceptance being based on perceived benefits and costs.

The solution that seems to be emerging from national debates is a mixed approach, with a stepwise process to finding a technically licensable and politically acceptable site. This siting process identifies technically feasible sites (well-being), whilst ensuring approval from local authorities and public acceptance at each stage (dignity). The above efforts are increasingly combined with attempts to find locations near nuclear power plants (justice).

Robustness

Experience suggests that strategies that meet multiple ethical principles have a better chance for getting broad societal support; such strategies are also called robust (Linnerooth-Bayer, forthcoming). For example, a highly robust strategy will be the siting of a disposal facility (with the possibility of retrieval) in Eurajoki (a site near a nuclear power plant, accepted by both the local government and national parliament), if the technical suitability of the site is demonstrated.

While options and sites that meet multiple ethical principles cannot be found in each case, robustness of RWM strategies may be increased by using other means as well. Compensation, for example, is a means appealing to those who adopt the principle of dignity since by offering benefits for the host community it promotes acceptance. It is appealing also to people who adopt the principle of justice, but in this case it has to be positioned as a means for offsetting inconveniences rather than for buying public consent. Local monitoring of an RWM facility is an arrangement that promotes

1. It should be noted that responsibility is only one of many possible criteria which can form the basis for a fair distribution of burdens.

acceptance by increasing trust and perceived security. It is also appealing to those focusing on justice, since it empowers the less powerful.

How can robust strategies be found?

Fairness of decision-making processes

As mentioned earlier, one of the major sources of conflicts in RWM debates is the divergence of views on fair solutions to the RWM problem. Typically, various stakeholders favour different principles: for example, government agencies tend to emphasise safety (well-being), local communities emphasise local acceptance (dignity), while environmentalists focus on responsibility and other criteria related to the distribution of benefits and burdens (justice).

Linnerooth-Bayer (forthcoming) suggests that a pluralistic, deliberative process may be key to identifying robust strategies. Renn *et al.* (1995) have defined the conditions for a fair and competent discourse. The National Research Council of the National Academy of Sciences has developed the so-called analytic-deliberative framework for structuring policy debates (NRC, 1996). The proposed processes are deliberative in that stakeholders decide how to find a compromise between divergent interests, ethical principles and other values.

To illustrate the above issues, the history of siting a spent fuel storage facility in Hungary is presented.

Search for a robust strategy: Siting a spent fuel storage facility in Paks, Hungary

At the beginning of the 1990s after the collapse of the Soviet Union the former arrangement of returning spent nuclear fuel from the Paks nuclear power plant to Russia became problematic. Due to emerging uncertainties, in 1990 an investigation was undertaken to determine whether and how it might be possible to store or dispose of the spent fuel within Hungary. In 1992 a decision was made to construct a temporary storage facility at a site adjacent to the power station.

The power plant made every effort to achieve public acceptance of the planned facility. Before starting the licensing process, the power plant management began negotiations with local governments of Paks and nearby settlements; these negotiations focused on public monitoring and financial support. As a result, the Association for Public Inspection and Information (TEIT) was formed as an independent entity which includes the city of Paks and 12 nearby settlements. The purposes of the TEIT have been the monitoring of background radiation, dissemination of information to local communities, and negotiating financial compensation with the power plant.

Following some heated debates in the city of Paks between a protest movement and the municipal government, and negotiations between the city and the nuclear power plant on special guarantees concerning the waste stream to be shipped to the facility, in 1994 an agreement was made and the land use permit was issued. The facility became operational in 1997.

We claim that the success of the siting efforts can to a large extent be attributed to the robustness of the strategy. As discussed earlier, long-term storage meets the principle of justice (intergenerational equity). By locating the facility near a nuclear power plant, the criterion of responsibility is accommodated, as well. The solution also meets the principle of dignity since the facility has been accepted both by the host community and the neighbouring settlements. In addition, the arrangement

leaves the option of future export open (as guaranteed by the nuclear power plant in an agreement with the Paks municipal government). The principle of well-being has also been met to some extent, since both the technology and the site correspond to safety standards.[2] Generous compensation and public monitoring offered to the affected communities have also contributed to the robustness of the strategy.

As far as the process is concerned, it can be characterised as partially deliberative. Negotiations were focusing on compensation, local monitoring arrangements and guarantees on the waste stream, while decisions concerning the selection of the storage option and the site were made without any public input.

Nevertheless, the most important achievement of the process was the creation of the TEIT. Since its creation, the Association has been instrumental in strengthening relations between the power plant and the communities. This approach is complementary to traditional public participation (through e.g. hearings) in that it may facilitate more innovative public participation efforts through the ongoing ties that have been created with the communities (Langton, 2000).

It is concluded that in addition to the robustness of the selected strategy, the community relations approach was another key factor of successful siting.

References

Bay, I. and Oughton, D. (2003), "Principle-based ethics and the clean development mechanism", in: *Proceedings, VALDOR 2003 Conference, Stockholm, Sweden, June 9-13, 2003* (Karinta Konsult, Taeby, Sweden), pp. 512-523.

Langton, S. (2000), "Conditions for meaningful public participation. Precursors of practice", in: Gayer, J. (ed.) *Participatory Processes in Water Management* (Proceedings of the Satellite Conference to the World Conference on Science, Budapest, Hungary, June 28-30, 1999), UNESCO, Paris, pp. 129-146.

Linnerooth-Bayer, J. (forthcoming) "Fair strategies for siting hazardous waste facilities", in: Lesbirel, H. and Shaw, D. (eds.) *Siting Experiences in Asia, Europe and North America,* Kluwer Academic Publishers, Dordrecht.

NRC (National Research Council) (1996), *Understanding Risk: Informing Decisions in a Democratic Society,* National Academy Press, Washington, D.C.

Renn, O., Webler, T., and Wiedemann, P. (eds.) (1995), *Fairness and Competence in Citizen Participation: Evaluating Models for Environmental Discourse,* Kluwer, Dordrecht.

2. It should be noted, however that long-term storage is not an option particularly favoured by the technical community.

WHAT DOES THE LOCAL PARTNERSHIP SEE AS FAIR AND LEGITIMATE? [1]

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I am speaking here as the chairman of the Board of MONA from Mol. I think by now you know what MONA's task is. I will not repeat that. We have been working since 9th February 2000 and I can tell you the work is not finished yet. I think it is important to put my speech into that perspective, so that you know that I will be talking about my experience and that it has not yet come to an end. First I will speak very briefly about the context, namely the behaviour of the inhabitants of Mol vis-à-vis the situation; afterwards I will try to answer the question of whether we think the process in which we are engaged is fair and legitimate. Finally I will explain certain criteria which in our view must be present in order to render a positive or a negative judgement on the partnership.

What is the attitude of the inhabitants of Mol? In the 50s and 60s the inhabitants of Mol were very happy with the whole nuclear event: it was modern, it was new, and on every road to our village, it said: "Mol, atomic city", because we were just so proud of that. Of course times change… Afterwards there was a period when we were not very happy with the whole nuclear thing and the attitude changed due to scandals that arose. An example I like giving is that Sun Parks, a touristic center, thought of coming to Mol. However, they didn't want people to know that there was going to be a Sun Parks center in Mol. They didn't want people to talk about the Mol Lakes: they wanted people to talk about the Rose Lakes, which indicates that they were a bit embarrassed about it. Another example we observed was that with the nuclear transports that we also have in our municipality for high-level radioactive waste, and finally the leaking waste barrels discovered in Mol, people didn't even want to come outside. But that did not mean they did not have an opinion: on the contrary, it showed that they were very involved in the whole matter.

The people of Mol have known this problem of course for 50 years: it is part of our lives now, it is really in our backyard. We live next to the nuclear waste, we have been living there for a long time, and deciding now what to do about the waste can only make things better for the inhabitants of Mol. I would like to repeat once more: there have been no protests, but the residents are very aware of the problem.

I thought it was important to give you the context because in many municipalities we hear that there is immediate protest. In Mol and Dessel, we are confronted with a population that is maybe a bit more relaxed about the nuclear waste issue, but still there's a very strict follow-up.

Turning to the question that I have been asked to answer, I think we have to demonstrate on the basis of a number of minimum criteria whether we see the partnership itself as legitimate and fair.

1. Speech given in Dutch; transcribed and edited from the simultaneous English translation.

The first important point is of course the composition of such a partnership. We were able to work on the basis of a concept that was developed by the University of Antwerp, which offered a balanced composition both in the General Assembly and in the different working groups. I would like to emphasize the fact that this is just one concept. I don't think we have a wish to make it seem like the best possible solution. For us, though, it is very important that we have a concept that is scientifically based.

In the concept of the University of Antwerp, everything is based on vertical information. What does that mean? There are many representatives within the partnership, but of course it is very important that they get feedback, and that they give feedback in turn to their members and the other players. So it is not just individuals involved in the partnership: they are actually all representatives of different organisations.

The second important point is whether the members of the partnership also accept this concept. If that is not the case, then of course from the very start we are faced with a problem. In the partnership we have pro and contra opinions on the waste repository question. Up to now, all the different members in our partnership in Mol at this moment have confirmed that they appreciate how it works. Political statements have been made by people from Green parties, for instance in the municipal council, saying that they are very happy with this way of working, and the participation that they have, the say that they have. That is also what was emphasized by the previous speaker, and the speaker before that: it is of great importance to be able to talk about things even if the decision does not necessarily fall in line with one's own opinion.

Of course you also need acceptance by the inhabitants themselves. Most accept the partnership approach, most of them know MONA, and know what we do within MONA. However, there are always people who are very critical. So … sometimes information is spread about MONA which is completely incorrect or at least too partial.

What is also very important is independence: the partnership needs to be able to work independently. That independence is important on two levels. First of all, vis-à-vis the nuclear sector: we have to be able to take a step back. That is certainly not a simple task. Nuclear was always something for engineers and scientists, now it also involves a lot more people. So it is important that the partnership take the necessary distance from the sector. Who is involved in the partnership? Are they only "nuclear people", to call them that? As for the people who are not part of the industry, are they capable to be and to remain independent enough ? Another important question in this connection is: who manages the agenda, who decides what is happening within the partnership?

We also need independence from politicians. I am a politician myself but I think the partnership gets a lot of strength out of the fact that the partnership takes its distance also from politicians. MONA really asks politicians to support them and not to interfere with them and not to make it into some sort of a political game. We of course also need an agreement between the municipal majority and the minority; both parties have to accept the partnership so that it is not abused in a political game. At the political level, the greater number of the Mol municipal council have said already that they accept the partnership of MONA and will accept its report at the end as well, although they will be able to make additional remarks if they want to.

A further important point of course is our need for a budget: do we have sufficient funds in the budget to do our work, do we have a location, do we have money to pay the co-ordinators, do we have money for publications and communication, do we have money to call upon experts, so that we can gain insight, and of course can we pay for studies and research? In Mol, the partnership receives an

amount of 250 000 euros per year paid by ONDRAF/NIRAS; until now that has certainly been more than sufficient for the activities that we have developed.

Fairness and legitimacy require that the partnership have access to all information. The partnership should take the initiative to listen as much as possible to the pro and contra opinions and to listen also to independent information from experts. That is a very difficult issue. The partnership needs objective information; some say that it is difficult to gather objective information because it is such a technical subject and for a very long time, it was really only managed by people who were actually part of the nuclear sector, who said "this is a separate world". Obtaining all necessary information of course is based on trust between these experts and the partnership.

An additional issue is accessibility. This is a bit linked to the previous issue but I think it is slightly different: namely, we have to be able to gain access to the world of science. Because ours is a very technical subject, it is very important that the technical jargon be translated, rewritten, reformulated in a more normal language so that it is understandable to the "man in the street". Here again, the fact that all experts of course belong to the nuclear industry does not always make things easy for us. The municipality of Mol supported the MONA project by organizing at the beginning of 2001 a training over the course of 6 evenings to try and explain nuclear vocabulary to the general public. This meant that the experts of the sector came to explain their project to the "ordinary people". However, typically an expert says "I'll keep it very short and I'll explain it very simply" and then shows our Flemish-speaking community a film that turns out to be in English…

Another aspect that weighs on fairness and legitimacy is: what is the task of the partnership? We had a lot of discussions in Mol about precisely what is MONA's task. We are only dealing with low-level short-lived waste, so actually it is quite a limited task. Although we can talk about it, we can't make any decisions for high-level waste. This discussion about the boundaries of the MONA task is still going on and still has an influence on the attitude of a lot of people towards the partnership who say "well, it is all very wonderful, but it is very limited. You're only discussing minor problems and you can't have any say on important matters". That is the remark we keep hearing.

Duration is important as well: ours is a difficult task to finish in two days' time or in two months. We asked for a bit more time; we started with two years and that was extended without a problem. At this moment we have been working for almost 4 years, which is certainly giving us plenty of time.

The main question concerning what makes MONA fair and legitimate is difficult for its members to answer directly. It is, of course, knowing what will happen to the work of our partnership. I think this is essential: we can do our utmost for years but if our report's then put away in a drawer somewhere, is not discussed, is not followed up by a decision, then of course the partnership process is not fair, then they've actually made a fool of us. That is a feeling that is very strongly alive among a lot of people and it engages the responsibility of the municipal council who must receive the report, discuss it and continue along that line. ONDRAF/NIRAS also must respect its engagements, but finally of course it is the federal government which will take the final decision. And politicians sometimes really like to wait a long time with making the right decisions.

Once MONA finishes its primary task, the task that was given to us, we consider that it is important to continue with the follow-up of the file. It is a very hot file at the moment. We feel it has to remain hot, certainly for the period between the end of our task and a decision from the federal government. We feel that afterwards as well, when the decision has been taken, it will be very important that the activities be followed up by the local population.

My conclusion: with the partnership we got a very great opportunity. I would not say it was a gift from God, but we shouldn't minimize our task and what we were able to accomplish. Our partners here have understood that the partnership goes very far. I don't think that's always the case in other countries. I think we should be thankful for that. I think it is certainly a form of democracy that is not always easy to handle. But of course its success depends on many factors. First of all, as I said before: acceptance of the partnership concept as **just one of many possible** concepts, but the right one for us. Secondly: trust; if there is no trust, then the system doesn't work. Responsibility on the part of all actors is needed: they all have to work in full confidence on the concept. Good leadership means that we have to make sure that it remains an objective process, that both those in favour and those against can have their say. Finally, success depends on good communication and good information to those outside the partnership. I remind you of the MONA calendar that was mentioned yesterday as one example.

ROUND TABLE DISCUSSION DURING SESSION 1

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The round table discussions of the first session of the Belgium Workshop addressed the following questions:

- Accepting or refusing a person, an institution or a grouping as a legitimate stakeholder – who makes the decision and how?
- How are the local partnerships built and organised?
- How to obtain community support for the partnership's legitimate decisions/findings?
- Experience teaches that no decision is reached solely by formal and legal processes. What role do informal processes play?
- How can the informal procedures be accepted? Do they need to be made explicit?

Discussion took place after the plenary presentations, at tables grouping Belgian stakeholders and FSC delegates. After the discussion, each table's findings were reported to the plenary.

Most of the discussion concerned the local partnerships. Important findings were that the statutes for the partnerships were developed by the partnerships themselves and there were no legally binding rules handed down by the federal level. The partnerships are part of an informal process. A legally binding participation (i.e. within the EIA) will be initiated at a later stage. As the partnerships function outside of the formal legal procedure, they can function in a more flexible way.

It was noted that the partnerships make recommendations, but it is not clear what the government will do with these recommendations. It was also argued that the process may cause conflicts between neighboring communities. As in other contexts visited by the FSC, the importance of the right of veto of the community was stressed, although this may cause a conflict between technical suitability and social acceptance. Access of the community to the local partnership is necessary. Finally it was accepted that time is needed to explain the recommendations to the broader community before any decisions are taken.

Accepting or refusing a person, an institution or grouping as a legitimate stakeholder – who makes the decision and how?

Everybody is affected

In a broad sense everyone who could be affected by the decisions taken (even if no decision is taken), should be allowed to participate in the debate. Legitimacy has a role to play in the local,

regional, national and international context. It would be difficult to differentiate between the stakeholders.

There was a general understanding that stakeholders should not be excluded and that a broad range of participants would benefit from the debate. Interested organisations and individuals should be accepted without restrictions. Decision on individual participation should be left to the social/political/cultural group concerned. Everyone should be allowed to join the partnerships at a later stage.

Playing the game

However commitment and acceptance of the "Rules of Engagement" are required. The only exclusion criteria should be disrespect of other members and of the rules of the partnerships. In the Belgium case this never happened. There can also be technical drop-outs due to lack of knowledge or lack of interest.

How are the local partnerships built up and organised?

Setup of the partnerships

The concept of the local partnerships was developed by a university group, which is regarded as neutral, and helped improve the acceptance of the partnerships in the communities. Professional administration, high degree of autonomy and intensive interaction with ONDRAF/NIRAS were the key features. The partnership working groups are autonomous and set up the agenda and the time schedules.

Local versus national issues

Although the partnerships feel that the "radioactive waste management" is a local issue, their work has repercussions on a national level. Therefore it is important to have both local officials and representatives of the government (policy maker, regulator) committed to the work of the partnerships. It was noted however that the federal policy maker is not involved in the process. This lack of federal involvement could have both advantages and disadvantages.

Partnerships and the role of politics

Town councils rely on the partnerships' work and assess whether the community is appropriately represented. Some elected councils are also members of the partnerships. This participation brings up some questions: i.e. the conflict of interest between legitimate representatives (elected council members) and the partnerships. The need for setting up partnerships could be looked at as a sign of a crisis in local politics. What could the partnerships do in order to improve (political) acceptance that the Community Council could not do?

How to obtain community acknowledgement for the partnership's legitimate decisions/findings?

Home made

On a local level, the consideration of how to balance different interests, stakes and objectives is important. Different interests and groups need to be represented in the partnerships and their views reflected in the process and the outcome. Furthermore, the project will have a greater impact if it is "home made". Building trust means being aware of the problems, being transparent and having enough time to reply to questions brought up by the public. The outcome should be clear and understandable to all concerned. This needs time because the findings and recommendations have to be explained to the community.

Transparency

Information, communication and dialogue play a key role for the legitimacy (and the acceptance) of the partnerships. Partnerships should take every opportunity to communicate with the public and relevant community groups, go on the street, actively attend events, and go door to door. Feedback from the grass root level on partnership communication is required and needs to be organised. The suggestion of a big event with a federal minister was brought up. This would be the grand finale.

Avoid a club of experts

Information and communication are important for the partnerships so that they are not seen as a "club of experts" keeping the knowledge gained within themselves. For longer term projects, a regular change in representation should be considered. The partnerships should be accessible at all times. The "silent majority" should cease to exist.

