Community Research

European Union Contract Number: FP6-036413. Deliverable 23a

Towards implementation of transparency and participation in radioactive waste management programmes

ARGONA Final Report

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Date of issue of this report: 12/02/2010
Start date of project: 01/11/2006
Duration: 36 Months
Lead contractor for this deliverable: Karita Research AB

Revision: Final

Project co-funded by the European Commission under the Euratom Research and Training Programme on Nuclear Energy within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
RE	Restricted to a group specified by the partners of the ARGONA project	
CO	Confidential, only for partners of the ARGONA project	

EUR 24864

Foreword

ARGONA is a project within the European Commission 6th framework programme. The overall objective was to support transparency of decision-making processes in the radioactive waste programmes of the participating countries, and also of the European Union, by means of a greater degree of public participation. The participating organisations were:

Swedish Radiation Protection Authority (Coordinator)
Karita Research AB, Sweden (Project Management)
University of Gothenburg, Sweden
Nuclear Research Institute Rez plc, Czech Republic
University of Tampere, Finland
DECONTA, Slovakia
SCK.CEN, Belgium
University of Lancaster, United Kingdom
RAWRA, Czech Republic
Stockholm University, Sweden
Joint Research Centre, European Commission
Galson Sciences Ltd, United Kingdom
University of Stavanger, Norway
Wenergy AB, Sweden

The European Community under the Euratom 6th framework programme supported the ARGONA project, contract number FP6-036413. The project has been conduced with six work packages that together produced 25 Deliverables to the European Commission, available at the project web site http://www.argonaproject.eu . The final reporting consists of three documents:

1) This Final Report
2) The ARGONA Summary Report, and
3) Suggested Guidelines For Transparency And Participation In Nuclear Waste Management Programmes" (ARGONA Deliverable No. 22).

This Final Report and the Summary Report have similar structure to make it easy to combine the reading of the two. For example, a reader who finds a subject in the summary report for which he or she wants to go into more detail, he (or she) can go to this full Final Report where the individual chapters have the responsible work package leaders or task leaders as authors.

End user input made it evident that there is a need for guidance for the application of approaches to participation and transparency. It was suggested that such guidelines could be divided into two different forms: 1) general guidelines or principles for the governance of nuclear waste management, and 2) more specific and pragmatic guidance, using e.g. "best practice" and examples. The suggested guidelines has the purpose to be a first step towards meeting this need.

We hope you will find our findings interesting to take part of!

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1. Introduction

During the last decade nuclear waste management organizations have acknowledged the need for more transparency, stakeholder participation and community involvement in the decision making processes. New approaches to participation and transparency have emerged in this sector that are now being disseminated also to other fields. Knowledge has increased dramatically with respect to risk communication, various models of citizen participation, conditions for community involvement and transparency. The programmes have also become more communicative by requirements of Environmental Impact Assessment (EIA) at project level and Strategic Environmental Assessment (SEA) at the planning and programme implementation levels.

Still, however, the progress in European programmes can be increased. This is the case in Western Europe in spite of the fact that this is where most of the research has so far been devoted to transparency and participation. The new EU member countries are now developing their own approaches but they also want to gain from methodologies developed earlier within the EU research programmes. The point of departure for the ARGONA project is that participation and transparency are key elements of effective risk governance and the acronym ARGONA stands for "Arenas for Risk Governance". The project was conducted by a cross-disciplinary group of researchers in natural and social sciences, as well as consultants and end users in the area of nuclear waste management. Research activities include actors from civil society, such as local authorities, public interest groups, and non-governmental organisations.

Given the overall objectives, ARGONA intended to demonstrate how participation and transparency link to the political and legal systems and how new approaches can be implemented in radioactive waste management programmes. Thereby, studies have been done of the institutional and cultural context within which processes of participation and transparency take place in order to understand how the processes can be applied. The project has also included studies of theory in order to build participation and transparency on a firm ground, a number of case studies in Czech Republic, Finland, Sweden and UK, as well as implementation in Czech Republic to make a difference, learn and demonstrate. Although the focus has been on radioactive waste, findings are expected to be relevant for decision-making in complex policy issues in a much wider context.

The project has thus included both theory and case studies. It consisted formally of a series of six work packages and each one of them had a work package leader given in Appendix 2. However, for the final reporting it was found suitable, for reasons of readability, not to follow the work package structure in detail but to present the results in a different order than the work packages, and certain chapters in this report also contain material and conclusions from several work packages.

As a point of departure, this report starts with a brief description in chapter 2 of the status of participation and transparency in ARGONA countries. Furthermore, the RISCOM model application in the Czech Republic, described in chapter 3, provides an example of a how a transparency arena can be organized as a formal step towards more inclusiveness and clarity. The chapter also describes the testing and application in the real environment of a nuclear waste management programmes of other participation and dialogue approaches that were done in the Czech Republic. Chapter 4 deals with the policy making structures that exist, such as Strategic Environmental Assessment (SEA) and Environmental Impact Assessment EIA)

Directives, with the aim to explore the framework within which new arenas for participation and transparency can be formed.

Policy making structures and legal systems are formed within social and cultural contexts. Chapter 5 emphasizes that contemporary social trends favor initiatives for transparency and participation but also that they have to be adapted to local circumstances. Chapter 6 deals with another central element of transparency and participation, namely risk communication. Initiatives for transparency and participation don't come by themselves but are often introduced by catalysts in the form of "mediators" and chapter 7 puts the focus on their role as well as different forms of mediation. The aim of chapter 8 is to put our work on a firm theoretical base thereby analysing the relations between the deliberative arenas, transparency arenas and representative democracy.

Chapter 9 addresses the problem that there seems to be no systematic methodology available for comparing approaches to transparency and participation, allowing the selection of appropriate techniques for use in particular circumstances. Chapter 10 deals with local compensation which is a matter of great inertest for potential host communities for nuclear waste installations. Referring to the "ARGONA end Users Conference", chapter 11 puts the practical implications of research in focus and asks the question how recent research can actually improve the governance of nuclear waste management in Europe. Finally in chapter 12 we make some overall conclusions while also referring the reader to *the suggested guidelines for transparency and participation, reported separately*.

Appendix 1 gives a list of participants in the ARGONA project with contact details
Appendix 2 shows the links between the ARGONA work packages and chapters in this report

2. Participation and transparency in ARGONA countries

As a point of departure for the research and implementation activities that been done in ARGONA, this chapter describes briefly the situation with regard to participation and transparency in the six countries which have commercial nuclear power and which have ARGONA partners, namely Belgium, Czech Republic, Finland, Slovakia, Sweden and the United Kingdom. Readers interested in more detailed descriptions are kindly refereed also to the Final Report.

2.1 Belgium

Legal framework

The basis for the Belgian legal framework regarding civil applications of radioactive materials and nuclear energy was a law dating back to 1958, regarding the protection of the public against dangers from ionising radiation. This law has been frequently adapted and modified, following scientific and technical progressions (e.g. the introduction of stricter standards on exposure to radiation by employees, on environmental protection or on public health), and was ultimately replaced by another law in 1994. Changes in social and cultural values also led to adaptations in this legal framework. In general, it can be said that these adaptations pushed the nuclear sector towards higher levels of accountability and transparency (even though the law of 1994 does not contain any specific provisions on transparency and/or public participation, unlike for instance French legislation). Examples are the introduction of a law defining the financing mechanisms for the decommissioning of nuclear power plants and management of spent fuel; and of laws (and their consequent implementing orders) establishing specific regulatory, advisory and executive agencies, like NIRAS/ONDRAF (the National Institution for the Management of Radioactive Waste and Enriched Fissile Materials) and FANC/AFCN (the Federal Agency for Nuclear Control).

NIRAS/ONDRAF was founded by Royal Decree in 1981 and became operational on paper in 1982. In practice however, the Belgian nuclear research centre (SCK•CEN) continued its historic role in the conditioning and management of radioactive waste during the 80ies. It took a much publicised waste scandal (the 'Transnuklear case', involving SCK•CEN's 'waste department' and the German firm Transnuklear) for NIRAS/ONDRAF to fully take up its responsibility as the sole organisation in charge of the management of radioactive waste. Thereafter, NIRAS/ONDRAF's mandate was further updated by new laws and royal decrees. Today it incorporates the transport, processing and conditioning, temporary storage and final disposal of radioactive waste, a number of tasks related to decommissioning of nuclear facilities and the obligation to prepare and keep up-to-date an inventory of all radioactive waste (including spent fuel) and an inventory of all potential radioactive wastes (the so-called nuclear liabilities) on Belgian territory.

Governance, aspects of participation and transparency

Despite all legislative initiatives, NIRAS/ONDRAF still has the fundamental ambivalence between its (legally enshrined) role of a public interest organisation and the (equally legally enshrined) obligation to negotiate with nuclear waste producers for the financing of its main

activities. Also with respect to its mandate to take care of the management of radioactive waste, NIRAS/ONDRAF plays a double role of executer and 'guardian', a problematic position that has been questioned by observers in the recent past.

After the Belgian sign-up in the international moratorium on sea dumping (Convention of London, 1983), NIRAS/ONDRAF made three attempts to 'nominate' potential candidate sites for the disposal of low and medium active short-lived waste (1985, 1994, 1996), proposals that were predictably contested by the local communities each time. Finally, The federal government decided that NIRAS/ONDRAF should opt for a final repository, or at least one that could progressively become 'final', whether that be on the surface or underground, and that it should start looking for a potential site first and foremost in the existing nuclear areas and additionally in any municipality that would be willing to volunteer. The agency also was to develop methods, including management and consultation structures, making it possible to integrate a project of this kind at a local level. As a result, in cooperation with two Belgian universities, the agency developed a partnership model and concretised this together with the municipalities of Dessel and Mol (who reacted positively). The municipalities of Fleurus & Farciennes joined three years later.

The local partnerships (MONA in Mol, STOLA in Dessel and the joint partnership PaLoFF of Fleurus & Farciennes) were set up as a micro-level model of representative democracy. Overlooking the whole partnership activity was a general assembly (GA) uniting representatives of all participating organisations. These organisations (political, societal and economical) were initially identified by using a social mapping technique. NIRAS/ONDRAF has one seat in the GA (in all three partnerships this seat was taken by the director-general). This assembly decided on the main strategic course for the partnership discussions. It was the GA that finally decided if the integrated repository project (as developed by the partnership) would be presented to the municipal council, thereby effectively advising it to put the municipality forward as a candidate to host the LILW repository under the conditions stipulated in the partnership report. In a structure of working groups, the partnerships dealt with technical issues ('implementation and design', 'safety', 'public health and the environment') as well as with aspects of (risk) compensation ('local development'). In the beginning of 2005, MONA and STOLA issued their report argumenting a 'conditional yes'. Both reports got approved by the municipal councils and (through NIRAS/ONDRAF) forwarded to the competent Minister of the Belgian Government. The PaLoFF report was rejected by the municipality of Fleurus, a decision that meant the end of all participatory activities in the region.

After Dessel got chosen as the host municipality in 2006, the management structure of the partnerships somewhat changed. Although Dessel got chosen as NIRAS/ONDRAF's 'privileged partner' (a decision that caused frustration and distrust within the Mol community as the agency originally committed to abstain from expressing a preference), the government decision prescribes the continued involvement of MONA in future project proceedings. On an operational level both partnerships continue to exist (with the same management structure but with 3 working groups, 2 directly connected to the concrete LILW repository, a third one to follow up the general nuclear issues in the region). On an administrative level a joint steering committee came into life, to ensure integrated decision making and project steering (NIRAS/ONDRAF – STORA – MONA, with an advising role for the mayors of both Dessel and Mol). The construction and realization phase of the repository (under the conditions set by the partnerships) is foreseen from 2012 to 2015, with exploitation starting from 2016 onwards.

In the beginning of 2009, NIRAS/ONDRAF also started the procedure for the siting and disposal of high-level long-lived waste. It aims to develop a 'waste plan', including a technical option (no site selection yet) to be presented to the Belgian authorities in 2010. For what the participation of civil society is concerned, additional to the legal requirements (the Strategic Impact Assessment procedure, prescribed by the Belgian law of 13 Feb 2006 that is based on the European Directives 2001/42/EG and 2003/35/EG), the agency organised a set of open dialogues and an so-called 'interdisciplinary conference' with the academic world, regulators and the industry. The agency has been criticised by several academics and civil society representatives for the short time frame of the participatory exercise and inadequate efforts made to engage citizens into the debate. In addition, its proclaimed neutral role has been questioned, as the agency takes up the role of 'moderator' of the process while, at the same time, it presents its own preferred technical option (non-retrievable disposal of vitrified waste in clay layers). Up til now, the Belgian authorities have not take position in this issue.

2.2 Czech Republic

Basic Facts

The fundamental framework for radioactive waste management is formed by the Atomic Act and regulations of the State Office for Nuclear Safety. According to the Act the state is responsible for the safe disposal of all radioactive waste. To ensure the related activities the Radioactive Waste Repository Authority (RAWRA) was established in 1997. There are three LILW repositories in operation in the Czech Republic. All relevant current activities are aimed mainly at increasing operational and long-term safety and optimising the whole system.

The long-term policy of the state is formalised in a basic strategic document “Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic”. According to the Concept, construction of a deep geological repository for the direct disposal of spent fuel and other high-level waste is considered the only realistic option for a final solution based on the current state of knowledge; yet this decision on further development could be revised by a new evaluation of management options, expected in ten years’ time. In compliance with the Concept two suitable sites should be selected before 2015 and included in area development plans. In 2030 construction of a confirmatory underground laboratory should be started. According to the Concept, construction of the disposal facility should be started only after 2050 and operation is targeted for 2065.

The siting process

Siting of a deep geological repository based solely on geological criteria began as early as 1991 (resulting in a recommendation of eight sites). The screening stage of the site selection process was repeated according to a complex array of safety (geological) and administrative criteria and completed by RAWRA in April 2003. This process aimed to achieve transparency and to provide some aspects of public involvement. Eleven potentially suitable sites were initially identified in different rock formations. At the end of 2005, areas of approximately 10 km^2 at six sites were selected for geological landscape and borehole survey and for further characterization based on the data obtained and expert recommendations.

Many communities protested against these developments and demanded, among other things, the strengthening of their role in the siting process (the right of veto). Between 2003 and 2005 local referenda were held in many communities; voters rejected the construction of a repository in their vicinity, and also awarded local representatives a mandate to apply all the legal measures at their disposal to oppose preparations for the construction of a repository. Due to public opposition and in compliance with governmental decision, RAWRA has postponed all its activities at these sites for at least five years.

On the request of the government, from the end of 2008 RAWRA undertook the analysis of geological data on the Czech Republic's five existing military training areas (MTA). The desk study showed potentially suitable geological conditions in two of these sites. The subsequent work proposed for at least one MTA include aerial geophysical measurements with the aim to obtain for these areas the same extent for data as is available for the above mentioned six sites.

Currently the moratorium on geological work at the six sites is coming to an end. Further geological research work will require the permission of the Ministry of the Environment, i.e. the next step to be done is the application by RAWRA to the Ministry of Environment for the establishment of exploration areas. Before re-introduction of the exploration work RAWRA aims to acquire the consent of the respective communities.

Communication

Since its establishment RAWRA has striven to maintain good relations particularly with the local population of areas around operating repositories, and aims to good relations at the sites considered to be potentially suitable for further research. Since the identification of the sites significant efforts have been concentrated on communication and mutual understanding with local communities, with RAWRA's activities focusing on dialogue with local representatives and on providing comprehensive information to local people (through public meetings, information leaflets, offer of study trips to nuclear facilities, etc.).

Information is considered a necessary prerequisite for dialogue on nuclear issues. That is why RAWRA started to assist small communities with reconstruction of local libraries and established small RAWRA information centres in several villages (Lubenec, Rohozná, Dolní Cerekev, Milíčov; further villages may be served). Another way to provide information is to organise visits of nuclear facilities related to final disposal or interim storage. RAWRA organised several excursions to low-level waste repositories or the interim store at the Dukovany NPP site. RAWRA has also organised a series of excursions to facilities abroad. The number of participants in these visits is about 50 and they are mostly local elected representatives, teachers, etc. During these visits participants usually have an opportunity to meet local representatives at nuclear sites and directly discuss with them issues of interest.

Current communication aims and activities

During of the analysis of archive data in the MTAs RAWRA contacted the representatives of corresponding local and regional authorities and later informed them about analysis results and about potential further developments. RAWRA has been in written contact with mayors of communities close to the "perspective" MTA and also with local civic association and

provided current information and offered personal meetings and more detailed information in case of interest.

As RAWRA aims to achieve local support or tolerance at the sites, where it will apply for the establishment of exploratory areas, it has contacted once again the representatives of the sites and as an initiation of further dialogue proposed that it will cover the costs of independent experts (nominated by relevant community) to get involved in critical reviews of all works to be carried out by RAWRA in the future and to control the quality of work and review the work also from the perspective of local interests. RAWRA has also informed, that the negotiations with the ministries with the aim to provide financial support in regions at the stage of geological survey has been initiated (as such support from the nuclear account would require amendment to the Atomic Act).

Finally before the selection of the two final sites in 2015 environmental impact assessment process (EIA) is planned for each of the sites. This will provide a significant opportunity for an active involvement of local communities, local associations and the general public to address issues of local interest, which might have not been satisfactorily arranged up to this stage.

The ARGONA project

In addition to bilateral communication of RAWRA and communities a neutral platform for discussion among a broader spectrum of stakeholders is needed, which would be trusted by all participants. A very significant step towards this aim was made within the framework of the ARGONA project (see chapter 3). In the Czech Republic the RISCOM model, developed in Sweden and further developed within the EC RISCOM II project, is being applied with the aim of development of a decision-making process with the active involvement of stakeholders including local and general publics. A reference group was established, whose members attend regular meetings and work together on the identification of conditions for involvement of stakeholders in the deep geological repository development process. The group involves representatives of practically all different stakeholder interests.

The leading role in all activities is taken by employees of the Institute of Nuclear Research in Rež near Prague (NRI Rež), representing a neutral scientific organisation. Meetings are held about 4 times per year. The members signed an agreement on co-operation, identifying possibilities and methods for the application of the Swedish RISCOM model in the Czech Republic in compliance with its legislative, social and historical background; considering means for mutual open communication among all stakeholders. Most discussions are facilitated by an experienced mediator and observed by Swedish advisors. As a first major event of the RISCOM application in the Czech Republic, a public hearing focused on the deep geological repository site selection process was organised at the neutral site of chateau Stirin on 23 May 2009, with the participation of many state and nongovernmental institutions (see chapter 3). When the ARGONA project is terminated at the end of 2009, the reference group considers that it is very important to find ways to prolong its activities into the future as is has formed a good milieu for mutual dialogue and cooperation among "the parties"

2.3 Finland

Actors and their responsibilities

The Finnish nuclear power programme consists of four nuclear power plant (NPP) units. Two units are operated by Teollisuuden Voima (TVO) in Eurajoki and two by Fortum Power and Heat (FPH, formerly Imatran Voima, IVO) in Loviisa. A fifth unit is under construction. The main actors in nuclear waste management are the utilities, the nuclear waste management company Posiva (owned by the utilities), the Ministry of Employment and the Economy (formerly the Ministry of Trade and Industry, MTI) and the Radiation and Nuclear Safety Authority (STUK). The utilities, which are licensees under the nuclear waste management obligation, are responsible for nuclear waste management, its planning, implementation and costs. The Ministry is responsible for overall management and supervision in the nuclear energy sector and also directs the planning and implementation of nuclear waste management. STUK, operating under the Ministry of Social Affairs and Health, is responsible for the supervision of nuclear safety and the use of radiation.

The Nuclear Energy Act (990/1987) and the Nuclear Energy Decree (161/1988) are the most important sources of Finnish nuclear energy legislation. The legislation also includes obligations in relation to public participation and informing residents. Furthermore, the Act (468/1994) on Environmental Impact Assessment (EIA) Procedure applies to all projects that may have considerable negative environmental impacts, and the related Decree (713/2006) states that construction of a nuclear facility must always be subjected to EIA. According to the Nuclear Energy Decree the Decision-in-Principle (DiP) application must be supplemented with an EIA report. Thus an EIA procedure must be implemented before submitting the DiP application. The balance of power in licensing is defined in the Nuclear Energy Act. The government makes the DiP. If the DiP is favourable, then Parliament decides on ratification. However the Parliament cannot change the contents of the decisions. According to the Act the local council of the municipality where the facility would be located has a veto right which cannot be overruled by the government. Thus the site selection is dependent on the approval of the local council.

The aims and timetable for nuclear waste management were set out in the governmental policy decision of 1983. In 1994 the Nuclear Energy Act was amended to include the prohibition of nuclear waste import and export. Shipment of spent nuclear fuel (SNF) from the Loviisa NPP to the Soviet Union, and later Russia, took place in the period 1981–96. Posiva was established in 1995. According to the decision of 1983, SNF management involved site selection by 2000 and application for a construction license by 2010, with operation by 2020. Subsequently, the application for a construction license was re-scheduled for submission by 2012.

Posiva implemented the EIA procedure in four candidate municipalities (Eurajoki, Kuhmo, Loviisa and Äänekoski) between 1998–99. The DiP application in which Posiva proposed Eurajoki as the location of the repository was submitted in May 1999 and this launched the DiP procedure. The local council of Eurajoki approved a statement in favour in January 2000. Government took the DiP in December 2000 and Parliament ratified the decision in May 2001. Another DiP was ratified by Parliament in May 2002 due to the extension of the repository for SNF produced by the Olkiluoto 3 NPP unit. The excavation of the underground rock characterization facility as part of the repository began in 2004. In 2008–09 Posiva submitted two further DiP applications for extension of the SNF repository.

Public participation in accordance with the EIA Act and the Nuclear Energy Act

From a formal point of view the EIA procedure for final disposal of SNF started in February 1998, when Posiva submitted the EIA programme to the MTI, the contact authority in all nuclear facility issues. However, a lot of diverse public participation activities in relation to the EIA took place in the candidate municipalities before the formal EIA procedure (Leskinen and Turtiainen 2001). TVO and Posiva had also carried out various public relation and information activities in the candidate municipalities since the mid 1980s when the site selection process started, that is, long before requirements of the EIA Act of 1994 (Kojo 2005). TVO started to talk about the forthcoming EIA process in the candidate municipalities around the end of 1995. In the first place the focus was on assessment of environmental impacts, not on public participation. For example, an initiative for a local referendum by a local opposition group was seen as too early, as implementation of the EIA procedure should begin first. TVO emphasized the importance of wide assessment of the impact of the plan on the environment and individuals instead of better participation arrangements. The public sector was also engaged in information gathering too. For example, as a part of the publicly funded nuclear waste research programme (JYT2), a residents' questionnaire was prepared, focused on their opinions on the impacts of SNF management. Another example is the stakeholder meeting initiated by the chair of the local council in one municipality. The meeting, which aimed at gathering stakeholder views on information needs in relation to nuclear waste disposal, was meant to be an input for further research. The role given to residents in the early "EIA discussion" emphasized their importance as a source of information. Before that they were only given the role of object with lack of information. Now residents were expected to be able to give opinions regarding possible impacts and research themes. Thus the EIA was presented as a procedure designed to enlarge the information base for representative decision-making but without empowering residents with funding or any opportunity to stretch the underlying values.

Posiva's governance style was amended in 1997. Now the central feature was an increased orientation towards more intensive interaction with local people, although some efforts had already been taken earlier. At the same time the quantity of information dissemination increased as well (Kojo 2005.) Posiva informed every household in the four candidate municipalities through the use of information leaflets. In the autumn of 1997 With the help of consultants Diskurssi Oy, Posiva arranged a series of four meetings in each municipality. The first one was a public meeting, the second and third were so called 'discussion working groups' for representatives of local associations, but due to widespread criticism, in the event anybody could take part. The fourth meeting was again a public one (Leskinen et al. 1997, 7; Posiva 1999, 58–59). The aim of the meetings was to gather views on the disposal plan and preparations for the EIA, informing about the plan and the related planning process (especially on participation possibilities), creating discussion links between Posiva and residents of the municipalities, supporting confidence building in the EIA procedure and development of open public discussion on the plan and its impacts (Leskinen et al. 1997, 6). The main focus of the EIA process was on the impacts of the final disposal plan. Alternatives were presented but due to the aims stated in the Nuclear Energy Act, the scope was narrowly framed.

In the EIA procedure Posiva used a wide range of information and public participation activities e.g. EIA leaflets were distributed to each household in the candidate municipalities, "Posiva Research" supplements were placed in the local newspapers, and focus groups, exhibitions and bus excursions to the Olkiluoto NPP were organised (Leskinen and Turtiainen

2002, 13–18; Hokkanen 2001, 121–128; Kojo 2002, 38–41; Hokkanen 2007, 167–215). The philosophy of this new company-driven governance style was not presented. None of the candidate municipalities took any serious initiative to arrange public participation. However, the municipality of Eurajoki initiated a local negotiation on compensation with TVO and Posiva at the end of the 1990s (Kojo 2009; Kojo and Richardson 2009). This partnership was based on the close co-operation the parties that had existed since the early 1990s and was framed by the economic difficulties that Eurajoki faced in the 1990s and the economic incentives that were offered, such as the real estate tax income. A number of local politicians and industry representatives were the main drivers of this approach. The credibility of the new governance style created in the EIA procedure was in direct contradiction to the local compensation negotiations. In particular, the major of Loviisa criticized Posiva for breaking "the rules of the game" of the EIA procedure. After the agreement with the local council of Eurajoki interaction in the context of the EIA procedure seemed to be less important for the company. Posiva submitted the DiP application to the MTI at the same time as the EIA report. Thus any feedback given in the hearing associated with the EIA report could not be taken into account in the DiP application.

Public participation in accordance with the Nuclear Energy Act of 1987 consists of dissemination of information and a public gathering. The applicant is responsible for compiling an overall description of the facility and making it generally available after a check by the ministry. The description is, for example, circulated to every household in the intended municipality. The ministry is responsible for arranging a public gathering in the municipality where the planned site of the facility is located. Opinions may be given either orally or in written form. According to the Nuclear Energy Act the opinions presented "*shall be made known to the government*" by the ministry. The public gathering is formal in nature. No debate is allowed between participants, therefore mediation, for example, is not possible. Furthermore, feedback is only given by the applicant after several months. The public gathering is open to everybody but in practice it is arranged only in those municipalities that are included in the DiP application as alternative locations. The main purpose of the public participation carried out in accordance with the Nuclear Energy Act is to offer citizens a possibility of providing their comments *directly* to the highest national decision-maker i.e. the responsible minister and the government. The general philosophy would seem to be that nobody should interpret the feedback but that the decision-maker should receive an authentic message from the citizens. In practice authenticity is safeguarded by recording the oral statements given in the public gathering. The fear of possible biases due to indirect feedback might partly explain the passive role that the MTI adopted in arranging the public participation, which meant that consultation and mediation could not take place. One should also remember that the central administration might see the local discussion as a duty of local politicians and the municipal administration in which the ministry should not interfere. However, the amended governance style of STUK has indicated that other strategies than merely keeping one's distance are possible, too (see Varjoranta and Hautakangas 2000). For example, STUK senior management met local stakeholders and STUK held open lectures on nuclear waste and radiation in the candidate municipalities. However dialogue focused on safety assessment was never initiated.

2.4 Slovakia

Nuclear Power Plants

There are 4 nuclear units in operation in the Slovak Republic at present; all of them are of the Russian VVER-440 design. Two operating units are installed at the Jaslovské Bohunice NPP (V-2 NPP, units 3,4) that have been upgraded recently. Anothe two operating reactors are located at Mochovce NPP (EMO, units 1, 2). Construction of further two units at Mochovce NPP has been suspended for financial reasons. Recently new owner ENEL has started the works to finalize them until 2013. In addition to the two reactors in operation at Jaslovské Bohunice site, there are another three reactors on this site. NPP V-1 (units 1, 2) was phased out in December 2006 (and 2008 respectively). At the moment these units are under the preparation of decommissioning. Next one is a pilot reactor called A-1 which is under the first stage of decommissioning. It was in operation from 1972 to 1977 and was permanently shut down in 1977 after two accidents. In May 2009 Czech PM Jan Fischer and Slovak PM Robert Fico announced construction of a new reactor unit at Bohunice. The project schedule will be specified after completion of the feasibility study in 2010.

RAW Management

Radioactive waste (RAW) is conditioned at the Bohunice RAW treatment centre. Final waste package is a fibre-reinforced concrete container. In addition, a bituminisation facility for fixing concentrates was commissioned in 1995; and a vitrification facility for treatment of a special type of RAW from NPP A-1 operation. After conditioning ILW and LLW are disposed of at the Mochovce national RAW repository which has been in operation since 2000. RAW not acceptable for near-surface disposal shall be stored at the NPPs. A modern interim storage facility shall be installed at Bohunice NPP site to allow storage of this kind of waste. The RAW which does not meet the criteria for disposal in near surface repository shall be disposed of in a deep geological repository. Such a repository is intended to be built within the territory of Slovak Republic.

SNF management

For the first period (short-term storage of 3 to 7 years) spent nuclear fuel, SNF, is stored in the pools located next to the reactors at each reactor unit. Then the SNF is moved to the Interim Spent Fuel Storage Facility (ISFS) located in a separate building at the plant site. The ISFS is a wet storage facility with a capacity large enough to house the SNF of all four reactors until the end of their designed lifetimes. Interim Spent Fuel Storage Facility in Jaslovské Bohunice is in operation since 1987. A major reconstruction, seismic reinforcement and storage density compaction during 1997-2000 resulted in a capacity increase from 5 000 up to 14 000 fuel assemblies (or 1 680 tU). This capacity is sufficient for the fuel storage needs of all Bohunice units till its expected shut down and also of Mochovce (units 1,2) till 2015. By that time, it will be necessary to build a new storage facility at the Mochovce site.

Storage of SNF from Mochovce NPP is assured for a short-term period of 3 to 7 years in the pools located at the reactors installed at each reactor unit. According to current intentions, the intermediate storage of SNF (40 to 50 years after removal from the reactor) will be provided in a dry storage facility at Mochovce. EIA process for this facility has been successfully finalized, and a project for the construction of the facility is currently in its first stage of

investment implementation. Nowadays, for this purpose is used free storage capacity of ISFS J. Bohunice (SNF from EMO 1,2 is being transported to Bohunice site to storage).

Waste management agency

Unlike other countries there is no radioactive waste management agency existing in the Slovak Republic nuclear energy sector. All nuclear waste management activities are performed by the state-owned company JAVYS, a.s. However, recent institutional developments signal that such an agency will be established; most feasible approach is transformation of JAVYS.

Regulatory body

There are two independent regulatory bodies in the Slovak Republic; both of them fully comply with EU regulations:

- *Nuclear Regulatory Authority of the Slovak republic* (UJD SR) is a central state administration authority taking care of regulatory activities generally in the field of nuclear safety of nuclear installations and performs regulation of radioactive waste management, spent fuel and other parts of the fuel cycle, as well as of nuclear materials, including their control.
- *Ministry of Health of the Slovak Republic* is a central state administration authority for health care, health protection and other activities in the public health sector including radiation protection. Its supervisory activities are performed by the *Public Health Authority of the Slovak Republic* (PHA SR).

SNF Disposal Plans

The basic concept of the Slovakian management of the nuclear fuel cycle back end is at present the establishment of a permanent deep geological repository within Slovak territory. This facility will be intended for high-level and long-lived RAW and SNF disposal (open fuel cycle without reprocessed is considered). Slovakia therefore started to develop a national deep geological disposal programme in 1996. However, the programme was frozen in 2001, mainly due to financial reasons. Next of the reasons was that Slovenské Elektrárne (SE) considered the option of transporting RAW to the Russian Federation for final disposal or reprocessing without return of HLW products. Later on these negotiations failed (due to legislative and financial reasons) and thus the geological disposal programme should be restarted soon. SE in addition expressed support to the option of an international or regional deep geological disposal by its official support letter to the SAPIERR project of EC Euratom. Recent activities are aimed to establishment of new organization entitled European Development Organisation (EDO) within the structures of EC.

Public information and involvement, the public rights in the EIA process

Public information and participation in Slovakia in the field of NWM is ensured and promoted by EIA legislation, and reflected in the activities of involved arganizations. Civil associations and citizens of affected municipalities are entitled to participate in the assessment process from the very beginning. Delivered comments and standpoints of public individuals/groups, NGOs and affected municipalities have to be considered during the assessment and decision making process.

The role of the public in the phase of the Intention

After submitting the Intention, the public has the first opportunity to participate. It is a duty of the local municipality to inform the public about the intended activity and to announce when and where the Intention will be available for the public (for the period of 5 weeks). The public has the right to submit standpoints or comments to the Ministry of Environment. The Ministry has to take these standpoints into account and to deal with them in the future steps of the process. The public can also establish a civic association in this phase, which can also submit its standpoints.

The role of the public in the screening process

Public standpoints to the Intention have a great significance in the screening process. The public is entitled to establish a civil initiative or association in this phase. The detailed assessment is obligatory for any nuclear facility.

The public's role in scoping and determination of a timetable

Scoping is a highly significant part of the EIA process which the public can either influence or utilize for further steps. The Ministry takes into account the standpoints to the Intention also for the purpose of scoping.

The public's role in the hearing process

As mentioned above, the most important public participation tools are as follows:

- Check-up of report completeness with the possibility to suggest return it to the proponent
- Active participation at the public hearings
- Possibility to establish a civic association
- Possibility to submit standpoints to the report.

Environmental Impact Assessment Procedure

The Atomic Act requires from the operator to perform an EIA process for any new nuclear facility or activity. The Slovak EIA legislation is based on the act No 24/2006 Coll. on environmental impact assessment. This act establishes the responsibility of the Ministry of Environment to evaluate the proposals, which can influence the environment. The scope of the evaluation includes all new nuclear facilities and also the changes of existing facilities exceeding 50 % of former extend of activity. This act also establishes the responsibility of the Ministry of Environment to give the statement to the proposals for proposed options. Direct and indirect impacts resulting from new activities related to urban structure, health, living conditions and public acceptance are assessed in detail.