Experience teaches that no decision is reached solely by formal, legal procedures. What role do extra-legal, informal procedures play?

How can the extra-legal, informal procedures be made explicit? Do they need to be made explicit?

Formal versus informal procedures

In general, people want procedures to be explicit, to be objective and transparent. A well defined process is based on laws and regulations which set the basis for legitimacy and defines the role of each stakeholder.

On the other hand informal procedures play an important role in daily life. Informal procedures such as the partnerships can help to build trust and confidence and are an excellent tool for public involvement, as long as the procedure is open, honest and fair. The partnerships, being outside the "political framework", can be seen as more objective.

Role of informal procedures

The most important role of the partnerships is their involvement and understanding of the community regarding all issues and aspects of radioactive waste management. The acceptance of the community heavily relies on the partnerships' visibility, the understanding of their work and the interaction between the public and the partnership. The partnerships have an internal and external effect: they can help build confidence for taking legally binding decisions at a local level and they can represent the interests and concerns of the community.

Formalise an informal procedure?

Informal procedures are often crucial in decision-making processes, but a clearly defined framework is necessary. Formal legal processes need to be defined. Formal and legal decisions, based on national laws and regulations, will often be taken later when important political decisions have already been taken (e.g. site selection).

Therefore formal legal decisions should be taken at the end of a well-defined, flexible, informal but formalised process, aimed to explore, adapt and reach conclusions.

Some concerns

- All participants are from the local community, but what happens to groups (clubs – sport/cultural) that are cross-community?
- There is a danger, that the partnerships become a "club" in themselves.
- The lack of a legal basis could result in work and efforts being wasted.
- There is no control on the next steps to be taken once the partnerships made their recommendations: work on "Post-Partnerships" should be considered.

Session 2

Dealing with Knowledge in Managing Risk

Chair: Věra Šumberová

SCIENCE AT THE INTERFACE[1]

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From laboratory science to interface science

Most modern natural and technological sciences are laboratory sciences. If at all possible, they will pursue what they are after in laboratories, those closed-off and special places where experiments can be conducted "free" from environmental influence and disturbance. Laboratories are the site of knowledge production, the fact factories of science. They are a specific version of the sort of structure modern societies have invented to organise task accomplishment in many areas (other varieties are the industrial factory, the prison, the clinic, the university).

Laboratories have advantages. One of these is that a laboratory science does not have to put up with its objects of investigation as they occur in nature. First, it does not need to accommodate a natural object *where it is*, anchored in a natural environment; laboratory sciences bring objects "inside" and manipulate them on their own terms in the lab. Second, a laboratory science need not accommodate an event *when it happens*; it can dispense with natural cycles of occurrence and make events happen frequently enough for continuous study. Third, a laboratory science does not have to put up with an object *as it is*; it can substitute transformed and partial versions.[2] Dissociating natural objects from their environment and reconfiguring them in the lab is not simple, but it has epistemic advantages when it can be accomplished. For example, the objects of interest tend to become miniaturised (cell cultures rather than whole plants, image measurements rather than cosmological objects), they tend to become continually available in laboratories world-wide for inquiry, and planetary and stellar time scales are replaced by the time scales of the social order.

Laboratories also impose conditions, for example sharp boundaries between the internal and the external world. Most laboratories in the natural sciences have procedures (and walls) to fend off unwanted transgressions of objects from the natural and human environment which they see as potential contaminants. A "wild-type" mouse in a molecular biology lab is not, for example, an animal caught in the wild. It is a special mouse strain inbred over many generations in breeding labs to serve as a control in relevant experiments. Animals that live in the wild (or in the buildings where labs are

1. Author's note: Conference summary only. Please do not quote without permission.

2. Astronomy, for example, was long a field science based on a particular observation technology, the telescope. But then astronomers turned to using an imaging technology as well, first the photographic plate with the help of which photons of light emitted by stellar bodies can be captured and analysed, and recently CCD (charge-coupled device) chips which enable astronomers to transfer and process their data electronically. If CCDs are used with space telescopes, they render astronomers completely independent of direct observations of their "field" – they transform it into an image-processing laboratory science.

located) are strictly prohibited from entering a lab facility as potential disease carriers and pollutants. Laboratories, then, are not only specialised places, they are places that set up barriers against the environment and attempt to raise the stakes against those who might want to enter.

Laboratory sciences "interface" nature in a peculiar way: by barring "real" natural objects from entering the lab and by substituting for them reconfigured versions of these objects to work with in research. These supplemental versions of natural objects do refer back to natural processes or conditions, but at the same time they are also autonomous new objects and processes with differential qualities and reproductive powers within laboratory contexts. They are not simply copies of an original nature.[3] Doing laboratory science involves continuous boundary work – that of stripping natural objects from their environment and that of distilling substitutes from natural materials that can be further processed in the lab.

Laboratory sciences have the disadvantage that their products must be freshly contextualised when they leave the lab to reenter natural environments. In the natural sciences, "recontextualisation" is often accomplished by transferring some of the conditions that obtained in the lab onto the natural environment, as when Pasteur, after discovering a vaccine to fight the Anthrax bacillus that affected cattle at the time in France, transformed features of the farm into laboratory-like conditions to make the vaccine work in practice (e.g. Latour 1987:249). Recontextualisation in the natural sciences may also just be a metaphor for a long chain of processes, involving specialised disciplines, by which some natural scientific results are used to create technologies which are then used in practice – a process that often fails, involves political strategies of persuasion and other complications. Contextualisation involves adaptation not only to new laboratory external physical environments but also to the social world. Pasteur, for example, had to convince the farmers to use his vaccine, and he carefully staged field trials in partly transformed farms for that purpose. One direction of social science research maintains that a form of (re) contextualisation of a much larger scope and impact is evident today in contemporary societies, affecting in tendency all sciences and technological fields. This assessment is encapsulated in the idea that we have progressed from "Mode 1" science and technology to a "Mode 2" situation where knowledge is generated in the context of application and implication (Gibbons, *et al.*, 1994; Nowotny, *et al.*, 2001).

Mode 1 and Mode 2

According to the authors cited, Mode 1 knowledge production has the following characteristics:

- It is the traditional mode of organisation of research in universities.
- Its main objective is the production of new knowledge.
- "Pure" disciplines are the locus of knowledge production and scientific recognition.
- The process of knowledge utilisation is sequential, running from fundamental to applied research.
- The peer review system is the predominant form of research and career assessment.
- The main outlet for the diffusion of knowledge are peer-reviewed journals.

3. The new objects stand in a variety of relations to their referent: part-whole (sample taking); physical object-image (of transformed aspects, radioastronomy); evolutionary active genetic mechanism – evolutionary paralysed/disabled function; historical objects – artificially recreated or simulated version (physical particles present at the beginning of the universe) and so on.

With Mode 2 knowledge, on the other hand, science can no longer be separated from society, culture and economy. The characteristic features of Mode 2 knowledge productions are that:

- Problem-solving is the main objective of research.
- The social structures of research production are unstable, e.g. heterogenous teams and task-oriented networks are in place.
- Research is transdisciplinary.
- There is a contextualisation of research and the localisation of research in new social spaces.
- The academic monopoly on the assessment of the quality of research no longer obtains.
- There is a diversification and de-institutionalisation of knowledge diffusion activities.

Mode 2 knowledge production is the knowledge production of a changed society, whose new characteristics to some degree explain the intensified contextualisation of research. "Mode 2 society" (Nowotny, *et al.*, 2001: ch. 2) is what others have called a "knowledge society" characterised by the following:

- Knowledge is a productive force that partly replaces capital and labour.
- There is a proliferation of diverse sites of knowledge production (e.g. small high tech companies).
- Dedifferentiation – traditional distinctions between the subsystems of a society that perform particular functions (the economy, law, science) and operate within a specific code (e.g. that of scientific rationality or legal codes) are breaking down, a feature helped by.
- The rise of information and communication technologies (e.g. Castells, 1996) leads to fluid networks that crisscross traditional boundaries between systems.
- Changes in the general culture (e.g. Lyotard, 1984; Bauman, 2000) affect the authority of science and knowledge.
- Modernisation is reflexive (e.g. Beck, Giddens and Lash, 1994).

The last notion means that we live in a world thoroughly constituted in and through reflexively applied knowledge (e.g. even traditions are now "invented traditions"), but at the same time the traditional equation of knowledge with certitude no longer holds (Giddens, 1990: 36 ff., 39). In fact, empirical knowledge always was deeply uncertain, but this may have mattered little in a situation where knowledge "lived on" in interiorised scientific and technological contexts where it became further articulated in experimental systems over long periods of time. In a world where more knowledge is applied, and the emphasis is on innovation, society itself becomes a laboratory (Krohn and Weyer, 1994) for testing uncertain knowledge that is put into practice before it is thoroughly understood (most knowledge in the context of application and implication cannot be rendered certain in the scientific laboratory).

Paradoxically perhaps, it is in such a knowledge society that science and knowledge do not relieve the risks with which we are confronted, but add to them, through accelerated technological innovation, the opening up of new possibilities (think of the life sciences), and the use of society as a testing ground for uncertain knowledge. If one adds to this Beck's notion of a risk society (1992) as one where the achievements and successes of modernity now haunt us with their unintended consequences (e.g. pollution as an unintended consequence of social welfare and mobility for large

populations), one has something of a background scenario for the "ontological insecurity" of individuals (Giddens, 1990: 92 ff.) and the "menacing appearance" of the world (Lasch, 1977: 140) in which life becomes a "never-ending search for health and well-being". This background scenario is also what supports the idea of a Mode 2 knowledge production. Mode 2 knowledge production is knowledge contextualised not only by application but also by implication – by the context of the many partly foreseeable and partly not foreseeable impacts of technoscientific research.

These impacts matter since people faced with ontological insecurity and perceived risks, searching for life-enhancement in a menacing and uncertain environment, *talk back* at technoscience. As a consequence, experts must now extend their knowledge to many areas beyond their specialty and they must try to integrate what they know with what others want, or think they should do. In other words, in Mode 2 knowledge production, society is not only the recipient of research results but an active partner participating in the construction of knowledge (think of government determining which cell-lines may be used in stem cell research). New legitimisation of science and knowledge comes from experts being actively engaged in the trading zones between technoscience and society where the content of future knowledge is determined (Nowotny calls this the agora; see Nowotny, 2000 for all this). This process of contextualisation, if it works, moves knowledge beyond scientific reliability to the production of *socially robust* knowledge, which results from the active engagement with society that takes place in the public sphere rather than in the laboratory. The institutional opportunities where society and expertise may enter into a dialogue need to be developed and need care.

The arguments presented here provide a general assessment of current changes in knowledge production as interrelated with changes in Western societies. They are extended by the author's research in progress on images of the user in expertise by risk-based models of organisation as relevant to scientific laboratories (an example is NASA).

References

Bauman, Z. (2000), *Liquid Modernity*, Cambridge, UK: Polity Press.

Beck, U. (1992), *Risk Society, Towards a New Modernity*, London: Sage.

Beck, U., Anthony, G. and Scott L. (1994), *Reflexive Modernization,* Stanford: Stanford University Press.

Castells, M. (1996), *The Rise of the Network Society*, New York: Harper & Row.

Gibbons, M. *et al*. (1994), *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*, London: Sage.

Giddens, A. (1990), *The Consequences of Modernity*, Stanford, CA: Stanford University Press.

Knorr Cetina, K. (1999), *Epistemic Cultures, How the Sciences Make Knowledge,* Cambridge, MA: Harvard University Press.

Krohn, W. and Weyer, J. (1994), "Society as a laboratory: The social risks of experimental research", *Science and Public Policy*, 21(3): 173-183.

Lasch, C. (1977), *Haven in a Heartless World*, New York: Basic Books.

Nowotny, H. (2000), "Re-thinking science: From reliable to socially robust knowledge", in H. Nowotny and M. Weiss (eds.), *Jahrbuch 200 des Collegium Helveticum*, Zürich, pp. 221-244.

Nowotny, H. (2001), *Re-Thinking Science, Knowledge and the Public in an Age of Uncertainty*, Cambridge, UK: Polity Press.

THE EXPERIENCE OF A LOCAL PARTNERSHIP WITH EXPERTS[1]

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Dessel, Belgium

STOLA is an abbreviation for Structured Study group for Low-level short-lived radioactive waste, with all the actors of our small community of Dessel. You may know: social culture and economic factors of course all play a role in radioactive waste management and we work together with the experts of ONDRAF/NIRAS. But I am sure that was explained to you sufficiently yesterday and I can skip all that. 70 000 m³ of low-level radioactive waste can be disposed of in our area and that only under certain safety conditions for humans and the environment. Of course one of the conditions is also that it has an added value for our municipality. In the past four years, I have participated in the activities of STOLA in Dessel and also led them. In that period, I met many, many experts, I spoke to them; I also really listened to them and together we worked on this disposal process. I will give you my personal opinion on that contact with those experts. Although I am going to be one in a long list of professors giving lectures today, I may not be the most scientific of speakers: I will be talking mainly from my experience with the people from STOLA.

The technology for this disposal concept could not have come from our community; we had to get that knowledge from ONDRAF/NIRAS. They presented and explained the general concept and the scientific studies that were done. STOLA did however analyse and evaluate all the critical data. It was clear that for that, we needed a basic knowledge of the nuclear facts, for example about the technology, about radiation, about safety, about the political and social decision-making process. This implied a transfer of knowledge from the experts to the people of STOLA.

And which people am I talking about? Who are the members of STOLA? STOLA consists to 45% of highly-trained members; 40% have had technical training and 12% have followed lower training. The number of social actors or members representing different community groups comes to 74%. The other quarter are individuals, inhabitants of Dessel who reacted to the call and who presented themselves as members to help develop this project. These private individuals came from all parts of the municipality. Furthermore, I want to add that all of us are volunteers and that of course mean that we have to have all our meetings during evenings.

Dessel did have nuclear experience. You saw it yesterday and I am sure you have heard it already: in our municipality the nuclear industry has been present for more than 50 years. And 16% of our STOLA members have already had some nuclear experience. Either they were working for the nuclear industry or they used to be an employee within the nuclear industry and were now retired and enjoying a well-deserved pension.

1. Speech given in Dutch; transcribed and edited from the simultaneous English translation, with input from the written text provided by STOLA.

The internal experts of ONDRAF/NIRAS gave to us the data that we needed for the development of the repository concept. ONDRAF/NIRAS also use external experts for advice, for instance from universities, or from scientific consultancies. Those people also came to our study groups to give us some more explanation on the concept. But STOLA was also looking for experts independently: we did not necessarily accept and believe everything that was being told by ONDRAF/NIRAS. We believed a lot of what they said but we were still quite critical. So we also looked for our own experts, professors, consultancies … and I can tell you that almost all Flemish universities helped us in our work. We also benefited from expertise from the sociological and economic fields. So in addition to the difference in the structure of knowledge and the level of knowledge between STOLA and the experts, there were the differences in choice of expert consultants and their discipline.

The time that we needed for this transfer of knowledge was significant. We had foreseen two years, but as of today we have been working for four years. Some members have left us because they moved to another municipality. Others found there was just too much work to keep their interest over all those years. Not a lot of new members have joined us, due to the problem of lack of knowledge and the volume of transfer of knowledge accomplished throughout the whole period. Those people who joined us later on found it almost impossible really to catch up. So in the end we have worked for four years; that has been a burden for the chairman who had to work these two extra years and may have to go on working for more than that as well.

We spent a lot more time than foreseen on the transfer of information. In part this was due to the language of the experts with their typical technical jargon. It was very difficult to really integrate that among the members of the working groups. As well, the examples that experts used to make things clear to us were not necessarily more understandable. I am not even talking about the time that we had to give to the interpretation of diagrams, tables, and so forth.

Another important element is that what may be a detail for an expert could be an essential aspect for our community. Of course that works the other way round as well. Nevertheless, I noticed a number of things on the side of the experts that weren't all that adapted for a perfect functioning of STOLA.

I have to say that within our working groups we got the impression that the expert does not want to come to STOLA to waste his or her time. Sometimes it was the case that it was a waste of time for them – at least that's how we experienced it – and some of the experts only came because they were pressured into doing it.

Another element that we have to take into account is that the external experts were not always correctly briefed about the task that they had to fulfil on that particular evening. They were not always sufficiently briefed on what STOLA actually means and what it is. Very often there was a difference in perception: sometimes they thought we were just there to occupy ourselves in a more or less useful manner. Finally, some of the experts were less well trained in communicating. We sometimes had difficulties with the presentation offered by such experts.

Based on the many, many meetings and intensive contacts we had over these four years with the internal experts of ONDRAF/NIRAS or the external experts called in by STOLA or ONDRAF/NIRAS, we at STOLA feel we are in a position to draw several conclusions:

- The scientific approach to the disposal concept now takes the social impact of disposal more into account.
- The personal attitude of the expert is very important.

- The expert's right to make decisions in the development of the disposal concept has diminished (of course, this is our perception and it may be an illusion).

We also noticed that there was a lack of sufficient co-operation between the experts with the power to make decisions at the different policy-making levels. That's the case of course not only for the nuclear sector; it is mainly due to a lack of communication between the political decision-making levels in Belgium.

After four years of work, I conclude together with the people of STOLA that there was confidence, or at least confidence grew, in the experts who spent this time working with us on the nuclear disposal project.

When talking about confidence, I would like to come back to a question that was posed yesterday and that I heard return today, namely: what do they think in the municipality of Dessel, and what do they think of STOLA? We have already referred to our open house days in September of this year, and the survey done among the inhabitants of Dessel. Our newsletter reports that there were 664 answers given to the questionnaire, out of more than 1 000 participants in the open house. 68% of the people answering were from Dessel. One of the questions was: "Do you have trust in the work done by STOLA?" – 81% answered "yes" to that question, 17% answered "more or less" and 2% answered "no". Another question was: "In previous years, was enough attention paid to informing the inhabitants of Dessel?" – 69% said that they had received sufficient information about the work of STOLA and also about the data or information spread by STOLA.

Maybe it is not part of this context but still I like mentioning this time and time again. The question was: "What will happen after STOLA?" – 93% of the visitors in Dessel said that there would still be something like STOLA, that STOLA would continue or something would exist like STOLA to make sure that there would be a follow-up, and that there would be constant or at least regular information to the inhabitants of Dessel. And then another question: "Do you agree with the disposal of radioactive waste in our municipality?" – A total of 86% agree; 50% agree completely and 36% agree more or less.