The environmental impact assessment process includes hearings of citizens in local and neighbouring municipalities, local initiatives and actions taken by public institutes. Local authorities, individual citizens, and public institutions may express their comments and opinions in public hearings as written statements. A positive statement from the safety authorities (Nuclear regulatory and Radiation protection authorities, Ministry of the Environment) is a binding prerequisite for the acceptance of a decision by the government. The licensing authority has to take into account the result of the EIA process. The Regulatory body in this process issues the statement to EIA documents before the siting of any nuclear installation (including radioactive waste management facilities). The statement is based on the assessment of documents issued in accordance with the EIA Act.

2.5 Sweden

The legal framework

In Sweden, spent nuclear fuel and nuclear waste management is the responsibility of the industry according to the Nuclear Activities Act. One important part of the act is the requirement for a R&D Plan to be submitted by industry every three years to the government. This plan, produced by SKB, is subject to a broad review organised by the Swedish Radiation Safety Authority (SSM), which is they newly formed body as a merger of SKI and SSI.

It is the responsibility of SKB to do all the necessary R&D, site investigations deemed necessary, and to produce a license application for the final repository to be handed in the to the Swedish government. In 2010 SKB will, according to plans, formally apply for a final repository in Östhammar, and then a review period, estimated to about three years, starts. The SSM will then be in focus as handling the review according to the Nuclear Activities Act. It can be foreseen that the results from earlier phases for research and development of transparency and public involvement will then be implemented and used as an integrated part of the licensing process.

The second arm in the approval process is the inquiry of the Environmental Court following the Environment Code, which will include a court procedure with open hearings The co-ordination of the two main legislation's with a final decision is to be made by the government.

The financing of the necessary measures and facilities for management of the waste are covered by a nuclear waste fund supported by a fee on each produced kilowatt hour by the nuclear power utilities. Cost plans are submitted by SKB and reviewed by SSM each year according to the Financing Act.

SKB has the consulting responsibility

Site selection for a final repository is a long and stepwise process. In Sweden the siting process in its current voluntary form has been ongoing for more that fifteen years, including regional studies, feasibility studies in six municipalities and finally delayed investigations with deep drilling in two municipalities (Oskarshamn and Östhammar) .

SKB has since 2002 undertaken formal consultative activities in connection to the legal requirements on EIA, which is included in both the major laws. Regional consultations have involved SKB, the County Administrative Board, representatives from the municipalities and the authorities SKI and SSI as participants, and the general public, including environmental organizations as observers. This has been subject to debate since the environmental organizations have demanded to be able to participate on equal terms. Public consultation meetings have been open to the public, including interested parties such as environmental organizations. In the EIA document to be part of the license application, SKB has to tell how the concerns and questions raised during the EIA process has been taken into account.

Dialogue and transparency initiatives

In parallel with the SKB formal EIA consultations, a series of initiatives have been taken both at national and local levels over a period of almost two decades with the "Dialogue Project", RISCOM projects, regulator hearings, the Oskarshamn Model and most recently the "Transparency program". These activities have initiated and hosted by other stakeholders than SKB (the regulatory body SKI, Oskarshamn municipality and the Swedish National Council for Nuclear Waste). These dialogue-related activities have not been triggered by specific events, legal requirements or government initiatives, but can rather be seen as proactive initiatives taken by organizations having their own roles in the radioactive waste management program.

These initiatives, which have been described in one of the ARGONA reports (ARGONA Deliverable D20), started with the *Dialogue Project* which took place from 1990 until 1993. At that time the SKI proactively realized that that new activities were needed to communicate the safety assessments to laypersons and local stakeholders as the SKB radioactive waste management program was soon to leave the more pure research stage to enter a phase of site selection. The Dialogue Project was organized as a simulated review process (Andersson J, Andersson K and Wene, 1993) of an application for the final disposal of spent nuclear fuel (SKI, 1993a). Perhaps the most important result was that the participants, who included licensing authorities, municipalities and environmental groups, got a "preunderstanding" of issues and arguments in the coming decision-making process. The participants also wrote a joint letter to the Swedish government about issues in the decision making process (SKI, 1993b).

At the mid-1990s, SKI and SSI saw the need for a broader participatory consultation which led to the RISCOM projects. The RISCOM Model was originally developed during 1996-98 in the *RISCOM Pilot Study* (Andersson, Espejo and Wene, 1998). A central concept of the RISCOM model is *stretching*, which refers to a practice where central actors in a decision making process are gathered in front of a wide audience that challenges their claims to truth, validity and authenticity by posing questions from different perspectives. The hearings held in Sweden in 2001 in a critical stage of site selection organized by SKI were the first time the RISCOM Model was implemented in a real decision-making situation - see (Andersson, Wene, Drottz Sjöberg and Westerlind, M. 2003) and (Drottz Sjöberg, 2001).

There are clear links between the Oskarshamn work and the Dialogue – RISCOM projects as the great involvement of the municipality as a key actor in the radioactive waste management program was inspired by the majors' participation in the Dialogue project and later the municipality work was organized inspired by the ideas in RISCOM but also the EIA principles although the EIA was then not yet part of legislation. Later Oskarshamn and Östhammar, the other, and now the chosen municipality, being subject for detailed site investigation, cooperated in setting up meetings and hearings.

The Swedish National Council for Nuclear Waste initiated its transparency program in 2006 in response to the general agreement among central stakeholders in the Swedish nuclear waste management program, that there was a need for activities by the Council leading to more transparency. The objectives were to increase the quality of the decision-making process by contributing with more clarity and awareness, to prepare the Council for its advisory role to the Swedish government and also be a resource for all stakeholders, the political decision

makers and concerned citizens who wish to deepen their insight into the issues addressed. The program was largely built on RISCOM ideas and regular meetings have been held with central stakeholders in the Swedish program and hearings with "stretching" on selected topics have been held. This Council initiative was taken at a time when the profile of the Oskarshamn municipality as hosting "transparency arenas" decreased as the municipality itself became an obvious stakeholder having an outspoken will to become the selected host municipality as did the other candidate, the Östhammar municipality.

The challenge, however, with the transparency program is to reach out to the political decision makers at the national level, especially since the time distance between hearings held so far and critical government decisions is at least six years which puts a high demand the reporting system. Runebjörk (2008) has concluded that the reporting from the Transparency Programme should be open in the sense that it should not make conclusions on the issues as such (e.g. if a certain disposal method is to prefer or not). Instead it should be open for alternative solutions and clarify what they would mean also in the value-laden sense.

Reflections

The very fact that SKB is the responsible body to present a solution with a license application also having the responsibility for the EIA process means that the company leads the entire process which other bodies have to follow and review and maybe affect. In the light of this one could see the Dialogue and RISCOM initiatives as "repair work" for what SKB cannot, or doesn't want to, do. However, this series of initiatives has been taken by from SKB independent and autonomous bodies, such as municipalities and authorities, which have their own goals with the stretching to create clarity for their own sake. I is quite possible, though, that SKB has been conveyed signals by the stretching from the outside society which had an impact on their programme. In fact, it is also the meaning with the stretching function that it should have an impact on the one being stretched so that he becomes more viable. However, this is not only the for the SKB in this case but also for other stakeholders being stretched such as NGO:s or authorities.

Two specific factors should be mentioned that are judged to be important for trust in the Swedish nwm programme. One is that the general position of a Swedish municipality is strong, the municipality holds a planning monopoly and can veto the siting of national facilities such as a final repository. And irrespective of this SKB early declared that all steps in the site selection programme will be taken on volunteer grounds with respect to the municipalities. When a municipality has been against SKB site selection activities, SKB has stopped their work in the community.

Another specificity in the Swedish case is the possibility both for the candidate municipalities and interest organizations to receive funding from the nuclear waste fund to finance their participation in the EIA process. This funding has made them capable to participate and raise their concerns and views.

2.6 United Kingdom

The UK has been rather unsuccessful in implementing radioactive waste disposal programmes in past years and separate waste management policies have until recently been followed for low-level, intermediate-level and high-level waste. With regard to Low-level Waste (LLW), current Government policy is to continue to dispose of solid LLW in the national repository (LLWR) near the village of Drigg, in west Cumbria, which has been operational since the 1960s. A consultation was launched in June 2009 to explore management options for these wastes, especially those arising from decommissioning activities, with a view to disposal of some lightly-contaminated materials in controlled landfill in order to preserve space at the LLWR.

With regard to High-level Waste (HLW) resulting from reprocessing of spent fuel, a national disposal programme was suspended in 1981 after intense public opposition to studies at several sites in Scotland. Until 2006 (see below), Government policy favoured continued temporary storage of HLW, mostly at Sellafield where spent fuel is reprocessed, while an alternative management strategy was developed (NB spent fuel is not currently regarded as a waste).

With regards to Intermediate-level Wastes (ILW), in 1982 the Government set up Nirex to examine potential sites and disposal options for ILW and LLW that was unsuitable for disposal at the LLWR. Early proposals from Nirex included the shallow disposal of LLW and short-lived ILW. A number of sites were identified and investigations carried out, but without any public involvement, and there was intense local opposition at every site. In May 1987, immediately prior to the general election of that year, a decision was made to develop plans to co-dispose ILW and some LLW in a single deep repository, based mainly on cost considerations.

An extensive national survey was carried out by Nirex between 1987 and 1989 to identify deep repository sites in several potentially suitable geological environments. This was accompanied by a limited public consultation on the development of the potential environments but not on potential sites. Nirex gradually reduced the number of potentially suitable sites from 500 to 12, again without any public involvement, and in 1989 announced the intention to investigate only Sellafield and Dounreay, an approach that was endorsed by the Government. Finally, in 1991, Nirex announced that it would concentrate investigations at Sellafield.

In 1992, Nirex announced its intention to develop a Rock Characterisation Facility (RCF), adjacent to the Sellafield site, prior to construction of a full-scale repository for ILW. Nirex applied for permission to begin development of the RCF in 1994 but this was rejected by Cumbria County Council, primarily on planning grounds, but also because of a perceived lack of involvement in the siting process. This was followed by a public inquiry in 1995/6 into an appeal by Nirex against the council's decision. In 1997, on the recommendation of the inquiry Inspector, the Secretary of State for the Environment rejected the appeal and the proposal was abandoned.

Following the failure to develop the Sellafield facility, a number of initiatives took place designed to explore possible ways forward for the management of radioactive materials other than LLW. These included a Consensus Conference in 1999 involving randomly selected members of the public, who concluded that it was necessary to develop a strategy that was

both publicly and technically acceptable, and which involved the public much more than had been the case previously. A series of workshops for invited participants was also held to explore how such involvement could take place, and in 2001 the Government launched the Managing Radioactive Waste Safely (MRWS) process, designed to develop management options for all higher-activity radioactive wastes in the UK.

As part of the MRWS process, the independent Committee on Radioactive Waste Management (CoRWM) was established in 2002 with a remit to determine the most suitable management option for these wastes and to make recommendations for implementation. CoRWM undertook a wide ranging public and stakeholder engagement programme, involving local communities, NGOs and technical experts over a three-year period. CoRWM published its final report and recommendations to government in July 2006, and proposed that a siting process based on voluntarism should be implemented. This process would identify a site for a deep geological repository, identified by CoRWM as the best available technical solution, following a period of robust interim surface storage and intensified research and development. In CoRWM's view, a repository should be sited by means of a partnership arrangement with a voluntary, willing, community, which would be supported for its participation and receive a negotiated package of benefits in recognition of its agreement.

In October 2006 the Government responded to the CoRWM recommendations and agreed that all higher-activity radioactive wastes should be disposed of in a deep geological repository as proposed. Without consultation, it gave responsibility for developing a programme to implement the strategy, from April 2007, to the existing Nuclear Decommissioning Authority (NDA), absorbing the functions of Nirex into the NDA and winding up the company. CoRWM was to be reformed with a different membership and a revised mandate as an advisory body to government.

The Government subsequently held a public consultation on its proposals to implement CoRWM's recommendations between June and November 2007, but this did not include further discussion of the NDA role which had already begun. Following an initial response in January 2008, a White Paper was published on 12th June 2008. This lays out the details of a staged voluntary approach to siting, in which local communities will initially be invited to express an interest in being considered for subsequent investigations. Those that come forward will be expected to demonstrate sufficient local support. Local geological conditions will then be assessed before the formation of a siting partnership representing local interests and those of the implementing agency, in this case the NDA in the first instance. Communities will receive financial support to enable them to take part in the partnership process. The plan envisages identification of at least two sites for detailed examination. It is expected to take several decades for a facility to be located and developed.

Once a community has formally expressed an interest, the British Geological Survey will undertake a desk-based screening to determine whether there are areas within it unsuitable for repository development. If this screening still indicates that suitable areas may exist and comprehensive community discussions suggest sufficient local support, the community will submit a report accompanied by what is described as a 'Decision to Participate'. Following this a partnership will be formed between the community and the NDA, and funds will become available from Government to enable it to take an active part in the process to determine whether suitable sites exist. If they do, it is expected that the local authority will support NDA and its contractors to undertake surface-based exploration, in order to gain

detailed geological information that will enable assessment of the sites to begin. This will include granting the necessary permits.

On 25th June 2008, Copeland Borough Council, where the Sellafield site is located, formally expressed an interest in being considered as a site for the deep geological repository. Allerdale Borough Council, which borders Copeland to the north, also agreed to express an interest in January 2009, as subsequently has Cumbria County Council, indicating that west Cumbria is its preferred location. Although the process has yet to move forward to the initial geological screening, Copeland and Allerdale formed the West Cumbria MRWS Partnership in November 2008. This group is intended to explore the issues related to possible repository development, and to make recommendations to the councils as to whether they should proceed to the next stage of the MRWS process, the 'Decision to Participate'. The Partnership is planning to conduct a comprehensive public and stakeholder engagement programme in west Cumbria later in 2009 in order to develop its recommendations further. Cumbria County Council joined the partnership in September 2009.

Radioactive waste management initiatives in the UK have encountered intense public opposition in recent years due to an almost total lack of public participation. Since 1997, when the RCF proposal at Sellafield was abandoned, government and the authorities have realised the importance of involving the public and stakeholders in developing policy and implementation strategies. The MRWS process has moved forward because of, and not in spite of, this renewed commitment to openness and transparency.

Not every government decision has been accepted by all parties, but the decision by three councils to express an interest in being involved in initial investigations (without any commitment to continue) indicates a general feeling that this time the process may be more acceptable and could ultimately lead to the identification of a potential repository site. It remains to be seen whether the local consultations in west Cumbria demonstrate that there is actually sufficient support among the population.

Government still hopes that other communities in the UK might come forward for initial examination, as this would reduce the suggestions being made in some quarters that the entire MRWS process is an elaborate ruse to allow a site in west Cumbria to be developed, even after the earlier refusal in 1997.

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3. *Implementation in the Czech Republic,*

(Hana Vojtechova, NRI Rez)

Testing and application of novel participation and dialogue approaches is an important part of the ARGONA project. The objective of this work package is to demonstrate how a structured framework for transparency and participation can be designed for a real process (e.g., the deep repository site selection) by transferring the theoretical principles explored in other work packages to practical working arrangements. This includes using methods like science shops, consensus conferences and other participatory methods involving different stakeholders as well as the RISCOM model application in the real environment of nuclear waste management programmes, particularly in the Czech Republic.

3.1 Focused Science Shop

The focused science shop was held on March 12, 2008 and addressed the theme: "Radioactive waste management and radiation risk in comparison with other hazardous waste and risks".

The main goal of the focused science shop was to increase awareness amongst the public of actual and potential effects of radioactive and toxic wastes and to prioritise questions/uncertainties that people might have in this field. The following topics were discussed:

- Differences in the general perception of nuclear waste in comparison with other toxic wastes;
- General public awareness of the issue of nuclear waste management and other toxic wastes management;
- Management and ultimate disposal of radioactive waste and other toxic waste in terms of the technology employed.
- NIMBY effect.

A broader audience was selected with a suitable mixture of specialists and interested technical and non-technical peers including representatives from NRI, universities, Ministry of Industry and Trade, Ministry of Environment, State Office for Nuclear Safety and Radioactive Waste Repository Authority, representatives of communities and NGOs, and waste producers such as CEZ plc, etc.

The action was a step forward in the communication between the experts and representatives of the local administration and it was a good opportunity for acquiring new information and exchange of opinion among the participants.

However, the absence of non-governmental organisations and political representatives was a serious negative aspect of the science shop. In spite of their efforts the shop organizers were not able to provide for the participation of the NGOs mainly due to their disinterest. They also did not succeed to provide for the presence of the representatives of the responsible ministries such as Ministry of Environment, Ministry of Industry and Trade and Ministry of Finance.

The individual participants concluded the discussion with the evaluation of the shop session. Their main conclusions and recommendations for the organisation of further events are summarized as follows:

- Continuation of discussion on the theme of "Radioactive waste in comparison with other hazardous wastes." Discussion should take place at two different levels:

  - At the level of the scientific community with the participation of responsible state authorities and organizations - the discussion about the causes leading to different approaches in the management of radioactive waste and other toxic wastes – e.g., discrepancies in the field of safety approaches, conditions for the acceptance of radioactive and other toxic waste, appropriate means of informing the public (quality and clarity of the provided information).

  - Broader audience – a suitable mixture of specialists, interested technical and non-technical peers and public – facilitating dialogue and exchange of information among all stakeholders and improving the public awareness – e.g., discussion on the common and different features in the fields of radioactive waste and toxic waste management, safety requirements, potential environment impact.

- An opinion was presented that it would be useful to invite media to the next similar shop. It might be a way for attracting also the representatives of the non-governmental organizations and of the responsible state bodies (except for RAWRA, SONS and SIRP).
- Cooperation between NRI Rez and RAWRA on one side and the present representatives of the local administration on the other side has been settled by motivating the given political representatives to the participation in the next joint negotiations organized in the framework of the ARGONA project.

3.2 Consensus Panel

The consensus panel was held on June 12, 2008 on topic "Spent nuclear fuel management alternatives". The main goals of this consensus panel were as follows:

1. Identification of the main criteria relevant to the assessment of the existing alternatives and determination their importance (weight) from the perspective of all stakeholders;
2. Achieving at least a partial consensus on selecting the most suitable alternative (management of radioactive waste and spent nuclear fuel).

Similarly to the previous meeting (focused science shop), a broader audience was selected including representatives of NRI, universities, Ministry of Industry and Trade, Ministry of the Environment, State Office for Nuclear Safety and Radioactive Waste Repository Authority, representatives of communities and NGOs, and waste producers such as CEZ plc, etc. The seminar was held with the participation of foreign observers from Sweden, UK, and Finland.

On the basis of the discussion, a significant number of interesting results were obtained. The main benefit of this meeting is that all stakeholders met around the same table and they had

the opportunity to discuss given subjects and express their views. All interested parties were willing to discuss even NWM controversial issues, such as identification of the main criteria relevant to the assessment of various NWM alternatives or deep repository siting. This poses a great shift towards an open and meaningful communication among all stakeholders.

In all participants' opinion a “safe space” for debate was ensured and everyone had the same opportunity to express his opinion. All participants also agreed that the whole course of seminar was transparent and correct. From this perspective, the chosen format of dialogue seems appropriate to ensure the exchange of new information and mutual discussion among the stakeholders on the contentious issues concerning NWM and nuclear energy in general.

All participants expressed the view that it is very important to continue in discussion on the theme of "Nuclear waste management alternatives". It would be useful to organise another seminar on the topic of radioactive waste management alternatives with the participation of researchers clarifying the different positions and views on the issue of management of radioactive waste and spent nuclear fuel existing even within the scientific community.

All participants also agreed that at present the social and political problems are the most important and most urgent problems in the field of the nuclear waste management in the Czech Republic. It is therefore very important:

- To increase the activities of relevant state institutions in communication with the public in the field of NWM and enhance public confidence in the state institutions.
- To develop motivation programs as another way how to incite the public interest and to positively influence its attitude towards the radioactive waste disposal, siting of the geological repository, and nuclear power production in general.
- To strengthen the political responsibility - a long-lasting consistent and clear political attitude of the government and government parties concerning the problems of the final disposal of spent fuel is lacking in the Czech Republic. The general public misses the necessary long-term guarantees.

3.3 Interaction Panel

The interaction panel was held on May 6, 2009 and addressed the theme: “The Siting and Safety Case”. The main goals of the interaction panel were to get participants input to the research in the Czech Republic for the development of a safety case (for final repository for high-level radioactive waste) and to learn the participants ideas that should be included in the safety assessment for the geological repository siting in the Czech Republic.

The following issues were discussed:

1. Involvement of stakeholders in the process of formulating the safety case
2. Kind of information and arguments of primary importance for performance assessment

For this purpose a narrower audience was selected consisting mainly of experts that are involved in formulating the performance assessment and strategy for deep geological repository siting (representatives from NRI, universities, Ministry of Industry and Trade,

Ministry of the Environment, State Office for Nuclear Safety and Radioactive Waste Repository Authority and NGOs, and waste producers such as CEZ plc). The action took place with the participation of a foreign expert from Sweden – Mr. Kjell Andersson from Karita Research, who was project manager of the ARGONA project and for this meeting he fulfilled the role of mediator managing the whole course of the interaction panel.

Based on the responses obtained by means of a questionnaire distributed among all participants of this interaction panel the following conclusions could be drawn:

- The main asset of the interaction panel is given by the fact that it was the very first meeting of this kind in the Czech Republic – with the possibility for the professional public to discuss among themselves the issues mentioned above, to exchange information and opinions among all participants, to explain or elucidate of some basic terms used in this field.
- Despite all efforts exerted by the project team, not all invited stakeholders attended the interaction panel. Representatives of the responsible Ministries of Industry and Trade and Ministry of the Environment Protection were absent. Thus, the discussion was held in absence of these important representatives and also of this reason no big importance can be ascribed to the conclusions obtained during the discussion.
- The issues of siting and safety case are still at an early stage in the Czech Republic. Therefore the discussion on the topic issues was mostly very general. At the present stage of discussion it was not possible to achieve any concrete and important outcomes that could be of practical use or with consequences to the present situation in this field. In any event, those who did attend the meeting positively received the interaction panel.
- All participants agreed on the necessity to link up this seminar with other similar activities that would deal with the individual aspects of the given topic (Siting and Safety Case) and to continue thus in the discussion both at the professional level in presence of the responsible state institutions as well as in a much broader discussion in the presence of all stakeholders in the field of NWM.

3.4 RISCOM model application

The RISCOM model was implemented in the Czech nuclear waste management mainly in the problems of deep geological repository siting.

<u>First phase of the RISCOM model implementation (Pre-understanding)</u>

In the first phase of the RISCOM model application, the RISCOM Reference group was established with the participation of all main stakeholders in the Czech nuclear waste management process. In addition to the nuclear industry and government bodies it includes representatives of potential siting communities and NGOs, sociology scientist and foreign experts from Sweden from Karita Research and Wenergy, who have experience with the implementation of this communication model in their country.

The role of the Reference Group is crucial for pre-understanding the learning process in the first phase of the RISCOM process. It is entitled and takes responsibilities for decision especially in the following areas:

- Search of methods for inciting an interest of the general public and responsible organizations
- Identification of levels and topics for meaningful dialogue
- Decision on format of dialogues and establishment of information channels.

Establishing the RISCOM reference group meant a significant shift in the cooperation of all stakeholders in the management of nuclear waste in the Czech Republic. A well-functioning group consisting of all stakeholders has been established and a good milieu was formed for mutual dialogue and cooperation among "the parties" such as state institutions (e.g. RAWRA and relevant ministries), NGOs and representatives of communities from selected localities. The role of this reference group was crucial for preparation of a public hearing (Tento odstavec jsem maličko upravil).

Second phase of the RISCOM model implementation (Learning Process)

In the second phase of the RISCOM model implementation in connection with learning process, the Reference Group decided to organise the first public hearing in the Czech Republic on the topic “Siting repository and recommencement of the siting investigation of the particular sites for deep geological repository”. Public hearing was held on May 23, 2009. The following topics were discussed:

1. Why the Czech Republic and its inhabitants need the geological repository of HLW and SNF? What process of selecting the repository site shall guarantee the fairness and protection of rights of the affected communities?
2. What is the present situation of the geological repository siting process? What activities should proceed in the selected localities, what should their time schedule be, and what effect they will exhibit on the life in these localities (particularly in the period of survey and in the period of the actual building of the geological repository)?
3. What are the apprehensions and expectations of the representatives of the localities?

All participants of the public hearing, NGO and representatives of communities inclusive, agreed on the necessity to build a geological repository of HLW and SNF but they disagreed on the methods of the selection of a suitable location for its siting. This agreement represents a relatively significant shift in NGO's attitudes towards the geological repository and nuclear power in general.

At present the Czech Republic is in the period of characterization of the localities selected for the geological repository, i.e., in the period in which the geological survey in the localities for the repository should start. The execution of the survey is at present subjected to the consent of the respective communities in the given localities.

However, a majority of communities would not issue their consent with this survey that should take place in the years 2009-2015 and should result in the selection of two localities,

the main one and a reserve one. Thus the process ended in a blind street. Some of the possibilities of further steps that were presented during the public hearing are as follows:

- A greater involvement of general public in the dialogue of all stakeholders and in the decision-making process using the following means:

a) Participation of the general public by means of a comprehensive open communication and full information – a well understandable language is a prerequisite.
b) Participation on the check-up of the geological repository siting process by means of independent experts chosen by the communities – RAWRA already offered this method of participation to the communities.
c) To behave to the communities as to the partners – to respect the opinions of inhabitants, to ensure the right of the communities to withdraw from the process in any of its stages – one of the main NGO requirements.

- The problems of the geological repository siting involve many branches – along to the safety criterion, on which the greatest emphasis is placed, also the sociological and economic aspects should be taken into consideration. Along to the technical experts and geologists also philosophers, sociologists, etc., who are able to prognosticate the development of the society from a long-term point of view, not only from the point of view of the period between the elections, should be integrated into the discussion.
- A development of motivation programs – compensation of the negative impacts of the selection and construction processes of the geological repository into the community and region lives.
- To reconsider the Government Concept of handling with radioactive waste and spent nuclear fuel – to incorporate into it the principles mentioned above.
- To change to respective legislation – to include the possibility to draw financial means from the nuclear account for the payment of financial compensations in the connection with the geological survey and construction of the geological repository.

On the basis of past experience, the RISCOM model proved to be a very suitable tool for launching a dialogue among all stakeholders in the area of NWM in the Czech Republic and could be very well used in this field also in other European countries, which are in similar situation as the Czech Republic.

It is important to continue the activities of the RISCOM reference group that was established in connection with the ARGONA project and RISCOM model application in the Czech Republic and in organization of various events such as seminars, science shops and hearings to ensure open and meaningful communication among NWM stakeholders.

3.5 Conclusions

The main conclusion of work in WP5 is that ARGONA project provided a framework and suitable methodology (safe space) for discussion among NWM stakeholders. All interested parties are willing to discuss even NWM controversial issues, such as siting of deep geological repository (DGR). It turned out, however, that for further discussion it is very important not only to ensure a safe space for meaningful communication, but also:

- To increase the activities of relevant state institutions in communication with the public in the field of NWM and enhance public confidence in the state institutions.
- To develop motivation programs as another way how to incite the public interest and to positively influence their attitude towards the radioactive waste disposal, siting of the geological repository, and nuclear power production in general.
- To strengthen the political responsibility - a long-lasting consistent and clear political attitude of the government and government parties concerning the problems of the final disposal of spent fuel is lacking in the Czech Republic. The general public misses the necessary long-term guarantees.
- The RISCOM model proved to be a very suitable tool for starting a dialogue among all stakeholders in the area of NWM in the Czech Republic and could be very well used in this field also in other European countries, which are in a similar situation as the Czech Republic.

It is necessary to continue the activities that were initiated under the ARGONA project – mainly to continue in activities of the RISCOM reference groups that was established in connection with the RISCOM model application in the Czech Republic and in organizing various events (seminars, science shops, hearings) to ensure opened and meaningful communication among all stakeholders in the field of nuclear waste management and siting of the deep repository.

Recommendations for the organization of further activities:

Main recommendations for the organisation of future activities in the context of increasing active involvement of general public into the decision-making processes concerning NWM and the deep geological repository siting are as follows:

- Utilization of the RISCOM model as suitable methodology for discussion among NWM stakeholders.
- To select appropriate topics with clearly formulated questions taking into account the character of participants - other issues can be discussed within the scientific community and others in the wider discussion with the public participation.
- To use service of a professional mediator (as an impartial and independent person managing the whole course of the discussion) to facilitate communication among interested parties during the discussion. This applies mainly to the discussions on contentious issues such as selection of an appropriate nuclear waste management alternative or deep repository siting.
- To ensure participation of representatives of state institution such as Ministry of Environment, Ministry of Industry and Trade, Ministry for Regional Development and also representatives of government parties. This is one of the most important prerequisites in order that discussion would be relevant and meaningful and the conclusions obtained could be applied practically.
- To ensure media participation in similar events. It might be one of the methods for drawing attention to the issues relating NWM and to ensure greater interest and participation of general public and the responsible state organizations and, last but not least, of NGOs in these actions such as seminars, science shops or public hearings.
- Proceeding step by step and set smaller goals - the current situation in the field of NWM in the Czech Republic makes it impossible to achieve an immediate consensus

among all stakeholders on controversial issues such as the siting of the deep repository or selecting the appropriate alternative to nuclear waste management. Therefore, at the present stage it is important to ensure a space for open and meaningful dialogue on these issues, for exchange of views and for explaining the positions of all stakeholders rather than to try to achieve consensus upon any terms.

4. *The policy making structures and the legal system*

(Kjell Andersson and Maria Lidberg, Karita Research)

The point of departure for the ARGONA is that participation and transparency are key elements of effective radioactive waste management. The project investigates how approaches of transparency and deliberation relate to each other and also how they relate to the political system in which decisions, for example on the final disposal of nuclear waste, are ultimately taken. As a basis for the analysis of this issue, one part of the project deals with the policy making structures that exist, such as Strategic Environmental Assessment and Environmental Impact Assessment Directives, as well as national nuclear safety and environmental legislation. The aim is to determine the framework within which new arenas for participation and transparency can be formed (ARGONA Deliverable D2). A questionnaire was issued and sent to key organizations at national and local levels. The intention was to highlight issues that set the scene for e.g. site selection and involvement of stakeholders. One issue is the requirements for, but also if there are any limitations of, the use of novel public participation approaches (as compared to traditional participation such as receiving information, asking questions at public meetings and submitting written comments) within the legal systems. This chapter describes the questionnaire and summarises the results of responses. Driving forces for transparency and participation are discussed, as well as current practices and future needs, and conclusions are made of relevance for the future development and application of new approaches.

4.1 Background

Paterson et al. (2006) has undertaken a comprehensive review of the current international and national nuclear-related legislation framework and of international agreements, including the historical developments of environmental and participatory instruments and gives a specific focus on the mechanisms for public participation. That report has been used as a great source for background information. The international agreements most relevant for public participation and transparency in nuclear waste management are the Joint Convention on Safe Management of Spent Fuel and Radioactive waste, the EU Strategic Environmental Assessment (SEA) Directive, the EU Environmental Impact Assessment (EIA) directive, The UNECE Convention on Access to Information, Public Participation in decision-making and Access to Justice in Environmental matters (the Aarhus Convention) and the convention on Environmental Impact Assessment in a transboundary context (the Espoo convention).

At the European level, the SEA and EIA directives are incorporated in the legislation in member states; the strategic type only recently and therefore the experiences with application are small compared to project EIA. SEA may be important from state/region-wide perspective since it may define the framework of a field in longer-term perspectives, whereas project EIA is more locally focused. Legal systems in European countries forming background for decision making differ vastly in philosophy, execution of justice and powers, governance, hierarchy (different levels - supranational, state to municipal level) and also extent of credibility perceived by inhabitants. Legal systems in most new EU member states underwent profound changes during last 15 years due to transformation of society from communistic regime to democratic systems and following negotiations prior to EU accession. Different

mechanisms of public participation and consultations in legally-based decision making processes and for public information were established in individual countries. Large differences among countries are therefore also incorporated in legal and decision-making systems in radioactive waste management reflecting differences in history, culture and politics.

There is a wide range of nuclear-specific legislation and agreements, but in addition certain environmental legislation and agreements will be applicable to nuclear energy systems in one way or the other. While in the national context nuclear energy systems are often treated as issues apart, they will have environmental impacts beyond just radiation impacts just as any other industrial activity have. In order to simplify licensing processes and to make them more efficient, in most countries agreements exist that give one licensing authority, typically the radiation protection or the environmental protection authority, a lead role. The respective legislation then becomes the main tool, with other legislation and international agreements being given due consideration. In this sense the whole palette of environmental, radiation protection, water, mining and waste related legislation may be invoked in a given case (ARGONA Deliverable D2, Paterson et.al., 2006).

4.2 The questionnaire

The questionnaire was developed by Karita Research in close cooperation with the other ARGONA partners. It was sent to key organisations at national and local levels in seven European countries[1]. The questionnaire was forward looking, rather than evaluating past experiences and it had a relatively free format for responding to the questions. There were a mix of questions requiring straight forward answers and questions requiring more effort and qualitative judgments and the answers could regard both High and Low level waste. The questionnaire was divided into four parts. The first part was intended to provide the context within which decision processes take place, both with hindsight and looking to the future. The second part concerned the legislative framework at national, EU and international level and the third part dealt with the current practices of public participation. The last part addressed the need for implementation of processes designed to enhance transparency and participation in the future Nuclear Waste Management.

There were fewer responses to the questionnaire than expected, why the results can not be used to determine the conditions of specific countries, but rather to give an overall picture of the situation and the future needs in a broad European perspective. The questionnaire responses are used anonymously in the sense that no name or organisation is mentioned in the text.