So in the community there is definitely confidence, confidence in the expertise developed by STOLA, and definitely in the experts who have supported us during these four years. I don't think that is thanks only to an increase in our knowledge. It is also due to a change in attitude both in ourselves and in our experts, thanks to our personal contact with them, both during and after the meetings. Probably this confidence grew also because we had a joint task: to look for an integrated project for the disposal of low-level radioactive waste.

THE IMPACT OF THE LOCAL PARTNERSHIP METHODOLOGY ON THE ORGANISATIONAL CULTURE OF THE RADIOACTIVE WASTE MANAGEMENT AGENCY

Peter De Preter
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1. The ONDRAF/NIRAS approach in the eighties and beginning of the nineties

At the beginning of the nineties the waste management issue in general was still seen as a mainly technical and scientific issue. The long-term waste management issue (disposal) was considered to be a challenge for (hydro)geologists, engineers, modellers and assessors. There was a general conviction among professionals in the field that the necessary research, development and demonstration work would automatically lead to all the answers and arguments needed to convince all stakeholders. Also, the idea was held that by striving towards the best technical solution and by trying to find the perfect site, people would be convinced and accept the solution presented to them.

This approach led e.g. to a site selection process based on purely technical criteria (geology, hydrogeology) and on a screening of the whole Belgian territory without even considering the non-technical dimension of the problem. The result of this effort was the identification of almost 100 potentially suitable sites for the surface disposal of low-level short-lived waste. This list was published in the ONDRAF/NIRAS report of 1994; the reaction from the targeted municipalities was negative all down the line.

At that time disposal and communication teams of ONDRAF/NIRAS were separate entities without any integration; interactions were only on the level of checking for technical details the communication messages to be sent to the outside world.

After the negative siting experience in 1994 and 1995 two complementary actions were started. In the first action the siting methodology with the technical criteria was extended to environmental and sociological criteria. The result of this effort was never applied and published, because the conviction grew that this was not the right way to deal with the non-technical dimension of the problem. At the same time ONDRAF/NIRAS was asked by the government to reconsider the options for the long-term management of low-level and short-lived radioactive waste; as a result this siting methodology was abandoned. In the second action ONDRAF/NIRAS aimed to identify all the potential opponents and allies of a disposal project, with the objective to find the best method to present the disposal project. Also from this action it became more and more clear that a fundamentally different, less defensive, less authoritarian approach was needed.

2. The ideas at the moment of creation and start-up of the first partnerships

The concept of a fundamentally different approach, based on co-management and co-decision with the local communities during project development, emerged from the collaboration with sociology experts from the universities of Antwerp and Luxembourg. In view of this co-management and co-decision ONDRAF/NIRAS created several partnerships with nuclear municipalities: STOLA with the municipality of Dessel in 1999, MONA with the municipality of Mol in 2000 and PaLoFF with the municipalities of Fleurus and Farciennes in 2003. The partnerships, with the legal-juridical statute of a non-profit organisation, were structured in three levels: a general assembly, a board of management and working groups. Two permanent collaborators form the coordination team within each partnership.

The different roles of ONDRAF/NIRAS in the partnerships were seen as follows:

1. A partner amongst other partners in the **general assembly** of the partnership. At this level the ONDRAF/NIRAS staff member (general manager) has to monitor the ONDRAF/NIRAS objectives, mainly the technical and strategic objectives of the programme (technical feasibility, safety, planning…). He cannot take up a dominant position during debate and discussions, but he can autonomously engage ONDRAF/NIRAS. On the issues of local integration and development he should take a retired position.
2. The ONDRAF/NIRAS representative in the **board of management** is the gateway to ONDRAF/NIRAS capabilities and expertises for the partnership. He also monitors the ONDRAF/NIRAS interests within the partnership and the partnership interests within ONDRAF/NIRAS. He cannot take up a dominant position, but can autonomously engage ONDRAF/NIRAS in certain matters. He should be an integrator of all the aspects of the project.
3. The ONDRAF/NIRAS experts in the **working groups** have to bring in all the ONDRAF/NIRAS expertise and knowledge to the working groups; they can take a proactive role in the discussions on the subjects within their field of expertise or if an overview is to be given of the available knowledge and of the required studies. Their role is primarily focussed on the technical issues of the disposal programme.

The experts have to combine two different attitudes.

The first attitude is to provide the working groups with the information they want or need in order to be able to have informed discussions and take informed decisions. This implies the following elements:

- explain the legal and technical constraints of the project and its context (also historical and decisional);
- explain the technical issues of disposal and of the disposal facility, with the possible alternatives; clarify the criteria and hypotheses used, the limits of knowledge, the remaining uncertainties, and help make the technical choices.

In doing this the expert has to be open to criticism and discussion; he (or she) has to be able to respond in a non-defensive way to questions within his field of competence.

The second attitude is one of being receptive to the viewpoints of the other members. The expert has to learn to think in terms of the perspective of the other members of the partnership; he has to be

aware of the constraints of the other stakeholders and to take into account the expressed opinions that can influence or even change the project. He has to accept that these can modify the initial project.

The aim and general idea was that the working groups would become the locomotive of the project.

3. Experience and lessons learnt after a few years of collaboration in partnerships

- One of the major advantages of the partnerships is that one can take the time needed to explain and discuss a complex issue with an interested partner. This is an essential advantage from a communication point of view. It is not possible to capture such a complex and delicate matter in a few simplified messages. A direct consequence is that it is no longer possible to strictly control the timing of the programme.
- The technical working groups are a stimulating and active forum of discussion and scrutiny of the presented elements of the disposal project, but they consider that it is up to ONDRAF/NIRAS to be the engineering-consultant for the project and to take up the responsibility for the project. The role of the working group is to evaluate the information presented and to make clear if and where modifications are needed or to evaluate if potential modifications constitute improvements to the project. The working groups seem to agree that the ONDRAF/NIRAS experts can play a central, proactive role in presenting information, arguments and ideas to the group.
- Most technical and scientific information was provided by ONDRAF/NIRAS staff and by subcontractors of ONDRAF/NIRAS. This puts the ONDRAF/NIRAS expert in a position where he has to gain trust through the quality and transparency of the information he provides and the way he provides it. In this connection, review by the regulators has offered a significant input to the confidence of the local stakeholders in the fairness of the process and in the correctness of the information provided. Also, technical audits by independent experts by order of the partnerships have contributed to improving the project.
- It is necessary for a waste management agency to have from the very beginning a clear project that one can present to a partnership. People expect this from an organisation responsible for waste management that already worked on the issue over a long time (decades). Presenting a clear project however may not imply that every last detail is fixed and decided, on the contrary; but one has to explain why certain choices were made in the past. This is the required basis for discussions of potential modifications of the project.
- There is no clear-cut separation within the waste management organisation of technical and communicational functions. Communication in and to a partnership is not the monopoly of a communication team. The technical people also have to acquire the skills of dialogue and communication (listening capacity, openness to other opinions and to feelings expressed, receptiveness, capacity to give clear and honest answers…). This requires training, exercise, practice and experience to be built up. The organisation has to foster this dialogue experience of the staff. The integration in one managing team of all the disciplines, technical and non-technical, remains a prerequisite.
- One can observe in the ONDRAF/NIRAS team an evolution from a closed and defensive mentality and attitude towards a very open-minded approach. The partnerships are really seen as a potential part of a solution, rather than a part of the problem. In such a situation the challenge for the team is the balance to be struck between “all technical choices are made by the technicians” and “everything is open and can be changed”. Some points can be breaking

points (such as safety considerations or project costs), and these should be clearly discussed and negotiated with the other members. In such an open-minded approach all mistakes made (such as incoherencies in communicated messages, incorrect results…) have to be corrected as quickly as possible and in a transparent manner; attempts to hide mistakes are pernicious to people's confidence in the organisation. When two experts are expressing diverging or contradictory opinions, an inescapable reality in open debates, the underlying reasons for this and the consequences for the project should be openly and carefully examined.

- As all sorts of questions can be asked at every moment, each ONDRAF/NIRAS expert is confronted with a vast range of issues. Nobody can be an expert in all matters related to a disposal programme. On the other hand everybody has the natural tendency to try to answer to whatever question asked. So, experts have to have the discipline to avoid detailed answers when outside their expert field; they have to limit themselves to a prompt general answer or to an engagement to provide a more comprehensive answer afterwards.
- The partnerships have asked (and are asking) for a large amount of additional information. It is essential for people's trust in ONDRAF/NIRAS to react promptly to all these questions. Defined actions have to be executed within short deadlines. For this an integrated, flexible and mature organisation that can respond quickly but with high quality is crucial. Heavy hierarchical structures and cumbersome organisations will experience difficulties to achieve this responsiveness and alertness.
- The information streams through the managing team are important and have to be organised and streamlined to a certain level. A lot of feedback from meetings and discussions, fast or last minute reviews and checks are needed and have to be fit into the organisation of the team. Everybody must be well informed about everything in order to have an overview of the situation. This means that a lot of short and well-focussed coordination meetings are required, at least in an early phase of the project. Every team member is an antenna to pick up signals and send them to the rest of the team.
- For an organisation that evolves from a closed, defensive approach towards an approach of collaboration with other stakeholders it is necessary to avoid chaos within the team by a strict organisation with clear and well-defined responsibilities and a strong, always-present coordination team. This strict organisation however must not substantially degrade the required flexibility and enthusiasm of the managing team. A small integrated team presents a clear advantage.

THE ROLE OF THE SAFETY AUTHORITY[1]

Pieter De Gelder
Division Head, AVN, Belgium

The original programme of the Belgium Workshop did not include a scheduled talk by a representative of the safety authority. However, because of the interest expressed by FSC delegates in this player, a speaker stepped forward.

Pieter De Gelder, division head of AVN spoke of the role of the safety authority in the local dialogue. He recalled that in Belgium a safety authority in the modern sense of the word was founded only in the mid 1990s. The safety authority is a federal agency (FANC), while AVN is a private company, a contractor to FANC.

Mr. De Gelder highlighted that the regulators are not formal members of the partnerships and do not attend each meeting. However, from time to time, partnerships invite experts from FANC and AVN to give presentations on specific topics. In particular, these experts have provided information on their roles and activities in the process, on legal and authorisation procedures, and on the evaluation of ONDRAF/NIRAS dossiers. Mr. De Gelder observed that they found a very motivated local audience and they have committed themselves to continued interaction with the partnerships. Finally, he stressed that this type of public interaction around the repository issue is new to the regulator.

1. Drawn from the Executive Summary of these Proceedings.

ROUND TABLE DISCUSSION DURING SESSION 2

Claire Mays
Consultant to the NEA

The round table discussions of the second session of the FSC Belgium Workshop addressed the following questions:

- Do local stakeholders have, internally or externally, all the expertise they need in order to address the issues raised by radioactive waste management projects?
- Do institutional stakeholders have all the expertise they need to take local impacts into account?
- What kinds of expert input are sought and attained by the different stakeholders?
- Were any formal methods used to aid local partnerships perform technology assessments? Or other types of assessment?
- How to maintain the knowledge and expertise achieved by the stakeholders?

Discussion took place after the plenary presentations, at tables grouping Belgian stakeholders and FSC delegates. As in Session I, most of the round table discussion focussed specifically on the experience of the local partnerships. Many insights were shared about the nature and role of expertise in complex decision making. They are summarised below, on the basis of the feedback provided to the plenary by each round table. Some of these insights can be generalised to other contexts. All in all, a profile emerged of the local partnerships as a unique and effective tool to deal with knowledge issues in managing risk.

Do local stakeholders have, internally or externally, all the expertise they need in order to address the issues raised by radioactive waste management projects?

The round table discussions recognised that RWM is multidimensional and that therefore, very different types of knowledge and expertise are implied. This is especially clear in Belgium, where the LLW management partnerships enshrine the search for an agreed project integrating technical and social dimensions.

Technical expertise, provided in an ongoing manner by ONDRAF/NIRAS, and local interests and experience, provided by the community, combine to create an integrated project proposal and a high level of trust and acceptance for the project. Both types of expertise are needed, and no single aspect will be 100% covered by one party, or 100% shared by both parties.

Local stakeholders as a group therefore do not necessarily have all the expertise needed for decisions, but the partnership process enables them to get it. Major sources of technical expertise

appear to be ONDRAF/NIRAS (as partnership members), the regulator, and independent experts called in on demand. It was noted, however, that individual community members participating in the partnerships sometimes have technical expertise. Some for instance are professionals from the nuclear industry (or retired). One member of STOLA is able to offer special insight on tunnelling based on his professional experience as a civil engineer and contractor. Still, the availability of technical expertise from outside the nuclear industry seems to be relatively limited in the partnerships.

Round tables noted that getting to the point of knowing the critical questions to ask, and whom to ask, requires a start-up effort. Then it might be difficult to gain access to needed expertise at a specific point in time.

There must be a commitment to provide the resources, the freedom and the time needed to acquire information. Partnerships should (and did) have access to funds to obtain a second opinion, or hire "their own" experts, or verify results.

The variety of dimensions involved in RWM means that trust is needed – people must trust others who bring their different knowledge to bear on the issues. Perhaps community members who are also nuclear plant workers contribute to trust-building by bridging the gap. However, there are fundamental issues of trust related to expertise. How can you obtain truly independent, unbiased information, and how can it be verified? For instance, university research today sometimes is funded by corporations and that may create pressure towards certain conclusions. Experts may have hidden agendas. For these reasons, access to a reasonable cross section of different opinions may be the best way to guard against bias.

Knowledge evaluation presents another set of challenges. Different experts may have legitimate reasons to disagree, but those outside their field don't understand their arguments. (Expert disagreement may lead people to conclude simply: "the thing is not safe".) Also, it must be accepted that "all the answers aren't out there", and that sometimes it is very difficult to determine whether the right answer has been obtained. Finally, some partnerships found that scenarios for safety assessment were very useful, but they could find no credible scenario to frame reflection about the future state of society. (They encountered in this way the inherent limits of very long term planning.)

In any case, the round tables noted that the partnerships were active in requesting visits and presentations from experts whenever needed to complete their understanding. MONA participants noted that they were generally satisfied with the quality of presentations made by these visitors.

Communication between the peer members of the partnerships is described as very good: the technical staff of ONDRAF/NIRAS are committed to the process of building up mutual understanding and an integrated project, just as are the dedicated volunteer members of the community.

Alongside specific project knowledge, lots of intangibles are built up through the partnership process: skills, attitudes, and contacts.

The round tables found that the local partnerships show how to handle a complex problem with competence, seriousness, and transparency. They note, also, that the most deeply involved partnership members over time develop much more knowledge and insight into the project than some political decision makers.[1] Voting municipal council members rely on the expertise developed in the

1. STOLA at one time took a position as an informed expert, telling a federal minister who spoke on the air about a "scandalous cover-up of leaking waste barrels", that on the contrary the incident had been examined

partnerships, and have said that they will accept the conclusion of the partnerships to guide their own decision. Still, the question remains of how to transfer the insight built up in the partnerships, to the political players and moreover to the wider community.

Do institutional stakeholders have all the expertise they need to take local impacts into account?

The Belgian partnerships were formed precisely to allow institutions access to expertise for decisions affecting the local community. The mutual need for expertise underlies the partnership philosophy.

Local members provide specific insights on socio-economic needs. They also provide knowledge about tangible features of their community, like experience of the hydrogeology. However, this knowledge might not be very extensive, and require deeper study to be integrated into the RWM decisions.

Round tables noted that experts might be "blind" to certain aspects, and that local members can throw light on community impacts. Institutional stakeholders, too, present a risk of bias when they place priorities. There again, local participants steer deliberations back to what communities consider to be core issues for acceptance of a project. For instance, ONDRAF/NIRAS anticipated that radiological protection would be the top issue of concern; however, in one working group on health relatively more attention was given to truck traffic, because local children typically ride their bikes to school.

Even though the partnerships offer the opportunity to fill in the gaps, the culture of institutions – their predominantly technical profile – can remain a barrier to understanding or taking into account the local impacts. This is why it is important for partnership members to be willing to listen carefully to each other and to learn.

What kinds of expert input are sought and attained by the different stakeholders?

All types of expertise have been sought in the Belgian local partnerships, related both to the nuclear industry and to non-nuclear areas. Technical, social, economic, cultural, political, legal, procedural, local development, safety, public health and communication issues all have been examined. It is not clear that in every case, satisfactory expertise could be identified.

Local partners have the capability to audit technical issues by using independent expert support. "Independent" expertise in this context is defined as "outside the partnership" and disengaged from the specific stakes. The regulatory organisation, FANC, was used as an expert under this definition.

Participants noted that "interface" experts are needed in some circumstances: these persons can help the partnerships translate and interpret technical language. They can help, also, to apply the general or theoretical knowledge to the community situation. This allows the partnerships to use the expert input to better identify specific, local impacts. It is always necessary to brief thoroughly the visiting experts so that they understand the local context and can adapt their input to the demand.

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one year earlier in their community newsletter. This was described as a victory for truth, and for the partnership's viability.

The partnerships benefited from lectures on topics of special interest. The round tables noted that the choice of expert speakers was not imposed by ONDRAF/NIRAS. All specific requests came from within the partnership. MONA perceived the lectures as an "optimal" way of gaining social science knowledge.

The community participants perceived that the physical risks associated with LLW are not severe. Therefore, radiological protection and public health expertise were not the most solicited. One round table found that local development and installation safety were the topics for which more expert input was requested.

Were any formal methods used to aid local partnerships perform technology assessments? Or other types of assessment?

Few formal methods for technology or other assessments appear to have been directly applied within the local partnerships. No brainstorming, decision analysis, or participatory technology assessment (PTA) techniques had been tested to date.

Furthermore, no formal methods have been imposed. The working groups settle their own investigative procedures. Often, this involves formulating the important questions they want answered. Then, they invite appropriate experts to give their opinion.

Some general assessments have been performed on the state of the environment or on socio-economic characteristics of the region. Certain questions have been raised that might benefit from formal assessment, but this has not been performed. The issue of stigma, and potential economic losses related to local image, was mentioned as an example.

Despite the absence of formalised methods, the partnerships point out that they have developed locally adapted solutions for the different dimensions of an integrated repository project.

In later stages, Environmental Impact Assessment (EIA) will probably be performed. The International Atomic Energy Agency (IAEA) was mentioned as a source of peer assessment: a review could be performed when a defined plan for a repository has been worked out.

The absence of formal assessment methods does not signify that the work was disorganised. The important role of the working group president was highlighted. Those in charge had to make up a good schedule and prepare the meeting carefully. If this was successful, the working group had a good, productive meeting. Local partners felt that some training in group discussion methods would have been appropriate and helpful. Working group presidents would benefit greatly from professional coaching at the beginning of the process.

Among the practical hints for running the meetings were: work no longer than 2 hours (from 8 to 10 p.m.), with a friendly refreshment period afterwards. Minutes are prepared by subject co-ordinators, and checked by all group members.

How to maintain the knowledge and expertise achieved by the stakeholders?

The partners are aware that those involved directly in the partnerships develop a degree of knowledge and expertise that may disappear when they leave. At the same time, turnover and renewal are needed, because the volunteer members have been devoting their efforts in some cases for many

years. Many methods can be cited for consolidating knowledge: oral history, information technology, cataloguing, and mentoring. One partnership has specified that a repository project must include a "knowledge centre". This is a project requirement, not an option.

Paper records are kept. These consist of reports, including a main summary, detailed annexes, and minutes of the related meetings. This is a way to assure traceability of decisions. The reports will be archived by both the municipal councils and by the waste management agency. ONDRAF/NIRAS is also developing a computerised knowledge management system, so that the database compiled from committee work and expert input may be searched.

Knowledge is not built up for its own sake in the partnerships: the working groups aim for closure that will facilitate local choices and decisions. The older partnerships, STOLA and MONA, mention some frustration with a "moving target": once a given question seems to be resolved, often a new set of issues is opened up.

These partnerships also insisted that the federal decision, which will intervene after municipal decisions, should come in a timely manner. If the decision is tabled in 2004 and not considered before 2010, they pointed out, the requisite knowledge will have dissipated.

The partnerships' mandated lifetime ends when they hand their integrated project and recommendation to the municipal council. However, the members are concerned about community monitoring of the subsequent, "post-partnership" stages (decision, negotiation, construction…). These stages could take at least one decade. Some feel the local partnerships should be mandated to continue. At the very least, an advisory board drawn from the membership could assure continuity. Funding should be provided during these stages to support some kind of structure.

Some suggest that the local communities should capitalise on the huge investment placed in the local partnerships by all partners. The structure and the momentum that have been built up can be maintained by applying the method (with appropriate institutional partners) to handling other community issues.

Whatever solution is found, the local partners stressed that post-partnership continuity is vital, to maintain the meaning and substance of the integrated repository project proposals.

Session 3

Building a Relationship to a Concrete Waste Management Project Based on Interests, Values and Knowledge

Panel Moderator: Thomas Isaacs

HOW PLURAL INTERESTS, VALUES AND KNOWLEDGE COULD BE TRANSLATED INTO A CONCRETE RADWASTE DISPOSAL PROJECT DESIGN: AN ARTIST'S VISION[1]

Cécile Massart
Professor at the École Nationale des Arts Visuels La Cambre, Belgium

I am an artist and I am a professor, a teacher. I am not a scientist; I am not an architect, and if there are some mistakes with regard to some terms, words that I am going to use, please don't hold it against me: you are the experts. My vision is a bit different from yours; this is why we are here today: we are here to meet together, because we are faced with a very interesting issue. So I will try and show some pictures to you. I'll start with a question that is put to me here: "How can an issue like a radioactive waste repository be part of an artistic research?".

I would like to say at the start that I am an engraver and an engraver carves, engraves, and traces figures on metal, on stone. The engraver makes things more durable, more sustainable in the spirit and also engraves upon the memory. I started engraving in the 70s and this is now an important part of my work. I never realised that engraving would allow me to look at the earth as a big matrix in which you could engrave very durable things like radioactive waste. So those things are put in the earth and I realised that it is very important to tell people what is in the earth, in the soil. This is a challenge; it is a real challenge for the artist: it is important to show people what is inside the earth, inside the soil.

Radioactive repositories. Why am I interested in such sites? It is because the first time I went to this type of site, I was very much moved, very much struck by the site. You have all the visual references of course. If you know a bit of the history of art, you are impressed; you can think about pyramids, you can think about dolmens. You're going to think about all that and discover a lot of things. All that is going to be integrated in my work: engraving, photography, publishing, videos, etc.

In this context, against this background, I am going to analyze the notion of environment as an enlarged way to understand reality. It means that you start from a piece of paper, but then you extend your vision to something broader, and you have to have a different vision on that. This is a central behaviour of current artistic practice; environmental pieces of art are placed in an architectural context and also in the context of a social and political situation. Contemporary art is something moving and that's very good. It is exciting! What is interesting is to have a relationship with the social reality, the political reality. It is something in the forefront of my research.

In the case we are dealing with here, the objective of our work integrates a signal, a signal in a strong place, and that strong place is the repository. This is going to change our interactions and it is going to give birth to all kinds of relationships. It means that a person is going to look at the landscape and the territory and is going to have a broader view. We also want to give the opportunity to the

1. Commentaries and accompanying a slide show of the artist's work made in French; transcribed and edited from the simultaneous English translation. The artist's preparatory notes, in French, are appended to this paper.

inhabitants and then to other people who will never go to a museum, who will never go to a gallery, to see something. For me it is a real challenge because we are here working for a very broad range of people. Much broader than when you work for a museum or a gallery.

"A site that is archived for alpha, beta and gamma" is the title of what I have been working on in the last ten years in all my exhibitions, in all my presentations. This is the whole issue: are the repositories archives for the future? I call them the archives of the future. Let me tell you how I came to this. In 1982, I abandoned all the traditional engraving techniques I had been working with for the previous ten years. I became interested in the new type of image that is part of 98% of the images we're used to: images on TV, fast-food images, computer images, etc.

I wanted to know what an image actually was. That's a question I have been asking myself for about ten years. This is why I work on different types of projects that were gathered under the title: "Pixel's Story". You see here a whole set of pictures, of serigraphs, and several silkscreens. I was making photographs at that time, using some photo software to work with the silkscreen. It was quite interesting work indeed.

This is an exhibition at the Modern Art Museum of Brussels in 1987. It was much broader than engraving and computer screens. Here the ceiling had been taken away in order to work on graphics that would bring light into the room. You have those six silkscreen prints on polyester. It was a search for pixels and that was the only objective. Here I work with squares of 10 cm on 10 cm.

Here is an exhibition in Sao Paulo in Brazil. I worked on screens and than I reproduced that with all sorts of paintings. At that time, very few people had screens: the museums and galleries did not want to work with floppy disks; they did not have the appropriate tools to work with computers. So my problem was: how can I show my work?

Here is a researcher who's put on a screen and then you have the result beyond on plastic sheets of 3 meters by 2. I made all the painting on the plastic sheets. It was an interesting material. We worked with a Commodore, not a high-quality one. So the images were not totally clear: there were some traces around the different shapes.

I also want to work on what is behind the computer screen. It is much different than when you work on paper. Here again it is engraving, it is matrixes on engraved glass. And it is the light that makes the image because it is the shadow on the engraved glass that you can find on the paper. It is only the light passing through that is going to create the image.

One day, there was a TV programme; I was with friends and they said "come and watch because they are talking about what you're doing". Actually my work had to do with squares; it was about graphic pallets. The programme was talking about the radioactive storage sites in Soulaines-Dhuys. I did not know there were such sites and it was a real shock because what was shown was the same work, like my work but in a totally different situation. I was working on the aesthetic side, the aesthetic dimension. And there, there were green, red, yellow squares. I think that TV programme was broadcast in 1992 or 1993.

I wondered about why had I been so shocked and the day after I made phone calls to the Ministry of Energy, etc. I made a lot of phone calls, I contacted many people and all those people referred me to other people and at the end of the day, I had a contact with ONDRAF/NIRAS. So I went to ONDRAF/NIRAS on Madou street in Brussels and I received some information, brief information. But I was excited by this idea. This is why I made hundreds of serigraphs of six print screens.

At the same time, I made ready an exhibition in Mexico. Again I worked on coloured squares. It was called “El Color y el Tiempo”, that’s “Colour and Time”, it was the colour and the half-life of radioactive waste. Here you see squares, colour circles; they are behind big columns and each day at the same time, there is a shape that is drawn by the light. This is why I tried to show around the first balcony of the building in Mexico.

Here again, you see six silkscreen prints, you have different prints one on the top of the other and they are going to make the light vibrate. So first you have very dark squares, and they are becoming lighter and lighter; at the end they are white. There is no radiation there any more. So there’s a reduction of radioactivity in the bunkers. The result was only white squares. So with time, radioactivity diminishes and you’re going to have everything in white. It is about a hundred six-screen prints like that. And multiplied by the number of colours, there were thousands of them. That was also exhibited in Sharjah, in the United Arab Emirates. They were other artists and they were quite surprised by this work and two years later, they asked me to make a presentation about this project. For them it was really something unknown, something they had never heard of; very surprising indeed.

Here’s another piece of work. The idea is: how can we transfer information to the future, how can we archive information for the future? I worked with people in El Cabril and said: “how are we going to transfer the information, how are we going to transfer the knowledge of the waste in the bunkers?” And they said: “Well, we don’t know” and I started a reflection; I said: “we have our computers”. That computer support is very good but their life cycle is not very long: they are going to be renewed. So how are we going to transfer all this information? So I took a lot of computer screens and I engraved barcodes on the screens. That was the question: how are we going to do the marking? We are talking here about a long half-life. How are we going to transfer, to transmit that to the future generations? And here, colour is the basis.

As I said earlier in my presentation, when I decided to start working on radioactive waste, my project was first to see what was happening in those repositories because it was not enough to watch a TV-programme. After seeing that TV programme on a French channel, TF1, I gave a phone call to ANDRA, I prepared a dossier and I received a negative response. They said: “No, we can’t give you any authorisation, you will not be allowed on the site”. Again, I wrote in 1994, in 1995 and again the reply was: “No, it is not possible; you can’t come and make pictures. It is totally forbidden to make pictures, to take photographs of the site”. Then I went to Dessel in 1995. And there I received more information.

Then there was the Lisbon exhibition and the CGRI, the International Relations Institutions of French-speaking Community of Belgium[2] invited me to take part. I said “OK! I am ready to take part in this exhibition but I would like to make a report on Portugal”. I did not know any thing about the situation in Portugal but I went there, to Sacavem, in Portugal and I started working on the whole issue of oceans. The question was “never again in the ocean”, because I learnt at that time that waste was disposed in the oceans. Then there was an exhibition in Faro, along the seacoast. And we said: “we need an archived site”. That was a radical position; they wanted to have something outside and inside. And inside the 2 galleries of Trem and Arco, you have red paper. Red paper is going to be destroyed by the light. Even if it is raining, the paper is going to stay there, but over the course of one month, the colour deteriorated because I used unstable pigments. Again, it is the relationship between colour and time. Time is going to mark the paper. So that was the work around this. You also have the barcodes;

2. Commissariat général aux Relations internationales de la Communauté française Wallonie-Bruxelles (CGRI).

there were barcodes all around in the exhibition room. The idea was to make archives, to identify and not to have sea disposal any more.

Then there was a series of engravings about identification again with barcodes, etc. That was made for the Sacavem exhibition.

This is in Brussels, in the De Markten exhibition and cultural centre. I presented a video and photographs of the Mol and Dessel facilities. Now, visiting made me understand the whole issue for Mol and Dessel. For me, Mol and Dessel were just one and same thing. But now after the visit we made, I better understand the situation. And I show the picture from the inside.

In 1995, I had the opportunity to go inside to see how all the things were organised. And I tried to integrate all that in the computer screen. I destroyed about 20 screens. I used the inside of the screens and I used them to frame my pictures.

After the Sacavem report, there was El Cabril. I would like to thank the people who allowed me to make this report on El Cabril because it was a big discovery for me, it was a real shock.

It was more than identification: marking was also extremely important there. Then I worked on the El Cabril site. All those images on the right hand side made me think that it was possible to mark the site, to build an esplanade in the mountains. So this is the place. I was asking a question about the site. They said: “Well, we are going to build a mountain on the site and we are going to have animals and trees?” And actually, all the sites, all the repositories had a project. They want to do more than just hide the site. So I made a whole study on the marking of these sites with the students of the University of Bilbao; I thought it is important to have research with the inhabitants, with the students from the university, from schools.

I would like to thank Electrabel because in the year 2000, they allowed me to show the project of the future Belgian site. As I had not been allowed to go to Soulaines to take pictures, in 2000 I asked the Soulaines site again if I could come and take pictures. I talked about this exhibition in Antwerp and they said “No! No! You’re not allowed. You will not be allowed in.” This is why I decided to use those pictures and say: “Well, it is going to be this, more or less. You’re going to have this.” This is the exhibition in Troyes. As I was not allowed on the Soulaines site, I had to prepare something anyway for that exhibition. This is why I prepared different texts and I also made silkscreen prints for that exhibition.

This is my report on the Angra dos Reis site in Brazil. That’s the Rio problem. Here we have different photographs with the beaches, the barcodes again. Again you see squares on the pictures, on the photographs. It is because you’re in the middle of a wonderful nature; it is a beautiful place.

In 2000 there was a big exhibition in Troyes. We had to organise a big presentation there and after the presentation, the people in Soulaines said: “we really apologise. Actually we did not know what you wanted to do. You know, people cannot enter the site because most of them are against what we do on the site”. And I said: “No! I am not against your project, I just want to start a reflection with you”. This is why I was accepted in Soulaines, and I made different pictures. Again the question was how is a site considered, because there are different ways to consider a site.

Then there was the Rokkasho Mura project in Japan. There also I showed a project of an esplanade, a platform for the site and I made different pictures again. In Rokkasho Mura, there was prior research on the site and before the building on the site; different things were found on the site, elements that belonged to people who had lived there in the last 10 000 years. They found fragments

and they made a museum. I said: “Well, that’s very important, that’s very interesting. It is important to show the continuity on the site.” It is the continuity of what happened in the past and what goes on in the same place afterwards. So we took from the earth all those fragments that were found; they were put in the museum and after that the repository was built. Again there was publishing, photographs, and sculptures.

And now we have to think about the future again. For the repositories, I have some ideas for the future. I have a passion; it is a real passion now for me, I put all my energy in that passion. I would like to change people’s vision on repositories because I see that scientists make a lot of efforts indeed: they want those repositories as secure as possible, as safe as possible and it is very important to show that to the future generations. We have to think also about all the movements, the social, cultural, political movements. We have to think about the environment: our environment might totally change in hundreds of years. It is very important to talk to the population around the site. But I believe it is also important to go much further than that in our research. I believe it is important to put an interesting and significant marking on those repositories for us and for the future.

Appendix

(French preparatory notes to the paper)

COMMENT LA PROBLÉMATIQUE DES SITES DE DÉCHETS RADIOACTIFS ENTRENT-ILS DANS UNE RECHERCHE ARTISTIQUE ?[3]

Les sites de déchets radioactifs suscitent d'emblée beaucoup de questions, d'intérêt par leurs références visuelles et mentales.

Personnellement cette découverte fait suite à un travail graphique antérieur.

Je le poursuis en gravure, photo, édition, installation, vidéo, projet.

Dans ce contexte j'étudie la notion d'environnement comme un mode élargi d'appréhension du réel. C'est une attitude centrale de la pratique artistique actuelle et les projets d'œuvres environnementales nous mettent en présence d'une situation architecturale, sociale, politique.

Dans le cas qui nous occupe : créer un « signal » dans un lieu fort. Ceci modifie radicalement nos interactions et entraîne de toutes nouvelles formes de convivialités diverses.

« Un site archivé pour alpha, beta, gamma »

Titre récurrent à toutes les expositions et manifestations depuis 1994.

Le travail pose un questionnement sur ces archives du futur :

- l'identification des déchets et le transfert des informations dans le futur en tenant compte du facteur « temps » ;
- le problème de la communication ;
- la fascination : attirance/répulsion pour ces lieux où l'on incise le paysage d'une marque indélébile ;
- notre responsabilité et notre réflexion face à ces lieux chargés d'une histoire particulière léguée à l'inconnu ;
- la recherche d'un marquage que nous devons laisser à voir, à visiter, à modifier dans le futur, d'où les maquettes d'esplanades pour les sites européens.

3. Notes préparées par l'artiste pour son intervention à l'atelier.

Dans ce contexte, il faut une vision, échafauder une pensée nouvelle avec comme base le respect du monde vivant.

En prenant en compte :

- la notion du temps ;
- la particularité de ces déchets qui aujourd'hui sortent encore de notre cadre familier ;
- être conscient que ces lieux chargés d'énergie, qui font référence aux tombes, tumulus, témoins de notre société, sont des lieux de conservation à ne pas violer ;
- la notion de danger.

Actuellement, il faut valoriser l'idée qu'en Europe, on marque les sites par de grandes esplanades, en faire des lieux à visiter, offrir aux futures générations un signe fort qui leur est adressé.

Ce que la science essaye de mettre à jour : « le non dit des instants perdus »

Que proposer comme « marquage », dans ces lieux ?

Il est illusoire de croire que l'on va figer une forme dans le temps : sa perception change, il n'y a rien de stable.

Comme le contenu des bunkers, il y a modification.

Le problème est, ce que nous avons à communiquer ou pas, et comment joindre l'inconnu (300 à 5 000, à 10 000 années…).

C'est un travail dans la brume du temps et de la pensée qui nous positionne en recul de nous-mêmes pour projeter une idée et la traduire.

C'est un travail d'équipe, qui peut être mené auprès d'une grande diversité de population avec laquelle on établit une « communication » et un bilan à publier.

Deux axes sont importants :

- désinistrer, empêcher la peur, désacraliser, positiver ;
- attirer l'attention sur le lieu que l'on visite avec une recherche artistique de grand niveau qui « garde » ce lieu actif et le valorise.

Le projet

Le projet sur lequel je travaille serait une grande esplanade (vue d'avion), une place.

Ses dimensions seraient étudiées par rapport à sa situation, son exploitation, son environnement sachant que celui-ci se modifiera.

Cette esplanade serait surélevée avec un accès pédestre par des escaliers ou une pente transversale sur les côtés.

Des dalles formeraient un graphisme qui ferait référence aux fiches d'identification des déchets.

Sous les dalles des dessins, textes, signes, récoltés lors des rencontres avec les habitants formeraient une couche de messages. Ceux-ci seraient lisibles sous diverses formes, livres, cartes, inclus dans l'aménagement du « visitors' center » par exemple.

L'homme se positionne en responsable, sort de l'état actuel du monde qui joue le jeu du danger sans le maîtriser (armes nucléaires, déchets).

Il propose pour les générations futures, une vie avec les déchets radioactifs.