4.3 Driving forces for participation and transparency

Participation and transparency is increasingly demanded by society to be able to proceed with NWM projects. Laws and regulations form a base and sets directions for the process of participation and transparency (PPT). The EIA directive and its requirement for consultations is important as well as the national legislative framework. Political events and decisions in the past, from statements and agreements to protests and demonstrations, have also contributed to the current climate for PPT. Governmental initiatives in the different countries can play an essential role, such as CoRWM in the UK and the partnership initiative in Belgium (Hériard

[1] Response came from Belgium, Czech Republic, Finland, Slovak Republic, Sweden, Spain, UK

Dubreuil, COWAM II Final Synthesis Report) and in addition, there are voluntarily initiatives to form PPT arenas as well as research initiatives on both national and international level that explore and put focus on these issues. Many of the respondents in this survey have experienced several of these driving forces in their countries but there are also great variations in the current situation.

The responses regarding who or what is initiating PT activities varied, but four main groups could be identified in the answers. First, the legislative framework and acts such as the Nuclear Energy act, EIA directive and other requirements important for participation and transparency entail that PT initiatives have to be taken. Second, the nuclear waste industry initiates PT processes, mainly as responsible for the consultation processes required by the EIA directive. Further, authorities, executives and councils on national and regional level have taken initiatives, such as the transparency programme in Sweden, initiated by the Nuclear Waste Council, or the Environmental Impact Assessment for Decommissioning Regulations, EIADR, initiated by the British Health and Safety Executive. Finally, initiatives have also come from the local level, such as from the two site-selection municipalities in Sweden. Except from meeting the requirements in the legislation, there are other reasons why PT initiatives are taken. One is to build confidence, another to improve the final disposal project: increase safety and upgrade peoples understanding. Identified is also the more strategic reason behind PT initiatives to make the process acceptable to key players. Municipalities have initiated PPT in order to empower themselves to build knowledge and understanding before they have to take important decisions with respect to siting, but also to be able to influence the decision making process.

4.4 Current practices

The requirements calling for participation and transparency are mainly implementations of international conventions and EU directives such as the EIA directive and nuclear Energy Acts. Participation is generally defined in wide terms, enabling additional participation beyond the formal requirements. The EIA Directive sets out directions for the public concerned to be given "early and effective opportunities to participate in the environmental decision-making procedures […] and […] be entitled to express comments and opinions when all options are open to the competent authority or authorities before the decision on the request for development consent is taken". The 'public concerned' is defined as "the public affected or likely to be affected by, or having an interest in, the environmental decision-making procedures" but also "non-governmental organisations promoting environmental protection and meeting any requirements under national law shall be deemed to have an interest" (European Union. Directive 85/337/EEC as amended by Directive 97/11/EC). 'The public' is defined in a similar way by the respondents: it mainly consists of the two groups of local representatives (local people, residents, stakeholders, syndicates, organisations etc) and NGOs (that do not have to be related to the site), groups that not necessarily share the same interests. The public is mainly talked about in an organised form rather that spread and single individuals.

The EIA consultation process is a central mechanism for participation, involving the public in several ways. The public is reached through meetings, the distribution of the environmental statement and the possibility to give their opinions throughout the process. The responses show that PT processes don't have to be limited to the EIA consultations. In the Swedish municipality Oskarshamn, participative work involving the public has been organized for

several years and the partnerships in Belgium also involves the public. In the UK, a local Site Stakeholder Group (SSG) involves participation from many local stakeholders and their work aims to find a common solution together with the industry. Other mechanisms that are mentioned important for participation and transparency are agreements, as the Memorandum of Agreement signed by actors in West Cumbria, UK, official statements and a serious and open communication.

The responses regarding transparency reveal different views of the concept. Some exemplifies elements of transparency as making reports available for public inspection, the publishing of the EIS in the local newspaper and the distribution of consultation invitations. This illustrates that transparency can be seen as making reports, statements and invitations available, and to give the public an opportunity to give their comments. Others see it more as an attitude of openness that welcomes all opinions from anyone. Other respondents mentioned another dimension of transparency: to be able to see values and reasons behind decisions, something that can be harder to achieve. These different views imply that different instruments are required to achieve a transparent process, depending on what meaning you give the concept[2].

Public Participation is ensured and promoted partly by legislation, partly by the work of the industry and voluntarily initiatives. Even if the industry's work is regulated in the legislation, their level of ambition is crucial, as their attitude to the public and how the consultations are shaped. A number of voluntarily initiatives promoting public participation are mentioned. Initiatives have come from governmental organisations as well as from municipality level and more independent actors and the research community. The level of public participation varies among the countries, from a very limited participation from different groups to processes involving a number of different actors and groups.

4.5 Future needs

The views around the future needs in the area of participation and transparency vary, which could be a result of the differences in the current practises in the countries. Some see a need for a more transparent process with increased participation, while some do not. Others rather see possibilities for improvements of the current practices. The process today is missing a 'guardian of the process' that can help make strategic aims visible and there is also a need to make PT more independent from strategic intentions. The information process should start early and the evaluation of PPT and the criteria for a successful process is also mentioned as is the need of review and a more fundamental discussion about the NWM goals. A group of people that is considered missing in the current process is the younger generation. Increased engagement from the younger generation as well as economically disadvantaged communities is suggested to be realized by better logistics, as well as a re-considering the funding system to include more actors for engaging in this question. In Sweden, environmental organisations are able to apply for funding for engaging in the process, a practise that does not exist in all countries. The perspective of future generations is important to include as well as increasing the involvement of the national politicians. Improving initiatives can come from different actors, such as the industry, the municipalities or from independent actors. If support is provided, independent actors have a great potential to take PT initiatives.

[2] The RISCOM group has made a very precise definition (Andersson, K., Westerlind, M., et.al., 2004): "In a given policy area, transparency is the outcome of ongoing learning processes that increase all stakeholders' appreciation of related issues, and provide them with channels to stretch their operators, implementers and representatives to meet their requirements for technical explanations, proof of authenticity, and legitimacy of actions. Transparency requires a regulator to act as guardian of process integrity"

The differences in both the need for improvements and what is suggested reflects the different practices in the countries today. However, the current legislation does not seem to be an obstacle for the suggested improvements and measures can be taken within the existing legislation. Several respondents do not experience any formal obstacles that hinder, delay or stop good ideas for future implementation of PT practices. Support as time and money is however essential for the possibility of taking new transparency and participative initiatives. The balance in the access to resources among the nuclear waste actors can be crucial for the future PPT.

4.6 Discussion

Transparency and participation in nuclear waste management is a truly multi-level governance issue all the way from international conventions to the actual implementation of processes. With the EU Directives and international conventions a broad spectrum of instruments to facilitate public participation in decision making process in the nuclear field has been put into place. According to the responses of the questionnaire, the EIA directive has had the most important role in forming the current climate, while for example the Aarhus convention is not mentioned in any notable extent. Indeed, public participation became an important part of the EIA identity at an early stage. Public involvement can take place in various phases of the EIA process, but it is usually recommended that involvement begins early in the process. The extent of public involvement varies considerably between EU countries as well as the degree by which these instruments are already working in the various Member States varies from Member State to Member State and from instrument to instrument.

We can conclude there are institutional settings at hand that can be used for the purpose of participation and transparency. The other side of the coin is that where we don't have legislative frameworks we don't need to wait for them before something can be done. There is a high degree of freedom inside the current legislation for participation and transparency initiatives and improvements. Participation is defined widely in the legislation and there are no limitations or restrictions that hinder increased participation and transparency and improvements can be made inside and beyond the existing legislative framework. Many of the good examples of public participation have been developed and used entirely without new laws or conventions. However, important to point out in this optimistic context is that the opportunities to form new initiatives are dependent on resources. The access to and regulations around resources is probably vital for the outcome of the processes of participation and transparency. Funding that enables freedom in how it is used can open up for creative initiatives. There is also a clear need for a better evaluation mechanism of the already existing processes.

The paradox is that when creative initiatives are being formalized as parts of a legislative framework they can lose in force and formalization can take place at the cost of creativity and content. One can follow the EIA and SEA legal requirements in an administrative way without much of real public participation and without much progress in terms of transparency. There is thus the issue of striking a balance between the force of a legal process, which an implementer cannot escape, and an informal process that can be very effective in providing awareness but for which there are no guarantees – the informal process is essentially dependent on the good will of key actors. There is also an issue of balancing the level of detail prescribed in a formal process. A high level of detail relating to the steps in a formal process

can make it less flexible and less able to adapt to new issues and changing contexts. A low level of detail can give too much agenda-setting power to the implementer or other strong actors who may decide to pursue a minimum level of ambition.

4.7 Conclusions

We have seen that there is a mixture of driving forces – events, laws and regulations, spontaneous-, governmental- and research initiatives - that has triggered and developed processes of participation and transparency. The initiatives for such processes have come from a mixture of actors, some being forced by legislation to do it, but many have been voluntarily and not taken for the reason of fulfilling formal requirements.

The development of processes for participation and transparency has thus been based on a diverse mix of actors, forces and reasons, and with the expressed future needs in mind. It could be suggested that for improvements of processes of participation and transparency also in the future, there needs to be maintained or enhanced opportunities for a diversified and balanced mix in several ways, improvements that should take place inside the current system, rather than demanding any legal or organizational changes. What is needed to enable initiatives to be taken is access to resources for different actors. If there are no resources available, obviously no new PT approaches will be taken.

Even if international conventions have an important role, their importance should not be overestimated. They give little practical advice about what kinds of participation processes should be used, how they should be set up, how the results should be followed and how the processes should be evaluated. In practice, as is the nature of international agreements, much of this will be up to the parties to define within their own countries. On the other hand, the pure existence of a convention, especially when it includes access to justice as the Aarhus Convention, is a good argument for e.g. NGO: s to request information and participation.

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5. The impact of different cultural contexts

(Britt-Marie Drottz Sjöberg and Ole Andreas Engen, University of Stavanger, Norway, Phil Richardson, Galson Sciences Ltd, UK, and Jozef Prítrský, Deconta, Slovakia)

5.1 Introduction

One point of departure of the ARGONA project was that participation and transparency are key elements for effective risk governance. The project has investigated how approaches to transparency and deliberation in selected countries can be compared, and how they relate to the governance system in which decisions on nuclear wastes are processed and taken. An important part of WP4's efforts in this regard has involved examination of how risk communication can be organized by explicitly taking cultural aspects and different experiences into account. This has been done by the use of available literature, and by data collection through the medium of questionnaires, interviews and focus group discussions in several countries. One specific sub-task of WP4 was to compare and summarize different countries' approaches to, and utilization of, risk communication strategies in the managing and storing of nuclear wastes.

In the following discussion we summarize the main findings, information and reasoning that lie behind our conclusions on the impact of different cultural contexts. A more detailed presentation of communication strategies and tools are presented in Chapter 6. Before drawing conclusions in relation to different cultural contexts in this chapter we include data from the Eurobarometer 2008 for comparison purposes. It may be that citizens in countries more familiar with nuclear technology or who perceive themselves as more knowledgeable in the field may also differ with respect to their views on nuclear waste management (NWM). If that is the case then the finding and recommendations from WP4 would not necessarily be generally applicable to all European countries.

5.2 Governance and risk communication issues

The concept of "governance" is related to public choice theory and research on management and power structures within economics, political science and sociology (see e.g. Fukuyama & Wagner, 2001; Hood & Heald, 2006; Pierre, 2000; Salomon, 2001). The concept of "new public management reforms" (NPMR) which was introduced in the first Argona WP4 report (Drottz-Sjøberg et al 2008) is also of interest in this context due to its normative discussion of how to make a bureaucracy more efficient and democratic. One definition of NPMR is that it includes "reforms consisting of deliberate changes to the structures and processes of the public sector organisations with the objective - in some sense – to run them better" (Pollitt & Bouckaert, 2004). Discussing the principles of risk governance and risk management implies looking closer at the various definitions of "governance" and if possible pinpointing differences in its use in various countries, at various levels of the society, or in different types of organisations. We will not go into definitions here, but exemplify governance structures in the text.

The discussion of cultural aspects may seem a very ambitious goal, mainly because cultural studies emanate from many different disciplines, e.g. cultural studies, anthropology, sociology, psychology and the study of organizations within several disciplines (e.g. Guirdham, 1999). Cultural aspects can refer to broad objects of study such as "the Western

World" or "Contemporary society" (Geertz, 1975) or to narrow studies such as those of culture within an organisation (Schein, 2004).

In this report and in the ARGONA project generally, it has been necessary to specify the targets of such an overview. The type of society and its political strategy, e.g. the degree of state involvement in nuclear waste management, was one such possible target, public expectations and the means available for public expression being another. Selections were made based on results from interviews and discussions in the project so that the discussion on "cultural aspects" would complement the governance structures and practices encountered in the work.

Figure 5.1 illustrates our theoretical approach to the study of cultural differences. The figure illustrates the close relationships between the concepts of "risk informed decision making", "institutional and governance agencies" and "cultural aspects". The arrows indicate the flow of influence between the different concepts and how different kinds of actions concerning risk communication derive from institutional and cultural settings.

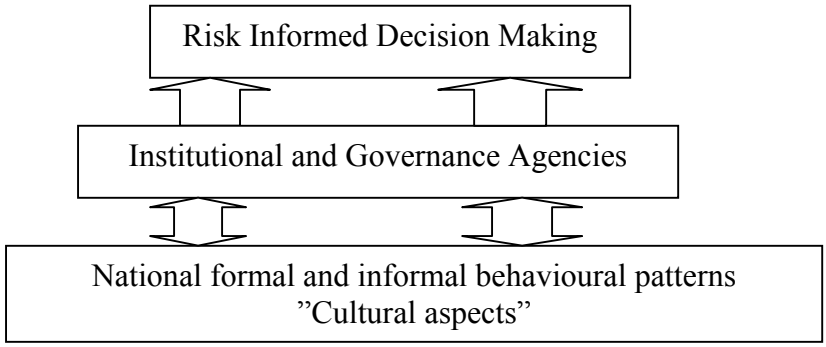

Figure 5.1. Schematic, theoretical model to guide the selection of target areas in the study of cultural differences, and assumed main relationships between target areas.

The explanations of social phenomena, such as risk informed decision making, refer to a broad topic, and in this chapter we propose to regard "risk informed decision making" as a dependent variable explained by the structure and "behaviour" of the involved organisations, shaped by the institutional and cultural setting. The approach implies a general top down structure rather than an organisational-oriented comprehensive analysis. Such a methodological choice may exclude interesting aspects concerning risk communication in different countries, but has been chosen to enhance an overview of complex and multi-faceted empirical data.

The objective in this chapter is to indicate how risk communication processes may differ due to varied institutional characteristics within national regulatory regimes, and how e.g. historical inheritance constructs the basis for how risk communication processes are developed, proceed and carried out. In order to compare how different countries organise their governance structure concerning risk management we can discuss it along the following dimensions:

- How are the formalised regulatory regimes, routines and procedures developed in order to enhance participation from democratically chosen institutions?

- To what degree did the governance structure in the different countries support popular participation in order to increase influence in risk decision making?

Sweden

The Swedish Radiation Safety Authority (SSM) has been the managing authority under the Ministry of the Environment since 1 July 2008, with national collective responsibility within the areas of radiation protection and nuclear safety. The regulatory role of SSM includes research reactors and interim storage facilities. SSM has also a focus on R&D that supports safety enhancing technology. The liberalisation of the energy markets has challenged the roles of the regulator both economically and politically. Furthermore, Sweden is a signatory to a broad range of international conventions. These include: liability in the field of nuclear energy, early notification of a nuclear accident, assistance in the case of a nuclear accident and finally the safety and management of nuclear waste. To a large extent these conventions may be considered as institutional settings for risk communication processes.

The important Swedish agent as facilitator for risk communication is the Swedish Nuclear Fuel and Waste Management Co (SKB). SKB's assignment is to manage and dispose of all radioactive waste from Swedish nuclear power plants to secure maximum safety for human beings and the environment. This issue is associated with both the democratic decision-making process, e.g. consultation meetings and the environmental impact assessment (EIA) process, as well as the technology to be used. SKB is an example of an autonomous governance institution established to extend the possibilities of achieving legitimacy when inducing and monitoring public reforms. The cases of Oskarshamn and Östhammar highlight the Swedish effort in achieving transparency and local participation in risk communication processes.

With respect to environmental impact assessment (EIA),permits under the Nuclear Activities Act and the Environmental Code are required in order to build the final repository. Both laws stipulate requirements for environmental impact assessment with associated consultations. The results of the EIA process, an environmental impact statement (EIS), will describe what consequences the planned activities are expected to have for human health and the environment and how these consequences can be prevented or mitigated.

Regarding consultations, these are held with the County Administrative Board, the national authorities, the municipalities of Oskarshamn and Östhammar, the public and the organisations that can be expected to be affected. These consultations deal with the siting and design of the activities as well as the form and content of the EIS.

United Kingdom

The governmental energy policy in the UK is to ensure that the market instruments reinforce each other - despite the fact that some of the means and goals are conflicting. However, according to the recent Energy Review, the market is a cornerstone of energy policy and where the market alone does not, or cannot, guarantee efficient equilibrium, the government

has to consider the use of frameworks for market intervention. This policy has resulted in a mix of energy institutions. We may therefore make a division between governmental/public and independent institutions in the energy sector. Compared to the other countries, the United Kingdom is distinguished by possessing a complicated system of public and independent energy actors. The obvious explanation is the scale of the markets, but it is also a result of the public management reforms that have taken place over the last 25 years.

The question is whether this complicated system actually encourages participation and transparency concerning risk-informed decision making.

Until 2007, UK Nirex was SKB's "sister-organisation" in the UK in that it was set up originally by the waste producers, but did become an independent company later. Its main task was to develop a disposal facility for intermediate and long-lived low-level wastes. The siting process for this took place during the late 1980's and 1990's, and was heavily criticised for its almost complete lack of openness and transparency which typified the nuclear industry at that time. Following rejection of a proposed research facility at Sellafield by a public inquiry in 1997, government developed a new management strategy for all higher-activity wastes in the UK (excluding spent fuel which is not currently regarded as a waste).

Following a series of public consultations on a proposed way forward, the independent Committee on Radioactive Waste Management (CoRWM) was given the task in 2003 of recommending options that could provide a solution for the long term management of all higher activity wastes in the UK. This task was to be accomplished in an open, transparent and inclusive manner, to provide an opportunity for members of the UK public and other key stakeholder groups to participate in and engage in risk communication processes. CoRWM recommended deep geological disposal in 2006. This was subsequently endorsed by government following further public consultations, culminating in a White Paper in 2008 outlining a volunteer siting process. Since 2007 responsibility for strategy development and implementation of deep geological disposal has lain with the Radioactive Waste Management Directorate (RWMD) of the Nuclear Decommissioning Authority (NDA), Nirex having been wound up. A reconstituted CoRWM now has only an advisory role and reports to government. Nearly all communication on waste management related issues is performed by RWMD at the present time.

It is reasonable to claim that the participation process thus far in the UK has been less successful than in Sweden, given that even after more than 25 years no publicly acceptable candidate site for a repository has yet been identified. To some extent this too can be explained by the scale of the energy markets. There is also a greater distance between the local public and the authorities in UK than exists in Sweden. This tends to make the information dissemination process more complicated. Furthermore, it is reasonable to suggest that the governance structure is more top down oriented than in Sweden, given that government remains responsible for disposal whereas the waste producers remain active in the open market.

Slovak Republic

The Slovak Republic has during the last 15 years implemented a range of comprehensive energy reforms. The great effort involved in changing the Slovakian energy sector to market-based principles is reflected in the fundamental acts and institutional reforms that have taken

place. These fundamental regulations introduced new concepts into the Slovak Republic energy law and defined the respective role of the state authorities and the rights and duties of those involved in the energy sector. From an institutional point of view these laws can be considered as the basic premises for an energy market functioning in accordance with the EU principles.

Besides that, the new "Atomic act" no. 541/2004 Coll. on peaceful utilization of nuclear energy was introduced in 2004, along with a set of regulatory decrees later on.

Unlike other countries there is currently no radioactive waste management agency existing in the Slovak Republic nuclear energy sector that could be compared to those in Sweden and the UK. At the moment, all RAW management activities are performed by the state-owned company JAVYS, a.s. However, recent institutional developments signal that such an agency will be established; the most feasible approach is the transformation of JAVYS.

There are two independent regulatory bodies in the Slovak Republic; both of them fully comply with EU regulations:

- *Nuclear Regulatory Authority of the Slovak republic* (UJD SR) is a central state administration authority taking care of regulatory activities generally in the field of nuclear safety of nuclear installations and performs regulation of radioactive waste management, spent fuel and other parts of the fuel cycle, as well as of nuclear materials, including their control. The responsibilities and competences of the UJD SR may be summarised as supervision of nuclear safety including all aspects of RAW management.
- *Ministry of Health of the Slovak Republic* is a central state administration authority for health care, health protection and other activities in the public health sector including radiation protection. Its supervisory activities are performed by the *Public Health Authority of the Slovak Republic* (PHA SR).

The top down institutional characteristic of the nuclear policy of the Slovak Republic may explain the low level of involvement of NGO's and the public in risk related decision-making processes. Another factor may be a low capacity amongst the NGO's. They have a shorter history than their sister organisations in Sweden and UK although they work in an international context. The NGO's thus seem to have temporarily withdrawn and reluctantly observed that the decision-makers in processes related to nuclear waste final disposal will be the Government, the Parliament and relevant ministries. Essentially, therefore, from an institutional point of view, the Slovak Republic differs from the UK and Sweden.

To sum up, we observe that the decision-making process within the nuclear energy sector in the three countries studied is characterised by various interests and different agendas and plans. However, such interaction requires certain generally accepted rules. Differences in interpretation and disagreements are nevertheless not insuperable barriers if the parties are able to communicate. But such abilities are most likely to be possible only if there is a pre-existing cultural basis of co-operation. As mentioned above, the UK, Sweden and particularly the Slovak Republic, have different historical heritage in utilising their institutional infrastructure. These differences are to a large degree expressed in how the different countries organise their nuclear waste management programmes.

5.3 Cultural similarities and differences

The work of WP4 in collaboration with the other work packages of ARGONA points to a comprehensive network of factors influencing interest in, and reactions to, nuclear waste management (NWM). In gathering information from stakeholders and interest groups in the various countries we have become aware of similarities as well as differences in governance structures and risk communication strategies, and we summarize the central aspects below.

The similarities between the United Kingdom, the Slovak Republic and Sweden include the following aspects:

- They are all European Union countries
- They are all democratic states
- All are members of the IAEA
- All use international standards in NWM
- All conduct Environmental Impact Assessments (EIA)
- NWM is a national issue and responsibility
- Funds are developed for financing NWM in all three countries
- There is awareness of the importance of communication of information
- Local government entities are involved at some stages of the process
- Nuclear waste issues attract media attention in all three countries
- There is a high level of qualifications amongst relevant experts
- There is a high educational level in the general population
- There are information, knowledge and trust gaps between experts, interest groups and the public

Influencing factors are at work at several levels, from the international IAEA standard setting context to local municipality circumstances. There are also huge interest and knowledge discrepancies among groups and among individuals within each country. This situation contributes to the overall complexity and limits the possibility to generalize experiences from specific set-backs or advancements. Our main and maybe most important conclusion is therefore that attention must be paid primarily to the local setting, be it a country or a municipality (or equivalent), although at the same time recognising that such local settings and conditions are developed over time and within circumstances steered by strong external forces. This overall conclusion implies that there cannot be a standardized recipe readily available and applicable to all countries or nuclear waste management scenarios. We suggest, however, that much can be achieved by sharing experience and communication between interested groups.

Below we outline a number of factors that emerged in our attempts to understand the differences in the UK, the Slovak Republic and Sweden in NWM work, i.e. historic legacy, social system, economy, policy of information and transparency, attitudes, trust, knowledge and current social trends. We suggest that these factors converge into what may be termed “national approaches” and can be used to delineate similarities and “cultural differences”. The outline below summarizes the more detailed accounts presented in the reports, or deliverables, from this work package (ARGONA Deliverable D5 and D9).

Historic legacy. Relevant historic developments involve international politics and strategic power plays, as well as national nuclear waste legacies. Firstly, the use of nuclear reactors for peaceful electricity production was an available option for technologically advanced countries

after the Second World War. It represented the start of a new technological and political era where strategic concerns involved both politics and energy production. In this respect nuclear power, and the resulting nuclear wastes, came to represent a double edged sword of risk and opportunity for many countries. The "first generation" of involved countries also constituted central actors in the historic period of the "cold war" whereas nations not central in that power play developed energy production in different circumstances. The United Kingdom was among the first nations in the world to utilize nuclear energy. There were radioactive leaks and accidents early in that development period (e.g. the 1957 accident at Windscale, Cumbria, now Sellafield). However, the political context as well as public relation strategies at that time embedded the technology in secrecy. The Slovak Republic's energy production and NWM were until the 1990's part of the Soviet Union production and waste management system. An accident in 1977 at the A-1 NPP Jaslovske Bohunice resulted in the closure of that reactor. In Sweden very few people remember or take an interest in the early attempts to develop nuclear reactors, e.g. R1 deep in the bedrock under the Royal Institute of Technology, KTH, 1954-70, the Ågesta reactor (R2 or Adam in production 1963-74 and with accidents in 1968 and 1969) in the Stockholm area, or the Swedish plans to develop nuclear weapons, which were laid to rest 1968.

The examples above of nuclear accidents occurred in historic political climates when information and transparency were not necessarily an option or even expected by the public. However, later awareness of these events and fear of long term health effects has to some degree influenced current politics, and blame and shame sentiments have become part of the rhetoric of our time. Such generalized fear has also attached itself to uncertainties about risk extrapolations into the future, the effects on life conditions of future generations, etc., and has greatly contributed to the "trust issue" that is nowadays so prevalent.

It could be noted that the UK, Slovakia and Sweden have all had some historic accident or incident in the nuclear power production. The media coverage and debate has been vivid in the UK, but low in Slovakia. The Swedish discussion on nuclear power seem to have had its peak in the late 1970's, and the early ideas to expand the Swedish nuclear industry were halted in 1980 based on the outcome of the national referendum on nuclear power. The concerns driving the political discussion in the late 1970's were focused on nuclear waste management, whereas after 1979, fears were especially caused by the Three Mile Island incident, i.e. future health effects and risks caused by accidents in other countries. Opinion polls shortly after the Chernobyl accident in 1986 showed low figures in favour of nuclear power. Current polls, however, indicate an overall favourable view of nuclear power (see data further below).

This brief note on historic background points to a) secrecy and potential military use as common factors that have influenced, or have a potential to influence, current sentiments of NWM; b) current information and knowledge about these accidents or politics; c) the development over time, e.g. planned increase or decrease of production, and change to national responsibility instead of export of certain wastes, and d) the impact of accidents that occurred in other countries. The examples are associated with different reactions to national nuclear technology at different times and locations, international politics and events that have had an impact on NWM. In addition, the historic legacies and accidents have created somewhat different challenges to the management of wastes in different countries. For example, do management of waste resulting from reprocessing of spent fuel, and the management of specific types of waste products due to accidents, require specific considerations?

The current situation in the Slovak Republic displays an operating repository in Mochovce intended for disposal of low-level and intermediate-level (LLW-ILW) radioactive wastes. Beside that, there are nuclear installations for RAW management (storing, processing and treatment) and interim spent nuclear fuel storage facility in Bohunice. A new spent nuclear fuel storage facility in Mochovce is under considerations. Sweden has built a final repository for radioactive operational waste, SFR, at Forsmark, a central interim storage facility for spent nuclear fuel, CLAB, outside Oskarshamn, and is currently planning an encapsulation plant in Oskarshamn and a final geological repository for spent nuclear fuel close to Forsmark. The situation in the UK is that a national repository for low-level wastes at Drigg is operating, but with limited capacity for low-level and intermediate short-lived wastes. Neither Slovakia nor UK regard spent nuclear fuel as waste, although plans are in discussion regarding management of high-level and other long-lived wastes.

Figure 5.2. Spent fuel containers, Slovakia, and spent nuclear fuel storage CLAB, Sweden.

Social system. WP 4:1 has only specifically worked in the UK, the Slovak Republic and Sweden although valuable input from other work packages focusing on other European countries has been available in the project period and contributed to our conclusions. Generally we are impressed by the many influencing factors related to NWM across the compared and discussed countries. In a top-down perspective many similarities are apparent in terms of international collaborations, standards setting and exchanges of information. Governance systems on national levels, however, steer political as well as information policy and participation processes along different paths, as discussed above.

In addition, the different settings and developments of national debates or decisions on nuclear waste have also resulted in variations of economic considerations. Funds have been available in Sweden since 1982 through the nuclear fund, i.e."Kärnavfallsfonden", whereby nuclear operators producing wastes pay a fee related to production in kWh. The Board of the fund is appointed by the Government, and the fund is expected to cover all expenses related to NWM. In the Slovak Republic a similar fund has existed since 1995, and at the moment the Slovak Nuclear Fund is based on the Act. 238/2006 Coll. Nuclear power plant operators pay an annual fee determined by both installed capacity and the price of the electricity produced. The United Kingdom separates a) Decommissioning and management of civil "legacy wastes", funded by the UK taxpayer via the NDA, and b) "wastes from new build". The rules specify that any new nuclear operator must establish an acceptable Funded Decommissioning Plan (FDP), to be approved by the Secretary of State. A Nuclear Liabilities Financing Assurance Board (NLFAB) was established in March 2009 to provide independent scrutiny and advice related to wastes from new build.

National economy. Economic factors influence prosperity or poverty. We have observed during the project that more developed countries, or affluent groups in such countries, consider economic factors to a lesser extent than those countries or groups intent on improving living standards. Although most agree that nuclear waste management is important, including planning and building of various kinds of facilities aimed at shielding current as well as future individuals and environments from physical harm across very long time periods, the current actual economic situation seems to influence acceptance issues and decision-making processes differently across countries. The choice of future policy related to development of energy resources is an important part of societal debate and development. Such choices outline and restrict the immediate future and later become the framework within which NWM processes proceed. The international financial crisis that cut deeply into national, regional and private prosperity during the third year of the ARGONA project clearly showed that local public opinion considered short time economic factors as relevant in discussions on e.g. local siting of a repository. Although dissimilar in details, such trends could be discerned in both Sweden and the Slovak Republic. Such short-time trend influences cannot be disregarded in the discussions of NWM and it could be of interest to specifically consider the impact of economic factors on decision making in more as well as less vulnerable economies.

Policy of information and transparency. Massive requests for, availability of, and easy access to, information are rather novel social phenomena. The modern or "post-modern" world we see today champions "flat" organisations and "participatory" political processes on many levels, which cause a vivid debate on the meaning of democracy. The requests for and the availability of information have grown in parallel to the transformed information and communication flows via new technologies. Information can be produced, stored and transmitted on a massive scale, and it can be selectively channelled, distorted or used for manipulative purposes. Interconnected sources and networks of information today represent social influences and powers that are not easily pinpointed with respect to origin, actors and accuracy of content. However, requests for information can easily be met through e.g. various media, including computerized networks, if that is the policy. It is today also possible to facilitate exchange of information and experience on an international scale and thus provide examples and comparisons across countries and organisations. Nonetheless, we have observed that civic requests tend to go beyond mere information acquisition and are aimed at enhancing influence in decision-making processes.

Other work packages in ARGONA have looked at the phenomena of wide reaching participatory processes, including discussions of new "tools", e.g. deliberation techniques, in such processes. There is no doubt that availability of information from most sources today is seen as a democratic right or prerequisite of democratic participation. Related to the risk communication approach of WP4 we conclude that technologies are available for widespread information accessibility, distribution, and also to some degree for communication through interactive channels. The problematic challenges instead lie in achieving attractive systems of reliable information, and the necessary high authoritative status of the most knowledgeable information sources, in the competition with spectacular but unreliable "world views" or personal evaluations.

One subgroup of WP4 had the task of scrutinizing e.g. what are the problematic issues and shortcomings in information presentation and understanding (see also Chapter 9). Knowledge level and educational background are just two explanatory factors in explaining the variability in understanding of available information. There is an immense variation to be taken into account in meeting information needs in society, as well as in developing effective communicative tools when such needs are identified. Both the transparency and participation objectives depend on successful communication on risk.

It is in the communication arena, as we see it, that the demands of science on the one hand and society on the other may create confusion or conflict. Successful nuclear waste management requires massive scientific and technological know-how as well as socially negotiated and accepted standards and visions for the future. Both requirements must be nurtured and fulfilled to achieve progress. The requirements do not follow the same rules and practices, however. Proper science is not founded on democratic voting practices, and democracy is not founded on scientific principles. Instead science and results from the scientific fields must be translated into commonly available formats of discourse, and utilized in civic participation and decision making processes. Thus, work with nuclear waste management has to provide arenas and accomplish results that involve both these unique qualities and merge parallel practices into a transparent NWM process.

On the international level information requirements are intended to be met by the introduction and use of Environmental Impact Assessment processes (EIA) where various stakeholders, including experts as well as those locally or otherwise affected, participate in dialogues to achieve optimal results regarding future environmental, health and safety conditions. As we have seen, however, national and local policies related to information and transparency differ, and reveal different practices as to when, how and in what form the EIA processes are developed. Differences may be a source of a variety of good examples, but differences may also reveal more or less inviting or successful scenarios. In WP4 we have seen widespread attempts at participatory processes in the UK, e.g. national stakeholder dialogues, with no other obvious result than increased awareness of complexities, some cynicism and potential experiences of alienation. Examples from the Slovak Republic illustrate that the long and winding road to an open, democratic social system involves a variety of "social legacy" obstacles to information flow, although European requirements and standards are formally upheld. Probably a most significant challenge in that country at the present time is to ensure that access to information, recognised and respected in legislation, is also introduced at an early stage in decision making processes. The Swedish example similarly reveals that information demands are continuously high, in spite of a decade of local site investigations and communication processes about nuclear waste management. Rules for, and the contents of, participation processes have been discussed continuously. This tendency for requests for

additional knowledge of details and future possibilities or technological alternatives, seems to increase the more knowledgeable local citizens become.

A few concrete examples may illustrate the comments above. In our 2008 Deliverable the situation in the Slovak Republic was critizied by a member of an anti-nuclear NGO as follows: “At the time of the Focus Group meeting, not a single document relating to plans for implementation of the currently valid Strategy had been disclosed by the Ministry of Economy to any other state authority or to the public. The Ministry of Environment did not have any information related to the current state of preparation of plans or projects related to nuclear waste final disposal.”