VALORISATION OF A REPOSITORY IN AN ADDED VALUE PROJECT[1]

Erik Van Hove
Department of Social and Political Sciences (Retired)
University of Antwerp, Belgium

I am going to address my remarks in the first place to the agencies. So the other ones present here can sit back, and relax and enjoy the comments. I would like also people to keep in mind the approach we are adopting here: we are considering different structures with a perspective which is totally unforeseen for those who set those structures. So that is a key issue we will tackle here. It was very useful that Cécile could show us it was possible to do so. Now … First I will discuss how agencies tend to address the programme of acceptability and conclude from that the way I would like to see it happen. Once we know our objective, I would like to discuss how we can improve those thoughts of acceptance and I will have a final message of hope and somehow not leave you with the feeling that all is lost but that you can rely on the human spirit, even if you make mistakes.

Normally, and we have heard those ways of addressing the problem all along here in the meeting, there are three ways we go about seeking acceptability: Quite often local communities are compensated for accepting the burden of a repository with money. Another argument advanced for acceptance appeals mostly to engineers, but has lost its lustre in the wider community: the technologically advanced state of such projects. A third strategy is an appeal to the sense of public duty. The local community should bow to the greater good and serve the public interest; people should not let themselves be led astray by the NIMBY effect.

But I would like at the start to mention very clearly what I think should be the way of approaching the problem: acceptance should depend on the possibility for local stakeholders to insert a project into their own life-plan, their interests and enjoyment of life, their ambitions, dreams and expectations.

First: on compensations. It is an argument with a certain degree of a perverse effect. Normally, in order to increase your compensations, you have to depict the project as much as possible as damaging, unsafe and obstructing. This also increases the amount of resistance to the project within the local community and within the larger society. I do not say that there is no room for compensations. There is certainly when certain specific costs are incurred by public authorities, for example for additional public services like increased spending on fire prevention, increased spending on road deterioration, and things like that. It is quite clear that a project should compensate for specific costs.

The beef I have is with those people carrying around a big wallet and thinking everything can be arranged with money. I remember one of the first times I came to ONDRAF/NIRAS, I encountered someone who is retired by now who said: “Well, all that wishy-washy stuff you bring in, really I do not think that is anything useful. We have to be guided by our rational scientific principles and we

1. Commentaries accompanying a slide show; transcribed and edited from the audio recording.

should do what is right and if we encounter within society irrationality and obstruction to the right way of going about it, well, of course we have to dirty our hands a bit and we have to hand out cash here and there, we have to give nice trips to people, and we have to suffer large dinners and things like that, but but do it all in the right spirit and for the betterment of society". That was, let's say, a spirit I have encountered also in not retired and still active people.

It is very dangerous also for a local authority to go that way because it is so easy to get characterised as someone who's selling out, who does it for the money, who is willing to sacrifice the safety and the well-being of the population just to get a bit into the coffers of the municipality or something like that. It is a very dangerous road to take.

Back in the 1960s when we had space exploration, all of society was enthusiastic; we were glued to our television screens to see the moon landing and things like that. By now, space exploration does not mean anything anymore. It is going on, but more in the way of, let's say: "we do it and we should go on with it and it is useful for science and you see the raincoat you are wearing is actually made with a material developed for a space suit". But it does not really impress people anymore. And we heard that said yesterday in another speech: engineers have a tendency to be object-oriented and to be really almost enamoured by what they are doing. They just have that need to build something because it is possible to build it, just for the intrinsic value of the thing. And we have within our society quite a number of monuments to that spirit, for example huge canal facilities that let you slide boats down a slide. That is something very difficult to build.

The project ONDRAF/NIRAS is developing for the Walloon part of Belgium in Fleurus-Farciennes has some of the characteristics and elicits some of the enthusiasms I see in projects which, from an engineering point of view, are very interesting, very enticing to go into. And I suspect we could interpret that spirit by building a repository which is used as a tourist attraction but where, for safety reasons, no waste will be stored ever.

We tend to say of local people that they have only their interest in mind, that they are not willing to sacrifice themselves for the public spirit, that they are selfish and subject to the "NIMBY" effect, or whatever it is. Well, the public interest is a medieval notion. It presupposes something like the common good, which transcends the needs and the expectations and the mean and down-to-earth interests of people. In this view, people should really serve only a transcendent entity directed towards an almost secular and trans-world objective of society. In that frame of mind, it is quite normal that you ask people to be subservient to some kind of sovereignty, a sovereign, a goodness which exists beyond their private aspirations.

That criticism does not mean that we have to consider only individual and selfish interest. There is something like collective interest. Whoever in this room is interested, has personal needs and personal ambitions, has also identified with people around him: with family, friends, etc. And will be prepared, sometimes even at the cost of his own life, to defend the interest of those near and dear to him. The interest of the collective will go even beyond that sphere. Such collective interests can indeed take on symbolic value and, although I am always a bit suspect of it, there is even some little bit of room for patriotism, if you like! But that is really an aberration from times past. So what we are saying is that really when local stakeholders are addressed, it is perfectly alright that they consider their own interest, that they look at things from a personal point of view and that what they wish to get out of a project is not a realisation of some kind of transcendent public utility, but something which serves their needs and the needs of those around them and that they identify with. In other words, local stakeholders are something completely different from the other stakeholders we have to assemble around the project.

All the professional parties involved (agencies, regulators, professional experts, etc.) treat a project like this at a distance. It is not something that is personal for them. They even say to you: "You should not take it personally!" It is a professional mistake to take things personally. If a physician takes it personally when he is treating you, you are very much in danger, or not being treated well. A couple of weeks ago, I actually came back from a meeting at Dessel, to attend in my own municipality a meeting of an agency which has the intention of establishing a refuse processing plant quite near our neighbourhood. We had a panel before us (I was sitting for once on the other side of course in the audience), and I started discussing with the lady lawyer of the intermunicipal agency owning the project. I went at her and I started asking how she would like her children to play around a facility like that, would she like them to ambulate or toddle around it, would she be proud of what she was doing. And she said to me "You should not take it personally!" and I said: "But to us, it is a personal matter, it affects our daily lives and those of our children and grand-children. It is personal!" And I went on and on like that, and after a while she left the room and one of my fellow neighbours came back and said: "You know, she is crying in the car, she is sitting outside and she is crying!" "So, so well, at least now she is taking it personally."

Another characteristic of those local stakeholders is that they do not keep to the subject. They are not to the point. They tend to consider the whole thing and they bring in all kind of things, the ones experts never consider and never think about it because they are not to the point. And local stakeholders are perfectly entitled to do that because indeed they even complement experts in that fashion by considering the whole, by taking a holistic approach.

When we talk about expertise, there is something where you can see well if you gather ten experts around you: you will get ten pieces of the puzzle. You will get information on that point, on that point, on that point… and how it should be made and on that, and on that… But you never get a puzzle assembled into a whole picture. That is what local stakeholders are bringing the whole, that is the specific expertise – if you can call it that – you should not really call it that – of local stakeholders. And, at the same time, it indicates dangers in the type of processes we are going through. We tend to inform and to educate and to instruct our local stakeholders to such an extent that they are in danger of becoming experts in the restricted sense of the term: experts who again create a distance between themselves and the larger community they are supposed to represent.

How could we go about it to make projects more attuned to the needs of local stakeholders, more acceptable to local communities? I would like to bring in three points which I have chosen not so much because they give a complete picture, but more because they complement the remarks we normally make. You will not find anything said here about safety and matters of that kind.

Several characteristics of engineering projects work against acceptance by local stakeholders. Engineering projects tend to be mono-functional, do not have the flexibility that allows diverse valorisation from a multitude of perspectives. They have a specific function and are designed to serve that function and in principle nothing else – whereas projects in daily life tend to be much more flexible, much more interpretable in different ways, much more capable to be mobilised for different perspectives, and for different points of view, and for different messages. We have seen an example of that just 15 minutes ago [in Cécile Massart's presentation].

A second point I would like to make is that we really do not make it easy for the local stakeholders to like our projects, to get enjoyment from them, to be proud of them. They are so ugly. Engineering projects are often uninspired, they lack creativity, are not designed to fit into the landscape. No one likes to have a picture taken with the thing in the background. And third, I would like to make a point which is, I think, very important: it is one that a lot depends on in order to make possible that acceptance is achieved. Let me go on to those three points.

Flexibility: I did not find any better term and if there is any native speaker in the language who can offer me a better word for this, for what I would like to say, I will be very grateful. Flexibility is the capacity of a project to fulfil universal needs on several dimensions. I will give you some examples with these slides. You see two rooms. One is an examination room in a hospital. It has only one function and it can serve only one function and whatever else you do there is illegitimate, should not be tolerated and should be severely sanctioned. In a living room, also quite a lot of things happen but you do not need to be severe about it or to consider it illegitimate because it is a flexible space. It is meant to be for living, not for something specific, just to live in. So whatever your inspiration leads you to is quite all right.

We can see the same sort of contrast in human relations. The top picture is a physician examining a lady. The bottom picture also shows a relation between two people but a much more open relationship. It does not do at all if within that first relationship anything else enters than the professional exchange of information and treatment. That is all that is supposed to happen in a physician-patient relationship. In the other picture, quite a lot of things can happen.

As for tools, do not be misinformed, the top one shown here looks a bit artistic but it is not artistic at all. It is actually a very specialised tool to calibrate an instrument and if you think it is just a screwdriver, it is not. There are thousands and thousands of different instruments that look like screwdrivers but are specific to one action within an industrial process. The bottom picture [the hand of a primate] is the basic tool you have to probe things; you see that we have some precursors in that field.

The fourth example shows a sports field on top, and a park at the bottom. Actually it is Central Park in New York. You can play in the park but it is not dictated what you should do there. You can do all kinds of games: you can play ball games, you can chase each other and whatever; you can even do other things that are not so nice. The top one is also an American picture and it shows a field that is rather specific. If you wish to do any kind of other sports in there it is rather difficult and if you wish for example to organise an open-air concert in there, you have major refitting to do. So, with this contrast, I would like to get across to you the idea that indeed you can do something about flexibility, that even if you are building something as specific as a repository, you should consider other issues, you should consider that people probably will try, even sometimes with creative efforts, to do something different with it and you should make room for that.

Repository projects are closed to their environment, do not invite involvement. Some of you will probably recognise this type of building. In fact, it could be that you drove by one when you visited the Mol-Dessel area. It is not exactly a building where you take your family for an outing and arrange your kids in front of it to take a picture. In the companion images [including an image of a concentration camp cemetery…] we see other repository spaces. Before you feel a little bit shocked, take the idea a bit further: a graveyard like the one shown is a repository. It is a repository of bodies who went through one of the major catastrophes of the 20th century. A repository like this has a number of characteristics and they serve functions. One of the first functions is that it should eliminate health hazards. That is why we put people in the ground in the first place. If you asked an engineer why he would do that, he would say “well, it is to make sure that there is no health hazard, if you do not do it sufficiently quickly, you will have cholera and you will have all kinds of diseases”.

The symbols that come into our field of vision every year around this time also have a very strong sign function. They are not put there just for the engineering needs of storage and disposal. They serve a purpose beyond that. They serve to remind us of the mindlessness, the silliness and the catastrophe. That is a major worry. I am not saying that all repositories should have to meet the same standard for forceful signifiers. Still, we have seen in the previous presentation that indeed, when we talk about

nuclear energy and nuclear waste, we are using strong stuff and that strong stuff should have its place in the memory of society. When we handle it, it should lead us to establish forceful signs.

These images of storage spaces show that you can have some pride in a repository. This one shows silos with the offices on top. It is a very proud site. A medieval site: if you are a bit of a traditionalist, you could make your repository in this style but I would not advise it. Actually I have seen medieval buildings that have been plasterboarded and then, when the building was restored, they put medieval façades on it. It is very impressive!

These images contrast openness and something a bit more difficult to explain. I will use three of the five minutes I have left to do it. Openness does not mean that there are no borders. A gate creates openness while empty space does not do it. So, it does not mean that all borders are abolished, but you have to be invited in (not exactly the way Soulaines reacted to the request). A lot of the security apparatus responds not to a need of security but to the need engineers have to place their space away from daily life, to establish what was called yesterday "laboratory conditions", a space which in which every inch is under control. That is the opposite of openness. You can create spaces in which you allow for security and you put in the appropriate measures of security, but where you do not make a fetish or a symbol out of security.

When I first visited Soulaines, I put on some kind of clothes with a meter and then I was told by someone equipped in the same fashion: "this is an entirely safe site. There is no danger at all." About the same time, I visited the underground facility in Sweden. I had a rented car and I do not read Swedish. So, I ended up driving almost straight in it because I probably ignored quite a number of signs in Swedish, telling me that I should not take that road. But I stopped when I encountered one of those things going in there with barrels, and I left my car there and nobody said anything. Then we had a meeting in their canteen. It was one of the strangest places I have ever visited because it looks like a living room with windows and curtains on the windows. When you look through the windows, you will see that you face a wall about one meter beyond. There is a sort of labour rule saying that the canteen should have windows and that there should be curtains on the windows. It has a very strange effect, at the same time demystifying a site in a fashion that is very effective. Openness is a not only a matter of physical structures, it is also a matter of the spirit and of the fact that your information system should be transparent.

Final message! Even if you mess everything up, people will survive and people will find a way out. When engineers set up the mobile telephone system, they put in a facility to exchange messages. People use their phones now to look at those messages and not to call anymore. People show great ingenuity in finding alternative usages or functions beyond and instead of the original purpose of a thing.

MODERATOR'S REPORT ON WORKSHOP SESSION 3

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While much in stakeholder confidence work is focused on the periods of project conceptualisation, siting, and development, eventually a successful waste programme will result in a set of facilities with visual, aesthetic, and other physical impacts on the host community. This most interesting and interactive session explored both the artistic and aethestic aspects of the waste management process and the relationship among the stakeholders, particularly the affected local communities and those who might help develop both the products and processes associated with implementation.

Two insightful presentations were made, followed by a lively panel discussion and interactions with the broader FSC participants. The first presentation was made by artist Cécile Massart, Professeur à l'École Nationale Supérieure des Arts Visuels La Cambre, Brussels. Professor Massart has been focusing on issues associated with the management of radioactive wastes for some period of time. She operates from the understanding that a proper role for art in such projects can help change the view of waste disposal by stakeholders and the broader public. Interestingly, she has investigated the artistic aspects of waste management facilities themselves as well as artistic visions of themes associated with radioactive waste.

For the past ten years, Professor Massart has been working on a project titled, "An Archived Site for Alpha, Beta, Gamma". Working with computer graphics, Professor Massart has been obtaining access to appropriate radioactive waste sites, making photo and video reports and leaving copies of documents and exhibit projects with those in charge of the sites she visits. The exhibits have included an installation, photographs, silkscreen prints, one-off books, sculptures, and more.

In addition, Ms. Massart explored at least three separate and important topics in which using art as a vehicle for communication offers an alternative and perhaps improved method for communicating over the more "traditional" verbal and written communications almost always favoured by technical and programmatic individuals. The first was to portray radioactive decay not by measurements or comparisons to other risks, but to use the gradual lightening of colors to depict in an artistic piece the gradual and natural decay of radioactivity with time. Second, Ms. Massart demonstrated the possibilities for art to help maintain archives for the future, a key knowledge preservation activity for a programme that will span generations. Third, Ms. Massart also showed the possibilities for art to influence markers that would ultimately be placed at waste management sites, preserving the continuity of knowledge regarding such sites. Finally, Ms. Massart showed many examples of how art can influence the look and feel of waste management facilities, helping to reflect and then realise the vision of the local population.

Erik Van Hove, retired professor of sociology and generally credited with being a prime architect of the partnering arrangement between implementers and local communities in Belgium made the

second presentation. He spoke of the valorisation of a repository in an added value project. In particular he mentioned three typical ways in which implementers attempt to convince local communities of the advantages of hosting waste management projects, and described how in each case, the benefits are most often perceived quite differently by the local population from the way intended by the implementers. First he pointed out that simply offering to compensate local communities for accepting the burdens associated with a repository often has a perverse effect. Namely, in order to qualify for the largest compensation in such a situation, there is an incentive to make the project look as unsafe and damaging as possible to maximise the compensation. This of course would likely have just the type of outcome we seek to avoid: namely the image of a waste management project in a most risk related form. Second, Dr. Van Hove made the point that the allure of high tech projects no longer provides the type of positive image that communities have sought in the past. And third, appealing to "the public interest" is a somewhat outdated notion, which often gets translated such that helping meet the "common good" in reality means that the affected community has to sacrifice.

Dr. Van Hove went on to relate that though local stakeholders may lack the technical expertise, they consider their personal interests very carefully and decisions made on such projects are taken quite personally. This provides caution but also opportunity for such projects to be conducted in ways that can help, though not guarantee, better acceptance by local stakeholders. Dr. Van Hove mentioned three attributes. First, while engineering projects tend to be thought of as mono-functional (e.g. dispose of waste), building flexibility into the project to reflect the interests of the local stakeholders can measurably improve stakeholder satisfaction. What the implementer may see as a single purpose project may indeed provide additional, desirable capabilities to a creative local population. Second, while engineering projects, particularly waste management projects, are often designed and built in uninteresting utilitarian ways, a more creative design and implementation can bring a sense of enjoyment and pride to the local stakeholders. And third, while engineering projects are often conducted in a manner closed to their environment, a more transparent, inclusive process may draw local stakeholders more intimately into the project. All of these features can help by providing inviting borders, by valuing the beauty and aesthetic value of the project and by building the project so that it has an appropriate place in the memory of society.

Dr. Van Hove finished by making the point in both words and pictures that people show great ingenuity in adapting the uses and functions beyond those originally intended, furthering the benefits of flexibility. He highlighted the realisation that when local stakeholders can help provide the vision and then the reality of such waste management projects they can significantly improve their sense of ownership of the project and their ultimate acceptance.

Speakers Massart and Van Hove were then joined in a panel discussion by Antoine Debauche director of IRE and member of PaLoFF, Jacques Helsen from MONA, Frans Dumoulin from STOLA, and Jean-Paul Boyazis of ONDRAF/NIRAS (unforseen circumstances prevented Mr. Vanbrabant of Belgoprocess from participating). Each made short but important remarks reflecting and reinforcing many of those made earlier as appropriate to their individual circumstance. This was followed by a short but spirited discussion. One of the questions debated was whether a waste management facility should be highlighted as an artistic expression and symbol for the local population, or whether it should be designed to blend in as much as possible with the natural environment and not call undue attention to itself. While many communities might see such a project as a mechanism to help revitalise the local area and may desire, as both Professors Massart and Van Hove suggested, to create an artistic vision that will help bring a sense of interest and uniqueness to the local community, it was also the sense that most important was to work intimately with the local stakeholders to help assure that whatever is developed reflects the vision and desires of that community.