In fact there are a number of documents prepared in Slovakia to support activities related to nuclear waste management:

- Strategy of the back end of nuclear energy (SEA process finished in 2008),
- Results of DGR development programm (1996-2001),
- Preliminary plans of RAW and SNF management (and their updates),
- Conceptual deccommissioning plans (and their updates),
- Documents from EIA/SEA processes,
- Results of a number of national or international projects (FP6, PHARE, BIDSF).

Most of the above mentioned documents are disclosed for the public; however some of them (e.g. those regarding DGR) are kept confidental according to commercial agreements.

Following a series of failed efforts to site a repository for long-lived Intermediate Level Waste in the United Kingdom, a national consultation began in 2001 to address methods for management of all solid, long-lived higher-active radioactive wastes, known as the ‘Managing Radioactive Waste Safely’ process. A new independent committee, the Committee on Radioactive Waste Management (CoRWM), was set up to design the next stage of the consultation process, examine available waste management options and recommend a preferred one to government. Beginning in November 2003, CoRWM examined a list of management options, involving both experts and the public in a staged process. CoRWM published its final report on 31st July 2006. It recommended deep geological disposal as the best available approach in terms of safety and security (the two issues considered as most importance by the public). In CoRWM's view, a repository should be sited by means of a partnership arrangement with a voluntary, willing, community, which would be supported for its participation and receive a raft of negotiated benefits in recognition of its agreement.

On 25th October 2006 the government confirmed that long-lived radioactive wastes will be disposed of in a deep geological repository as proposed, accepting CoRWM's recommendations for implementation, subject to a short public review. It gave responsibility for developing a programme to implement the strategy to the Nuclear Decommissioning Authority (NDA), absorbing the functions of UK Nirex into the NDA and winding up the company.

The government launched a public consultation on its proposals to implement CoRWM’s recommendations on June 25th 2007. The Consultation closed on 2nd November 2007 and government issued an initial response on 10th January 2008 followed by a White Paper published on 12th June 2008. This lays out the details of a voluntary approach to siting, in which local communities will initially be invited to express an interest in being considered for

subsequent investigations. Those that come forward will be expected to demonstrate sufficient local support. Local geological conditions will then be assessed before the formation of a siting partnership representing local interests and those of the implementing agency, in this case the Nuclear Decommissioning Authority in the first instance. Communities will receive financial support to enable them to take part in the partnership process. The plan envisages identification of at least 2 sites for detailed examination. It could take several decades for a facility to be located and developed.

On 25th June 2008 Copeland Borough Council, where the Sellafield site is located, formally expressed an interest in being considered as a site for the deep geological repository. Allerdale Borough Council, which borders Copeland to the north, also agreed to express an interest in January 2009, as has Cumbria County Council, indicating that west Cumbria is its preferred location.

Once a community has formally expressed an interest, the British Geological Survey will undertake a desk-based screening of the area to determine whether there are areas that are unsuitable for repository development. If this screening indicates that suitable areas exist and comprehensive community discussions support it, the community will submit a report and submit what is described as a 'Decision to Participate'. Following this a partnership will be formed between the community and the NDA, and funds will become available from Government to enable it to take an active part in the process to determine whether suitable sites exist. If they do, it is expected that the local authority will support NDA and its contractors to undertake surface-based exploration, in order to gain detailed geological information that will enable assessment of the sites to begin.

The Swedish situation currently involves SKB's selection, in June 2009, of the Östhammar municipality to host the planned final repository for spent nuclear fuel. It is expected that SKB will submit an application for a permit to build the encapsulation plant (in Oskarshamn) and the final repository (in Östhammar) to the relevant regulatory authority (SSM) in 2010. Permits are required under the Environmental Code and the Nuclear Activities act. Both laws require an EIA with associated stakeholder consultations, which SKB will coordinate.

Consultations according to the Environmental Code have been carried out since 2002 and will continue until the permit applications are submitted. They have involved the County Administrative Board, the national authorities, the municipalities, the public and the organizations that can be expected to be affected. SKB provides written documentation (in Swedish and English) in the form of booklets for these consultations. The current situation was preceded by several steps. SKB started in the late 1970's to build knowledge of the Swedish bedrock and conditions that could affect the performance of a repository (in accordance with the KBS-3 method). In 1992 direct contact was made with all Swedish municipalities to inquire about possible interest in hosting preliminary studies. Several municipalities were involved in discussions and preliminary studies during subsequent years, but none wished to proceed.

Following further contact with municipalities already hosting nuclear facilities, SKB started site investigations in 2002 at two sites, i.e. the Simpevarp area of Oskarshamn and the Forsmark area in Östhammar municipality. In 2004 the site investigation in Oskarshamn was extended to also include the Laxemar area. The SKB information given to municipalities, special groups and the general public has been extensive over the last decade. It has involved local information offices, open meetings and seminars, local information newspapers (see

below), information on the Internet, and of course the various consultation processes referred to.

Figure 5.3. Examples of local newspapers in the two municipalities involved in site investigations, Sweden

In 2004 SKB also initiated a Social science research program, which involves research, dissemination of reports and papers, project related seminars, and yearly seminars focused on the 'year-book', which present summaries of the results from the latest research projects. The latter seminars, held over a 2-day period, have involved presentations and open exchanges of views between participating authorities, political representatives from the municipalities, researchers, environmental groups, SKB-personnel and other interested persons (see below).

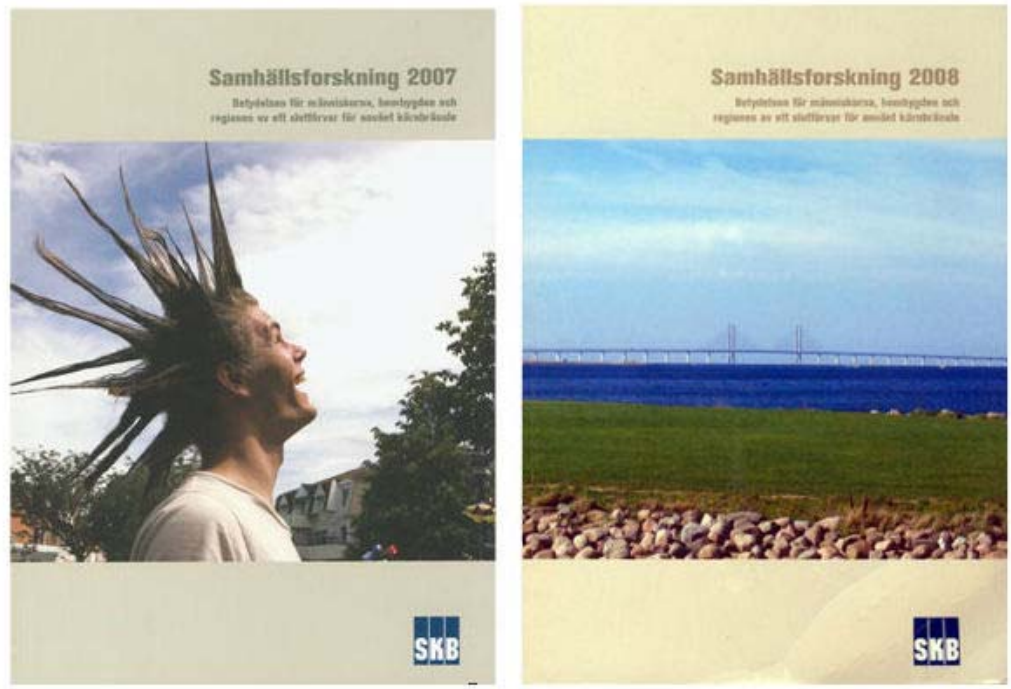

Figure 5.4. Examples of year-books from SKB`s Social sciences research programme, Sweden

The Swedish process has e.g. highlighted the fact that demands from the involved municipalities of Oskarshamn and Östhammar have to some extent led to them taking charge of the specific planning processes over time so that they (politicians and municipality boards) were in agreement with the views of the general public and in line with desirable future political steps as anticipated from the municipality's point of view.

In comparison, the Finnish repository development, although in many respects similar to the Swedish case, also offers examples of important differences. One major difference lies in the Finnish use of the "Decision in Principle" decision-making process in contrast to the Swedish process of taking a final decision only when all required materials and processes are presented and completed. Although both examples seem to generate trust they are also fundamentally different.

We suggest that the specific effects of varied governance systems are studied even more closely in the future. On the basis of current social trends we hypothesise that familiarity with national decision-making systems might be competing unsuccessfully with new trends in social justice or "direct democracy" in the longer run. Such novel and international trends may result in higher degrees of similarity across countries in the not too distant future. However, such developments will probably nevertheless still be coloured by a country's particular traditions.

5.4 Comments on the generality of ARGONA project's results

Before we attempt to suggest guidelines related to risk communication and related topics on the basis of the results in the WP 4:1 sub-project, we would like to corroborate our impressions with those of official statistics. For example, we have observed in Eurobarometer data (2008) that countries with operational nuclear power plants (NPP's) in the European Union have citizens more in favour of nuclear power, who have more knowledge of nuclear waste management and who tend to have a higher level of trust in central actors than citizens in those countries that do not have operational NPP's. In addition, self-sufficiency in energy production is another strong motivation towards pro-nuclear attitudes along with job opportunities (according to Eurobarometer and other public opinion surveys, e.g. in the Slovak Republic). We have also noticed that the citizens of countries participating in ARGONA present higher ratings in these respects than countries with operational plants not participating in the project. In addition, within the ARGONA group of collaborating countries Finland and Sweden especially show profiles that may be illustrations of culturally unique "Nordic" social systems and sentiments which often present high levels of social trust and knowledge. A few examples and comparisons are given below.

Attitudes. The European Union countries participating in the ARGONA-project all have operational nuclear power plants. The Eurobarometer data can be used to calculate the average for UK, Slovakia, the Czech Republic, Finland, Sweden, and Belgium[3], and the results show mean values of 55,5% "in favour" of nuclear energy production in these

[3] The ARGONA project includes the Joint Research Centre, JRC, situated in the Netherlands, but since this Commission research centre is European the Netherlands as a country is not included in the statistics of countries with NPP's working in the ARGONA project. Norway is also a country participating in ARGONA, but not considered in the reported statistics because it is not a EU member state.

countries in 2005 and 57,83% in 2008. Thus, the figures show a similar trend over time as in the EU totally, but also considerably higher mean support than in the European Union generally.

Table 1 below shows that a) countries with operational NPP's present a higher percentage of public opinion "in favour" of nuclear energy production than do countries that do not have operational NPP's, and that b) the countries with operational NPP's participating in the ARGONA project reveal higher mean values in favour of nuclear energy production than the overall group of EU member states with operational NPP's (data from totally 13 states included in 2008 Eurobarometer). See Table 5.1[4].

The table highlights that the framework of the ARGONA project for investigating and communicating the management of nuclear wastes seems to be embedded in a public opinion situation that is more favourable to nuclear energy production than is the case in the EU as a whole. The observed differences might be of importance with respect to the generalisability of the findings emanating from the ARGONA project.

Table 5.1. Overview of percentages "in favour" of nuclear power production in all EU(27) countries, those with and without nuclear power production, and countries participating in the ARGONA project with nuclear power production. All data based on the Eurobarometer 2008.

Group of countries	Mean value*, percentage "in favour" in 2005	Mean value*, percentage "in favour" in 2008
EU (27 countries)	37	44
EU countries with operational NPP's (13 countries)	50,77	54,00
EU countries without operational NPP's (12 countries)	22,75	27,42
EU countries with operational NPP's participating in the ARGONA project (7 countries)	55,50	57,83

* The used scale included the response alternatives: "Totally in favour", "Fairly in favour", Fairly opposed", "Totally opposed", and "Don't know". The figures representing "in favour" in this table utilized the first two response alternatives.

In addition, respondents to the Eurobarometer survey in 2008 who held a negative opinion about nuclear energy were asked whether they would change their view "if there was a permanent and safe solution for managing radioactive waste". The results showed that 48% of this group would remain opposed to nuclear energy, 8% responded "I do not think there is a solution", whereas 39% responded that they would change their attitude given a permanent, safe solution for radioactive waste management. (5% responded "don't know").

[4] Bulgaria and Romania not included in the statistics here.

Time issues and attitudes to deep underground disposal. Regarding radioactive waste management, the Eurobarometer (2008) reported that an average of 93% of the responding Europeans perceived an urgent need to finding a solution to the problem now rather than leaving it for future generations. Deep underground disposal was overall seen by a relative majority of 43% as the most appropriate solution for long-term management of high level radioactive waste, whereas 36% opposed this type of disposal. However, the Eurobarometer noted an increase in the "don't know" responses between 2005 and 2008 in this context. The level of "don't know" answers was 21% in the 2008 measurement (an increase with 4 % from 2005).

Table 5.2 below gives an overview of the Eurobarometer results in 2008 for the ARGONA countries and the EU average regarding the citizens' views of deep underground disposal. The results show that the citizens in the ARGONA countries on average reported less uncertainty (13%) than the European Union average (21%) regarding deep underground disposal representing the most appropriate solution for long-term management of high level radioactive waste. A majority of the respondents in Finland, Sweden, Slovakia and the Czech Republic agreed with the statement in contrast to respondents in Belgium and the United Kingdom within the ARGONA project. The don't know type of responses was especially notable in the United Kingdom (22%).

Table 5.2. Overview of types of responses regarding the statement "Deep underground disposal represents the most appropriate solution for long-term management of high level radioactive waste" (Eurobarometer, 2008).

Country in the ARGONA project	"Totally agree"	"Tend to agree"	"Totally disagree"	"Don't Know"
Finland	27	38	29	6
Sweden	34	29	25	12
Slovakia	19	33	30	18
The Czech Republic	14	37	32	17
United Kingdom	15	28	35	22
Belgium	11	31	53	5
Average ARGONA	20.00	32.67	34.00	13.33
Average EU (27)	17	26	36	21

In addition, 41% of Europeans agreed totally to the statement that "There is no safe way of getting rid of high level radioactive waste", according to the Eurobarometer (2008), and 31% tended to agree; thus in all 72% concurred with the statement. The comparative percentages for the 6 countries of the ARGONA project were 38,7 (totally agree), 34,2% (tend to agree), and 72,9% in all. It is noteworthy that the summed agreement responses to the statement from Sweden (82%) and Finland (81%) were considerably higher than the ARGONA project average. Within the ARGONA group of countries the Czech Republic had an average agreement of 63%, and the highest disagreement response of all countries, i.e. 26%, and 11% don't know responses.

Thus, the ARGONA countries (72,9%) were overall in line with the EU average (72,0%) regarding the statement "There is no safe way of getting rid of high level radioactive waste". However, a smaller proportion of the respondents in the former group agreed totally with the statement. It was also noteworthy that Finland and Sweden, i.e. countries quite advanced in the process of building geological repositories for high level nuclear wastes, reported considerable agreement to the aforementioned statement.

Involvement in decision-making processes. One of the questions in the Eurobarometer (2008) had the following wording: "Thinking about the hypothetical construction of an underground disposal site for radioactive waste, near your home, with which of the following do you agree the most? 1) You would like to be directly consulted and to participate in the decision making process, 2) You would like local non-governmental organisations to be consulted and to participate in the decision making process, 3) You would leave the responsible authorities to decide on this matter, 4) None of these (spontaneous), 5) Don't know.

The results showed that Europeans (in 27 countries) most often preferred to be directly consulted and involved in the decision-making process (56%). On average, 22% preferred local non-governmental organisations to participate in the decision-making process, and 15% indicated that they preferred the responsible authorities to decide. Table 5.3 shows the data, and the corresponding percentages for each of the countries participating in the ARGONA project. It can be seen that the most preferred alternative in the latter group was to be directly involved, and that such responses were most common in the United Kingdom and Belgium. Approximately a fifth to a third of the respondents in the ARGONA countries instead preferred non-governmental organisations to be involved, and an average of 22% of the respondents preferred the authorities to decide. In comparison to the EU(27) average the respondents from the ARGONA countries were somewhat less inclined to be directly involved, and somewhat more inclined to prefer the involvement of the authorities and (to a small extent) the non-governmental organisations. Note also the lower "don't know" response rate in the ARGONA countries.

Awareness, knowledge and trust. "How well informed do you think you are about radioactive waste?" The average EU(27) value in 2008 was 25%, as compared to the ARGONA average of 31%. Citizens in Sweden and Finland produced the highest averages of "well informed" (52% and 46%) among the 27 countries the Eurobarometer used for the data collection (2008). Among the ARGONA countries the averages of Slovakia (24%), Belgium (23%) and the Czech Republic (19%) fell below the EU(27) mean value.

In response to specific knowledge questions about radioactive waste the Eurobarometer found that respondents in Sweden and Belgium reached the highest averages of correct answers. As can be seen in Table 5.4 all countries in the ARGONA project produced averages above 50% correct answers. Regarding radioactive waste management, the highest levels of correct answers were given by respondents in Finland, Sweden and Belgium. The ARGONA countries average was 42% correct answers as compared to EU(27) 36%. The "don't know" responses in the ARGONA countries varied between 9% and 24% regarding radioactive waste, and 7% to 20% with respect to waste management (the remaining percentages regarding the knowledge questions represent percentages of incorrect responses, and are not shown in the table).

Table 5.3. Overview of response alternatives, and response percentages, related to preferred involvement in decision making processes. Data from the Eurobarometer (2008) for the ARGONA participants, and the EU(27) average.

Country in the ARGONA project	"Directly involved"	"Non-governmental org. involved"	"Authorities to decide"	"Don't Know"	"None of the other alternatives
Finland	48	29	21	1	1
Sweden	45	32	21	1	1
Slovakia	44	20	30	2	4
The Czech Republic	39	24	31	2	4
United Kingdom	66	21	8	3	2
Belgium	52	23	22	0	3
ARGONA average	49.00	24.83	22.17	1.5	2.5
EU (27) average	56	22	15	4	3

Table 5.4. Percentages of responses regarding being well informed (self-rated), correct responses to questions about radioactive waste and radioactive waste management, respectively, and corresponding don't know responses. All data from Eurobarometer 2008.

Country in the ARGONA project	% thinking they are well informed		% ∑ correct responses:		"Don't know", 2008	
	2005	2008	Radioactive waste, 2008	Radioactive waste mana-gement, 2008	Radioactive waste	Rad. waste management
Sweden	51	52	63	47	13	10
Finland	43	46	58	51	14	10
The Czech Republic	25	19	56	41	13	19
Slovakia	25	24	52	36	14	20
United Kingdom	25	26	54	34	24	21
Belgium	23	23	62	44	9	7
ARGONA average	32.00	31.67	57.50	42.17	14.50	14.50
EU (27) average	25	25	49	36	22	23

The data show that citizens in the ARGONA countries, on average, perceived themselves to be well informed to a rather high extent, but that especially Sweden and Finland were exceptions vis-a-vis the EU(27) average. Citizens of the ARGONA countries responded correctly to knowledge-related questions to a much higher extent than did the average European, and the respondents in the former category were less uncertain, as reflected in the lower "Don't know" answers.

The Eurobarometer (2008) also asked about trust in 8 different information sources regarding the way radioactive waste is managed in the respondent's own country. The categories were: scientists, non-governmental organisations (NGO's) concerned about the environment, international organisations working on peaceful uses of nuclear technology, national agencies in charge of dealing with radioactive waste, the national government, the EU, the media, and the nuclear industry. The respondents could give multiple answers and also respond "None of these" or "Don't know". See Table 5.5 below for an overview of the results.

Regarding trust in information sources about radioactive waste management, citizens in Sweden had the highest trust in those national agencies that deal with radioactive waste. Respondents in the Czech Republic especially trusted national agencies (46%) and scientists (46%), whereas the category of scientists was the foremost source of trust in Belgium (51%) and Finland (46%). Especially in Slovakia, but also in the United Kingdom, people mostly trusted "non-governmental organisations (NGO's) concerned about the environment" (51% and 33% respectively).

Table 5.5. Overview of ratings of trust in eight information sources regarding radioactive waste management, the countries participating in the ARGONA project and EU(27) average. All data from the Eurobarometer 2008.

Country in the ARGONA project	Scientists	NGO's	Inter-national organi-sations"	National agencies"	National govern-ment	The EU	The media	The nuclear industry
Finland	**46**	25	40	41	18	10	18	18
Sweden	51	53	52	**58**	38	16	8	21
Slovakia	44	**51**	47	44	23	22	23	31
The Czech Republic	**46**	44	41	**46**	20	22	16	20
United Kingdom	32	**33**	24	19	16	8	6	16
Belgium	**51**	38	38	32	28	28	17	16
ARGONA average	45.00	40.67	40.33	40.00	23.83	17.67	14.67	20.33
EU (27) average	40	38	32	30	21	17	12	12

In summary, the figures show that citizens in the ARGONA countries thought, on average, that they were well informed to a somewhat higher degree than citizens in the EU generally,

although there was considerable variation between them. The ARGONA countries' citizens responded correctly to Eurobarometer knowledge-related questions to a much higher degree than did others, and they were also less uncertain as reflected in the "Don't know" answers. The attitude to nuclear power production in countries participating in ARGONA was higher than in other European states with operational nuclear power plants, and considerably higher than in European countries without operational plants. Trust in various sources of information was consistently higher in ARGONA related countries compared to the EU(27) average, sometimes considerably higher e.g. with respect to national agencies, international organisations and the nuclear industry. There were also interesting differences across the countries participating in ARGONA, such as consistently low ratings of trust in all information sources in the United Kingdom.

Taken together, the results from the Eurobarometer indicate that issues related to NWM, and our findings based on the ARGONA project, cannot easily be generalized to apply across all European states. Traditional European dimensions of north-south, east-west or central-peripheral seem to make less sense, however, than familiarity with nuclear power production in the respondents' own country. The attitude difference between EU countries with operational nuclear power (51%) and those without (23%) is huge, and totally overshadows the difference in attitude between the former group and the selected ARGONA participants (55%). In such a context one would expect that more potent conflicts regarding NWM issues would occur between nuclear and non-nuclear citizens or states in Europe than between stakeholders within states that take a national responsibility for NWM. However, within each country there are local or national authorities and interest groups, and groups acting on behalf of international organisations or interests. The latter type of interests includes e.g. international NGO's as well as international power producing companies, etc. Among the former types of stakeholders are national authorities and local groups and citizens. It is not impossible that the traditional definition of "culture" as depending on country or state characteristics will, in the future, be more related to organisational identity or value system within the European Union. However, for the time being we believe that the recommendation to 'think European but pay attention to local detail' is the most appropriate way forward in NWM.

Conclusions

We began by asking two questions in the beginning of the chapter, i.e. "How are the formalised regulatory regimes, routines and procedures developed in order to enhance participation from democratically chosen institutions? Plus: "To what degree did the governance structure in the different countries support popular participation in order to increase influence in risk decision making?" The answers can be summarized as illustrating a development towards increased national attempts to broad participation and local involvement in NWM decision processes, although there is a great variety of reasons and ways to outline such processes. The 2008 White Paper in the UK opens up participation processes and discussions of new negotiation possibilities involving local government bodies. The consultation processes in Sweden break new ground in inclusive work within legitimate structures. Similarly, the overview of regulations, procedures and organisational structure in the Slovak Republic provides opportunities for the creation of new communication arenas. Regarding the degree to which the governance structures have supported participation, there are obvious differences between the countries involved in WP4. One aspect is related to the utilization of EIA processes and the timing and scale of participation. Another aspect concerns which groups are perceived as legitimate or are invited into the process. A third

aspect relates to what groups or potential stakeholders actually want to become involved. For example, environmental groups in Sweden have found organisational forms through which to become involved in the EIA processes, in the Slovak Republic such groups struggle to get access to participation processes, and in the UK some environmental organisations see their proper or most effective role as outside critics.

One potentially important "diagnostic factor" in predicting successful work in the nuclear waste management area may be the degree to which individuals and countries engage in relation to the current international issue of global environmental degradation and future catastrophic climate-related developments. Information, discussions and actions concerned with climate change, land degradation, toxic pollution etc. are all related to concerns about health and safety. There seem to be simultaneous demands for energy alternatives that are not CO_2 related, energy production that does not exhaust the financial assets of individuals or national industry, and energy production that is not related to potential health or environmental risks. Such strong social trends may influence public attitudes to e.g. nuclear power and nuclear waste management in both a positive and negative way, depending on what factors are the strongest in influencing acceptability. An example from eastern Slovakia is the local municipality of Kecerovce village that recently offered land to build a new nuclear power plant, wit the main reason being given as the high unemployment rate in the region.

It is an open issue whether demands for social justice will be reconcilable with effective energy production. For example, the trend in the United Kingdom seems to involve a sharper division between public and private business spheres, where organisations subjected to "market forces" are focused on production issues and authorities in the public arena are in charge of regulations and public deliberations related to nuclear waste management. This trend in the UK may indicate that national, state or public, and national or international private business spheres may develop activities that relate to different legislation with respect to e.g. transparency and participation processes. We also observe that strong technological and social trends are often international in nature, and that future development therefore may exceed expectations developed or originating within national contexts.

However, there also seems to be an interesting discrepancy between national and local levels. Highlighted media discussions of nuclear waste management are often framed in a larger, national or international perspective. If there are strong negative sentiments from such sources, for various reasons, they easily capture public interest and overwhelm national debates. Although local politics and local media output may be different in content and attitude, they are not trend-setting due to a "minority status". Therefore, a sentiment amongst a national majority not to accept a nuclear facility in the back yard (the NIMBY syndrome) cannot automatically be attributed to local communities. In situations where national and local interests become opposed, the rules of who should participate and decide are highlighted. From the point of view of local communities and their citizens we have often observed that "pride" is a more dominating experience than expressions related to the "bribe" epithet which is often placed on communities interested in hosting nuclear facilities by outsiders. We have also observed that local people are often more knowledgeable of the nuclear industry, they trust to a greater extent those in charge, and they may express pride in being part of local involvement in solving a national issue that is widely perceived as problematic.

We suggest that there is still very much to learn from work at a local level with respect to processes and practices surrounding planning and implementation of waste facilities. There already exists a substantial literature on local experiences in relation to information and

participation practices. Future studies would benefit by refraining from uncritically adopting available "majority views", and by initiating unbiased inquiries into the dynamics of the smaller local entities that are directly involved and that have relevant practical experience.

We would therefore emphasise that knowledge about local variations is key to understanding current processes within the European Union. The diversity exhibited may also be an important source for providing additional insights and tools for improved communication processes, although there is no reason to believe there is only one "ideal" or prototypical best practice. It may actually be the case that "best practice" is locally defined to a great extent, provided that such a locality is situated within a satisfactory overall governance structure. It may also be the case that intensified information processes and exchanges of ideas on several societal levels are necessary before similarities across countries become a prevailing feature of European NWM. It cannot be excluded that the demands and preferences of future generations will alter perceptions of technology, risks, and acceptable life-styles and that the future in many ways will be different from the views of previous generations.

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6. *Risk Communication*

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6.1 Introduction

This chapter summarizes principal components of risk communication issues based on input from and experiences of different cultural settings related to nuclear waste management (NWM). Essentially it describes the results summed up in the final year of the ARGONA project, sub-workpackage 4.1. The work consisted of delineating good risk communication approaches, as well as specifications of circumstances that require considerations. To meet the aim of contributing an in-depth analysis of risk communication strategies across national settings and trends regarding management of nuclear wastes we gathered a number of stakeholders from ARGONA participating countries (UK, Sweden, Slovakia, Czech Republic) in focus group discussions in Stockholm in September 2009. The tasks of the participants involved to provide comments on central features of existing materials and results, and to highlight strengths and weaknesses associated with various risk communication techniques and more composite risk communication strategies.

Previous work in WP4 (see sub-project deliverables for in-depth presentations of work and results), has summed up the current situation and shown that there exists a vast amount of information with respect to risk communication processes, but that it is important to continue to focus on enhancing democratic governance in that context. Furthermore, there is a need to inform more precisely with respect to details, various levels of knowledge and involvement, and to take into consideration that a variety of approaches can be used in such work. The main conclusion from the project has been summarised in the slogan ”*Think European but pay attention to local detail*”.

The results show similarities as well as differences in NWM across countries, and highlight many challenges in presenting risk information in easily accessible formats or transparent ways. The focus group discussions brought together individuals with various experiences, such as those working in municipality related tasks, environmental groups, authorities, research and consulting. Such a heterogenuous group setting could help to increase ”the tool box” of risk communication processes and to test which approaches fit best in diverse subject areas and cultural contexts. It was also suggested that interconnecting knowledge and experiences from various risk management fields and practices regarding health-safety-environment threats apart from NWM, e.g. climate change, management of toxic wastes, etc., may offer fresh approaches and perspectives. The discussions at the Stockholm workshop started on this note and the specific discussion themes were the following:

Discussion themes Day 1:

- Theme 1: Utilizing national and international experiences and perspectives on nuclear waste management: Is it reasonable to compare risk communication processes across countries?
- Theme 2: Based on the previous discussion: How could risk communication to the public in Europe be improved?

Discussion themes Day 2:

- Theme 1: Are you happy with the way risk assessment is presented in your country?

- Theme 2: (Based on graphical presentations)
  A) What is a good way of presenting (statistical, graphic) information?
  B) Are there any central characteristics of pedagogically well presented information materials explaining risk assessment?

This summary highlights some central issues of the discussions on risk communication processes. For an in-depth presentation of the second day's theme of presentation formats, please see Deliverable D17.

6.2 Structuring the Discussion Contents

The discussions were based on free commenting on the general themes that guided the sessions. Therefore the approach to summarising the contents has used a "gold-digger's' approach" where the nuggets were separated from less interesting materials. Comments were asked for from each participant in turn and the participants could comment on previous remarks as well as add new perspectives from their points of view. The presentation here involves the *extracted main dimensions* emanating from the discussions and does not give a verbatim account of exact statements. Thus, the structuring of the results presents only the "nuggets" extracted from the core contents of the workshop, often related to figures or tables. The figures attempt to suggest theoretical relationships and causal flows as they appeared in the discussions. It should be noted that statements and comments in the discussions represented the participants' personal points of views, and not necessarily validated facts or the view of particular organisations.

6.3 Selected Results

Comments on Current Developments. The exchange of views on current developments from national perspectives involved a discussion of the differences in trust in various countries, and possible reasons for the differences. It was noted e.g. that historical situations and decisions have affected trust in authorities. It was considered how much authorities and official bodies are trusted, and to what degree such organisations are seen as *independent* from the implementer. In some countries there even seem to be a view that "independence" involves not being related to the government, apart from independence from the implementer. On the other hand it was also commented that siting municipalities in Sweden had chosen to use state authorities as "their experts" in relation to safety issues, e.g. mainly long-term safety and safety assessments. In the UK, however, much of what emanates from the authorities is perceived as "smoke and mirrors", and people tend to turn to the media for information. It seems hard to know or to understand what agendas the different actors have. A comment related to the Slovakian experience pointed out that trust may actually lead in the wrong direction. For trust to develop there is a need for *enforcing mechanisms* to follow up on mistakes or bad conduct. The discussion highlighted that trust is not good *per se*, but judged in relation to goals and achievements.

A comparison between the current UK and Canadian approaches was made, and the pro-active local risk communication approach was highlighted as being more productive than situations where nuclear waste management organisations tour municipalities to feed information into the process. It was added that there is a danger in "forced risk communication" with respect to achieveing trust. However, current activities in the UK involve *volunteers* (municipalities) even though these actually turn out to be the same as those previously selected by Nirex (the former implementer). An important key factor in the process

is therefore the *independence* of the organisations in charge of the siting process, aiming at a financially efficient, but safe, process. It was suggested that from 2010 progress will be made in West Cumbria with respect to development of a "partnership" approach (as laid down in the MRWS process).

An example of how trust is enhanced in an unobtrusive way was provided from the UK, and the Seascale area in particular, where people working at Sellafield subsequently chose to retire in the coastal village. Their choice of staying close to the plant and industrial area was seen to provide an unspoken example of their attitude. However, it was also said that the NWM issue is politically very unpleasant. Examples to support this notion can be found in USA, Germany, and in many other countries. Much of this has to do with the culture in different countries, but the role of differences between generations was also discussed. It was pointed out that the extent to which various "generational cultures" vary, across and within countries, with respect to interests, care or environmental attitude, and questions of central importance to them as an agegroup, may have an impact on trust levels.

In addition, to be *representative*, e.g. the composition of bodies influencing the decision process in terms of type of interests or "stakeholders", should be considered. For example, an attempt to involve environmental NGO's in the European Nuclear Forum has failed, because many of the NGO's meant the Forum consisted of 90% industry-related individuals, resulting in a very strong focus on industry issues, which the NGO's felt unable to support. The figure below summarises key factors mentioned in the discussion, and suggests that independence of actors, especially central decision makers, the functioning of enforcing control mechanisms, voluntarism, and the involvement of a variety of "stakeholders" and explicit behaviors can influence trust and distrust. It must be noted, however, that the "trust" and "distrust" outcomes depicted in the figure are not good or bad *per se*, but judged within a complex situation and in relation to e.g. goals and achievements.