In some local contexts, residents may have a strong preference to see traditional architecture echoed in the design of new installations. This imparts meaning to the facility, a meaning precious to residents. However, the panelists were sensitive to the artist's mission of communication and alert. For them, the artistic dimension of a project is quite literally "something to be taken into account" – something that sends a message, for example, a reflection upon the unplanned consequences of our energy consumption. The artist's intention is not to hide troubling aspects; neither the fact that a facility may blend into its context, or on the contrary stand as a bold monument, will evacuate or serve to justify the past practices that lead to its necessity. It may be possible to engineer the "disappearance" of a facility into the background, but a mature society must realise that there is no pristine, untouched nature; we change and have changed all by our presence.

Bringing the aesthetic dimension into consideration, stated Jacques Helsen, has three benefits. First, it encourages and symbolises a bigger commitment: the decision to bring nuclear waste into our sphere of concern, and manage it. Second, it encourages and symbolises the community's willingness to erect the installation in the local context. And third, it provides the opportunity to archive information for the future.

One participant asked why something frightening and worthy of rejection should be made attractive, or moreover, made to be accepted? He confirmed what a panelist pointed out: if a LLW management site is safe, then this should be demonstrated, by its openness and accessibility to any inhabitant. Parallels were drawn with the Port Hope facility studied one year before by the FSC. The ambition of that Canadian community is to make the longterm storage area fully safe and fully a part of the local territory. One outcome of such a design will be to ensure the site's "automatic" upkeep over time as a valuable recreational resource.

A number of comments and questions followed. In discussion, two common themes emerged. The first was that for the artistic and aesthetic aspects to succeed, there must be a sense of trust and responsibility among the partners, including those brought into the project to lend an artistic or aesthetic view. The second point was that to be successful, such a project must be transparent and that through this transparency, people must be able to see that the local stakeholders can indeed influence the project in meaningful ways.

Closing Session

Thematic Reports and Final Remarks

Chair: Yves Le Bars

PUBLIC PARTICIPATION AND REGIONAL DEVELOPMENT AT A NUCLEAR WASTE DISPOSAL SITE[1]

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One of the conditions for citizens to actively participate in the search for a final repository for radioactive waste is public involvement and the preparation of perspectives for a long-term development of those regions that are geologically eligible for a nuclear waste disposal site. Regional development is an integral part of public participation and ranking second, after safety factors, as the essential field of interest for the local residents of a region chosen for a potential disposal site.

I will offer insights developed in the context of Germany's AkEnd, or the Task Group on Selection Procedure for Nuclear Waste Disposal Sites. This presentation will start with the discussion of those considerations referring to theoretical and empirical principles of public participation in long-term and high-risk projects. In a second step, the principles of public participation will be outlined. Afterwards, I will focus on the significance of the region as living space for people before I put up for discussion a few thoughts on regional development.

Civil society as reality and perspective

The question of why the public should be involved actively and intensively in the search for a permanent disposal site, can be answered easily. So far all attempts, not only in Germany, but in most countries where the search for a disposal site is on, have failed due to resistance by the civilian population.

Behind this pragmatic reasoning, however, there is a complex societal process which should be understood in order to be able to classify the individual elements of "active and intensive participation". In the last decades, a rather informal and situational form of democratic decision making and realisation of interests has evolved alongside the representative and formalised democracy. On one side, the institutionalised and formalised democratic structure is at work: the system of parliaments and government, of independent jurisdiction and mediatory organisations such as trade unions, associations and lobbyists who communicate their specific interests to the decision-

1. This contribution refers to texts previously written for the final report of AkEnd. See AkEnd, (2002) *Task Group on Selection Procedure for Nuclear Waste Disposal Sites: Selection of Final Disposal Sites*, Cologne. These texts have been revised and complemented. Thus, they no longer represent the recommendations expressed by AkEnd, but rather the author's statements.

making process. On the other hand, there are rather informal civic groups who try to influence the decisions on all spatial levels. The formation of civic self-organisation has its roots, at least in recent history, in the social movements of the Sixties and Seventies, but it is now widely spread throughout all political groups and tends to transcend the traditional patterns of left-wing, right-wing or liberal. At the same time, civic self-organisation does not present an alternative to representative democracy, but is only politically effective through and in reference to it. The articulation of their interests must be covered by the media and hence influences the parliaments' decisions and their realisation by the executive authority through elections which is to say through political parties and associations.

This development within civil society has led to new forms of participation. Participation today no longer means that the population is merely informed or that it has a formal right of objection, but rather is evolving into conflict management in order to overcome the blockage of developments and to participate actively in designing future developments. Therefore, participation is no longer (only) about winning over the public to plans and decisions. It is also no longer (only) about partially integrating common knowledge into specialist planning in order to avoid planning mistakes. The purpose of cooperation brings together specialists, lobbyists, government and administrative representatives, legislators and citizens who try to solve conflicts and to develop future concepts or concrete plans.

In order to find out how public participation is viewed in the general population, AkEnd initiated a representative national survey in Germany which was commissioned by the Federal Office of Radiological Protection.[2]

A large part of the population expects and demands consideration of their interests and participation when it comes to major projects, to which the construction of a permanent disposal site naturally belongs. In that context, the number of people demanding participation increases the more controversial and risky a project is in the public eye. When asked about permanent disposal, more than 70% of the people interviewed demanded participation, compared to 30% for an automobile plant. Information and participation at an early stage is demanded for large-scale technical plants. Obviously, people do not want to be confronted with the final result, but rather to participate in the planning and decision-making process from the very beginning.

The demand for participation is accompanied by a strong sense of mistrust toward political and social institutions. Apparently, there is a particularly low level of trust in this area. A significant part of the population, ranging between 10% and nearly 30%, has very little or no faith at all in the various institutions. Only environmental groups, the justice system, the police and sciences enjoy a relatively high level of credibility.

In terms of nuclear energy, this mistrust solidifies. Only public interest groups and environmental research institutes are viewed as credible.

In general, prospective evolution of civil society is only possible if the demand for participation in planning and decision making is combined with responsibility for society as a whole. That means that not only one's own interests can be pursued, but that long-term, sustainable and general interests must be considered. Concerning the safe storage of nuclear waste, this dilemma is particularly obvious. More than 70% of the people interviewed consider the problem of disposal to be extremely urgent (51%) or urgent (22%). Over 60% of the respondents strive for a solution of the permanent disposal problem within the next ten years. However, if a permanent disposal site was to be built in

2. For details on methods and contents, see: Stolle, Martin (2002), *Interim Reports*, ITAS, Research Center Karlsruhe.

their respective region, 80% of all respondents would object. Even decisions taken by the federal or state parliament or the municipal council would not be accepted. Accordingly, a decision taken by a nationwide, state-wide or regional referendum would not be accepted by the respondents.

The constellation of opinions and experiences with participation also show the difficulties which must be expected beyond voicing personal opinions in the context of participation. On the one hand, there are strong demands for early and active participation in important projects. On the other hand, the existing mistrust will hinder cooperation with the political institutions and associations. If one considers that only a small part of the population has experience with forms of active participation beyond the signing of petitions, it becomes apparent that the realisation of active and intensive participation requires careful preparation and a step-by-step approach. That makes clear that traditional procedures, including grass-root votes, probably cannot solve the conflict between people's personal interests and the responsibility for a decision serving general safety. Decision making must proceed slowly and step-by-step with the option to correct possible errors. Verifiable information as well as transparent criteria and rules of procedure are required; communication is necessary in order to find a solution that is supported by the citizens. However, it is advisable to regard the realisation of active and intensive participation as an experiment on a large scale. All participants must be willing to learn and implement changes at each individual stage. The concept of active and intensive public participation, as developed and suggested by AkEnd, is designed to meet those requirements.

Principle reflections on public participation and the search for permanent disposal sites

The suggestions for participation of the population developed by AkEnd are based on five principles, which will be briefly outlined in the following.

The dialogue

All forms of participation presented by AkEnd are guided by an interactive approach. This approach is not about raising acceptance of a completed procedure via individual events or stages of participation. At least it is not just about legitimising decisions that have already been made. Instead, reaching synchronisation of interests as well as perceptions and evaluations supported by everyone is the goal of the dialogue. It implies the equality of thesis and antithesis; conflicts are regarded as an opportunity to gain better insight into differences and agreements within the matter itself and its evaluation.

Transparency

Each person involved must know about all criteria and each step of the procedure before its implementation. Changes must be communicated in time. All information must be accessible to everyone. No desire for information is illegitimate. Time pressure does not justify the neglect of the information policy.

Fair allocation of competence

The search for a suitable site has thus far been the business of natural sciences and engineering. Their expertise is supposed to determine the suitability of specific potential disposal sites and to ensure the highest possible safety of storage. This fact has always been a cause for a gap of

competencies between the population and the specialists. The situation does not improve even if the social sciences join the natural sciences and engineering. If controlling the procedure and the residents' influence on it is supposed to be important, the participating citizens must be granted competence which places them in a fair position toward the specialists.

Participation as control

Very frequently, procedures are complicated or fail because some of the people involved are under the impression that important information is withheld, that certain decisions were based on other criteria than those agreed upon, that check-ups were not carried out as stipulated, measurement results were forged, etc. That is why the procedure and the adherence to stipulated criteria must be verified from the beginning. The public has the right to receive all relevant information. Only thus can the credibility of the procedure be established and maintained.

Participation as shaping of the future

A possible disposal site cannot be isolated from the development of the region that is chosen as a potential location. A disposal site can have both negative and positive effects on the future development of a region. In order to recognise advantages and disadvantages, dangers and opportunities for development, the participation of the population is required. Concepts for the future can only emerge with the formal participation of the public if they are supposed to be durable and integrate the various interests within a region.

Participation also means assuming responsibility

The participation in decision-making processes always includes taking on responsibility. The population can and should assist in directing and controlling the procedure of searching for a disposal site. It should control the adherence to stipulated safety standards. It should co-determine the future development of the region of a potential disposal site. However, that also requires a strong sense of responsibility in terms of reducing the danger of storing highly radioactive materials above ground by means of the safest possible underground storage. Should, after a previously settled time frame, the search for a nuclear disposal site fail despite all efforts in the potential regions, we suggest statutory planning as a strategy. The *Bundestag* (parliament) will in this case decide on a disposal site even if the citizens speak out against it. This is necessary as a last resort – even if highly undesirable – for the federal government to fulfill its statutory task of storing nuclear waste in the safest possible way.

Participation surely cannot guarantee the success of finding a disposal site. In any case it must be emphasised that a participation procedure with such a scope and intensity has thus far not been realised. AkEnd therefore recommends the evaluation of each step and a timely feedback of the evaluation results in order to implement corrections. The suggestion's time frame lies in the far future. Thirty years encompasses a multitude of social and technological basic conditions which social sciences are unable to predict. With that in mind, it is advisable to stay open for corrections. On the other hand, the proposal is embedded in the international discussion. There is a strong consensus that the lack of opportunities for participation is one of the important reasons for the failure of all procedures that have been launched so far. One could put it this way: participation is no guarantee for success in the search for a disposal site, but insufficient participation increases the risk of a failure. This holds true especially when participation is closely linked to the everyday interests of the citizens. The idea of combining the search for a disposal site with the conception and realisation of sustainable

regional development designed in cooperation and participation will once again lead to stepping on new territory.

The region as living space (Lebenswelt)

The idea to combine the search for a disposal site with regional development is based on two considerations.

First of all, the region which actively participates in the search for a disposal site and might actually become the location for it at a later date takes on a universal task relevant for the entire society. The site has thus the obligation to ensure the safeguarding and development of the respective population's livelihood, which is to say it has a special obligation to provide for the welfare of these people. Furthermore, the region has an extraordinary significance for the living space of people, and this applies to Germany in particular. Changes to the structural conditions of the region will therefore result in a high level of distress among the population.

The region is closely linked to people's everyday life; it is intertwined with the plans and interests of their personal lives, and the region provides the basis for their social networks. A significant share of knowledge about the world and the ability to cope with changing situations stem from this regionally influenced lifestyle. At the same time, inherent resources of knowledge and interpretation, regulated by the state and the economy, permeate peoples' lives via the mass media. Perhaps it is precisely this endangerment of natural inherited knowledge that creates an even stronger bond with the region. Approximately 80% of people name the region as their home, the bond is therefore insignificantly weaker than that with the nation and strikingly stronger than in the city or any suburb in which people live.

From a strictly practical point of view, the importance of the region shows itself in everyday life, the close local bond which is characteristic of many areas in Germany. More than half of the respondents have spent their childhood and adolescence where they live today. Even in a region which is developing at high speed due to the new construction of an airport (North Munich), this continuity is valid for more than a third of the residents.

Secondly, special tensions emerge from the strong bond with a region and the search for a nuclear waste repository. Most respondents associate the construction of a disposal site with concerns and fears. Thus, most people not only anticipate a burden caused by transports, the majority believes that health risks are very likely or likely.

In that context, tension develops between the understanding that a disposal site is necessary in order to store nuclear waste (more) safely and the rejection of the construction of a disposal site in their own region.

This tension, which is generally referred to as the "without-me attitude", can only be overcome if citizens are actively participating and therefore receive power to control the process. The joint work on concepts for sustainable regional development can manage additional worries concerning the future in a region with a potential disposal site.

The organisation of public participation in the development of regional perspectives for the future

For the drawing up of a regional development concept and concrete planning for realisation based upon it, professional expertise and the needs of the residents must be combined. The organisation must be co-operative, that means it must involve the institutions in charge of planning and development in a specialised and operational context. It must consider the complex interests in a region and the concerns of neighbouring communities. Regional development is situated in a close context with the future planning of the disposal site.

Citizens take the centre stage

A development concept can be created only on a platform which is open enough for a broad spectrum of public participation on the one hand, but which is also operating with binding responsibilities. The citizen forum is designed to organise active participation. Here, all questions concerning the examination of a potential site and regional development prospects are addressed. Participation is open to all citizens from the areas concerned. The citizen forum can build work groups that deal with specific issues such as regional prospects or risks and liabilities caused by the disposal site. It can also hold regional conferences on future prospects. An important aspect of the forum's work must be to hold public meetings in which it informs all citizens and offers them an opportunity to voice their opinions even if they are not actively participating. This helps to avoid an isolation of "expert citizens" active in the forum, and the interests and concerns of the entire population can be included. Based on the close connection between the sociological criteria, especially the socio-economic ones, and the development of regional future prospects, AkEnd suggests that those aspects that revolve around the search for a location, and those concerning regional development, be discussed simultaneously in the citizen forum.

Finally, clear recommendations must be formulated. The citizen forum has a right of proposal; it thus makes recommendations to the municipal council which then decides about the further procedure.

Support through a centre of competence

In order to manage these extensive organisational and subject questions, the region must be supported in obtaining competence accordingly. These competencies focus on specialist expertise, knowledge about political institutions and legal regulations as well as communication skills. For that purpose, the citizen forum has to be supported by a center of competence where specialists work on questions concerning final disposal, development planning and regional development. The binding right of proposal for the assignment of the positions in the center of competence should lie with the citizen forum. The center of competence plays an important role regarding the fairness of the procedure. Being able to consult and resort to specialists whom they trust, the citizens gain an equal position opposite the experts advising the operator of the procedure and other institutions involved in it.

A round table on regional development

Along with the citizen forum, local policy and administration as well as different interest groups must be included at a round table. The local interest groups are the Chamber of Commerce, the trade guild, representatives of agriculture, churches, trade unions as well as relevant clubs and associations.

At a round table, there must also be seats for the mayors of neighboring communities in order to have a chance to represent their interests. Between the round table and the citizen forum, there could be proposals on possible changes of spatial demarcation of the region concerned, be it expansions or reductions. Should a solution by mutual agreement between the citizen forum and the round table not be reached, the district council (Kreistag) or the chairman of the regional council (Regierungspräsident) will act as mediators, possibly on the basis of advisory statements.

At the round table, impulses from the citizen forum will be recorded and processed. The concepts drawn up at the round table are discussed within the citizen forum and are transferred, along with recommendations, suggestions for modification or concerns, to the municipal council which holds the decision-making powers for the further procedures.

All institutional and political contacts shall be maintained via the municipal government. They, along with the municipal council, are responsible for the coordination of all development concepts and plans with the established institutions, planning standards and the general public issues.

It is possible that a potential region for a disposal site can include or touch the area of several communities. All necessary decisions must then be taken based on mutual agreement in the respective municipal councils. The residents of all communities concerned will build a citizen forum which reports its recommendations to the respective municipal councils.

Principles for the realisation of regional development

Long-term opportunities instead of short-term advantages

By drawing up a regional development concept and the implementation of measures suggested therein, the future opportunities resulting from the construction of a disposal site will be determined and recorded without giving the impression of “political landscaping” or even “bribery”. In order to avoid such an impression, a regional development prospective must be financed on a legal basis. In this context, the public perception of financing strategies with regard to the style of the procedure and democratic conformity must be considered.

Support serves self-motivation

Each service, financial aid as well as non-cash contributions and staff performance, is geared toward the support of self-motivation of companies, clubs and associations, and institutions. The regional development concept must emerge from within and be realised with the initiative of the region. Funds must be regarded as support of self-motivated action only. In this context, funds or other transferred services are strictly bound to the development project and the region of the disposal site.

All benefits and payments are limited

The amount of financial support depends upon the formation of the regional development prospective that is drawn up in a dialogue with the respective region. What becomes apparent is that the amount of cost depends upon the success of the measures (when will they be self-supporting?) and on the duration of the funding (how long will the project be financed?). The funding of regional development measures can only be maintained until the development initiative supports itself.

Who provides the support?

For the formation and realisation of the regional development concept, AkEnd suggests that the polluters provide funds to the regions (polluter-pays principle). This money should be transferred to a fund in order to ensure flexible management. Co-financing of individual measures through the states (Länder) is not excluded per se.

Gradual realisation of regional development planning

The development and step-by-step realisation of a regional development prospective is closely linked to the preparatory planning for a potential disposal site. Ahead of an inquiry regarding voluntary participation in stage 3 of the selection procedure, the existing development potential of the region must be determined. During the exploration above ground, follow-up concepts for future development should be drawn up for those regions that declared their willingness to participate. AkEnd recommends that in the course of the underground exploration starter and pilot projects should be carried out in order to prepare the realisation of the regional development concept. The development concept should be realised in its entirety upon construction of the disposal site.

Conclusion

The search for nuclear waste disposal sites in Germany has thus far been carried out without an explicit concept of public participation. Accordingly, the question of future regional development of a potentially concerned region has not been dealt with systematically. There are, however, important and insightful predecessors for the suggestions made by AkEnd: the discussion surrounding contaminated arms industry land has significantly influenced the development of mediation procedures. The development of participation procedures also produced essential experiences with other disposal sites and locations for refuse incineration plants. International experiences, especially in Sweden, Finland, Canada and France have an immediate value for the considerations concerning the search for a nuclear waste disposal site.

On the basis of two theses, the proposal put up for discussion tries to introduce the social aspects into the procedure of a search for a suitable disposal site. Firstly, we presume that the procedure's success in a democratic society would be significantly harmed without the population's willingness to participate in the search and examination process. Secondly, a potential location for a disposal site must not lead to a long-term blockage of the region's future development. These two theses then lead us to the corresponding sociological weighing and exclusion criteria, to the concept of active and intensive participation and to the reflections on sustainable regional development. On that basis, I speak of an integrated sociological concept of the search for a disposal site. It is in everybody's best interest (and this was confirmed by the survey results) that the motto "safety first in case of doubt" is still valid. This case, should it ever occur, must also be communicated in a dialogue between experts, citizens and the political representatives.

AN EXPERIMENT IN DEMOCRACY: OBSERVING THE BELGIAN LOCAL PARTNERSHIPS FOR THE MANAGEMENT OF LOW-LEVEL RADIOACTIVE WASTE

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Abstract

Observations are offered on the FSC workshop and the Belgian local partnerships from the perspective of public participation theory and practice. A distinction is drawn between participatory democratic theory and pluralism in order to point out that partnerships exemplify the latter and are thus susceptible to the main shortcoming of pluralism, which is that the stakeholders become a club of experts, distant from the individual citizens. A model of risk decision making based on the notions of analysis and deliberation is presented as a means for analytically scrutinising the workshop and the partnerships. The workshop successfully diversified deliberation by invoking numerous features including: Small group work, informal venues, stimulating short presentations, involvement of local stakeholders, rapporteurs, community visits, and structured discussion. One shortcoming of the workshop was that it could have displayed more continuity with previous workshops and also convey a sense of progress on the issues of interest. A second shortcoming was that it invoked a very singular dimension of risk (to human health) without devoting adequate attention to the other dimensions of risk (economic, ecological, psychological, sociological, and ethical). The partnerships performed well in many ways; in particular the following features were evaluated as being positive: genuine commitment by partnership staff and leadership to involve all stakeholders, some degree of self-selection by participants (voluntary participation), widespread education and outreach, a flexible timetable, genuine commitment from ONDRAF/NIRAS to see the process through, clear, capable, and respected leadership. Finally, the simple survival of the partnerships in Mol and Dessel suggest popular legitimacy and buy-in by participants. A handful of more critical observations were made about the partnerships as well. First, the near absence of women strikes a chord of concern that women may not feel comfortable participating in these structures. Second, there was a singular way to participate, discriminating against people who wanted to take part without committing to monthly meetings for 4 years. Third, the partnership committee structure was highly dependent on strong hierarchical leadership, a quality that might discourage some forms of participation or input. Fourth, it is questionable as to whether the public involvement in the problem definition or the process design activities was broad enough. Fifth, the range of expertise consulted by the partnerships seemed to be quite narrow. An advocate for the committee might have helped locate more varied expertise. Sixth, the task of the partnerships might need to be periodically revisited. Seventh, the solidly strong consensus about the positive nature of the partnerships is disconcerting. Statements about there being no opposition within the community to the projected facility are difficult to accept. Overall the partnerships are an extremely positive example of how experiments in democracy are necessary in order to deal with complex, non-routine technical risk decisions.

Introductory comments

I have greatly appreciated taking part in the FSC workshop. The visits to the communities involved in considering an integrated repository concept for managing Belgium's LLW, combined with the lectures and discussions we have had here have offered a unique opportunity to understand the challenges of stakeholder involvement in the siting process. In response to my charge as a rapporteur, I spoke with as many people here as I possibly could. During this time, I learned a great deal about the Belgian context and the nature of the siting process in the communities here, as well as some personal stories and experiences of individuals involved in those siting processes. This was the first time I attended the Forum on Stakeholder Confidence. In preparation I read the reports from Paris, Finland, and Canada. While attending for these past few days, I have had the opportunity to speak with many FSC delegates and in so doing, have learned a great deal about this institution and how it is serving your needs.

I was asked to participate and observe during the course of this workshop and also to comment on two things. First, I should comment on the processes used in Belgium in the communities we visited: Fleurus-Farciennes, Mol, and Dessel. Second, I should comment on the process of this workshop itself. In particular, I was asked to organise my comments around themes that have been central to my research, which are concepts that can be used to evaluate and interpret public participation processes. Before turning to my observations about the two processes, however, I would like to provide a little background material.

Theories of democracy

Two of the major questions of interest to this Forum are: "Who are the stakeholders?" and "How should they be involved in the decision-making process?" I argue that answering these two questions first requires a theory of democracy. Generally speaking, it is common among political scientists to distinguish two "species" of democratic theory: participatory democratic theory and pluralism.

Participatory democratic theory, also known as direct democracy or strong democracy, posits that democracy is the full participation of individuals in making decisions about governance (Pateman, 1970; Barber, 1984). There are several historical examples of direct democracy, including the ancient Greek city-states such as Athens. For more contemporary examples scholars usually mention the town meeting in the New England region of the United States (Bryan & McClaughry, 1989) and the Landsgemeinde of the Swiss Mountain cantons of Appenzelle and Nidwalden where all citizens in the canton gather in the town square to make the key policy decisions of that year (understanding that the Landsgemeinde is more ritualistic than functionalistic). Perhaps the best example of direct democracy today is at smaller scales, such as within the workplace or within a club or organisation, where everyone is expected and entitled to participate as equals in shaping the key policy decisions of the organisation (Mansbridge, 1980; Gastil, 1993).

Pluralism, in contrast, sees the role of individual citizens as forming, joining, and supporting interest groups (Dahl, 1989). Also known as interest group liberalism or Polyarchy, this theory argues that policy should be set by interest group politics. Most western democratic nation states exemplify the pluralist theory of democracy. In this model, interest groups, empowered by their memberships, lobby elected political representatives on matters of governance. Note that citizens are not directly involved in governance, but participate in forming and maintaining interest groups.

Table 1. **Overview of the strengths and weaknesses of the two major contending normative theories of democracy**

Democratic theory	Strengths	Weaknesses
Pluralism	Builds upon personal relationships among stakeholders Efficient Develops competent political actors	Produces a club of political experts who can become isolated from the general public Does not contribute to the political maturation of citizens
Participatory democracy	Develops skills of citizenship in all people Maturation of the individual	Time consuming Requires broadly educated public Potential for emotional decisions

The Table above summarises the strengths and weaknesses of each of these theories of democracy. Pluralism works efficiently because interest group representatives develop political skills, are familiar with each other as political actors, and know that they need to compromise and sustain relationships in order to ensure future decision making. The main weakness is that these interest group representatives might become too out of touch with their constituencies. They may develop into what has been labeled at this workshop as a "club of experts".

Participatory democracy, on the other hand, is widely endorsed as a way to develop citizenship skills and, by becoming engaged in political life, mature as a fully social being (Mill, 2002). Indeed, participants of these local partnerships have spoken about how satisfying it has been to take part in this work. Some philosophers also have argued that the best way to protect individual rights and interests is to have individuals themselves involved in politics (Mill, 2002). However, there are down sides of participatory democracy as well. Two obvious aspects are, first, that it takes an incredible commitment to participate and in our busy modern lives this is a difficult concession. Second, there is the danger of the rush to vote. For decisions to be well informed, the electorate needs to be informed, but there is no way to require that voters know anything about which they are voting. Thus, votes, and referendums in particular, are vulnerable to manipulation of the electorate's emotions.

Both of these theories of democracies thrive in the academic literature. Both contain a descriptive element ("this is how a given organisation or system works") and a normative element ("this is how a given organisation or system should work"). Both theories have strengths and weaknesses. Both are appropriate and inappropriate for given contexts.

The partnerships we have met in Belgium here seem to manifest best the interest-group model of democracy. In other words, this is a stakeholder-driven process. Participants are chosen mainly to represent established interest groups and are presumed to speak for those interests at the meetings. This is not intended as an evaluative comment. I merely seek to point out that this is not a process of direct democracy. There is very little involvement by citizens who are not representatives of interest groups.

This distinction may be useful when it comes to making sense of how the public perceives the legitimacy of this process. We might ask whether the people in these communities accustomed to the liberal model of democracy. Will they be satisfied with being represented via interest groups? Or do they have expectations for a direct democratic process? These are questions to be answered by those familiar with the political culture of Belgium.

Analytic-deliberative model of participatory risk decision making

The second bit of background information that I would like to present is a model of collaborative decision making about difficult policy decisions, such as siting a radioactive waste management facility. The model is interesting because of the way it conceptualises such processes.

In 1996 the National Research Council of the United States National Academy of Sciences (USNRC) formed a committee to study risk decision making. A previous committee had published in 1983 a report which outlined risk decision making as a process with a technical and a political side, and a one-way flow of information from the technical to the political. In other words, it presumed that science should work independently of politics. The 1996 committee report, called *Understanding Risk,* took a very different approach.

Understanding Risk proposed to understand risk decision making in terms of *analysis* and *deliberation*. The report begins by recognising that science cannot operate in pure isolation from politics, but there are numerous *policy judgments* that enter into science. In decisions about risky technologies, scientists characterising risk need to make numerous assumptions and each of these is politically loaded. For example, how to present risk information is a political, not a scientific issue. Take for instance the challenge of how to convey information comparing the risk of dying while traveling by air versus by car. If risk of dying is presented in terms of miles traveled, cars appear to be much more dangerous than air travel. However, if risk is presented in terms of number of trips, then cars are much safer than air travel. Science cannot tell us which way of presenting the information is more correct. Both ways are equally correct. There are political implications associated with how the scientist chooses to present the data. This is not a question of correctness, but a question of appropriateness and answering that amounts to making a policy judgment.

Because policy judgments are moral judgments they must emerge from a legitimate political process, yet they are made in the context of technical decisions. The 1996 National Research Council committee saw a need for a political process to interweave with a technical process so that scientists are provided appropriate policy judgments – that is, they are not called upon to make policy judgments. Toward this end, the committee depicted risk decision making as a stepwise process in which science and politics informed each other. Figure 1 depicts the process. The steps are derived from traditional decision theory, but the committee did not see the progression from step to step as linear. Instead, it recognised the need for iteration and feedback in the decision-making process.

Figure 1. **The analytic-deliberative model for risk decision making** (credit: USNRC, 1996)

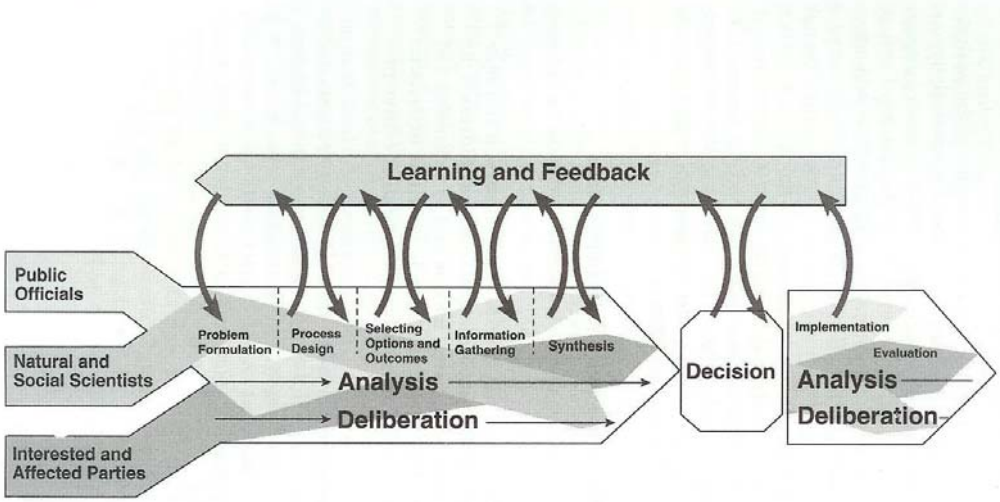

Figure 1 contains several key pieces of information. First is the differentiation of the decision-making process into steps. Second is the notion of iteration and feedback between the steps, suggesting that the process need not be linear. Third is the distinction among three types of parties: scientists, regulators, and citizens/stakeholders. Each of these types of people brings different things to the process and they have a legitimate role to play in every step. Finally, the figure introduces the notions of analysis and deliberation.

Two of the more significant rationalising means people use to make sense of the world are *analysis* and *deliberation*. Analysis is a way of using techniques to reveal patterns in observations. These techniques can be systematic or unsystematic ways of gathering and interpreting data. The overarching principle of analysis is that results can be validated. Customarily, we think of analysis as a scientific activity – usually natural sciences. But there are valid forms of scientific analysis beyond the natural sciences and engineering.[1] Examples include: ethical analysis, equity analysis, multi-attribute utility analysis (a longer list is provided on pp. 102-103, and also p. 158 of the report.). But it is not only scientists who do analysis. Lay people also practice analysis. Two commonly known examples are popular epidemiology and lay monitoring (often of rivers or estuaries). Analysis is done not only by scientists; it is a systematic, rigorous way of learning about the world that can be done by lay people as well as by scientists. Moreover, analysis is not a value-free activity. Clearly values inform how analyses are done, who does them, and when they are done.[2]

Deliberation is a means of collaborative inquiry through making assertions, asking for justifications, and weighing or considering the validity of arguments. Here people "confer, ponder, exchange views, consider evidence, reflect on matters of mutual interest, negotiate, and attempt to persuade each other" (National Research Council, 1996, p. 73). Deliberation is not only about values. Facts are also contestable and their meaning needs to be interpreted. Deliberation, just like analysis, is

1. For example, the committee wrote: "We emphasize that analysis can be used for social questions about risk, including potential economic, social, political, and cultural harms... [...] Analysis therefore may involve more than the tools of the natural sciences and more than quantification." (page 98).

2. *Understanding Risk* states this very clearly. See Chapter 2.

practiced by both experts and lay people. It is a mistake to conclude that science uses *only* analysis and politics uses deliberation. Scientists certainly engage in systematic analysis, but they also deliberate among themselves. Table 2 outlines some of these roles. For instance, at workshops, scientists present their research and interpret its meaning and significance through deliberation with other scientists. People engaged in politics clearly deliberate, but they also analyze problems by collecting data and interpreting them.

Table 2. **Lay people and experts play important roles in both analysis and deliberation**

	Lay	**Expert**
Analysis	Organisation and reflection	Research
Deliberation	Public forums	Workshops

A key point of the analytic-deliberative model for risk decision making is that scientists, regulators, and stakeholders need to collaborate in analysis and deliberation at each and every step in the decision-making process. Table 3 outlines the steps and the ways analysis and deliberation can play a role at each step.

Table 3 conveys that there are clear analysis and deliberation activities for each step in the decision-making process. The first two steps – problem formulation and process design – really need to happen coincidentally. How the problem is defined determines how it can and should be solved, which leads directly to issues such as who participates and in what manner. There are also limitations from the process design that shape how the problem can be formulated. Processes require resources and effort and the availability and limited generosity of the participants will, in turn, outline the degrees of freedom available in the problem definition.

Analytic activities for problem formulation and process design steps tend to revolve around preliminary impact assessments, which allow the potentially impacted population to be defined. Deliberative activities at these steps include discussions among experts to determine likely pathways for harm or damage, discussions among social scientists and practitioners about how best to design a process, and discussions among the potentially impacted parties about how best to characterise the problem and move forward with a decision-making process. This interplay of analysis and deliberation continues at each step in the process, as the text in Table 3 suggests.

Table 3. **Examples of analysis and deliberation in each step of a decision-making process**

Step	Analysis	Deliberation
Problem formulation	Characterise affected communities, assess conflict, elicit stakeholder concerns, preliminary impact assessment.	Allow different parties to learn about the issue and to express the problem and their concerns in their own words.
Process design	Identify potentially impacted population. Determine resource, staffing needs, timetable.	Determine membership and ground rules for interaction. Determine roles of different parties.
Selection of endpoints	Consult models and academic literature to determine significant endpoints.	Define roles of different regulatory agencies. Identify indicators for success with affected stakeholders. Expert workshop to identify data needs for selected endpoints.
Information gathering and interpretation	Strategic collection of data.	Validate data collection and analysis activities. Come to consensus on policy judgments needed in data analysis.
Synthesis of information	Invoke risk communication lessons to present results meaningfully.	Determine how best to express uncertainty, whether risk comparisons are legitimate.

Evaluating the workshop

The workshop has been designed to promote learning and the transfer of knowledge through a deliberative process. Table 4 lays out a number of the vehicles used in this workshop. **Small groups** were formed, containing a mixture of people from different backgrounds and countries and these were used to achieve much deeper discussion than could be achieved in a large plenary. **Informal venues**, such as coffee breaks or meals provided an unstructured discourse space, where people could meet each other and pursue lines of inquiry relevant to them. **Short presentations** by guests were delivered in the plenary and were used to stimulate or focus the thoughts and conversations of the workshop participants. The **involvement of local stakeholders** was a way of bringing the community experience and concerns directly into the conversations at the workshop. **Rapporteurs** summarised experiences shared by all, and even if everyone did not agree with the descriptions, these reports offered an opportunity to focus attention. **Community visits** were used to expose the participants to the community concerns and experiences and to immerse the participants in the political-environmental context in which the partnerships were operating. Finally, the workshop intentionally manipulated the **structure of discussions** (for example, by having the community members speak to the workshop experts as audience or by intentionally designing the make-up of the small discussion groups).

Table 4. **Techniques used in the workshop to diversify deliberation**

Small group work
Informal venues
Stimulating short presentations
Involvement of local stakeholders
Rapporteurs
Community visits
Structure of discussion

This list is rich in variety, but still, there are some additional techniques that were not employed. These were presented in the draft agenda as possibilities. It was suggested that workshop participants might break into small groups and **meet in parallel** with individual members of the partnerships. Again this would have enhanced the awareness of the participants. Although this did not happen formally, at the informal gathering at Town Hall in Dessel, workshop participants had extensive opportunities to speak with partnership members. **Meetings in the homes** of some partnership participants would have helped bring the workshop participants even closer to the community experience. Also suggested were **cluster discussions** with residents. If these residents were not active members of the partnership, these discussions would have given workshop members direct contact with the public and their perspective on the partnerships. Each of these techniques would have make workshop participants more familiar with the goings on of the partnerships and the communities. The last two hint at something that may have been lacking – contact with community members who were not already in allegiance with the partnership.