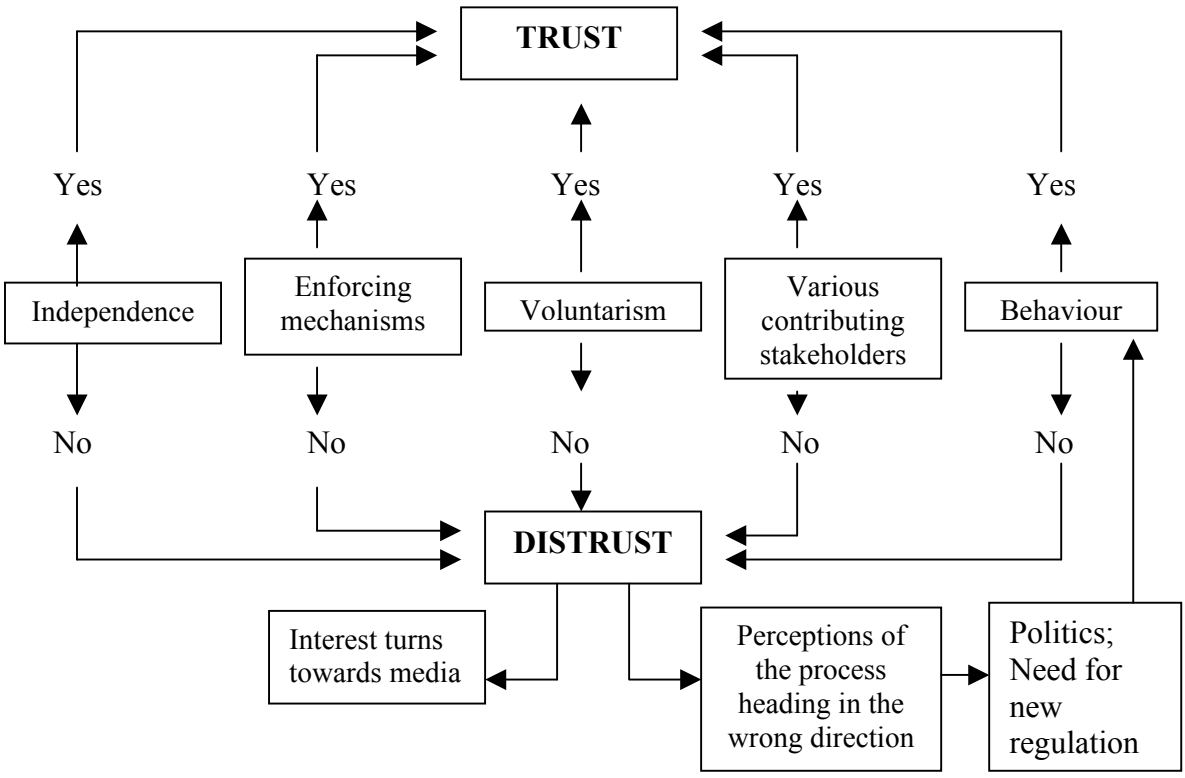


Figure 6.1. Theoretical summary of key factors in the discussion.

Strategic Approaches to NWM Processes. It is important to recognise what the *goal* of the risk communication work is. Is it e.g. to inform, to raise awareness, or to gain acceptance? One participant believed the goal is to gain acceptance for NWM, and added that there have been many problems in different countries in this connection. Instead the *long-term safety issue* should be the main focus of risk communication, i.e. the 100,000 to a million years' perspective for the repository system. The view was that the current discussion is not really focused on long-term safety. This person stressed that a core issue relates to *governance*, i.e. how different aspects come together and how one takes care of all perspectives. It was added that long-term safety builds on trust.

One commentator asserted that we do not have to prove safety over a million years – it is the *now* that matters with respect to safety; thus presenting a different view on the importance of the long-term safety focus, stating that radioactive wastes decay over time, and that the central focus instead ought to be the repository safety issue as a whole. If safety can be assured, then it should be possible to inform people about that. However, in this respect there are many uncertainties involved, and much work remains to be done regarding risk estimations and risk communication in this area.

Furthermore, safety assessment results are very difficult to understand for ordinary people, and anyway, people want *zero risk*, in spite of there always being a risk, e.g. a dose. How to solve this equation is the task in approaching risk communication. An example of this type of challenge was provided from the Swedish Stipulation Act in the late 1970's, which asked for absolute safety. The example aimed at illustrating the existence of a "political safety case", e.g. "a conceptual case" in contrast to the more quantitative assessment approach. The "absolute safety" notion was seen by the group as absolute nonsense from a technical and scientific point of view. The discussion returned to the long term safety issue and underlined the *inherent uncertainty* involved in social and political changes, and suggested that relatively speaking there are fewer problems or uncertainties with technical systems.

Someone asked why we are going into the siting phase so quickly (in Sweden), and underlined that one should separate more clearly the aspects of "recommendations" and "implementation of recommendations" in the NWM process. It was also suggested that "*the safety case*" has been a problem from the start because it has been approached as a purely, or mainly, technical issue. But one has to ask if it is purely technical. Is it not basically a philosophical problem? There were different opinions on this idea among the participants in the group. Someone argued that "the safety case" is defined solely by regulation. Another comment was that the Nuclear Energy Agency (NEA) of the OECD has a specific group dedicated to the development of the concept of "safety case" and of all the ingredients of this concept. It is the Integrated Group for the Safety Case (IGSC). In 2004 they published the report "Post-closure safety case for geological repositories. Nature and purpose", which illustrates very well what the safety case is.

One person pointed out that the safety case can either be focused on technical requirements for a nuclear facility, a case evaluated in a comprehensive safety assessment, or it may be a wider case presented by an implementor e.g. in an application to construct a repository, including more than technical aspects, but in principle restricted to aspects related to safety. Someone else claimed that it involves e.g. acceptance issues. It was thus asserted by some participants that it is necessary to define clearly in information and communication situations

what “the safety case” is, or how the concept is to be utilized. The importance of looking at exactly which the requirements are for a licence application was noted as well.

It was also suggested to explore, in a concrete way, what would happen if there is no decision (about a repository); this could serve as an example of basic strategies, and offer a fresh approach for many. Provide comparisons, e.g. of what can be implemented, was the contribution from one participant. Involve a “small step-wise decision making” procedure, i.e. make use of shorter time lines, was suggested by another. Others suggested making use of the “willingness to pay principle” in the decision process. The importance of being aware of the *agenda setting* from the start was mentioned.

Some recommendations were put forward in this context: Concentrate on safety; if safety cannot be guaranteed then just look for another site. Clearly provide the *criteria* for regarding, or disregarding, a site or locality as interesting. Define also clearly what are unsuitable sites or bad areas. It was also underlined the the NWM process must involve considerations of all aspects, e.g. from safety analysis to benefit packages. Look into the dynamics of the “stigma bargain chip”, for example. Consider *options*.

In addition, there needs to be some kind of basic *independence* defining the whole process of NWM. That also involves information distribution and quality of information sources. It was asserted that in Sweden most information comes from SKB, the Swedish implementer. Later comments to this statement pointed out that one must not disregard existing features compensating for this situation, e.g. comprehensive and broad reviews of R & D programmes, requirements on EIS, financial support to environmental groups from the Nuclear Fund, etc.

A short discussion took place on the appropriate definition of “independence”. One suggested definition was “not to have been involved in the reviewed project”, whereas “the involvement of elected people in the process” highlighted another aspect. The term “*expertise*” was discussed in a similar manner and a definition attempted. *Competency* and *honesty* were mentioned as central components. A suggested definition of an expert was ‘someone judged by an expert peer group to have the required competency’.

The discussion went on to comments on how to select “*stakeholders*” and who should be in charge of such a selection. It was stressed that it is an agenda setting issue of how persons participating in information meetings or panels etc. are selected and presented. How is the selection of organisations, “stakeholders” and persons handled within the national contexts? Is it a matter of a “tick in the box exercise” relative to official requirements just to be able to demonstrate an acceptable procedure, or is it a process involving something else or something more? It is important to consider who or what different “stakeholders” represent. According to some participants of the Stockholm workshop, not enough consideration has been devoted to this issue in their countries, and thus representativeness needs to be better clarified in relevant legislation or procedural rules. An aspect of the issue is how to handle a situation in which the often referred to “general public” does not show an interest in e.g. information or public meetings.

Voluntariness and choice were pointed out as important in strategic planning, as was the current development of ‘partnerships of interest’, e.g. in the UK. The strength of the “partnership” concept is that it gives a community the right to “walk away” from further engagements if they so wish. It is still an issue in the UK, however, to define what “the relevant community” is and how to specify the borders to areas not included. However, the

veto-right is important to local communities if they are to consider becoming involved in a siting process at all.

In this context it was noted that in the UK a land owner could suggest that his/her land be used to site a repository. Historically, British Nuclear Fuels bought farms in Cumbria when they became available, and today the Nuclear Decommissioning Authority consequently has a lot of land at its disposal, some of which may be used for "new build" of nuclear power plants. It was also noted that much of the focus so far has been directed at siting or repository issues, whereas little attention has been paid to transportation issues. The assumption was that transportation issues may become a larger issue than "the safety case", e.g. in West Cumbria.

Summing up the input from this discussion, recommendations included taking good account of previous experiences; to compile the results in a project or a report on risk communication, and governance; to reach out to interested local communities and those with questions with information and possibilities for dialogue. It was stressed that trust is built, it is not simply existent or non-existent. Trust is an end result of a longer process of interaction, and trust is constantly reevaluated.

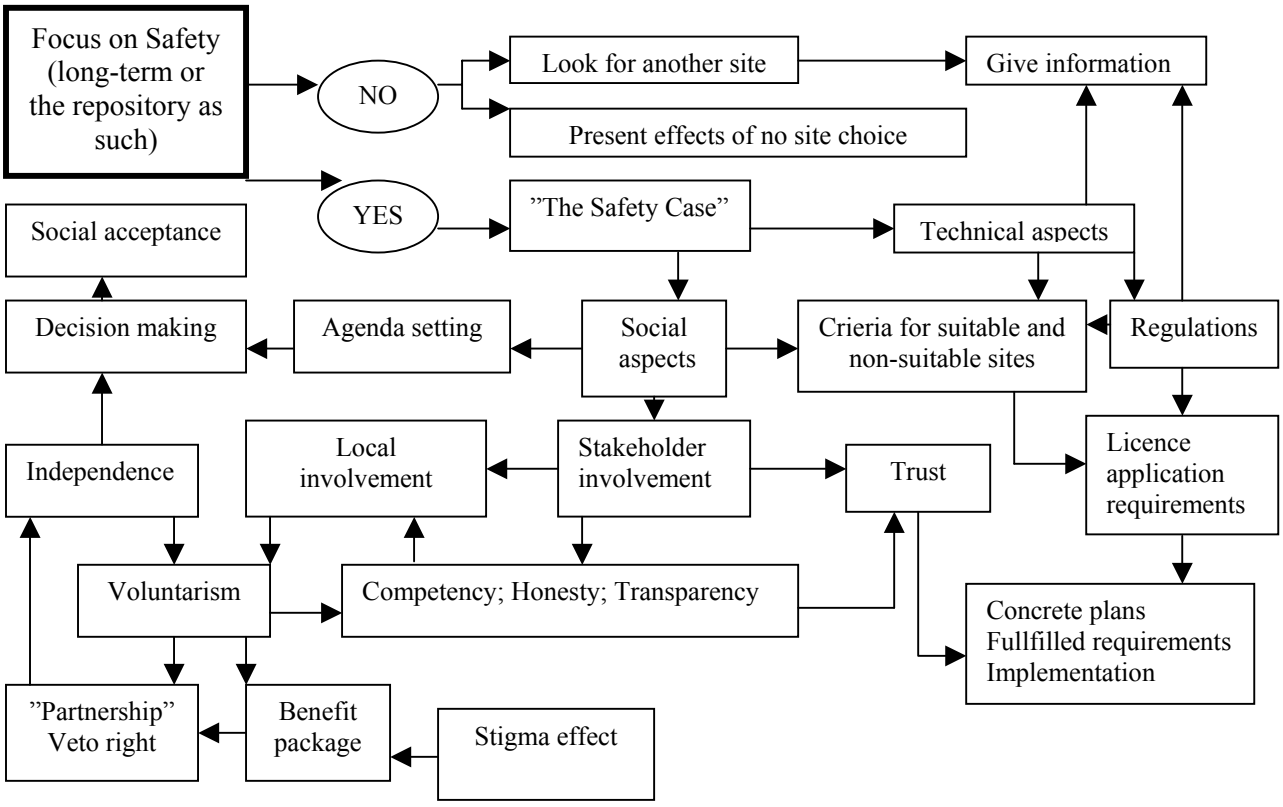


Figure 6.2. An overview of concepts used in the discussion, and suggested influences.

Prerequisites for Risk Communication Processes. It is important to ask the question "Risk communication about what?" What is the *goal* of the communication? Is is about safety issues, specific analyses, general information, attempts to contribute to improved knowledge, etc.? It was suggested to make use of, and improve, available materials through good examples from work in other countries.

Voluntarism is a necessary basis for risk communication and participation processes. The current West Cumbria process in the UK, is one example. This process is led by the local communities. For the time being there is no absolute definition of "host community" or its borders in the 2008 White Paper on radioactive waste management, but the process goes on and currently involves three different political levels. The concept of partnership has played an important role in the development.

Furthermore, *consensus* is an ethical starting point in developing a risk communication process, although this is very hard to achieve. It could be possible to use examples from countries more advanced in the process and try them out in other countries. *Trust* is imperative, and therefore it is important that there is *transparency* about whose interest, ideas or initiatives it is that are allowed to evolve.

When discussing *trust* it is important to differentiate between different kinds of trust, e.g. trust in information regarding what science can contribute to or solve (epistemic trust), and "social and political" trust in the institutions involved. Issues related to different kinds of trust elicit different kinds of responses. Regarding the question if it is reasonable to compare risk communication processes across countries one may respond "yes" in relation to communication involving suggested technical solutions and communication tools, but "no" with respect to comparisons across countries' social and political orders.

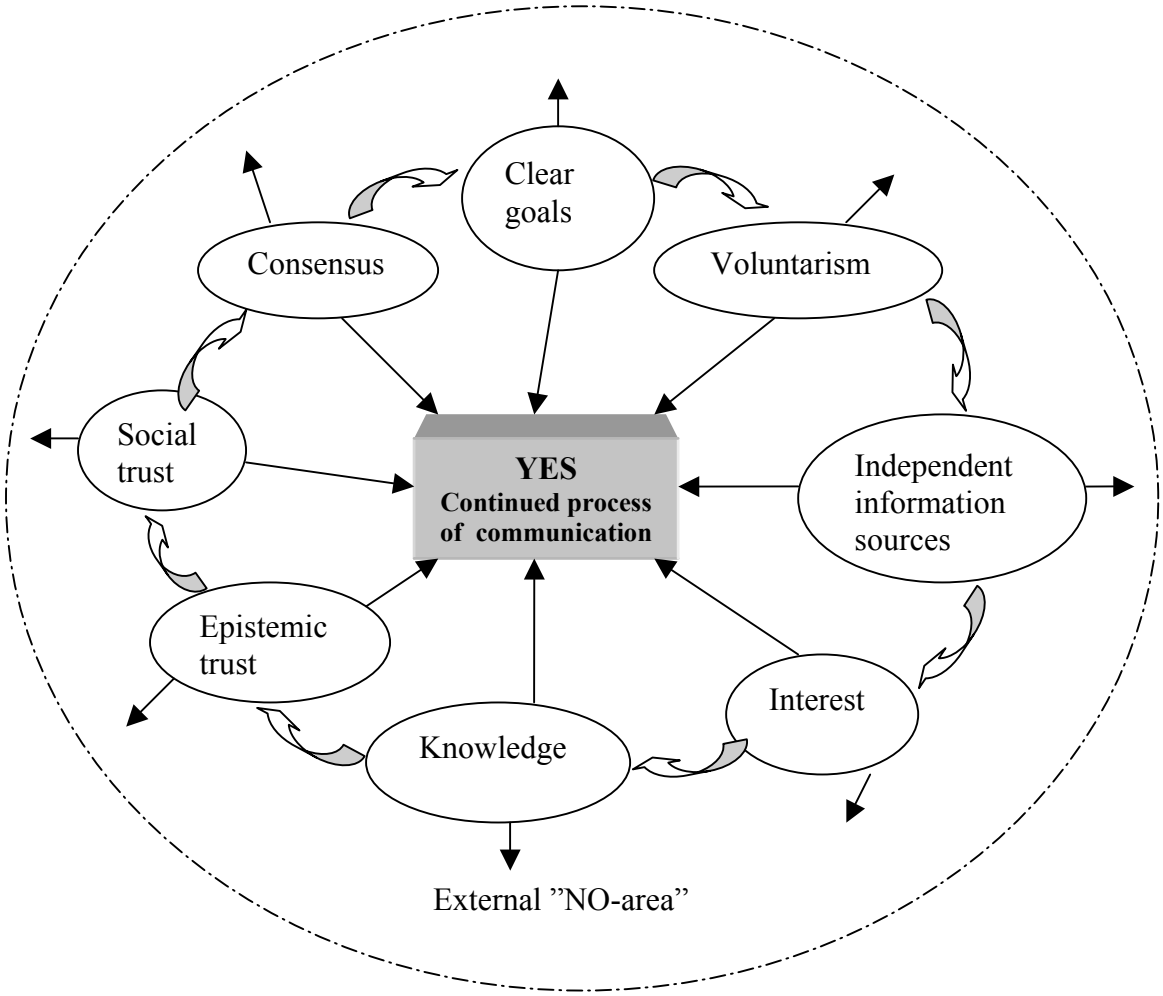
One should also distinguish between local knowledge and knowledge in the general population. Local groups and people tend to be better informed. However, trying to get a message across successfully to a group with no experience of risk analysis that, e.g. it would take 3-4000 years before any impact would be likely to occur in a repository, would depend heavily on the social trust and credibility factors attached to the presenter and that person's ability to explain as well as to respond to questions. Not to understand sometimes means to lose control, which generally is a feeling creating negative sentiments. Thus, bad explanations or unsatisfactory responses can result in negative feelings toward the subject matter even if what was said is academically correct.

It was noted that one type of communication or content will not cover all perspectives or information needs among interested individuals or municipalities. It is necessary that people receive correct, as well as understandable information, and that they trust the information source. For this reason the perceived *independence* of the information source is necessary. For example, regarding "the safety case" it is sometimes taken for granted that the regulator (authority) is the public's "eyes and ears" with regard to obtaining the best outcome. However, this is not always the case, and it is important to show people how, when and where they can participate, contribute or make a difference in the process.

One participant was concerned about the apparent paradox involved in the suggestion that everyone should be informed, whereas many people obviously are not interested or do not want to be informed. Therefore, the need to *create interest* for information about NWM was underlined. It was noted that not much work has been done by universities in the risk communication area in this respect.

The figure below aims to illustrate the central concepts of the discussion and their main dual directions or possibilities, i.e. toward the central "yes-area" and a continued communication process if a prerequisite is fulfilled, or the external "no-area" of various kinds of unsolved problems when a prerequisite is low or lacking. It is suggested that the prerequisites are all

available as starting points for an improved communication process. Note, however, that the positive development is a continuous communication process, not necessarily a successful one.



6. 3. A loop of prerequisites, and perpetual influences, in continuous communication processes.

Comments on Rules of Thumb, Public Meetings, Use of Concepts and Presentation Styles. Summaries of comments related to this heading are presented below in tables and bullet points to make the suggestions more easily reviewed. The following comments were extracted from the discussion regarding more general “rules of thumb”.

Table 6.1. Rules of Thumb Regarding Information and Communication on Risk.

<table>
<tr><td rowspan="2">Make all kinds of information available, on different levels, regarding the types of prior knowledge required.</td><td>Explain where information can be found.</td></tr>
<tr><td>Interact with schools to provide basic education about e.g. radiation and risk issues.</td></tr>
<tr><td>Accept help from “key people” who can carry information to other groups.</td><td>The Internet is important; make available various kinds of reports, protocols, and links to more information, etc.</td></tr>
<tr><td rowspan="2">Investigate which are the most frequently asked questions and provide easily accessible responses and documentation about the issues. For new questions, or questions related to issues that are currently the focus of attention in e.g. science, media, or a local community, the information requirements are different. Such issues may involve explanations of various kinds of uncertainties, explaining known basic facts, or strategies to further explore the issues.</td><td>Develop interactive websites; see e.g. the Regional Council in Uppsala’s current homepage.</td></tr>
<tr><td>Differentiate between sceptisism expressed in “epistemic uncertainty”, i.e. not knowing what types of problems science actually can give a correct answer to, and distrust, i.e. distrust or little “social trust” due to organisational affiliation, personal reputation, unfavourable media coverage, etc.</td></tr>
<tr><td rowspan="2">Make clear distinctions between “what has been done” and “what should be done”. For example, when reporting on “results”, make sure to communicate whether the results represent purely theoretical or simulated outcomes, or if the findings come from experimental or site specific tests conducted at a chosen site, etc. It is not until in the licensing application phase that details are really tested. Observe in such a context the various different understanding or expectations related to “the safety case”, e.g. as a technical challenge, as a conceptual proposal of “safety”, or as a site specific issue that requires local acceptance.</td><td>Invite people to meetings, group discussions and face-to-face encounters.</td></tr>
<tr><td>Listen to the participants’ questions and interests. Questions need honest and updated responses, also with respect to pending uncertainties, available choices or future options.</td></tr>
</table>

Table 6.2 below summarizes suggestions of considerations, preparations and actions related to public meetings.

Table 6.2. Rules of thumb more closely connected to public meetings.

<table>
<tr><td>Develop different kinds of meetings, e.g. with larger audiences, seminars, small group discussions, group work possibilities, etc.</td><td rowspan="2">Provide different types of informative materials adapted to the particular situation, and offer a possibility of follow-up and feed-back, for e.g. different interest groups or generations.</td></tr>
<tr><td>Recognize the audience you are talking to or with, and change the format of communication if necessary.</td></tr>
<tr><td>Complement information with meetings where experts can respond directly, and meet people face-to-face. Also a single meeting can be divided up into various parts, such as a choice of presentations on various subject areas, or small group discussions, in different rooms.</td><td>Make use of selected, experienced mediators or facilitators. There are “personality factors” involved here as well as knowledge of an area and other competencies, i.e. technical abilities or competencies, personality abilities and previous experience.</td></tr>
<tr><td>Use the RISCOM “stretching” technique in sessions with a panel of people holding different competencies from various fields asking specific questions to experts.</td><td rowspan="4">An interesting situation that may occur in relation with presentations to audiences is when outspoken proponents and opponents use a meeting arena to present their messages instead of debating the issue brought forward by a presenter. Such situations are characterized by the highlighting of alleged mistakes and displays of distrust. The scenario of attempting to gain public support from an audience should not be mistaken for an educational arena, and it seldom engages others than the spokepersons for the respective causes. People in such an audience that were interested before the dispute, or had brought specific questions, usually become reluctant to get involved under such circumstances. Their impressions of the presentation or meeting often become tainted by the experience and they can exhibit discomfort or dissatisfaction.</td></tr>
<tr><td>“Hearings” or “stretching sessions” can be used as meeting formats to get deeper into selected themes, e.g. copper corrosion, water flow, decision-making processes, etc.</td></tr>
<tr><td>People will often pick up what they perceive as wrong or missing information. Never dismiss anyone, or anyone’s question, as stupid, unimportant or irrelevant.</td></tr>
<tr><td>Never underestimate the potential concern a person may hold about an issue, and do not guess about the reasons for such possible concern. Instead respond to your best ability and, if the situation is appropriate, inquire about or discuss ideas and associations attached to the issue.</td></tr>
</table>

Specific terminology was highlighted as a communication obstacle. The group discussions gave several examples of terms and concepts that must be used with caution. To enhance clarity and facilitate communication it was suggested that one uses a spectrum of examples, and styles, as well as initially spend some time on explaining basic concepts and constructs. See Table 6.3.

Table 6.3. Examples of terms and concepts that must be used with caution.

It is usually difficult to explain to a lay audience what "*deterministic*" and "*probabilistic*" approaches mean. It was suggested in the discussion that if it is necessary to introduce these concepts then it is more pedagogical to start from a deterministic angle. A suggestion was "pick deterministic reference scenarios instead of probabilistic discussions". However, different theoretical frameworks and specific technical uses may give such terminology slightly different meanings. It is therefore suggested to remove such terms altogether in presentations to citizens and to aim for a much more concrete approach and, if possible, the use of everyday terminology.	An especially problematic concept is "*uncertainty*". For many people it means simply "don't know". It may not make sense to a person who holds such an understanding to grasp that degrees of uncertainty surround the presented estimates of risk. And confusion would certainly be a fact if the scientist is unaware of the listener's different understanding of the concept. It could be of some help if scientific concepts generally, but specifically those carrying ambiguity viz-a-viz daily uses of language, are defined and clarified early in a presentation and discussion.
It may also be problematic to use the concept "*conservative*" since it has many meanings in ordinary language, and not necessarily translates to "fail on the safe side" as may be intended in risk assessment contexts.	A similar presentation challenge is attached to the work "*risk*". The impossible task of achieveing zero risk can easily be misunderstood if there is a tendency to think in "black-and-white" categories, i.e. in terms of "is there a risk or not?"

The group discussions also dwelt on presentation contents, methods and styles. The suggestions below were extracted and are presented here in no specific order or classification:

• There should not be too much detail in presentations for non-experts. Details require prior knowledge, and it is important to outline a general overall orientation of a subject area or problem before going into details. For example, the water-flow situation in a repository, how to explain that? One possibility would involve clearly demonstrating what assumptions are involved, and what has been taken into account in the analyses perfomed before results or assessments are presented. The explanations could be enhanced by pedagogically developed graphs, tables, and plots.

• Slides in presentations always generate questions; start explanations from the questions generated by listeners.

• Demonstrate e.g. doses over time on understandable time scales. Include information about e.g. regulations and requirements, i.e. the framework within which analyses were conducted.

• Explain clearly what scenarios and parameters are involved to reach an estimate or, in a social context, a decision.

• Make sure that all "optimists" as well as all "paranoics" have their hopes and fears addressed.

• Remember that people are interested in “worst case scenarios”, no matter how unlikely such scenarios are. Be prepared to discuss the worst of the “worst case scenarios”.

• Explain e.g. what “the safety case” refers to before getting into details of risk assessment.

• Make explicit comparisons between good and bad sites for a repository.

• Put risk communication in the context of life, i.e. life is a risky business.

• Present concrete examples, e.g. make examples of a repository in Stockholm city, at a beach, and other available places.

• Explain pros and cons of the matter at hand.

• Level and detail of contents must be adapted to the people who should use or understand the matter. Support or validate information at all levels, e.g. for persons without as well as with prior knowledge.

• Do not only consider the contents of the communication, but look also at the level of difficulty regarding e.g. abstraction, choice of concepts, use of language.

• Present or produce different types of information, for example, classify different groups of people regarding their prior knowledge and concerns and start from there. The *level* must always be correctly adapted.

• If the contents or messages from a prepared presentation seemingly do not meet the information need or interest of a group, then be prepared to change not only the presentation, but also the presentation format.

• Respond to the questions *they* have. It is important to provide plenty of time, and many examples, in a presentation.

• Clarify early in a presentation what type of message you intend to give; listen to what questions people ask, inquire what they want information about.

• It is important not to make mistakes in the presentation of facts and information. Mistakes certainly involve giving incorrect information, but also to be too confident when information contains uncertainty or is scientifically disputed. An example from the UK illustrated a situation where confidence was lost due to a suboptimal presentation of water-flow estimates, and where other correct information was tainted by the mistake. Why should I believe you now? The commentator underlined that you are not able to go back on something that you as an expert has stated as the truth, so there is reason to be well prepared. If you go back on information previously presented as “true” or expertise knowledge, then trust is gone. It takes a long time to build up reputation and trust, but a single mistake may destroy it very fast.

• Make presentations similar and recognizable across time so that non-experts can relate to prior information. It is important with repetitions, and continuous contacts, to enhance understanding.

• Train and develop good pedagocical skills. One participant emphasized “Most important is *how* I explain something”.

• There are good reasons to differentiate between “generic reviews” that are basically theoretical and have diffrent scope and contents than e.g. reviews of site specific issues. In the former situation many can have an opinion, comment or ask questions, whereas in a specified expert area comments and sharp questions require prior knowledge and expertise in the field and of the specific case. In the latter type of case it is necessary to involve “peer reviews” for profound scrutinizing of the subject matter.

• It should be remembered that people in municipalities do acknowledge that they do not understand safety assessments or modelling. Therefore it is not a problem, quite to the contrary, to present information that is basic, or very simple to the expert, in a more easily accessible way. It was strongly suggested that one should give community people the possibility to comment on information or presentations to adapt them to the adequate level.

• “Safety” is one key issue. The long-term perspective requires understanding of performance assessments, etc., how to do calculations and their bases. With respect to the general public we need to be careful about details, and e.g. distinguish between safety related to technical calculations or e.g. the properties of different types of wastes, and the appropriate functioning of various organisational systems and how to trust them. There are many different political or systematic overall approaches developed, and they cannot easily be compared. However, good aspects of NWM involve careful programme planning, continuous, repetitive and independent reviews of that process.

• What kind of comparisons can be made? Well, there is e.g. the type of repository, e.g. bedrock, salt, clay. There are also the differences between low, medium and high level wastes, etc. But information is often too general, i.e. just presented as a “nuclear waste repository” or “nuclear waste” generally that does not pay attention to detail or connect to actual, available knowledge.

• Make comparisons with other areas, e.g. risk related to natural radioactivity, nanotechnology, stem cell research, etc. Provide perspectives that also compares perceptions of time spaces, e.g. climate change, the developmet of species, etc.

• Simplifications carry their own problems. Some of those are related to expectations or attitudes and others to prior knowledge level. A listener may very well be especially concerned about, and knowledgeable in relation to a certain aspect and would therefore not be content with too general information or answers. On the other hand could such a person certainly be totally uninformed about another speciality area, and react with indignation to detailed information without a review of the overall context? Probably continuous experience with different audiences is required to be able to foresee and understand the expectations of an audience or a specific group or person. Communication training comes with good feedback from meetings with various audiences.

• Should we work more through the media? Media does not have or give the “full picture”, and they often have their own agenda, so the approach is difficult. Furthermore, you cannot “blame” the media, it is futile. Media actors need to be better informed when they write an article, but when they write an article they have to consider what sells papers, although they usually understand the agenda. But in some countries, e.g. Sweden, the media is also

perceived as biased. Of course, there is freedom of speech, and it is often hard to prove that a media article is totally wrong due to all the surrounding uncertainties.

• One has to consider all the different kinds of media output, e.g. there are serious and less serious newspapers, various types of TV-programmes, news and commentaries, national and international journals, etc. Also considering the pressure put on journalists one cannot always expect good, reliable information. There is also a tendency of duplicating from already available sources which may amplify a message. However, all countries have journalists with real expertise in commenting on scientific results, without having a stake in the matter. These could be approached or engaged in information exchanges.

• It is important to use local media, because they are more knowledgeable about the local developments and the local population and are more interested in local, everyday events. Further away from a site the interest is lower, and there is often no great appetite for information at the national level. Siting is an especially local issue although it is also a national one as well. National media, on their part, tend to have a focus on accidents or events of a more sensational quality. Today one must consider also the internet, and internet media transfers.

• Remember that nuclear communities have a higher awareness level to start from (in terms of information and communication). If you are sure about "the safety case" then there should not be a big problem informing about it. However, make sure the NGO's are involved, and realise that every party (NGO's, industry, researchers, authorities, etc) have their own agenda or roles and commitments. A common theme, however, is that we have to take care of the nuclear waste.

How to Improve Risk Communication, Some Suggestions. The group discussion pointed out that one of the most important aspects of improving risk communication is that the information should be based on independent sources and reviews. A possibility would be to use the IAEA in such a capacity, or otherwise to consistently make use of independent organisations or groups. In the case of NWM one could envisage use of a "European group" to examine all "safety cases" across the member states, in order to investigate similarities and differences. Another suggestion was to set up a credible review board in Europe, e.g. a European Academy of Sciences, to fulfil the task of independent reviews. It was also underlined that all international regulations "should" be implemented in EU countries, e.g. the Euratom treaty, and other legislation, so that all nations developed similar practices.

In a similar vein the dicussion put forward the suggestion that competitions could be held involving member states of the Europe Union with respect to the '*Best Presentation of Safety in Nuclear Waste Management'*. Such competitions should have a broad panel of persons from a variety of competencies acting as judges. Their tasks should involve e.g. to evaluate contents, format, comprenhensibility, and dissemination efficiency, etc., of the presentations. The overarching role of such competitions would be to highlight the importance the EU attaches to adequate information transmission and risk communication ability related to nuclear waste management issues.

Whatever direction NWM and dissemination work take, the group discussion summarised that all suggestions or decisions in such processes need to be reviewed and discussed. Such reviews could be of different kinds, e.g. peer reviews, independent groups' reviews, etc. and

they could refer to single events or composite, strategic approaches. The core concern was to aim for and include "independent" second opinions.

6. 4 Summary

The discussion in the international focus group started from considerable experience and knowledge of the participating countries' situations. Thus, there was not much overall review of the current national state-of-the-art, but rather examples of current trends, and comments or offerings of comparisons to other participants statements.

There was agreement that historic perspectives must be taken into account when trying to understand a specific NWM process. Historic events and decisions steer the developments and e.g. choices of risk communication processes along certain paths, which may be difficult to understand without the knowledge of developments over decades. In this respect the group found the task of comparing current national risk communication processes across states to be difficult. However, the discussions did point out generic themes and prerequisites for good or improved risk communication processes. These themes and examples were outlined in the text above. Central themes involved independence in decision making and in various review processes and, as a defining characteristic of the whole siting process, the representativeness of stakeholders, the need for functioning enforcing legal mechanisms, the importance of voluntariness in municipality participation in discussions on siting a repository, and the central role of proactive local information work. It was noted that the representativeness issue is not well defined, and that classifications and e.g. geographic borders, related to those citizens and organisations who should be involved in deliberation and decision making processes, are among the main challenges in the immediate future in most countries.

Regarding strategic processes the importance of goal setting was underlined, as were the needs for a well planned and adequate governance process, considerations of short and long term planning horizons, and the actual pace of current development. Clearly defined work agendas were requested, and an awareness of the importance and role of agenda setting early on in a planning, or e.g. risk communication, process. It was suggested that experiences from other countries or projects were considered in the work and planning. The international focus group dwelt for some time on issues describing "the safety case", its contents and social role. Although "the safety case" is a well defined area of expertise, the social importance of how and why the work is performed and the evaluation and impact of the results are not technical issues. In a strategic context, the discussions brought to light the need for a transparent description of the role of scientific and technological long term planning within current society.

The figure below illustrates that the safety case is influenced by short term social and political issues, but also by social phenomena such as "trust". The concept of "trust" here represents an end result of a series of circumstances including "independence" in decision making, "representativity" in the process, and "accountability" with respect to openness, transparency and responsibility in decision making. In turn, the generated degree of "trust" influences the short term politics, via consensus building and active communication processes. The figure also shows that there are relationships between the core concepts. For example, "independence" between actors or with respect to actors flows into the review process, which in itself contributes to perceptions of accountability and trust. Furthermore, "representativity" has direct influences on "trust", "consensus" and participation.

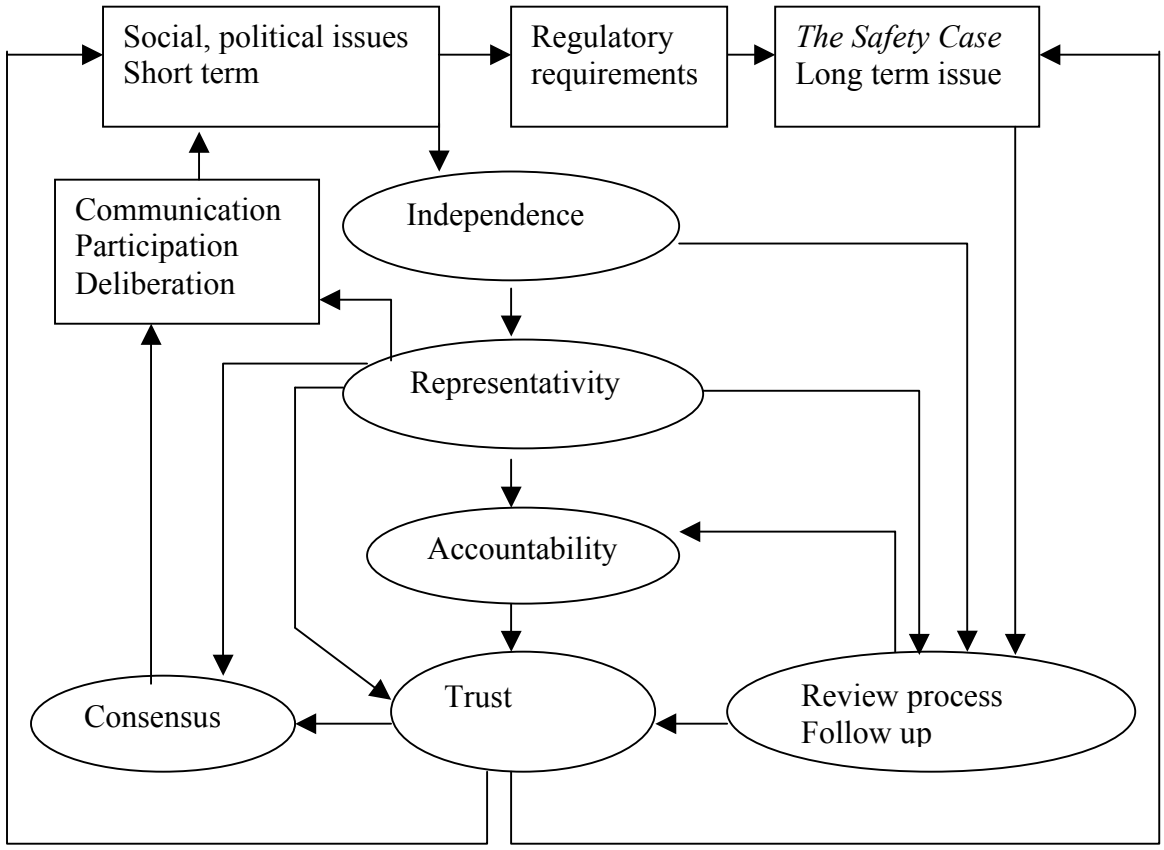


Figure 6.4. Generic summary figure of the discussions.

In conclusion, the first theme of the dicussion was: *Utilizing national and international experiences and perspectives on nuclear waste management: Is it reasonable to compare risk communication processes across countries?*

This question was responded to with an initial "No" regarding actual local or national conditions, involving historic and current social and political influencing factors. However, as the discussion continued there were many examples provided of general approaches that were, or ideally would be, common ground for comparisons across countries. Thus, to that end the question was also responded to with a "Yes". Such generic, theoretical or ideal circumstances are summarized in figures and bulletpoints in the text. They concerned strategic approaches to NWM processes, prerequisites for efficient or continous communication processes, and rules of thumb in informing and communicating on risk.

In response to the second theme of the discussion "*Based on the previous discussion: How could risk communication to the public in Europe be improved?*", there was an array of suggestions. These have been summarised above under the heading of 'how to improve risk communications, some suggestions'.

The final table below structures some of the most important input from the international focus group discussion into contents and requirements of five major steps: strategic consideration,

agenda setting preparations, contacts and discussions, recommendations on risk communication and implementation.

Table 6.4. Overview of the important major steps, and examples of contents and requirements, in a possible NWM process focused towards implementation of repository plans.

Steps	Content	Requirements
Strategic consideration	Provide reasons for planning a repository	Independence (reviewers, decision makers)
	Clear definition of "safety case" and evaluation of feasibility	Transparency; independence; trust
	Choice of governance perspective of process	Functioning enforcing control mechanisms
	Clear criteria for regarding/disregarding a site	Consideration of "all" aspects
	Creation of inclusive social communication process	Social acceptance Openness
Agenda setting preparations	Clearly define the agendas for the technical and the social processes	Overview of uncertainties and clarification of "representitativeness"
	Consider pace of development	Distinguish short and long term issues
	Proactive information	Information availability; understandable to target groups
	Prepare for involvement of stakeholders	Procedure perceived as fair
Contacts and discussions	Create interest	Preparatory work
	Invitation to participate	Voluntary processes
	Present uncertainties	Availability of pedagogical experts
	Discussions on e.g. "the right community", "partnership"	Interested local communities
	Investigate possibilities of local steering mechanisms	Availability of local control mechanisms, e.g. veto-right
Recommendations on risk communication	Provide and keep available information in various formats	Clear goals of each intervention
	Use correct and understandable information materials	Invite to feed-back on information materials
	Involve key group members	Extensive (local) network
	Collect and improve on available materials and experiences	Compilation of research results; new research
	Development of presentation techniques and skills; training in dialogue settings	Understanding of novel perspectives in the personal expertise area
	Work with "translations" of scientific terminology and ambiguous concepts	Cross-disciplinary collaboration; involvement of lay people
Implementation	Developments of concrete plans and work	Continous updates of key factors related to technological and social developments

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7. *The impact of mediators*

(Göran Sundqvist and Mark Elam, University of Gothenburg; and Linda Soneryd, Stockholm University)

7.1 Mediating as cultivating new forms of expertise

Processes of presenting and translating esoteric science-based problems could be studied as an area for the cultivation of new forms of expertise. One important group of experts – knowledge workers – acting in this arena, we refer to as *mediators*. Mediators help define the *context* of public policies with which different parties and emergent stakeholders can be encouraged to identify. In the first instance, mediators seek neither to oblige, nor to advise publics to respond in particular ways to technically defined problems, they seek only to place themselves in 'the middle of things'. Their ambition is to seed certain ideas and enable different parties to come together and interact in relation to them. Mediators seek to activate different parties in the government of their own affairs. They aim to act as catalysts, and as the ones capable of getting new policy programmes off the ground, and new social movements up and running (Osborne, 2004: 440). Resembling political entrepreneurs, mediators are tasked with helping to author new routines and practices which can bring together different parties in unified activities gradually serving to populate what is currently referred to as an 'institutional void' (Hajer, 2003).

Rather than simply wishing to educate publics about environmental dangers, the mediators can be seen as committed to involving publics and assisting them to recognize their own personal stakes in environmental problems. This process of helping publics to recognize and appreciate environmental problems as their own problems can also be approached in terms of political experimentation devoted to the construction of particular types of scientific citizens (Elam and Bertilsson, 2003). Mediators thus, do not only assist in defining the context of public policies, but they may also be crucial for how *concerned parties* or *publics*, are constituted, and what role they are assumed to play in discussions over policy.

The role of mediators, we argue has been underestimated in Ulrich Beck's notion of sub-politics as a new style of extra-parliamentary politics characterizing the governance of major environmental problems. According to Beck, recognition of problems such as transboundary air pollution and the threat of nuclear contamination coincides with a process of reflexive scientization where the sciences confront themselves, and where scientific scepticism is applied to 'the inherent foundations and external consequences of science itself' (Beck, 1992: 155). This turning of science upon itself signals for Beck the beginning of a new reflexive modernity where scientific authority is 'de-monopolized' and where we can expect alternative forms of scientific expertise to be picked up by different actors in society and played off against one another in emerging spaces of sub-political debate and discussion. Sub-politics are for Beck, experimental politics unbound from the classic-modernist institutional order encompassing representative democracy, a strict differentiation between politics and bureaucracy and a now faded vision of science as an undivided neutral adjudicator capable of 'speaking truth to power' (Beck, 1992: ch. 8; Hajer, 2003).

While we agree with Beck in his depiction of science and technology today as involved in the cause, the diagnosis and, hopefully, the resolution of large-scale environmental problems

(Beck, 1992: ch. 7, see also Yearley, 2005: 140), we disagree with him with regards the spontaneity with which new worlds of sub-politics can be expected to open up and 'erupt' around these problems. Accepting that independent of scientific information, measurement and argumentation, public awareness of the dangers posed by nuclear waste and ozone layer depletion would be minimal, how do individual members of the public come to identify with different measures and action plans seeking to ameliorate these dangers? What we believe Beck seriously understates, and what we are dedicated to study is the work of successfully *mediating* competing diagnoses of environmental problems and associated plans of action to variously targeted publics.

Given, as Beck stresses, the relatively invisible and intangible nature of contemporary ecological crises and their combined global and world historical dimensions how are they successfully presented to publics as requiring of them specific practical actions and adaptations in their everyday lives? Rather than seeing this task of public presentation and mediation as straightforward, our ambition is to study it as itself an area for the cultivation of new forms of expertise. As Thomas Osborne (2004) has pointed out the 'mediator' can be conceived of as a distinct type of intellectual or knowledge worker today.

The aim of understanding what mediators do when they mediate can be connected to Actor-Network Theory's (ANT's) attempt to rethink the relationship between scientific knowledge and social interests. In an early article, Callon and Law (1982) argue that while social interests may shape the production of scientific knowledge, so may original knowledge claims change people's understandings of their interests. In this connection they introduce the two key terms of *enrolment* and *translation*. One actor enrols another when the first is able to successfully present her knowledge as a means for the second to further his interests. Thereby, the second actor's interests are translated in a way that brings them into alignment with those of the first actor. Thus, what should be focused upon is how mediators enrol publics in environmental sub-politics by translating their interests in relation to environmental diagnoses and alternative ways of responding to them. While it is not our intention to attempt to come to the assistance of the mediators we study, it is our aim to further outline the importance of mediation work as such in the field of environmental governance.

Some mediators are experts not only in making translations of environmental diagnoses (i.e. science), but on methods for generating and translating lay opinions. A new centrality of the public has been accompanied by the deployment of a range of *technologies of elicitation* (Lezaun and Soneryd, 2007). These are instruments designed to generate lay views on the issues at hand, and feed those opinions into the policy process. Lay opinions on technoscientific matters are typically produced in transient and experimental settings: the small group of individuals assembled in a focus group, the public or semi-public forums in which citizens and experts address each other for a few hours, the slightly more permanent "citizen juries" where stakeholders and citizens aim to work out a common understanding of the issues under deliberation, etc. These assemblies are managed by what Rose has described as "experts of community," social science and psychology professionals deploying the "whole array of little devices and techniques that have been invented to make communities real" (Rose, 1999: 189–90).

7.2 Mediation through demonstration and mediation through dialogue

Ambiguities in how science can be communicated in public could be clarified through the distinction between demonstration and experiment and from this the distinction between *mediation through demonstration* and *mediation through dialogue* is developed. The first is about showing "hard facts", while the other is about involving citizens in activities where no final answer (truth) exists. *Mediation through demonstration* is about showing, displaying, and pointing out things. Andrew Barry (2001) talks about demonstrations as being both sights and sites of truth. Demonstrations are visual and typically designed to show 'hard facts'. Demonstrations can be events to be witnessed by smaller or larger publics. They have a theatrical quality about them where the division between demonstrator and audience is a constitutive feature. Demonstrations build on prior processes of experiment and rehearsal. They constitute major, minor and typically recurring events in the lives of particular technologies. Thus, an arm's length division between demonstrator and audience is a constitutive feature. This division is hierarchical, as demonstrators are either attempting to point things out to a laity, or trying to prove something to a panel of judges. The role of the audience is limited to witnessing demonstrations and to reacting to what they are being shown. Audiences may ask demonstrators questions, and may end up talking at length among themselves concerning what they have been shown, but it is the demonstration itself which sets the agenda for discussion.

In Collins (1988) classic discussion of nuclear flasks in a train crash it was ultimately the flasks themselves that were presented as speaking of their own integrity. We see the flask still intact and participate in a 'truth moment'. This witnessing required no expertise. The state of nuclear safety had been made thoroughly transparent to a wider audience: a collection of mind's eyes in pure contact with a physical state of affairs. Demonstration supports the nobility of sight over the other senses giving us an impersonal disentangled appreciate of a particular state of affairs.

When nuclear waste was 'discovered' as a major matter of public concern during the 1970s, anti-nuclear movements took it upon themselves to protest against the dangerousness of nuclear power for human health and the environment. These protests introduced a process of questioning regarding the impact of current choices on future generations. The survival of nuclear power production became linked to the ability of the nuclear industry to demonstrate long-term safety: to assemble 'safety cases' for reactors and waste repositories alike. Through legislation like the Nuclear Power Stipulation Act introduced in 1977 in Sweden (demanding the nuclear industry to demonstrate absolute safe waste disposal), nuclear technology was put on public trial. Reliable evidence of a safe solution to the waste problem had to be amassed and public prosecutors had to be found capable of rigorously interrogating the 'safety case'. The dangerousness of nuclear power production had to be translated into calculable risks which could be precisely specified and evaluated. The field of performance assessment (PA) for radioactive waste solutions took off during the 1970s calling upon the services of many scientific disciplines (Rechard, 1999). Regulators (prosecutors) and implementers (defendants) alike were in desperate need of scientific advice about how to play their role in the new trial setting tasked with collecting and evaluating what could be accepted as reliable evidence of risk and safety. At the same time although relying on scientists with similar disciplinary backgrounds it remained essential that regulators and implementers could be seen as developing new competences relatively independently of each other working as adversaries and not simply partners tasked with filling a regulatory void.

In order to be able to prosecute safety cases for nuclear waste facilities, PA must be able to produce rich amounts of evidence in relation to the three following three questions: (1) What could occur in the future? (2) How likely are these occurrences? (3) What are the consequences of different occurrences? Without detailed and exhaustive answers to each of these questions the trial of technology cannot take place. Thus, regulators and implementers alike were obliged to transform themselves into what Callon (1998) calls 'calculative agencies' dedicated to the task of quantitative risk assessment. The prosecution of the safety case for different waste facilities becomes, therefore, primarily the task of expert witnesses and adjudicators. In order for the whole trial situation to form the credible basis for reaching decisions, some degree of transparency must be maintained. What is demonstrated by the implementer to the regulator as proof of sufficient safety, must in turn, be possible to communicate and demonstrate for a larger public audience if the credibility of decision-making is to be assured.

Mediation by demonstration can continue until expert witnesses and adjudicators get it visibly wrong and distrust leaks to a broader public, resulting in decreasing credibility in expert authority. A classic example of this from the field of food safety was when expert authorities guaranteed that BSE could not spread to humans. When this proved to be wrong a crisis of expert authority arose. The breakdown of mediation through demonstration comes with the growing suspicion that front-stage separation of prosecutors and defendants of technology on trial is being combined with back-stage collaboration. A perpetual problem with mediation through demonstration is that defendants and prosecutors of technology will always be 'pre-connected' through their common dedication to producing the expert knowledge capable of constituting and sustaining the trial situation. While the verdict in any 'safety case' will need to be presented as speaking for itself, it will ultimately remain a negotiated outcome. The public appraisal of such 'prior connection' and the ultimately negotiated bases of what is staged as self-evident safety or non-safety, is likely to vary over time and to be particularly influenced by unfortunate accidents and mishaps.

Mediation through dialogue on the other hand, is about to a greater or lesser degree acknowledging the reality of negotiated safety underlying the trial situation staged by mediation through demonstration. It is no longer about experts convincing the public to witness what experts already claim to know and have already decided upon. On the contrary, it is about the practice of 'extended peer review' where expert frames and reasoning for and against a particular technology are weakly or strongly contested by alternative forms of expert and lay knowledge which have previously been ruled 'out of court'. This means that standards of truth, reliability and safety are potentially opened up for broader negotiation. It is accepted that there is more than one way of looking at things, and that there might be other, currently unknown and unrecognized, things worth publicly pointing out. Mediation by dialogue implies collective suspensions of judgement and 'extended peer review' where existing expert frames and reasoning for and against a particular technology are 'stretched', and weakly or strongly contested by alternative forms of expertise and lay knowledge which have previously been ruled 'out of court'. This means that standards of truth, reliability and safety are potentially opened up for broader and more inclusive negotiation.

The key mediators in mediation by dialogue are those apparently neutral human mediators skilled at bringing dispersed actors with different frames of reference evoking different bodied of evidence together. It is the task of such 'guardians' of dialogical process to construct arenas for dialogue, pointing towards the possibility of establishing 'common

ground' which can draw in and accommodate as many as possible of the relevant parties implicated in a particular matter of concern. In other words, the key mediators initiating and maintaining mediation by dialogue are the 'go-betweens' who take it upon themselves to try and talk different actors (both expert and lay communities) into talking with each other. If key stakeholders do not want to 'play' and cannot be persuaded to participate in mediation by dialogue then its role is curtailed. It is the combined depth *and* breadth of discussion that counts in mediation by dialogue determining its success or failure in moving policy processes forward.

Dialogue is not necessarily superior to demonstration. In relation to every problem a balance/mix of mediation through dialogue and demonstration is unavoidable in every programme of government. Not everything can or should be opened up for dialogue and negotiation in every case. Not everything can or should be dealt with through demonstration. Different rationalities of government may tend to suggest more demonstration than dialogue or vice versa, but there will always be a mix. The appropriate balance is again something that needs to be subject to some form of collective judgement (settled through dialogue or demonstration?)

That the methods are initiated and designed with the main objective to stimulate dialogue does not mean that they are not sometimes used also within programmes based on a rationality of demonstration. When this happens we may speak of 'token' participation or an instrumental use of public participation methods (i.e. demonstration 'disguised' as dialogue). Our aim is not to evaluate to what extent these methods fulfil their goals in practice, bur rather to emphasise mediation and the role of mediators in the development, spread and use of public participation methods.

7.3 The Swedish background

Following in the wake of the Nuclear Stipulation Act, and the adversarial nuclear politics associated with it, advances in Swedish nuclear waste management since the end of the 1970s have continued to be pursued through a process which can be labelled *mediation by demonstration*. For decades now, Swedish nuclear waste management has been primarily framed as an institutionalised confrontation between state authority, on the one side, demanding to be *shown* continuing progress in the development of nuclear fuel safety, and the owners of Sweden's nuclear reactors, on the other side, dedicated to succeeding in this task. Therefore, after 1984, the consolidation of nuclear fuel safety and steps towards the safe geological disposal of Sweden's spent nuclear fuel, have been steps first researched, developed and demonstrated by the nuclear industry, before being comprehensively inspected, assessed and adjudged by state authority. Carrying out and co-ordinating the research, development and demonstration work (the RD&D programme) we find the Swedish Nuclear Fuel and Waste Management Company (SKB) directed by Sweden's reactor owners. Carrying out the inspecting, assessing and adjudging we have until very recently found firstly, the Swedish Nuclear Inspectorate (SKI) and the Swedish Radiation Protection Agency (SSI), who merged during 2008 to form the new Swedish Radiation Safety Authority (SSM).

While mediation by demonstration can be seen as the central organizing principle of Swedish nuclear waste management it has over time had to confront, and continually wrestle with, its own limitations. Both the ability to convincingly *demonstrate* progress in nuclear waste management, and the ability to convincingly *inspect and adjudge* such demonstrations are

immensely challenging to cultivate and maintain. Both abilities demand the allocation of sizeable resources, and given this, the danger is always that the two sides will grow parasitic upon each other. In particular, because the Swedish nuclear industry has been forced to stake so much of its reputation on its ability to demonstrate and deliver nuclear fuel safety, the perpetual danger has been that so many of the available nuclear skills and competences will be bought up and consumed in pursuit of this task, that *too few will remain* to effectively carry out the work of inspecting and adjudging the safety of solutions proposed (Elam and Sundqvist 2009b). In this context, the merger of SKI and SSI in 2008 to form SSM, can be seen as the latest attempt to combat such a problem of diminished competence through a consolidation of existing powers of inspection. Regardless of such moves, however, mediation by demonstration has also been perennially afflicted by a deeper and darker suspicion that the division of responsibilities on which it is founded, between industrial demonstrators and state inspectors, is not as genuine and as clear-cut as it has been publicly presented.

Hitherto, the most serious crisis of mediation by demonstration in Swedish nuclear waste management occurred during the mid-1980s in connection with initial attempts to advance the siting of a deep geological repository for the final disposal of Sweden's spent nuclear fuel. In the beginning of the 1980s, SKB pursued a geology-led siting strategy for such a repository. Up until 1990 it was planned to carry out 10-15 study-site investigations leading to the identification of three sites for further detailed investigations during the period 1992-98 (SKBF 1983). Initial study-site investigations were selected in a way to attain both a geographical distribution of sites and a broad selection of rock types (primarily gneiss, granite and gabbro) (Sundqvist 2002: 113). However, these primary investigations quickly ran into stiff opposition as local 'rescue groups' formed in practically every location that test-drillings were initiated joining up to form a national network of local community groups (the so-called *Avfallskedjan*) (Lidskog 1994, Holmstrand 2001).

By effectively denying SKB (and by implication SKI and SSI) access to the nation's bedrock, local protests during the early 1980s succeeded in *derailing* the mediation of Swedish nuclear waste management by demonstration. Deprived of detailed geological data which could be objectively interrogated in a way capable of producing a credible demonstration of where the final disposal of Sweden's spent fuel should ideally take place, SKB were forced to re-orient the whole of their research, development and demonstration programme (Lidskog and Sundqvist 2004). As a derailment of mediation by demonstration, this crisis was also, of course, just as severe for those tasked with inspecting nuclear fuel safety.

Given these circumstances, we can witness that by the beginning of the 1990s, all the major actors in the Swedish nuclear waste management field, and SKB and SKI in particular, were in agreement that something needed to be added to mediation by demonstration to assure future progress in the siting and establishment of a final repository for Sweden's spent nuclear fuel. This additional something, which after 1992 has allowed SKB's R&D programme to get back on track and move forward, is an accompanying process which can be labelled *mediation by dialogue*.

The rise of mediation by dialogue in combination with mediation by demonstration coincided with SKB's turn in 1992 to a siting strategy for a repository based on the alternative principles of voluntarism and local acceptance. This represents a fundamental break with a geology-led strategy, as local acceptance and a willingness to work together with SKB towards the final siting of the repository are now the overriding criterion for inclusion in the siting process.

After 1995, this has meant that a KBS-3 repository is firstly destined to be sited in close proximity to one of the two historical 'home bases' of the Swedish nuclear industry: either the reactor site in the municipality of Oskarshamn, or that in the municipality of Östhammar.

After 1992, mediation by dialogue has to some degree enlarged public participation in Swedish nuclear waste management, but it has done so firstly by acting as a means to remedy the shortcomings of mediation by demonstration, and to help guarantee the latter's long-term survival as the dominant mode of mediation within Swedish nuclear waste management. However, just because mediation by dialogue has allowed new actors to participate in Swedish nuclear waste management it has also, to some extent, opened up the organization of nuclear waste management to broader discussion, where the hegemonic position of mediation by demonstration is no longer so secure (Elam and Sundqvist 2007).

The potential for mediation by dialogue to more seriously rival mediation by demonstration, rather than simply act as a repair mechanism for the latter, has been heightened by the introduction of new and comprehensive environmental legislation in Sweden during the 1990s. The Swedish Environmental Code introduced in 1998 has introduced a new legal framing of how Swedish nuclear waste management should proceed, both complementing and competing with the pre-existing framing established through the Act on Nuclear Activities from 1984. The Environmental Code has clearly served to elevate the role of mediation by dialogue in Swedish nuclear waste management, but at present, no agreement exists as to what mix of mediation by demonstration and mediation by dialogue is called for in order to manage Swedish nuclear waste management with greatest wisdom and virtue (Elam and Sundqvist 2009a).

7.4 Three Swedish examples of mediation

In the Argona project we have in detail analysed three examples of mediation in Swedish nuclear waste management: i) SKB's safety analyses, ii) SKB's public consultation activities, iii) the dialogue activities initiated by actors other than SKB: that is to say by SSI, SKI, and the Swedish National Council for Nuclear Waste, as well as the municipalities of Oskarshamn and Östhammar (Elam et al, 2009).

Three particular *safety analyses* have been studied, each of them carried out at critical junctures in the Swedish nuclear waste management process. The first is the KBS safety analysis presented in 1977 as a response to the requirements of the Nuclear Power Stipulation Act. This analysis became a strategic tool for gaining permission to fuel more nuclear reactors. The second safety analysis, called SKB 91, was presented in 1992 when SKB tried to formulate a new siting strategy based on local acceptance and voluntarism after the company had met strong resistance in their efforts to carry out geo-scientific investigations. This analysis focussed on the importance of bedrock for safety and was of great importance for accommodating a more flexible view on the bedrock conditions. The third safety analysis, called SR-Can, was presented by SKB in 2006 and was first planned to be a safety analysis on the canister for disposal and the encapsulation plant (where the waste will be sealed in the canister), but was expanded to include also site-specific data. This analysis will be further developed and will become a vital part of the final application, due to be sent to the Government in 2010, for the licensing of a final repository for spent nuclear fuel based on studies in the two areas close to the reactor sites in the municipalities of Oskarshamn and Östhammar that have been investigated and compared in detail since the year 2002 (then

called SR-Site). However, in June 2009 SKB chose Östhammar as the site for the application to build a final repository for spent nuclear fuel.

The Swedish Environmental Code, which came into force in 1999, prescribes that an application for a permit for activities that has an impact on the environment must include an Environmental Impact Assessment (EIA). The Code stipulates the process to start early and that *consultations* should be made with those affected and a general public. In the Swedish legislation the developer is responsible for carrying out the EIA. Since the law does not prescribe in detail how an EIA process should be organized, there is a high level of freedom for the developer to define who the affected people are, and how, and to what extent they, and a general public can be included in the process. The working format of the regional consultations took shape as early as 1994, when an EIA-forum was established in Oskarshamn in connection with the proposed encapsulation facility (Elam and Sundqvist 2007: 33). The legally stipulated consultations started in 2002 when the site investigations in Oskarshamn and Östhammar began. Compared with SKB's work on safety analysis, which primarily involves technical experts; the consultation process involves a broader set of actors. The public consultation meetings are in principle open to everyone that is interested. That the public consultation meetings have not attracted many participants is not surprising, this is more the rule than exception in public consultation processes. One aspect of the public consultations that potentially could be different from SKB's work with safety analysis is *the framing* of the nuclear waste issue: since the consultation process gathers a broader set of actors, such as, citizens, local politicians, interest groups, it is perhaps less technically framed and more open for dialogue rather than demonstration.

On the 14th of March 2007, at the launching of a transparency project aiming to 'illuminate' important issues in dialogue with other nuclear waste actors, an official presentation of various *dialogue projects* that have taken place in Sweden was offered to a broad set of nuclear waste actors. The new project organized by the Swedish National Council for Nuclear Waste was presented as a continuation of a series of dialogue projects, which have been pursued since the early 1990's. The administrative director of the council pointed out that there had been different organizations 'hosting' dialogue: first it was the authorities SKI and SSI, later on the municipalities (first Oskarshamn and later Oskarshamn and Östhammar jointly) and now, the Council for Nuclear Waste intended to become the focal point for more inclusive discussions. In summary, the actors that have participated most frequently in the different dialogue projects are the authorities, municipalities, the industry and environmental organizations. Many activities in the dialogue projects have made efforts to reach the general public, but public participation has been limited and it is more or less the same stakeholder groups that frequently return to the projects and they share, as the consultant involved in all dialogue projects said, their own 'community'. It is more or less the same people that have initiated these projects, and the organizers behind the dialogue projects are familiar with, but also seem content with, that this community is rather constant and in no need of being radically reformed with participation from new actors. The activities have been initiated in relation to the process run by SKB and the focus for participation can therefore be assumed to have been chosen in relation to what has been considered missing. The dialogue projects have increased the participation from many actors, but the fact that the organizers have not made further efforts to reach new groups outside this established nuclear waste community can be seen as an argument for the projects being a complement to the process run by SKB: it involves actors already active, but in a new form.

7.5 Conclusions from the Swedish examples

SKB's safety analyses, presented at several important junctures in the history of nuclear power and nuclear waste management in Sweden, have been constructed as cornerstones in the mediation of nuclear waste management. They have been put forward as representing comprehensive demonstrations: SKB *showing* and *pointing out* safety to an outside audience. To a great extent the safety analyses have been produced by SKB for the authorities as their primary target audience, and the only audience that really matters in terms of the task of inspection, evaluation and review. When popular summaries have been presented these have been more as public gestures, where no feedback of any significance for the process as a whole is expected. Overall the SKB approach is quite narrow, eschewing broader public involvement in upstream matters, such as debates about what constitutes safety. It can be expected that more groups will be interested in the SR-Site safety analysis when the time comes closer to the final decision. This analysis will give answers to questions about safety at the chosen site in the municipality of Östhammar. But not much points in the direction that the municipalities, environmental groups, politicians or citizens have the ambition to more strongly engage in questions about how to perform a safety analysis, and SKB persists in its view that this is a too complicated issue for lay people to deal with, and that all that remain for these groups is to trust the involved experts. That this way of doing safety analyses has remained dominant in Sweden can be explained by history: the strong requirements (absolute safety) originally placed on SKB. The company has shown its ability to adapt to new conditions and redirect its work in ways conditioned by society, but this has never happened to the way of doing safety analysis.

There are many examples of mediation by demonstration in *SKB's public consultations*. It is unavoidable that only a selection of information can be presented at these meetings. A consequence is however that it is difficult for the viewers to judge the facts, values and reasons behind what is presented by SKB. Since a dialogue over the values, uncertainties, or decisions behind the results is never encouraged at the consultation meetings, the consultation process is characterised by downstream engagement. SKB presents already defined problems and results from studies already completed. SKB talks about the consultation process as opportunities for 'dialogue' and that all participants have the possibility to raise issues and to influence the process. When it comes to safety issues, however, the consultation process is rather characterised by demonstrations disguised as dialogue.

The study of the *dialogue projects* suggests that they are mainly mediated by dialogue, and we can find elements of upstream engagement. We have no clear evidence that issues actually move upstream though: from critical discussions amongst a small but heterogeneous group of stakeholders to the implementer SKB. Ideally, the upstream process and dialogue should take place in the real decision making process before decisions have been taken. In this case, the dialogue is often reactions to demonstrations carried out and decisions taken by SKB. However, the dialogue projects have the potential to influence the process, indirectly. The clearest example of this is probably *the Oskarshamn Model*, where the work has led to important decisions crucial for the proceedings. The very idea that the dialogue projects have the function of being repair work to SKB's failures is of course a suggestion that even if the aims, and some of the elements in the dialogue projects are upstream and examples of mediation through dialogue, the result may be that issues are prevented from moving too far upstream displacing the pre-eminent position of SKB's RD&D programme, and that the dialogue projects so far have actually served to insulate and protect the industry's long-standing pursuit of nuclear waste management as nuclear fuel safety (KBS) from more life

threatening forms of criticism. The SKI and SSI position has been rather that mediation by demonstration should encompass an explicit concern with mediation by dialogue acting as something like a *political safeguard* helping to guarantee the broader legitimacy of the long-term state-industry project of securing nuclear fuel safety. For SKI and SSI, and more recently the Swedish National Council for Nuclear Waste, a key concern has been to promote mediation by dialogue as a means to render mediation by demonstration more open and transparent for the sake of its own self-protection. When mediation by demonstration becomes closed in on itself, the absence of an engaged public can even be disturbing to the leading actors as they find themselves continually playing before a more or less empty house.

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8. *Theoretical reflections on representative democracy, deliberation and transparency*

(Gaston Meskens, SCK.CEN)

Work Package 2 in ARGONA examined how democratic societies handle risk governance – i.e. the ensemble of rules, procedures and practices affecting how powers are exercised with respect to the control of potential adverse consequences to human health or the environment – with an emphasis on the possibilities and limits of public participation and the use of knowledge in deliberation. Broadly speaking, this study combines two approaches to inquiring what 'good governance' means. The first approach looks at the methods of governance while the second focuses on the ways actors use knowledge and mandates in governance.

8.1 Introduction

As an introduction to this chapter we first describe the aim and approach of this part of ARGONA and then we describe the contents of ARGONA Deliverable D13, where Work Package 2 work has been reported

8.1.1 Aim and approach of the Work Package 2 report

Inquiring governance methods

In a first approach, we will mainly draw upon one important tradition in governance studies, namely the one rooted in normative political philosophy (i.e. theories which seek to set out the conditions for 'good governance' mainly based on the ideal of 'deliberative democracy') to analyse and discuss the form, functioning and overall character of social interactions). To a large extent, WP2 builds on knowledge gained in the RISCOM - II project, and the conditions for the implementation of the RISCOM model are further investigated. However, following this, the framework is broadened to include reflections about how the 'transparency approach' and the 'deliberative approach' can be combined and how they can be linked to the functioning of the political system in which decisions (for example on the final disposal of nuclear waste) are ultimately taken. Following Habermas's seminal work, the term “deliberative democracy” is sometimes used as an umbrella concept for a rich and diverse set of approaches in recent and contemporary thinking about democracy. Deliberation is seen as a form of discourse, theoretically and ideologically requiring ideal conditions of equality of access and justification of arguments. Deliberation involves reasoned debate between citizens. It draws on a notion of procedural legitimacy. That is, if the conditions for deliberation are fulfilled, then the outcomes are supposed to be the best possible.