Critique of workshop

The workshop provided diverse opportunities for learning, contemplation, and deliberation. The substantive material delivered and discussed was, in the vast majority of instances, appropriate, interesting, and stimulating. Structurally, the workshop succeeded well at providing a rich array of discourse spaces, which enabled everyone to speak out and be heard, to delve into specific issues in depth, and to expose participants to diverse opinions, knowledge, and experience.

In addition to these many strengths, there are two noticeable shortcomings of the workshop, both of which could be readily addressed in future instances. First, I did not see evidence to suggest that there was learning or carrying over from workshops in previous years. Inasmuch as this was the third or fourth workshop in this programme and as many of the participants are the same, one would expect more continuity and progress across the years. However, any learning of this nature was not evident here to the first-time participant.

Second, I was astounded by the very narrow conception of risk that seemed to predominate the workshop. For many years now it has been accepted that risk is a multi-dimensional concept (USNRC, 1989, p. 258). We can speak about risk to numerous types of endpoints (see Table 5 for typology). Frequently, attention is paid mostly to the risk to human health; however this is by no means the only endpoint of interest to people. A competent discussion of risk must be certain to deal thoroughly with every relevant dimension of risk. The workshop narrowly focused on human health and economic impacts.

Table 5. **The multidimensionality of risk**

Human health considerations (physical benefits or damage)
Environmental consideration (ecological effects of land use changes)
Economic considerations (property value changes)
Psychological considerations (mental health effects, changes to decision-making heuristics)
Sociological considerations (changes in social relationships or community such as stigma
Ethical considerations (affects on belief systems, such as faith in democracy)

Evaluating the partnerships

Table 6 (below) outlines some of the most obvious strengths of the partnerships. What was most clear to me in speaking with partnership staff and community and ONDRAF/NIRAS leadership was the genuine commitment to involve all the relevant stakeholders in the process. Staff apparently worked extremely hard to find and interest key stakeholders. For the most part they were successful at securing participation of relevant interest groups. One particularly interesting insight was to hear from ONDRAF/NIRAS how the partnership process has impacted the agency. The maturation from the Decide-Announce-Defend approach to the present collaborative model is truly revolutionary and worthy of recognition.

Table 6. **Strengths of the partnerships**

Genuine commitment by partnership staff and leadership to involve all stakeholders
Some self-selection of the participants
Widespread education and outreach
Flexible timetable
Genuine commitment from ONDRAF/NIRAS to see the process through
Clear, capable, and respected leadership
Survival suggests popular legitimacy and buy-in by participants

The items on Table 6 do not need extensive elaboration. They were aptly discussed at the workshop. However, it is worthwhile highlighting several key points in the interest of ensuring that future processes consider these as attributes worth repeating. One of the most exemplary aspects of the process is the commitment of ONDRAF/NIRAS to conducting the process competently and to seeing the process through to its natural end. Being flexible with the timetable, indeed, consenting to extending the process two additional years, is a remarkable signal that the agency believes in the process and is committed to seeing it through. The fact that the processes in Mol and Dessel survived as long as they did is also a signal that the stakeholders of the communities find the process legitimate and valuable.

On the surface we have a process with very good intentions, strongly committed participants from the communities, and capable and committed staff and institutional support. We also heard strongly consensual views that the processes are working well. At the same time, I do not think we question the integrity or commitment of the volunteers or staff if we ask some more penetrating questions, all in the spirit of constructive reflection.

Gender imbalance

Often mentioned at the workshop was the under-representation of women in the partnership process. The number of women is surprisingly low. It is fair to say that women were under-represented by any standard, especially what we would normally expect to see in Belgium. Empirical research in Belgium shows that women participate in social groups about half as much as do men (Hooghe 2003). However, the number of women involved in the partnerships was many fewer than half the men. This suggests three possibilities. First is the possibility that women are not interested in the issue. But this is unlikely since we know women to be strongly interested in issues of human health risk. The second and third possibilities are that women do not feel comfortable participating, or they are logistically discriminated from participating. Both of these possibilities are troublesome because they suggest an inherent injustice in the partnerships. Depending on the nature of the problem, different answers are appropriate. Logistical bias can be eliminated by holding meetings at different times and places. Comfort and safety need to be addressed by active outreach and strict management of the discussions so that women feel safe in speaking in the company of men and can observe that their input is taken into account. Placing women in leadership roles, as was seen in some partnership instances, would also be important.

Limited opportunities to participate

One thing that makes a process robust is that it allows substantially different ways for people to participate. This feature is not present in the partnerships. In these partnerships, participation has meant making a commitment to attend regular meetings for a very long time (years). There have been no opportunities for people to become involved without attending meetings. Ideally, a good process offers myriad opportunities for people to become involved, so that they can choose the format that most suits their personal needs, desires, and limitations. For instance, it would have been possible for the partnerships to host day-long fairs, evening workshops, drop-in sessions, and so forth, with the objective not of publicising their own deliberations, but rather, of gathering input from a broader range of participants in view of its integration.

Structural dependency on leadership

The partnerships exemplify a structure that is highly dependent upon centralised hierarchical leadership for success. Each working group was run by a strong leader who managed the process quite tightly. There is a possibility that strong leadership of this form could discourage certain kinds of people from participating. It could also prevent the emergence of a shared sense of responsibility and commitment. Strong leadership could also potentially distort communications by restricting or censoring certain kinds of dialogue or certain individuals' contributions. Having stable leadership does bring an advantage: it usually means efforts can be channeled toward action goals more efficiently. However, this can still be achieved with rotating chairpersons. At the very least it might be advisable for the partnerships to vote in committee chairpersons for a limited time of service.

Public participation in process design and problem formulation?

In the classic decision theoretic model as shown in Figure 1 above, the first steps of a process are those defining the problem and designing the process. I wondered whether there was enough involvement by the local communities in these two important steps. The partnership process was designed by experts from Antwerp University and Fondation Universitaire Luxembourgeoise and this

is a positive sign. But it might also have been wise to involve more closely some of the major community stakeholders in the formulation of the problem (note that MONA wrote HLW into its statutes), and in the design of the process. In the description of the process, it appears as if the technical considerations – the need for the repository part of the "integrated" project – were included somewhat at the expense of the social considerations – community needs that are not narrowly defined by the LLW management issue. Certainly the technical and social concerns were never tightly linked. Involving a greater segment of the community in these early steps is a good way to build popular legitimacy for the process and its outcomes, even if large numbers of people refuse to participate in the following steps.

Narrow range of experts involved

The experts in the partnerships were mainly natural scientists and engineers. They were also mainly those who support the nuclear industry. The process would be strengthened by bringing in the expertise of a wider range of experts. It is clear that the sponsors were open to giving the partnerships the means necessary to acquire the expertise they desired, so that was not an obstacle. Instead, we may be seeing a lack of awareness among the partnership members as to what kind of expertise might be appropriate. The partnerships would have benefited from having a liaison person familiar with the broad expert community, both Belgian and international. Such an individual could have suggested areas of expertise relevant for the partnerships to inquire further and would have helped to identify individuals who would have served the partnership in this way.

Suitability of task

The task assigned the partnerships was to devise proposals for holding radioactive waste at the site. It is worthwhile inquiring whether this task was reasonable for a partnership to take upon itself. The main problem is that the partnerships do not contain the expertise and knowledge necessary to meaningfully accomplish this task. Because the partnership members were not all radioactive waste disposal experts, they relied heavily on both ONDRAF/NIRAS and outside expertise to derive a solution. The co-generation of the technical solution is time consuming and costly and, although it seems reasonable to expect benefits, e.g. the community is more likely to accept a design that the pluralistic partnership arrived at, there is a danger that the partnerships devote most of their resources to this aspect of the task, and also rely too heavily on a handful of experts who are not engaged in the process (outside expertise).

An alternative strategy, and one widely used in environmental and social impact analysis, is for the organisation responsible for the facility to propose a number of different scenarios. It would be ideal to have a partnership participate in generating and/or collecting input to the conceptualisation of these scenarios, but the technical designs would be the responsibility of the governmental agency and its contractors. Then, the partnerships could be informed of the differences among the designs and the performance expectations of each design. They would then have the opportunity to express their concerns and opinions, and evaluate the adequacy of the options along these criteria. This could free up resources to devote in turn to the societal aspects of the integrated project (much in the way STOLA developed a proposal for an information centre that not only would provide tourism income, but would also improve societal knowledge and follow-up of nuclear issues).

Too strong a consensus?

A final concern has to do with the striking reports that the majority of residents in the communities of Mol and Dessel are in support of the facility. It was repeatedly emphasised that there was no opposition to the work of the partnerships or to the facility itself. Deeper investigation revealed that there were a few individuals who remained opposed, but these were not objecting loudly. Signs occasionally appeared in the windows of some homes, but it was a silent protest. They did not bring their objections to the partnership. Instead, the situation has been characterised as consensus in which the few individuals who do not support the outcome agree not to object further.

Such claims appear suspicious and make me wary of condoning the process without further information. Given what we know about so-called NIMBY (Not in My Back Yard) and LULUs (Locally Unwanted Land Uses), in any community there is always a spectrum of opinion about the acceptance or rejection of a risky facility. Why does this opposition not appear in the deliberations of the partnership? It is that the partnership has been an imperfect process for dealing with dissent openly? Or is it that these nuclear communities have a history of discouraging dissent? Indeed, past research on nuclear communities in other national contexts has revealed that there is little support within those communities for tolerating dissent. A similar phenomenon may exist in these Belgian communities. My point is that the partnership should be cautious about interpreting lack of opposition as support for the facility or as endorsement of the partnership process. Instead, it needs to be proactive in seeking out alternative voices and welcoming all perspectives.

Conclusions

Several roundtables remarked on the huge investment, by both government and citizens, in these partnerships. There is a tremendous interest in seeing this investment yield fruit. The successful siting, construction, and operation of a facility is desired not only by ONDRAF/NIRAS, but also by some of the communities.

However, it would be shortsighted to evaluate this workshop and in these partnerships purely in light of the outcomes of the process. Whether or not facilities are realised, we might find value in thinking about what there is to learn from this partnership process.

One insight to draw from this experience might be to think of these partnerships and this workshop as institutions for learning. The workshops are meant to promote learning across countries, drawing on concrete experiences. Learning inside the Belgian partnerships seems to have two dimensions. The participants themselves learn how to conduct themselves in regard to a highly political and technologically complex policy issue. According to Aristotle and many political philosophers since, this kind of experience is essential to the maturation of the citizen. Citizens who learn the skills of invoking analysis and deliberation in a coordinated manner can become leaders in other decision-making venues. Indeed, the municipal members of the partnerships are aware of the social capital their experience has constituted. They are eager to see this capital applied beyond the current groups' mandate to the follow-up of the repository project development process. They also point out its potential value for the resolution of other community issues.

The second dimension of learning surrounding the partnerships concerns partnerships themselves. It may be fruitful to consider partnerships as institutions to promote learning. For example, the partnership in Mol might have a great deal of useful advice for the relatively new partnership emerging in Fleurus-Farciennes. Indeed, all the Belgian participants have had useful insights to share with this workshop. Their experience has much more to offer people all across Europe.

Such learning can direct our larger effort, the effort that draws us all to this place here and now. What drives our interest in developing partnerships that can produce democratically legitimate solutions to complex risk issues? I would answer that, because we believe in the fundamental value of human dignity, we respect the right of citizens to make decisions of governance. Despite this, we also believe in the positive values of a technologically complex society. Together, these beliefs demand an educated, competent citizenry.

How shall we make decisions about complex technological risk in a democratic society? One solution is technocracy – let the experts decide. We heard during this workshop that ONDRAF/NIRAS (and many other nations' agencies) tried that approach. It failed because people perceived illegitimate risk burdens were being placed on their communities. Consequently, they activated the channels available to them in representative democracies. The result was stalled decision making and an impotent siting process.

The approach we are committed to here is fully democratic. It seeks to educate the people who will be affected by the decisions and to empower them to participate in making the decisions. In our technologically complex society, we need new institutions for democratic decision making, institutions that are capable of dealing with the peculiar needs associated with managing these kinds of risks.

I am convinced that the best way to think about the partnerships we are studying here is as an experiment in democracy. We are fortunate to have this Belgian experience from which to study and learn. The investments in time, money, and effort put into the partnerships in all these communities should not only further a successful process of thoughtful contemplation about how to deal with the problems of radioactive waste in Belgium, they should also contribute to meeting a larger collective need to figure out how to innovate new institutions for risk governance. Hopefully these encounters will inspire others to take similar chances and to keep innovating, to keep trying new things, to be creative about finding new democratic institutions for making competent complex risk decisions in a fair and legitimate democratic manner.

References

Barber, B. (1984), *Strong Democracy*, University of California Press, Berkeley.

Bryan, F. and J. McClaughry (1989), *The Vermont Papers: Recreating Democracy on a Human Scale*, Chelsea Green Publishers, Chelsea, VT.

Dahl, R. (1989), *Democracy and Its Critics*, Yale University Press, New Haven.

Gastil, J. (1993), *Democracy in Small Groups: Participation, Decision Making and Communication*, New Society Publishers, Philadelphia.

Hooghe, M. (2003), "Why should we be bowling alone? Results from a Belgian survey on civic participation", *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 14(1): 41-59.

Laird, F. (1993), "Participatory Analysis: Democracy and Technological Decision Making", *Science, Technology, and Human Values*, 18(3):341-361.

Mansbridge, J. (1980), *Beyond Adversary Democracy*, University of Chicago, Chicago.

Mill, J.S. (2002) (1859), *On Liberty*, Dover, New York.

Pateman, C. (1970), *Participation and Democratic Theory*, Cambridge University Press, Cambridge.

United States National Research Council (1996), *Understanding Risk: Informing decisions in a democratic society*, National Academy Press, Washington, DC.

United States National Research Council (1989), Improving risk communication, National Academy Press, Washington, DC.

CLOSING REMARKS

Jean-Paul Minon
ONDRAF/NIRAS, Belgium

Ladies and Gentlemen,

First of all, I would like to thank you for being here the last few days. I hope it has been an interesting experience, both for FSC delegates and for the Belgian stakeholders. From what I heard, you have been working very hard. So, I try not to be too long, because you all deserve time off to digest and reflect on the information you received during this workshop.

Many questions were raised during the visits and the workshop yesterday, and I will spare you an overview of them all. But, I would like to highlight an important question raised by the people involved in the local partnerships, but also by the local political authorities: what about *after* the partnerships?

We detect two items to be treated in this after-period: the follow-up of both the dossiers opened by the partnerships and the other categories of radwaste.

First of all, let us go into the follow-up of the partnership activities. As the owners of their work, it is no more than normal that they be actively involved in the next phase of the dossier. The municipality and the partnership itself should do a proposal on how they would like to see it organised. For ONDRAF/NIRAS, it is very clear that there should be a follow-up. The knowledge built up by all the involved stakeholders should be preserved. That is in our own interest as well as the local interest, and for society as such.

As was pointed out by one of our stakeholders, this is an ongoing experience, and certainly it is not over yet. The lessons we have learned so far have to be applied in the next steps of the global decision-making process. We are committed to a continued interaction with our stakeholders. All the concerned stakeholders should be actively involved in a co-decision-making process so that the final decision has broad support.

Interaction is required for the follow-up not only of the dossier of the partnerships, but also of other subjects like the other categories of radwaste and the ongoing research and development. It is in dialogue and close consultation with the stakeholders that we should engage in a structure that provides answers to their needs and demands, and at the same time fulfils our expectations. A continued dialogue creates the possibility to understand what the local needs are, and how to respond to them. Only through close interaction – and this is the most important lesson we learned from the partnership approach – can we fully understand what the local stakeholder needs are. And inversely, in this way they can understand our needs.

Mutual learning, mutual understanding; that is what it is all about.

Respect, transparency, openness, ability to listen to each other, are key elements. The partnership approach is an iterative process, but it was also a huge investment for all parties involved: for the local stakeholders, but also for our own organisation. So, the continuity of what was started is vital. And I can only repeat that our own organisation is committed to continue this approach.

This workshop was an opportunity for ONDRAF/NIRAS – and I think also for the local partnerships – to give experts in the field of stakeholder involvement from abroad insight and information on the Belgian approach. This is certainly not the sole way to go about things, but it is a tailor-made concept that responds to the needs of the Belgian programme and as we see it, it provides a good foundation for legitimacy.

I hope that during this workshop you were able to better understand what we are doing, how we are doing it, and why.

To conclude, I cannot repeat it enough: it is an ongoing process. We will be happy to invite you all in a few years from now to give you once again insight and information on the current status of the Belgian radwaste management programme.

I wish you all a safe journey back home, and look forward to meeting you again. It was a pleasure to have you here this week.

Yves Le Bars
Andra, France
FSC Chairman

This workshop has yielded an impressive harvest. We saw in a concrete way how values, interests and knowledge have interacted and evolved over the course of the partnership process. We witnessed the invention of a new type of relationship between technology, society and culture, between local communities and a national operator and experts.

We saw how the local communities took up the issue of waste in a global manner and in so doing, became stronger. The local level is a global one, more encompassing perhaps of human society and its concerns than are the national level or the planetary level. The global character of local approaches opposes itself to the one-dimensional character of technical approaches.

Some questions remain, however: what kind of support does the waste operator receive from the national players (regulators, government, waste producers)? What can be the next step in the process, the next role played by the partnerships? What in the partnership approach is specific to the management of low level radioactive waste, as opposed to high level waste or spent fuel?

This workshop has provided an excellent basis from which to launch the second phase of the FSC. A number of themes may be followed up:

1. The involvement of social science in the definition and conduct of the process: ONDRAF/NIRAS and the Belgian universities successfully mobilised themselves. How can this be reproduced in other settings and countries?
2. Cultural change in organisations, integration of deliberative practices and respect for partnership processes: which objectives should be chosen, what piloting structures, which pathways to change? Is it enough to sponsor change inside the management and the regulatory agencies? How can it be favoured as well among waste producers, and the state institutions that are decisive players in the process, and who also guarantee its credibility?
3. The weak credibility of technologists in our area: how to reinforce it? How to bring to light their “hidden agenda”, their unformulated and even unconscious assumptions?
4. GMOs, urban management, other risks: we could benefit from comparisons and generalisation of our study to these other domains.
5. Moving from the purely functional to the cultural, integrating waste repositories into society despite the image they now have: is this not a condition for the well-being of local communities co-habiting with “their” repository?

6. How is the image of radioactive waste constructed in people's minds, those who live near sites and those, too, who live at a distance?

7. Working in harmony with public opinion despite its constant state of change: this implies studying societal perceptions and representations (items 4, 5, 6), and our own as well (items 2, 3), and finally, working with mediators (the media, opinion leaders like teachers or doctors).

Annex

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