Inquiring the ways actors use knowledge and mandates in governance

The RISCOM model adds to this essentially free and unconstrained communication in the 'deliberative arena' the communications going on in a 'transparency arena'. These are oriented more towards the practical requirements of decision making in the political system. In the transparency arena there is a function of “stretching” that makes it possible for stakeholders to evaluate claims of truth, legitimacy and authenticity. The primary focus is not to reach consensus on all matters at hand but rather to increase awareness among both the decision

makers and the more general public about all perspectives. Participation is therefore also required but for another purpose than in the 'deliberative arena'. Participation is mobilized for stretching and for transforming the principles of RISCOM to practical transparency arenas. Public participation should lead to transparency and insight in order for the system to work on the basis of a broader societal awareness. Both the deliberative and the transparency arenas have to find their places within the framework of the existing political processes. This process takes place within the representative democratic system, but can also include direct democracy in the form of referenda, focus groups or consensus conference. This is called the 'arena of representative democracy'.

If, inspired by the RISCOM approach, deliberation, in the sense of free and unconstrained reasoned debate between citizens, would be enriched with regular 'transparency checkups' with regard to the way actors use 'their' knowledge and mandates, one would assume the success of risk governance to be guaranteed. Asserting that this conclusion is too simple is the second aim of this work package. It will be argued that the complex risk-inherent character of the issues at stake implies a governance approach that needs to rely on 'opinions that cannot be turned into facts'. Therefore, in a governance arena, before transparency can be 'stretched', it needs to be 'unlocked' in a culture of reflexivity. While transparency can be ‘organised’, reflexivity needs to be ‘fostered’ in the academy and the research institutes (experts) and needs to be ‘enabled’ on the policy platform (stakeholders, experts, politicians). This study is therefore not only a critical analysis of existing governance methods (theoretical and practical). It will also make a plea for a new way of knowledge generation and a new way of policy making that takes into account the (im)possibilities of using governance methods, knowledge and mandates.

Finally, the approach of WP2 is theoretical, and many of the reflections (and proposals) can be applied to different policy themes. Given the context of WP2 and ARGONA as such, obviously the issue of radioactive waste governance will serve as an example and a thread through the whole of the report.

8.1.2 Structure of the Work Package 2 report

In view of the above-mentioned objectives, ARGONA Deliverable D13 consists of four major parts.

The first part (chapter 1) approaches governance in its conceptual meaning in order to initially make a proposal for three foundational characteristics ('holistic', 'inclusive', 'practical') that would be consistent with either the ethical/normative and functional/analytic approach. Following this, a necessary demarcation between 'risk' and 'injustice' is argued, stating that risk governance is only possible for practices that are justifiable 'in principle'. Anticipating on the inquiry of the performativity of the science-policy interface that is undertaken in chapter 3, chapter 1 continues with an analysis of the complexity that typically marks socio-political reason on (applications of) risk-inherent technologies and states that governance, in its 'ideological' modes is 'locked in' by cultural-historical hindrances that would need to be 'overcome' by way of new approaches to knowledge generation and policy making. Finally, the chapter reminds us that the reality of governance is in the end a dynamic of 'interactions between people' and states that an inquiry on criteria for 'good' governance will come down to an analysis of attitudes in and methods of socio-political interaction, both in terms of using knowledge and mandates

Generally speaking, the second part (chapter 2) inquires Habermas's understanding of governance and specifically his view on how discourse ethics could inspire, work through and be supported by constitutional settings. The chapter is organised in three paragraphs that each discuss a specific approach to governance. It starts with a discussion of Habermas's theory of deliberative democracy (which in turn builds on his ideas about 'communicative action'). A theoretical analysis is made of crucial concepts such as discourse, justification, systemicity (and the system/lifeworld distinction), etc. A second paragraph reflects on work done by scholars and practitioners who try to formulate institutional (procedural) rules for governance in complex democratic societies that in some cases try to approximate Habermas's deliberative ideals. The third paragraph discusses a final subset of approaches to the problem of shaping governance in the interest of the 'common good', namely those that explicitly aim for the empowerment of 'marginalised' groups in civil society. A general leitmotiv of chapter 2 is the assessment of all three approaches to governance against the foundational characteristics 'holistic', 'inclusive' and 'practical' that were introduced in chapter 1. The chapter ends with a plea for an 'epistemological turn' in order for actors to be able to jointly recognise the need to work with relative knowledge about governance.

Chapter 3 starts with the observation that, despite the motivational and methodological differences, the various approaches to governance outlined in chapter 2 seem to give no special attention to the 'issue at stake', or the problem or challenge that needs to be 'governed'. Approaches to deliberation, whether the theoretical one of Habermas, or the institutional or empowerment-focussed methods seem to have a universal character in terms of their applicability to various issues at stake. In addition, they all seem to describe a sort of once-through process that supports the aim to deliver a kind of 'end product': a final consensus over a previously still contested issue. Chapter 3 reasons that this assumption needs to be reconsidered, and does this by an inquiry of the performative and communicative character of the science-society-policy interface in terms of both its effectiveness and normative grounds. Based on reasonings on practical examples from out of the nuclear policy sphere, it is argued that, in the case of risk-inherent complex technologies, due to the necessary dealing with inherent uncertainties that lead to the use of (scientific) probabilities, prognoses and hypotheses, scientific issues cannot be completely clarified by scientific methods, which means that (1) questions with regard to these scientific issues such as ‘is this true?’ or ‘are we doing things right?’ can in principle not be answered in the arena and thus that (2) good governance’ will have to deal with limits to and interdependence between truth, legitimacy and authenticity. The chapter concludes with a second plea for an epistemological turn, now with regard to the knowledge used in governance, and this based on a conceptualisation and an instrumentalisation of 'what we don't know' - in the sense of what we supposedly cannot know – to be treated as an 'additional' kind of knowledge in governance.

With the aim to bring all elements of the previous chapters together, chapter 4 starts with a reflection of what could be the ultimate success criterion of good governance. It is argued that this would be the possibility to generate trust, and the text further elaborates on what this would mean in terms of the attitudes and methods of socio-political interaction, both in terms of using knowledge and mandates. The chapter introduces three methodological characteristics of governance that would ensure this possibility ('better knowledge generation', 'real justification', 'process thinking') and that at the same time can be used as normative guidance to specify consistent attitudes and practical methods in this sense. It will be motivated that, next to organising transparency in the political arena, there is a need to organise reflexivity, an attitude that can be understood as awareness for the (im)possibilities

of the use of knowledge and mandates. In a governance arena, before transparency can be 'stretched', it needs to be 'unlocked' in a culture of reflexivity. While transparency can be organised, reflexivity, on the other hand, needs to be fostered in the academy and the research institutes (experts) and to be enabled on the policy platform (stakeholders, experts, politicians). Finally, drawing on these considerations, the chapter puts forward a definition of deliberative democracy and connects it to the possibility of organising transparency arenas. To conclude, it looks at what all this would mean – in terms of necessary changes – for the system of representative democracy.

8.2 Governance: a contested concept

8.2 1 What ought to be: in search for the foundations of governance.

The principle of representative democracy, basically a legalised process of regular elections of candidates who gather in political parties and profile themselves based on (variations on) traditional party-ideologies, has become widely accepted as 'the right and best approach' to organise ourselves politically in our society. On the other hand, one can note that 'governance' exists today merely as a managerial concept or a philosophical idea. The argumentation on a need for a 'reform', although seen as obvious from many sides, cannot be 'proven' in an objective way, neither from out of a pragmatic or ethical stance. Instead of argueing from out of pragmatic or ethical grounds (or both), that 'government' needs to be to become 'governance', we define three 'quality criteria' that should apply to governance, regardless of the pragmatic or ethical approach and, more important, that could serve as a vantage point to describe what 'good governance' could mean in the case of RWM..

Defining 'governance' in the most general way as 'human interactions in face of a certain complex problem or challenge, guided by a certain reference or normative framework', we could say a governance approach should be:

From out of a functional/analytic (pragmatic) point of view

holistic	in the interest of	keeping or taking control over the problem ;
inclusive	in the interest of	better insight (synergy of knowledges, standing stronger together), from out of the need to avoid narrow framings, to get all 'pieces of the puzzle';
practical	in the interest of	being measurable in terms of assessment of effectiveness (both wrt 'solving the problem' and the related 'return on investment'); being measurable in terms of assessment of implementation of 'corrective feedback loops', in other terms: a solution needs to be implemented in a timely manner, and in an efficient and effective way.

From out of a ethical/normative point of view

holistic	in the interest of	serving 'the common good';
inclusive	in the interest of	fairness, justice (synergy of values, protection of the weak);
practical	in the interest of	being measurable in the sense of assessment of effectiveness of accurate response to urge and need.

being measurable in terms of assessment of implementation of 'corrective justice';

8.2.2 From theories to people: challenges at the science-society-policy interface

Although the idea 'governance' generally refers to an extended set of ideas and concepts related to culture and politics (from the simplest to the more complex philosophical ones) or more specific to a process relying on laws, regulations and conventions, it can not be seen as something driven and steered by an autonomous 'system' that would keep on running in the absence of people. Governance can only be done where people come together and interact.

To the extreme, we can even say that governance is the very happening of people interacting with a political aim and in a specific context of urge or need. In that case, and bearing in mind the 'foundations' that were outlined in the previous chapters, we could say that an inquiry on criteria for 'good' governance will come down to an analysis of attitudes in and methods of socio-political interaction, both in terms of using knowledge and mandates. Political interaction is meant in the broadest sense here, as it also includes contributions of science, civil society and the private sector 'in a political context'. This approach will not only enable necessary re-interpretation of some of these 'crucial' attitudes and methods, but also provide reference for making a plea for a simplified and more robust ground for governance – the possibility to generate 'trust' - that is at the same time normative and pragmatic. It will (hopefully) become clear then that questioning governance in this sense implies *an inquiry of the performative and communicative character of the science-society-policy interface in terms of both its effectiveness and normative grounds*.

8.3 From the 'outside' to the 'inside': managing the governance settings

8.3.1 Introduction – epistemological questions

Referring to the reasonings set out in chapter 1, innovative governance practices thus differ in three main aspects from the more 'traditional' government approaches:

- Governance strives for more **inclusiveness**, in the sense that it is driven by a concern to avoid narrow problems framings in order to collect all 'pieces of the policy puzzle' necessary to formulate, implement and defend good policy measures. Governance tries to give a more tangible content to the notion of the 'will of the people' – central to the concept of government – with its focus on *concrete people in concrete situations* (i.e. governance tries to connect to the 'lifeworld' of people in Habermasian parlance);

- In contrast to the monistic vision of sovereignty embodied in the notion of government, governance is inspired by a **holistic** view. In this view, sovereignty is seen to reside in *networks of interacting people* (politicians, policy makers, experts, stakeholders, affected citizens, etc.), and the result of this interaction is believed to show emergent characteristics which cannot be deduced from a study of the constituent parts taken in isolation. More precisely, this emergent notion of sovereignty is seen as a result of realising a connection between the inner self of the participants in a particular governance setting – an 'inner self' that can only be revealed through interaction;

- The **practicality** of policy measures from a governance perspective does not result in the final instance from the effectiveness (i.e. the guarantee of reaching the stated objectives by the proposed measures, e.g. by enforcing compliance through adequate mechanisms) or efficiency (i.e. reaching stated objectives with the most limited expense of (monetary) resources possible, e.g. as revealed by economic calculations) of the proposed measures – both central to the notion of government, but from endowing the proposed policy measures with a sense of *shared authorship* by those who participated.

Of course, having acknowledged these major 'fault lines' separating 'governance' from 'government', raises a range of broadly epistemological questions:

- How can we know that a particular governance network is inclusive (enough)? What knowledge do people possess that is relevant to the 'circumstances of governance'? Can this knowledge be acquired; if so, how; and how can its relevance be warranted?;

- How can we know whether the holistic 'common good' supposed to arise from interactions in the context of governance really represent a *common* good? Can this knowledge be acquired; if so, how; and how can its relevance be warranted?;

- How can we know whether interactions in the context of governance have really resulted in a sense of shared authorship? And can this knowledge warrant a higher degree of practicality?.

In the WP2 report, we undertook an investigation on how these questions are answered at the crossroads between the ideology, theory and practice of (deliberative) democracy. Of course, in view of the enormity of this task, we felt obliged to build in some more-or-less justified demarcations. From the theoretical point of view, we started off our analysis with a discussion on Habermas's view on deliberative democracy, or more generally, his view on the functioning of law, democracy and politics in contemporary societies. Using this theory (or ideology as some might call it) as a 'stepping stone', we next introduced what we have called the (formal) institutional and empowerment responses to the risk governance challenge and showed similarities and contrasts between these approaches and the Habermasian one. In the following sections, we present the main conclusions of these investigations.

8.3.2 Deliberative democracy, Habermas style

A first central issue of interest to us in Habermas's theory of deliberative (or discursive) democracy is that, unlike many other contemporary theorists of democracy, Habermas does not equate democracy with any particular set of institutional mechanisms (such as voting, a separation of powers, representation, etc.). Rather, he understands democracy as any institutional order whose legitimacy depends on collective will-formation through discourse. In other words, a democratic political system is a system that favours discursively mediated consensus over other ways of making decisions. To understand Habermas's concept of 'discursive will-formation', it is important to understand that the term discourse does not refer to all communication but only that which follows the immanent (i.e. pragmatic-transcendent) logic of its own 'validity claims'. What does he mean by that? Discourse, according to Habermas, is a particular form of communication that, removed from the context of immediate experience and/or action, is oriented towards understanding rather than success. Each participant in discourse should produce, in addition to intelligible utterances, statements

that are true, right and truthful. Producing these statements require people's knowledge of what is the case in the 'objective' external world-out-there, awareness of social intersubjective agreements that give legitimacy to their actions and consistency of their actions with their beliefs and intentions. Intelligibility, truth, legitimacy and authenticity are the valid conditions for discursive action, which each participant should be prepared to redeem through discourse. This in turn requires some other procedural guarantees, namely that participants, themes and contributions to the discourse are not restricted except with reference to the goal of testing the validity claims; that no force except the force of the better argument is exercised; and that, as a result of the previous requirements, all motives except that of the co-operative search for a rationally motivated consensus are excluded (this is Habermas's famous concept of the Herrschaftsfreie Dialog or 'ideal speech situation').

How does all of this translate into Habermas's political theory of deliberative democracy? According to Habermas, an indispensable component of deliberative democracy is what he calls the public sphere, that is an arena in which individuals participate in discussions about matters of common concern, free of coercion or dependencies that would incline these individuals to mere acquiescence. The public sphere should be the political embodiment of the demanding requirements for true discourse to happen. Therefore, it should be institutionally separated (e.g. through a system of political and civil rights) from collective powers of action located in the 'official' political structures, while also serving as a source of direction and legitimacy. Habermas is not arguing that discourse can be the organising principle of institutions. Institutions cannot conduct all of their affairs through discourse, any more than individuals would wish to devote their lives solely to discourse. Rather, we generally tend to avoid discourse because it is so cumbersome and consumes much time and effort. Moreover, genuine discourse is made impossible by the division of labour necessary for any collective action. Summing up, Habermas's argument is not that democratic institutions should conduct their affairs through discourse but rather that they should be structured so that discourse can emerge (in the public sphere) when ruptures of shared understanding require some kind of resolution.

Of course, there is much to be recommended in Habermas's views. Nevertheless, we consider some of the aspects of his theory to be somewhat problematic w.r.t. the three interrelated aspects of inclusiveness, holism and practicality in the context of (risk) governance. Habermas founds inclusiveness on the basis of being affected by a possible decision, and (the promise of) holism on the (counterfactual) possibility of ideal 'rational' consensus; while he devotes less attention to the question of practicality. With regard to inclusiveness, (potential) 'affectedness' stands as the ultimate touchstone of relevant participation. Habermas also maintains that communication and ultimately comprehension of each side's (potential) 'affectedness' by a decision is at least 'contra-factually' possible. However, to maintain these prerequisites for a reasonable debate is not the same as saying that any demands made by the parties present in the debate can be objectified as problems whose solution can be found by actors working together deliberatively (as Habermas does). We submit that the ideas incorporated in Habermas's 'ideal speech situation' should be seen as **negative requirements** for a dialogue to happen – i.e. it is enough for people engaging in dialogue to assume that their interlocutors are at least *not unreasonable* – rather than striving for an ideal of 'Reason'. With regard to 'holism' of the sought-after solution, this does not mean that democratic deliberation is indifferent to the universal, but rather that the universal will always be subject to competing interpretations, without any 'transcendental tribunal' able to make a final judgement on the correct one. Finally, with regard to 'practicality', Habermas does not have any concrete advice on offer other than that the 'solution' to a particular question of

governance (e.g. implementation of certain policy measures) should be implemented in such way that further discourse can emerge in case something 'goes wrong'. For Habermas, the moment of decision is always seen as something 'imperfect' – an (albeit necessary) distraction from the continuing discourse towards the 'common good'. Hence, we are left with rather limited practical guidance on what constitutes an 'acceptable' decision.

8.3.3 The institutional design approach

In the WP2 report, we limited our discussion of the institutional design approach to a discussion of two 'cases': the approach to governance adopted by the EU and, for obvious reasons, the RISCOM approach (as one example of an approach that tries to put Habermasian principles into practice).

W.r.t. to EU governance, our main findings can be summarised as follows. **Inclusiveness** of the civil dialogue is judged by the European Commission (EC) on three main criteria: *representativeness*, *openness* and *accountability*. However, it is unclear what is precisely meant by e.g. 'representativeness' in the civil dialogue consultations. The EC claims that requirements of representativeness vary in accordance with the nature of the responsibilities conferred on the parties consulted – i.e. limited in the case of a simple consultation, and more binding when social partners can lay down rules that can become law (in the social dialogue). The difficulties in applying a representativeness criterion to civil society groups are well-known and recognised by the EC, as until now no clarification as to what constitutes evidence of representativeness is available. Therefore, other factors such as the 'track record' of such groups in consultations or their ability to contribute substantial policy input to the discussion are considered to be of equal importance. In any case, it is clear that the requirement of **practicality** of the decisions to be taken (in terms of ease of implementation) in this case also influences the precise meaning of inclusiveness. This meaning is either stretched or restrained according to the characteristics of the governance issue: stretched in case of 'non-binding' consultations; restrained in case of processes leading to 'binding' decisions (mostly those that relate directly to the productive sphere). Clearly this also limits any claim to **holism** of the knowledge gathered in the process; or in any case, if such claim were to be made, it would be very hard to verify this in an objective way.

More theoretical proposals for (creating and) linking a 'vibrant public sphere' to the 'political system' also struggle with some problems which are inherent to the way these proposals conceptualise governance. Fundamentally, the problem is that such approaches aim to create a 'shelter' from politics, thereby endorsing the research seminar as the model for the organisation of the political community. **Inclusiveness** can under these conditions only be understood in terms of granting entry for 'problem-holders' to the grand seminar – provided that the problems are defined as questions already implying solutions in terms of supplying additional information, resources, communication channels, etc. With regard to the proclaimed **holism** of the seminar model (i.e. gathering all relevant knowledge and deriving the 'right' conclusions from it), it ignores the fact that the specific purpose of a given seminar setting might not be congruent with the needs of the 'whole' it is supposed to feed into. This is for instance evident from our investigation of the notion of 'guardianship' in the RISCOM™ model. The role of the 'guardian' relies on the notion that parliament – on behalf of which the guardian is supposed to act – truly represents what 'the nation' (or 'the people') think about the issue. This can only be the case if the legislative body is an exact one-on-one replica of public opinion, at least concerning the issue under scrutiny. But this view raises some serious

problems. The first is that, in order for the guardian to ensure that the system to be governed is responsive to 'Society', one necessarily upholds a very idealistic view of legislators as representatives of this 'Society', namely that these legislators are subject to the control of the people they represent. Here, the problem is quite simply that there is no effective possibility of submitting the legislature to the kind of public control in a way that would mean that the people could put their trust almost exclusively in this control. But secondly, even if it were the case that the legislators could ever be submitted to direct control of the people (e.g. by way of e-democracy) on every single matter of concern, and the views thus exposed would be transmitted via the guardian to the system to be governed, there would of course not be any guarantee that the majority ruling thus imposed would actually correspond to the 'common good'. Hence, the 'guardian of the system' hesitates between sources of authority on which to base a claim as a representative of the 'whole'. Finally, there seems to be no systematic evidence that the **practical results** of these approaches can be attributed to what they proclaim to be their central concern: the critical deliberation among equals about 'relevant' knowledge (including the methods used to arrive at this knowledge) for the problem(s) at hand leading to 'convincing' solutions only by the power of argumentation (and not, for instance, say by the authority of the invited experts, the selection of the material up for discussion or the skills of the moderator...).

8.3.4 Empowerment in the public sphere

A final subset of approaches to the problem of shaping governance in the interest of the 'common good' are those that explicitly aim for the empowerment of 'marginalised' groups in civil society. The key aim of the empowerment advocates is to enhance the inclusiveness of participatory governance arrangements – i.e. that less privileged groups (in terms of access to resources to influence or shape the public decision making) are given the opportunity to have their voices heard and that participatory governance provides the means for them to become more politically active. Moreover, compared to the approaches 'in between the system and the public sphere', empowerment advocates are usually not so much concerned with adding or modifying rules within a specific institutional governance arrangement. Although such institutional tinkering might be part of a tactical agenda within a specific spatio-temporal context, the overall goal of empowerment strategies lies on a much more encompassing level: in the long run, empowered participation is seen as a catalyst for an evolutionary (or even revolutionary) change of power structures. It is clear that empowerment approaches are mainly concerned with ensuring the inclusiveness of governance. In practice of course – and especially in the practice of RWM – empowerment of certain actors is often a precondition for achieving consultation processes with more balanced outcomes. On a conceptual level however, the empowerment agenda is fraught with problems, not in the least because of the often undisclosed philosophical presumptions underlying actual strategic interventions. Indeed, from a Habermasian perspective, the ultimate goal of empowerment can only be the removal of all 'empirical' obstacles to the 'ideal speech' condition. This condition – the ultimate guarantee of the possibility of informed consent – can only be realised after both the internal (the 'unconscious') and the external (the 'class struggle') barriers have been removed. One should aim for both 'material' and 'psychological' emancipation. However, this view faces two major unresolved questions: i) How to deliberate in a world marked by unjust material conditions?; and 2) How to reconcile the idea of 'therapy' (needed for psychological emancipation) with the notion of equality in political contexts? On the other hand, empowerment strategies inspired by the works of Foucault usually consist of a detailed analysis of power relations and forms of resistance to power in a particular setting, with an

emphasis on power effects that are localised and immediate on an individual level rather than on a 'global' level (i.e. analysis of power relationships in terms of classes, elites, institutions, etc.). Again: no doubt that the Foucauldian line of questioning in a practical sense can serve as a reminder of the dangers that sometimes attend even the most well-intentioned efforts at inclusive governance (especially in a domain such as RWM), in the sense that inclusive governance always entails a move of co-optation in a search for what is deemed to be 'politically feasible' given the constraints of technology, knowledge, institutions, organisations, etc. Faced with a claim to 'inclusiveness', analysts of a Foucauldian persuasion would always inquire about the price to be paid for this inclusiveness (in terms of shifts in power relations). In a theoretical sense however – and despite the huge conceptual gap between them – the Foucauldian approach struggles with a similar foundational problem as was the case for Habermas. Indeed, simplifying things to the extreme, Habermas makes a distinction between 'bad' (i.e. non-generalisable) grounding reasons and 'good' ones – i.e. reasons that can count on the reasonable assent of all those concerned by a decision. Foucault of course rejects the possibility of such a foundation for legitimacy, but in a formally remarkably symmetrical way proposes a new foundation: that of a 'force field' consisting of subjectless power-knowledge relationships. This makes the preferred Foucauldian mode of intervention – i.e. 'siding with the weak', exploring the possible points of resistance in the dominant power-knowledge matrix – quite literally an abysmal undertaking...

8.3.5 Conclusion: There is no 'safe house' for governance

Notwithstanding the many and profound differences between the approaches to (good) governance discussed in the second part of the WP2 report, they nevertheless share one fundamental trait: the attempt to provide a 'safe house' for the dynamics of governance to take place. What differentiates the approaches passed under separate review in this chapter is the application of this grounding principle to the normative expectations of **inclusiveness** (gathering the 'community of the affected'), **holism** (establishing an integrated order of knowledge w.r.t. to the 'situation at hand' and the possible options for action) and/or **practicality** (enabling efficient and effective actions). Habermas founds inclusiveness on the basis of being affected by a possible decision, and (the promise of) holism on the (counterfactual) possibility of ideal consensus; practicality being of less concern in his theory. His understanding of communicative rationality is however fraught with difficulties (cf. Section **Fel! Hittar inte referenskälla.**). Responses of the political system to the challenge of governance try to prevent the 'political machine' from faltering, thereby transforming the political function of making collective decisions about decisions made by other actors (i.e. binding, controlling, forbidding, guiding etc. the actions of others) into a behavioural norm for these other actors, at the expense of other possible normative expectations (cf. Section 2.2). Those approaches situated 'in between' the public sphere and the political system try to provide an objective ground for 'what the public wants' and use this a as guideline for shaping the decisions made in the political system, but fail to do so because of the essential undecidability between 'the common will' and the 'will of the many' (cf. Section 2.2). Finally, empowerment approaches in their most 'extreme' form (i.e. the Foucauldian variant) reject any normative claims to holism and practicality in the sense that these can be 'deduced' from norms, principles, rules, etc. – an order is always somebody's order; and practicality is always practicality for someone. Instead, their main concern is to reveal excluded or overlooked possibilities for action in the dominant power-knowledge matrix. Going one step further – i.e. stepping into 'political reality' and trying to actualise these possibilities, or even deciding to publish a Foucauldian-inspired analysis of a particular governance context – literally becomes

an abysmal undertaking, since on its own account, the Foucauldian analyst cannot give 'good reasons' to share his diagnosis of the situation. One simply has to choose sides 'for' or 'against' the dominant power-knowledge matrix, and live with the consequences. However, while we agree that political decisions in a domain such as (risk, RW) governance cannot be founded on absolute principles, this does not mean that one is always forced to 'choose sides' (with 'the weak', for instance) – such binary logic is but one possibility among many other options.

In essence, the problem with the governance approaches we discussed seems to be the following: the representations of 'good' governance they offer (including the sometimes unrevealed foundations of these representations) are in essence the expansion of a *monologue intérieur* on the part of one particular social actor (a philosopher, a policy maker, a mediator, for instance) on an imagined political reality. Such representations pass over or conceal the essential disunity and differentiation that is part of a political process. Taking into account the political dimension of governance implies that any proposal for a foundation of the governance process can be nothing more than a claim to knowledge which has to be submitted to the test of acceptance or rejection by other actors. What is therefore needed is an approach to learning how to construct 'good' governance which so far has been largely absent in academic literature on (risk) governance, namely one that does not look for the grounding of deliberation in a 'safe house' of stable presuppositions (e.g. about the nature of communication, the balance of forces between the actors involved, etc.) and/or puts the emphasis on the structural implications thereof (e.g. in terms of creating 'adequate' institutional setting for deliberation), but which also incorporates the ramifications of these questions for the involved actors, w.r.t. their beliefs and strategies. In sum, what is needed is a new epistemological turn in the search for 'governance for the common good'...

8.4 From the inside to the outside (im)possibilities at the science – society - policy interface

8.4.1 Introduction - the meaning of truth in deliberation in the context of risk governance

Chapter 2 kicked off with putting a simple research question, namely '*how is it possible to justify risk governance in the name of the 'common good' or 'the public interest*'? In that chapter, simply said, we focussed on the 'method' or approaches to 'good governance', with focus on the various views of what it implies for governance to be 'good'. From a spectators point of view, the aim was to describe different approaches or ways to ensure the proper arrangement or organisation of the governance setting or playing field. Talking about governance, thus far, there has been no specific attention given to the 'issue at stake', or the problem or challenge that needs to be 'governed'. Approaches to deliberation, whether the theoretical one of Habermas, or the institutional or empowerment-focussed methods described above, seem to have a universal character in terms of their applicability to various issues at stake. Chapter 3 looks at what happens if scientific-technical knowledge (whether considered as objective facts or relative results of social construction) is brought into the deliberation arena. It will appear that certain limits to the use of knowledge will put limits to the notion of truth, or will lead to a re-interpretation of the meaning of truth; a truth that is also 'prepared' to identify, recognise and incorporate incapacities of 'truth-making'.

8.4.2 Dealing with cognitive capacities

In the report, we argue that a recognition of the limits to truth making and the use of rational evidence will lead to a necessary re-interpretation of truth as a truth that is also 'prepared' to identify, recognise and incorporate incapacities of 'truth-making'. In the report, we briefly sketch three kinds of (what we call) 'cognitive incapacities' that complicate the generation of knowledge that should inform governance. These incapacities are related to

- the capacity to deliver social warranty
  denoting a 'discursive' or 'dialectic' perplexity → ('what you hope but cannot guarantee')
- the capacity to show factual evidence
  denoting a 'scientific' perplexity → ('what you believe but cannot prove')
- the capacity to show reasonable concern
  denoting a 'lay' perplexity → ('what you fear but cannot grasp')

The capacity to deliver social warranty

In the discussion on the designing of energy policies that are consistent with sustainable development, advocates of nuclear technology generally make reference to six arguments to claim that nuclear is an acceptable solution. Traditionally, these arguments are countered by those of the opponents in support of their claim that nuclear is an unacceptable technology in the frame of sustainable development policies:

	↓	'nuclear is sustainable'
	↑	'nuclear is unsustainable'
1	↓	the stability and reliability of the fuel market
	↑	limited uranium resources
2	↓	the low carbon dioxide burden of the nuclear fuel cycle
	↑	significant underestimated CO_2 emissions
3	↓	the competitive price of nuclear electricity in base load
	↑	subsidies, not enough provisions for waste & dismantling
4	↓	good nuclear power plant safety records of modern & safer future plants
	↑	Chernobyl, Three Mile Island , old plants, human error
5	↓	fuel cycles can be made proliferation-safe
	↑	warfare, irresponsible regimes, proliferation, terror
6	↓	available solutions for radioactive waste disposal
	↑	no available solutions for radioactive waste disposal

Imagine a situation where advocats and opponents would gather in a deliberative setting with a collective genuine wish to tackle and clear out these old divides for once and forever. One can ask the question then which of these issues *could* be cleared out by referring to 'reality' and 'good R&D and operational practices' in an open and transparent dialogue? The answer is 1, 2 and 3. It would be sufficient to acquire knowledge about the situation, as, from there on, straightforward causal reasoning can be applied (which doesn't mean that acquiring sufficient knowledge in these cases is easy). In addition, they could compare the different views and try

to find out *why* they differ and draw conclusions out of this comparison that could inform policy. Moreover, it would not be too bad if they would turn out to be wrong (it wouldn't harm anybody) and, besides, the consensus can be also adapted on continuous basis. Finally, in a discussion on these divides, also a comparison of nuclear with alternatives (in terms of availability of resources, CO_2 emissions and electricity price) is possible. In contrast, it may be clear that in the case of 4, 5 & 6, acquiring factual knowledge and applying causal reasoning is *not* possible, as

- the issues are marked by ‘risk’ that needs to be 'justified' and ‘managed’;
- essential factors (human behaviour, time) are beyond control;
- it is impossible to prove who is right and who is wrong;
- comparison of views triggers values deeply rooted in culture.

In addition, all these uncertainties and impossibilities complicates the comparison of nuclear with alternatives.

The divide over the issues 4, 5 and 6 cannot be 'clarified' in a deliberation or transparency setting, which means that it is impossible to reach a consensus over them. Both parties will have to admit that it is impossible in whatever way to give warranty of *either* opinion *and* counter-opinion. The fact that they are forced to share this view and to 'live with it' can be regarded as an incapacity to deliver 'social warranty', in the sense of 'delivering warranty to society'. In reality, this incapacity is generally ignored, or seen as something that needs to be overcome through policy. It is however more important to jointly recognise this *factual* incapacity to deliver social warranty and to also include this as an element of knowledge in deliberation as such (see chapter 4).

The capacity to show factual evidence

Suppose a nuclear scientist is invited as an expert in a parliamentary commission to explain his/her stance on nuclear. As a scientist, he/she traditionally will make claims based on the well-known rational arguments with regard to the safety of the reactor, the insight into the future performance of a waste disposal site and the regulations that ensure the protection against low levels of radioactivity. Knowing that these arguments are based on the science of probabilistic safety assessment, performance assessment and radiobiology of stochastic effects, and thus on a 'probability', a 'prognosis' and a 'hypothesis' respectively, one can understand that it is impossible to deliver 'scientific proof' of these benefits in a deliberation arena. In the case of waste disposal, he/she could make a claim on the projected evolution of the technical and natural integrity of a radioactive waste disposal site by pointing at acquired insight into the phenomenology of the behaviour of materials under specific conditions and by showing a graph that would project possible radioactive releases from the site in function of time. Regardless of the fact the scientist would be aware of different visions on his/her truthfulness and of the way it would be judged by others, the scientist would have to admit that, in the arena, the argumentation would essentially rely on 'what he/she believes but cannot prove'. In other words: even in an ideal Habermasian performative deliberation situation, wherein the speaker could show or prove legitimacy through 'authenticity' and 'transparency', he/she would face a certain *perplexity* when it comes to use 'scientific-technical evidence' in the argumentation. The evidence may be phenomenological evidence, but not (projected) evidence of proof. Even if the scientist would be able to show evidence of proof in a situation of deliberation, the result would still be that the audience is unable to fully grasp

'the conditions under which the speech act can be considered acceptable'. The scientist and the other stakeholders need to deal with *inherent uncertainties* that cannot be clarified or 'solved' by way of rational argumentation. The scientist is forced to 'ask' a certain kind of *trust* while the audience will need to *believe* what the expert claims *in order to accept* the claim.

Apparently, when using scientific-technical knowledge in deliberation, the question of validity of 'truth' cannot be solved within the value sphere of 'theory'. Besides the remark that this could lead to new ways of theorising epistemic authority and rationality in using scientific-technical knowledge, we state that it has serious implications for the way this kind of knowledge can be applied in both policy supportive research and in the deliberation arena as such (cf. chapter 4).

The capacity to show reasonable concern

To make the setting complete, we argue also for the awareness and recognition of 'stakeholder perplexity'. If the scientist in a deliberation on a complex technological application such as radioactive waste governance has to rely to a certain extend to 'what he/she beliefs but cannot prove', the stakeholder or civil society representative has to argument about 'what he/she fears but cannot grasp'. Due to the uncertainties with regard to the causality-risk relation and the complexity of distribution of benefits and burdens connected to 'risky' practices such as radioactive waste disposal, the citizen or 'lay person' will enter the arena with a concern that is not easily translatable into a rationale on acceptance (or rejection) of that 'perceived risk'. Indeed, the citizen has to bring a rationalist argumentation to the arena that would be based on a careful inclusive synthesis of his/her relevant values and norms (or those of the group he/she represents) and with a rational argumentation with regard to the legitimacy of the way he/she 'represents' society. With Habermas, it would appear impossible to *understand* the citizens speech act, as the citizen is not able to explain why the speech act would be *acceptable*. While usually the citizen is unable to go into a discussion on the scientific-technical issues that would allow to question the character of 'safety' of the disposal site ('truth'), a legitimacy claim referring to the normative or social world ('rightness') would essentially start from the (nowadays) unquestionable claim of 'the right to participate', but end up straying within the complex exercise of justification of the act of disposing radioactive waste as such. Last but not least, while the scientist can rely on a transparent rationale with regard to authority of *representation*, the citizen, as stakeholder, would have more difficulties to make a legitimacy claim with regard to the 'truthfulness' of the way he/she represents society.

8.4.3 Dealing with limits to and interdependence of truth, legitimacy and authenticity

Moving from Habermas to RISCOM terminology, we could say that in the case of risk-inherent complex technologies, due to the above described inherent uncertainties, scientific issues cannot be clarified completely by way of scientific methods. This means that questions with regard to these scientific issues such as ‘is this true?’ or ‘are we doing things right?’ can in principle not be answered in the arena. In argumenting on risk-inherent complex technologies, experts face a certain perplexity with regard to expressing their ‘beliefs’ that cannot be ‘stretched’ in the interest of clarification. On the other hand, stakeholders face a certain perplexity with regard to expressing their ‘concerns' that cannot be ‘liberated’ in the interest of clarification. These situations are known to result in simplified messages and strategic positioning. In the transparency arena, this can lead to taking defensive positions

instead of to generating trust. Summing up, we could state that ‘good governance’ will have to deal with 'the powerlesness of perplexity' and thus with consequent limits to truth, legitimacy and authenticity. These limits can be briefly sketched as:

- ► Limits to truth - feasibility of ‘proving’ understanding and insight (coping with inherent uncertainty and ambiguity of natural and technical processes)
- ► Limits to legitimacy - feasibility of setting correct framing for justification
  - feasibility of representation of ideas and concerns (in their nuances, ensuring full spectrum of views)
- ► Limits to authenticity - feasibility of making a consistent normative stance as individual (as expert, as stakeholder, as politician)
  - feasibility of representation of institutes (accountability)

This will in addition imply a certain interdependence between these three cornerstones of deliberation, and thus a necessary re-interpretation of the concepts.

8.4.4 Conclusion: in search of an epistemological turn

Whether the house for deliberation is considered to be safe or not by all actors, the political reality shows that the availability and role of scientific truth ('getting the facts right before negotiation') remains a given fact in itself in contexts of deliberation on complex issues. Despite all academic reflection on the social construct of science, it looks as if science still 'speaks truth to power', not only because of scientists see it as their responsibility, but also because of politicians *appeal them* to deliver evidence to enlighten politics. This can lead to problematic situations where politics press science to deliver clarity and certainty where it cannot, and where science, in order to preserve its credibility, doesn't want to see the limitations (or acts as if they do not exist) and thus refrains from bringing necessary considerations on incapacities in the arena. The ironic but sad point is that, as generating insights on incapacities is science in itself, science would be the only actor that can deliver these insights to the deliberation arena.

To conclude this section, we could say that, talking about science for policy making, we've entered a time wherein a conceptualisation and an instrumentalisation of 'what we don't know' - in the sense of what we supposedly cannot know – becomes as important as the rationalisations and subsequent recommendations we traditionally build on 'what we know'. We even dare to say that the recognition of and dealing with these incapacities is more important, as it transfigures 'the void of the unknown', at the same time recognised as the source of layman's concern but, motivated by the wish to protect the own credibility, ignored as a factual existence by as well scientists as policy makers, into the only relevant playing field of ethics in the context of science-informed decision making.

8.5 The possibility of risk governance

8.5.1 Introduction – in search of an epistemology of/for 'better relativism'

Despite the critical assessments made in chapter 2 and 3 it has to be said that as well the Habermas approach to deliberative democracy as the related RISCOM approach remain interesting vantage points for our inquiry about 'good governance' (in the sense of 'governance for the common good'). The reason is that these approaches back our statement that the quality of governance essentially depends on what happens at the science-policy interface, there where facts and values, 'embodied by people', come together in a complex cocktail muddled by obstinate uncertainties and conflicting interests. What we want to add to these approaches however is that, given the specific issues at stake, it is not always possible to deliberate up to a consensus based on the best argument (Habermas) or up to complete clarity based on stretching in a transparency arena (RISCOM). As an introduction to this last chapter, this motivation can be illustrated by recalling the previous argumentations by way of a reasoning in four steps:

(1) Chapter 1 concluded with the argument that questioning governance comes down to an inquiry of the performative and communicative character of the science-society-policy interface in terms of both its effectiveness and normative grounds. The initial need for demarcation of the concept of governance (raised in §1.2.), namely that the issue 'should be debatable' might been somewhat overlooked by Habermas, it certainly doesn't affect the initial validity of his discourse ethics approach. Practical discourse (based on discourse ethics as outlined in WP2 annex 1) with the aim to reach consensus on 'the validity and rightness of a norm' can indeed be seen as 'case-independent'. The problem comes in when actors refuse to involve in deliberation that is marked by *the possibility* of (conditional) acceptance of the norm, as they consider the norm (e.g. nuclear is a valid option in a sustainable energy mix) as unacceptable *a priori*.

(2) Chapter 2 reflected on Habermas' view on how discourse ethics could inspire, work through and be supported by constitutional settings. The critical assessments of §3.2. and §3.3. show that it is not possible to construct deliberation models or environments that would, *by design*, guarantee a successful outcome of deliberative practical discourse (successful in the sense of having reached a consensus 'where possible' on the validity and rightness of a norm, or in the sense of having reached complete clarity in a transparency arena in the RISCOM approach). However, the ideas of discourse ethics and transparency remain valid as fundamental principles of deliberation.

(3) The reasoning of chapter 3 shows that, even in an ideal deliberation or transparency environment that by design *would* guarantee a successful outcome, the characteristic complexity of the issue to be governed will put limitations to the possibility of generating and using knowledge *about* the issue *in* deliberation or transparency. These limitations affect the performativity of practical discourse and imply a necessary re-interpretation of the classical notion of scientific truth and, in a Habermasian sense as well as in a RISCOM-transparency related sense, of the meaning of legitimacy and authenticity of validity claims.

(4) Bringing all this together, it looks as if governance of complex practices such as risk-inherent technological applications can only be done 'in a loose structure based on incomplete knowledge'. The more positive way of putting things is that 'good governance' will need to

accept, treat and incorporate 'identifications of incapacities and unknowns' *as elements of knowledge as such*. The previous reasonings show that these incapacities are as well related to the method of deliberation as to the knowledge used in deliberation. This will have implications for *attitudes in* and *processes of* governance. The traditional saying that, in governance, trust requires 'robust frameworks' (robust = forceful) that deal with 'robust knowledge' (robust = sound, factual) will need to be substituted by the insight that trust requires 'enabling frameworks' that deal with 'reflexive knowledge', or thus that *trust requires the possibility to generate trust*. The aim here is not to propose a new theory for governance, but to seek ways to let the epistemology of this so-called 'better relativism' work through (and thus improve) the governance practice itself: In other words: governance is not only a joint opinion making process but also, and actually primarily, a mutual learning process.

8.5.2 Governance and the possibility to generate trust

It is tempting to call 'trust among actors in a political decision making setting' to be the ultimate quality criterion for democratic decision making in the context of governance. It sounds attractive in its simple and human sense, and even the most detached cynical politician and the most suspicious citizen would claim trust to be 'necessary' to give a political negotiation at least a sense of relevance. Trust would mean that there would be some consensus among actors that 'things are happening in a fair and good way', either in positive sense or from out of the understanding that 'this is the best we can do'. Any decision taken in this atmosphere could be called truly democratic, as actors who represent interest groups would be motivated to support the decision back towards the rank and the file of their group. In addition, when the decision would, for whatever reason, turn out not to be the best one, it would not be necessary to find a scapegoat.

Instead of approaching the concept of trust in a philosophical way with the aim to get to know what would be the necessary conditions for trust building that should typify practical governance settings, we prefer to present here three general characteristics of governance that follow from the argumentations made in the previous chapters and that, we believe, could be seen as conditions for trust building: (1) 'better knowledge generation', (2) 'real justification' and (3) 'process thinking'.

8.5.3 Trust building on method instead of proof

The characteristics 'better knowledge generation', 'real justification' and 'process thinking', seen as 'methods, acts or dynamics governance should aim for' are put forward here as conditions (in the sense of possibilities) to generate trust in the political arena. In the interest of clarity and of keeping this text concise, they are presented as key ideas that could inspire further reflection and discussion. As a general comment, we state that the totality of these ideas make clear that the aim of governance cannot be to 'deliver a product' but rather to 'maintain a process'.

Better knowledge generation

In light of the argumentation of the previous chapters, the aim of 'better' knowledge generation can be described as a joint act of *gaining insight in complexity*. The table

summarise what these 'cognitive challenges' would imply for the governance agora and arena in terms of 'attitudes and methods' that would make these exercises possible.

In short: better knowledge generation is knowledge generation through interactive practices and settings that foster reflexivity (1+2) and organise transparency (3). In contrast to 'transparency', the concept of reflexivity has many meanings and connotations. In this context, we would like to restrict ourselves to two simple notions: 'reflexivity(1)' can be understood as 'contextualisation' or 'becoming aware of how knowledge is produced', while reflexivity(2)' has the meaning of 'self-confrontation' in the sense of 'becoming aware of the potential of and limits to the own knowledge and role in a discourse setting' (the general notion of 'role' also includes an eventual official mandate).

Real justification

While deliberation builds on the act of 'better knowledge generation', it should be inspired and steered by the principle of justification. In short, 'real justification' includes:

- a first phase wherein one jointly investigates whether the issue is debatable (see chapter 1);

- a second phase of debating *conceptual justification* instead of *conditions for acceptance of an envisaged reality*. In that sense, 'real participation' is participation where there is a real chance for stakeholders to influence the process, including the possibility to come to a decision to reject an envisaged practice or to end or 'phase out' an existing practice. The often proclaimed condition of 'early involvement' is not enough; to the extreme, in a truly democratic governance setting, civil society is supposed to become involved at the stage of conception and testing of *ideas*; that is: before implementation in society. Obviously, most of the practices that are subject of discussion here have penetrated in society already (not only the use of fossil fuels or nuclear technology, but also gmo's, mobile phones and nanotechnology).. It would thus be necessary to inquire what the idea of real justification means in the concrete context of those practices;

- the process to have a character of reversibility, adaptability or the possibility of 'phase out' for practices that have penetrated society already. If it would, for whatever reason, be impossible to reverse, adapt or phase-out a practice, stakeholder involvement would be useless and only have a character of window dressing.

Process thinking

Process thinking in the context of governance implies at the same time looking back and looking forward. Both have as well a pragmatic as a normative dimension:

→ 'looking back'

  - Governance needs a consciousness of history in the sense of a joint understanding of 'why things went the way they went', in order to not only 'learn from the past', but also to critically assess shared but differentiated responsibilities.

▼	Elements of better interactive knowledge generation
1	**organising reflexivity(1) ('contextualisation')**
▼	*"first principles"* transdisciplinarity: 'synergies of sciences' (natural, engineering, social and human sciences) inclusiveness: 'synergies of views' (also: synergies of expert and lay knowledge)
▼	*analysis* ▪ identifying relevant phenomenological insights from natural sciences & technology ▪ recognising inherent uncertainties and cost-benefit (or risk-benefit) context shifts ▪ understanding the meaning of risk assessment in the absence of unambiguous causality ▪ understanding views and concerns in relation to relevant values and value frameworks ▪ mapping what we can(not) know & (don't) need to know ▪ identifying knowledge gaps
	evaluation ▪ contextualising relevant phenomenological insights from natural sciences & technology ▪ assessing the function and possible use of 'the science of simulation': calculation, fore- and backcasting, based on probability, hypotheses and prognosis (modelling) ▪ assessing the function and possible use of abstract guiding principles (such as 'sustainable development')
	framing ▪ problem framing, thematic framing, and value mapping in a multi-dynamic and pluralist context ▪ defining and organising shared advocacy in representation
	reference ▪ seeing 'the bigger picture' of justification (the meaning and application of multilevel governance) ▪ understanding (the consequences of) the historical legacy ▪ dealing with differences in societal development, leading to 'shared but differentiated responsibilities'
▼	gaining insight in complexity - developing common languages
2	**enabling reflexivity(2) ('self-confrontation')**
	▪ cautious use of guiding principles ▪ liberating recognition of 'cognitive incapacities' ▪ understanding the meaning of and limits to 'representation' and 'mandates'
3	**organising transparency**
	▪ revealing normative uses of guiding principles ▪ revealing cognitive incapacities ▪ revealing opinion shaping in representation ▪ unveiling practices of 'science shopping' ▪ communicating unresolved issues (what cannot be done (yet)) ▪ knowing who is accountable for what and why ▪ revealing business-policy connections and real agendas

- In many contexts, 'because of history', it is impossible to take a blank start with a justification exercise (such as with the use of nuclear technology). E.g. a certain existing 'penetration' of a risk-inherent technology in society may not prevent the political community to organise reflection exercises. Only the act of putting the question 'is it this what we really want?' would already qualify as a start for a 'real justification' process

→ 'looking forward'

- The possibility of 'revisability of opinion' should be taken up as an issue of permanent concern in governance processes, and this as a normative basis for any judgment on the desired degree of 'adaptability of implementation' of a decision in the social and physical reality. In this, adaptability should comprise not only technological fixes but also complete reversibility

- While 'the possibility of revisability of opinion' has more of a normative 'timeless' character, a 'desired degree of adaptability of implementation' is of course based on what we find desirable today. In this respect, the morality of 'looking forward' should also include a preparedness to grant future generations with the possibility to 'adapt' a certain implementation according to their norms and value basis. In terms of intergenerational accountability, it is important for future generations to know why 'we thought this was the best way forward'.

8.5.4 Implications for practical realisation, institutional design and regulation

For those pragmatic instrumentalists among us, it probably looks a bit bizarre to focus on 'trust building' at the ultimate goal of (risk) governance. According to them, governance is about making decisions that lead to actions in the real social, economic and physical world (from social security and tax measures over determining the specifications of a commercial product to constructing waste disposal sites). Of course these are the ultimate and, in the end, only measurable goals of the 'why' of governance. Trust-building, on the other hand, can be seen as the response to the 'how' question, or the question of what would be the ultimate way to organise governance. As we stated before that this question cannot be answered 'case-independent' inside-out (chapter 3) or 'people-independent' outside-in (chapter 2), it is clear that the 'why' and the 'how' become inseparably intertwined. We could thus say that, *in the interest of the 'why'*, the 'how' (the possibility to generate trust) becomes the ultimate goal of governance.

What is more important in the frame of the current argumentation is to reflect on how this 'how' of governance can be put in practice: how can 'better knowledge generation', 'real justification' and 'process thinking' be realised through practical social dynamics, all but not happening in formal institutional settings and guided by regulation (in the sense of both soft law and jurisprudential procedures)? In addition, should these settings and procedures need to be exclusively formal, or could they also work through informal ways? If yes, how? We prefer to restrict ourselves here to highlight some ideas on the three 'conditions' that, we

believe, are relevant in the governance context. For each of them, we also briefly reflect on the importance of formal and informal contexts to make them work.

Better knowledge generation

Referring to the table 'elements of better interactive knowledge generation', we should look at how 'organising reflexivity' (in the sense of 'organising contextualisation') on the one hand and 'enabling reflexivity' (in the sense of 'enabling self-confrontation') in combination with 'organising transparency' on the other hand can be realised in practical settings. Of course these elements should not be seen as separate building blocks that would need to be organised in a chronological order. In an overall political meaning however, 'enabling reflexivity in combination with organising transparency' should be seen as methods characteristic for a binding environment (a 'political arena') that aims to come to taking decisions and give account to society for them. In respect to this, 'organising reflexivity', with the aim to gain insight in complexity and to develop common languages, can of course also happen in a political arena, but should *in the interest of what it aims for*, especially be organised in *non-binding learning* environments. The essential distinction 'non-binding' versus 'binding' has of course consequences for the envisaged practical realisation, institutional design and regulation. They will therefore be treated separate here.

Organising reflexivity, or the design of non-binding learning environments

Approached in an instrumental way, 'organising reflexivity(1)' in the context of governance would then basically mean:

1. organising transdisciplinarity in the academy, with the aim to gain insight in the complexity of generating policy-supportive scientific knowledge;

2. organising inclusive learning processes and environments ('agora's') in civil society, with the aim to gain insight into the pluralism of views and the complexity of value-driven discourse and, based on this, to develop common languages (to be used in the governance arena).

The required institutional settings and legislative frameworks to 'organise transdisciplinarity' in the academy do not exist, and are also difficult (if not impossible) to design. Despite all the existing academic theories related to transdisciplinarity and second mode science, academic learning programmes do not respond yet to these new challenges themselves. The reason is of course that not everybody is convinced of the need for transdisciplinarity. Social sciences seem to orient their interests towards new cases such as sustainable development and climate change, but are reluctant to place themselves into an overall reflexive meta-framework of 'philosophy of the social sciences'. On the other hand, the applied natural sciences and technology and engineering sciences don't seem to be challenged much about their claim on epistemic truth or by calls to engage in a synergetic interaction with social sciences and philosophy. Not only did they get the privileged role to serve the basis for our so-called 'knowledge economy', but, as said before, in the frame of the current economical and ecological 'crisis situations', politicians appeal them even more than before to deliver evidence for political direction.

The topic of how to organise inclusive learning processes and environments in a formal way has been subject of a plethora of all but not theoretically underpinned policy

recommendations delivered by academic institutions, research centres and consultancy. The specific approach to policy contributions generated through partnerships, focus groups, consensus conferences, science cafés etc. may be well know (and generally appreciated) by action research academia and citizens who got, all but not voluntary, involved in this kind of exercises already, it looks as if only a minority of elected politicians see the added value or even symbolic function in relation to a traditional system of representative democracy. Non-binding conventions such as the Aarhus Convention are generally interpreted by politicians as an agreement to ensure citizens 'access to information', and not so much as a convention that also delivers a normative framework for involvement in decision making.

The synergy of enabling reflexivity and organising transparency

How the politically binding environment should look like in order to make it to 'enable self-confrontation' and to 'organise transparency' is a more difficult question to answer. In other words: 'form does not follow function' in the same straightforward way as it does (or would do) in the case of 'organising reflexivity(1)'. The method of 'organising transparency' can in principle be applied in various political discourse settings (parliament, expert commissions, hearings, thematic workshops, …) as long as everybody formally agrees with the importance and the aim of this approach. Whether this approach should be translated into legally binding frameworks (and if so, how) is of course not a political-procedural but a normative question. This question can be connected to the question of how the concept of deliberative democracy relates to the system of representative democracy. In any case, we state that the need to *formally* organise transparency (as described in the table) should become a universal norm that should inspire and steer the practical political organisation of governance.

Real justification

The correct framing of a governance process, in the interest of making 'real justification' possible, is part of the knowledge generation process (as specified in the table). Obviously, making 'real justification' possible itself will have to rely on legislative possibilities. Up till today, public involvement law is not designed on the basis of the idea of 'real justification'. It exists to give the public a formal chance to discuss 'better conditions for acceptance', which is principally not the same. Seen in a historical perspective, we can say that public involvement law is still designed from out of a technocratic top-down approach: Environmental Impact Assessment procedures, and even Strategic Impact Assessment procedures are designed to give civil society the opportunity to judge 'acceptability' when the project has already moved far beyond conception phase. This means that the chances for civil society to eventually reject the complete project are more restricted than in the case of 'real justification'. As also argued before, 'real justification' would lead to better decision making regardless of the outcome. In that sense, a green light from civil society at the concept phase would result in a better setting for acceptance of consequences at a later stage. To give an example: if civil society would be involved in a justification exercise on nuclear technology in the context of evaluating options for energy production, and the outcome of that exercise would be the decision to make use of that nuclear option, an involvement process in the context of the siting of a radioactive waste disposal site would have a different meaning than it has today, as civil society would have agreed already *in principle* with the production of radioactive waste as a consequence of using nuclear technology.

Process thinking

Of the three 'conditions', it looks as if the third one, process thinking, is the most difficult to consolidate in formal political and jurisprudential settings. In short, we could say that the system of representative democracy, seen as a consecutive series of elected legislatures, looks like the biggest danger to process thinking itself. Reality shows everyday that newly elected authorities of different political constitution than the previous one generally don't see it as their prime task to investigate and deliberate on what existing policies deserve to be continued in the common interest. A 'mild and reasonable tabula rasa' is seen as the logic way forward for new offices that want to take up their responsibility as a reward towards the electorate. Also within existing legislatures, process thinking in the interest of the quality of a specific process itself is endangered by the quest for credibility of an installed government and its undertaken policies as a whole. Nuclear energy policy is but one of the examples of issues that deserve some continuity of the decision making process, but that are put aside if they don't fit in the package of policies and measures that also need to serve the credibility of the authorities. The other way round, issues might be taken off the shelf if they could save an authorities' credibility.

Today, the 'looking forward' dimension of political process thinking is univocally connected to the concept of sustainable development. There would be diverging opinions on whether the actual politics of sustainable development meet the criteria outlined above or not. There are reasons to state that actual sustainable development policies are still too much driven by a 'means-end' rationality, and this in two ways. Firstly, the way policy measures are motivated in the frame of sustainable development make them to look as if their main reason would be to lift concerns of current generations instead of those of future generations. Secondly, in the sense of 'giving account to future generations', instead of to 'maintain processes', we could say that politicians still tend to want to 'deliver products' that would fix already now possible problems future generations could be faced with. It should however be clear that sustainable development is not meant to minimise the burdens for future generations or to maximise their benefits. It is actually not even meant to ‘balance’ their benefits and burdens. In a moral stance of looking forward, sustainable development should in essence enable future generations to decide how to distribute ‘their’ benefits and burdens according to their views, knowledge and values.

8.5.5 Bringing it all together - a normative interrelation of representation, transparency and deliberation

In this section, as a kind of summary, we first bring together all ideas that have been presented and treated before. This summary of reasoning can than serve to underpin a normative description of the concepts of 'representation', 'transparency' and 'deliberation'.

Of attitudes and methods - bringing it all together

Governance, in its notion of decision making that allows (or forces), in a spirit of democracy, the 'executives' to respect the rights and interests of the 'stakeholders', is facing a double complexity:

- an inherent complexity due to the necessity to deal with time scales, probabilities, prognoses, hypotheses and multi-interpretable guiding concepts such as 'sustainable development'

- political- and cultural-historical evolutions that hinder governance to tackle these inherent complexities, such as democracy based on traditional political identities, the enduring cultural hegemony of the exact and technological sciences and the recent emergence of (all but not) strategically nourished political climates of fear.

Defining 'governance' in the most general way as 'human interactions in face of a certain complex problem, guided by a certain reference or normative framework', we could say a governance approach should be *holistic*, *inclusive* and *practical*.

In this sense, answering the question 'what is good governance?' will imply an inquiry of the performative and communicative character of the science-society-policy interface in terms of both its effectiveness and normative grounds, and this based on the premise that any inquiry of *criteria* for 'good governance' will come down to an analysis of attitudes in and methods of political interaction, both in terms of using knowledge and mandates.

In the case of risk-inherent complex technologies, due to the necessary dealing with inherent uncertainties that lead to the use of probabilities, prognoses and hypotheses, scientific issues cannot be completely clarified by scientific methods, which means that

- questions with regard to these scientific issues such as ‘is this true?’ or ‘are we doing things right?’ can in principle not be answered in the arena.
- ‘good governance’ will have to deal with limits to and interdependence between truth, legitimacy and authenticity

In arguing on risk-inherent complex technologies,

- experts face a certain perplexity wrt expressing their ‘beliefs’ that cannot be ‘stretched’ in the interest of clarification.
- stakeholders face a certain perplexity wrt expressing their ‘beliefs’ that cannot be ‘liberated’ in the interest of clarification.

In the transparency arena, this can lead to simplified messages and taking defensive positions instead of to the generation of trust. Therefore, next to ‘organising transparency’ in the political arena, there is a need to ‘organise reflexivity', an attitude that can be understood as 'awareness for the (im)possibilities of the use of knowledge and mandates'.

In a governance arena, before transparency can be 'stretched', it needs to be 'unlocked' in a culture of reflexivity. While transparency can be ‘organised’, reflexivity

- needs to be ‘fostered’ in the academy and the research institutes (experts)
- needs to be ‘enabled’ on the policy platform (stakeholders, experts, politicians)

In this sense, the key 'criteria' to ensure a trustful deliberation climate in the governance arena are

- the willingness to foster reflexivity
- the willingness to organise transparency
- the willingness to deal with inherent uncertainties through precautionary-based and process-oriented policies (adaptable, reversible; instead of product-oriented)

Institutional reform is not just a matter of building the 'right' institutions, but of creating enabling conditions for stakeholders, scientists/experts and policy makers to listen, propose, deliberate and decide on the 'common good'.

The politician as a mediator of process – the pragmatic-instrumental meaning of 'representation'

One does not have to do extensive assessment of academic models of democracy and of existing democratic systems to learn that 'democracy' and 'representational democracy' are in fact synonyms. From Plato on, over historical republicanism to earlier and more recent models of liberal democracy, the standard form of democracy is build on the principle of representation: a certain (elected) elite is supposed to represent the interests of the citizenry and to give account for their policies towards that citizenry. The scope of this report does not allow extensive elaboration of the concept of political representation, let stand on the countless academic and more popular publications on this subject. What is interesting in the context of this study however, is the important difference between two kinds of representation in light of the presented conditions for governance (better knowledge generation, real justification, process thinking). The difference is revealed by the question whether those who 'represent', relying on a acquired authority (through elections), would need to act as decision makers on issues, or rather as a mediators (moderator) of the decision making processes related to these issues. This question may exist in academic debates on what would make up a fair and workable democratic system, but it is certainly not central in actual *political* discussions on political reform. The practice of politically 'representing' other people has of course its historical roots in the emancipatory dynamics 'against the power of the elite' (feudalist, dictatorial, bourgeois-industrial-economical, religious) that marked the 19th and 20th century. One could say that, in a society of emancipated, informed and vocal citizens, the meaning of representation would have shifted from 'representing the powerless' to a more pragmatic function of 'organising public reason in an effective way'. Many scholars (and even a few politicians) would agree in this respect that the conditions 'better knowledge generation', 'real justification' and 'process thinking' logically imply the role of the politician to be more of a 'mediator of process' than of a negotiator on issues. To put it strong: if inclusion (having a say as citizen in decisions that affect you) is considered as a fundamental human right, then 'representation' and 'representative democracy' are today nothing more than pragmatic ways of dealing with the unpracticality of organising the involvement of every individual in decision making. This should be the basic understanding of 'representation' today.

Transparency as a fundamental right

We don't need that many words to describe 'what should be the case' with regard to transparency. Andersson (2008) presents a complete and coherent picture of what transparency can mean in a political context of risk governance. We only want to add three ideas that follow out of our previous reasonings and that, we believe, add something more to the normative rationale in favour of organised transparency.

Firstly, as explained before, creating transparency has its limits. We said that, in arguing on risk-inherent complex technologies, experts face a certain perplexity with regard to expressing their ‘beliefs’ that cannot be ‘stretched’ in the interest of clarification. In addition, stakeholders face a certain perplexity with regard to expressing their ‘beliefs’ that cannot be

‘liberated’ in the interest of clarification. Therefore, next to ‘organising transparency’ in the political arena, there is a need to ‘organise reflexivity', an attitude that can be understood as 'awareness for the (im)possibilities of the use of knowledge and mandates'. This attitude, however, cannot be stimulated 'on the spot'. It should be fostered in the academy and the research institutes, and enabled on the policy platform (or thus 'in the arena'). Also citizens have the right to learn to develop an attitude of reflexivity in connection to particular issues that concern them. This should be the main motivation for political decision makers to organise public debates on these issues that are open for everybody. In this respect, also the media have a responsibility as an additional mediator of public reason.

Secondly, we see transparency, in the sense of creating clarity in the way interests and concerns of actors shape decision making, as a fundamental value *of* fair and effective decision making itself. Even stronger, transparency in connection with 'actions of others that affect me' should be seen as a fundamental right of each involved actor. Transparency is not something that only needs to be 'delivered' by the executives on request of those who are 'represented' and 'governed'; rather, it should be 'offered' by the executives as such. In this sense, transparency can be enforced by way of regulation and binding agreements.

Thirdly, while transparency is a 'right' for those who are 'represented' and 'governed', it has a double meaning and function for those who act with an executive mandate (including experts). On the one hand, stretching these actors in transparency exercises is a way to 'force' them to take up responsibility. On the other hand, unveiling (through transparency exercises) what science and politics can and cannot deliver is also a way to 'protect' mandatories from outside political or societal pressure to do 'the impossible'. Organising transparency can thus prevent mandatory actors in two ways to manifest, by way of narrow framing, or 'strategic simplifications', their personal, institutional or political agendas. In the first sense, 'strategic' would mean 'serving the own interest' in a political or economical power game; in the second meaning, the strategy would be to protect the own credibility. In most of the cases, both motivations play simultaneously.

Politics by deliberation as a characteristic of an intelligent society

Deliberation, or 'deliberative democracy' is often regarded as a quality of democracy, in the sense of the degree of 'deliberativeness' a particular (constitutionalised) system of democracy has (Held 2008). In the context of the ARGONA project, this report has no ambition to add an alternative or extended theory to what already exists. Similar to the piece of text on transparency, we would like to present an opinion that could add to the academic and political discourse on the subject. Qualifying deliberation as a practice or approach that finds its reason of existence in the enlightenment and deployment of the nuanced spectrum of views on how to tackle a complex challenge, deliberation is simply the way an intelligent society undertakes politics. Deliberation is decision making through public reason that, free from abstract 'identity'-confinements such as political parties or nation states, aims to build trust on method instead of on authority or 'evidence of proof'. In this sense, 'form should follow function'. In reality this means, simply said, that actors put the 'Elements of better interactive knowledge generation' (as given in the table in §4.3.) in practice, supported by the conviction that 'real justification' and 'process thinking' are fundamental political principles of an intelligent society. Creating transparency, al but not formally organised, is then to be regarded as an essential element of deliberation, next to a joint understanding that involvement is a

fundamental right and, consequentially, 'representation' has but a pragmatic-instrumental meaning, instead of an elitist-bucolic (and thus oppressive) one.

8.5.6 The possibility of deliberative democracy 'light'

Instead of starting from existing theories about the concept of deliberative democracy and a subsequent inquiry of how the existing systems of representative democray could respond to it, we prefer to put forward a 'definition' that relies on the argumentations made in the previous chapters and, in addition, present some considerations that would (hopefully) inspire reflections about the way 'good risk governance' could be put in practice:

> *A deliberative democracy is a constitutionalised democratic system that manages parallel thematic governance processes that, each in itself, are organised so as to enable the generation of process-wise trust.*

Regardless of the way this definition can be put in practice, taking into account the reasonings of the previous paragraphs makes clear that a thematic deliberative governance process would need to include formal transparency exercises, organised as 'transparency arena's, as a way to make intermediate 'checkups' of all actors intentions and interests. In that sense, transparency arenas should not be seen as activities that physically happen outside of deliberation, but *as formal phases of a thematic deliberative governance process itself* (see picture). Of course actors can be 'stretched' to reveal their intentions and interests at any moment in political discourse but, as it has been argued before, organising transparency should in any case go together with 'enabling reflexivity(2)', as sketched in the table.

In short, based on the definition, a shift to ‘full’ deliberative democracy would imply the installation of a system;

- wherein a government manages (mediates, moderates) parallel thematic governance processes;
- that launches specific thematic processes on the right moment, and from out of the principle of 'real justification' (which means involvement of the public at concept phase);
- that management tasks such as proposals of agenda & budget allocation in the interest of getting the parallel thematic governance processes on track and of keeping them running,
- that makes sure that the governance processes have a character of robustness against periodic elections;
- wherein the old party structure would become irrelevant, which means that elections would serve the establishment of a steering committee of individual that campaign on individual basis
- wherein these individuals would then act as mediators of process and distinguish themselves on the basis of their specific views on ‘better knowledge generation’, ‘real justification’ and ‘process thinking’

It is evident that this first option would imply a total reform of our political society, based on a paradigm shift with regard to the normative understanding of the way politics should be organised. Not everybody would agree with this need and, a thought more important in the frame of this study, it would be unwise to 'wait' until this reform would have become a reality

in order to start to organise 'good' risk governance of pending issues such as the management of radioactive waste, nuclear energy or climate change. A shift to deliberative democracy ‘light’, understood as traditional representative democratic authorities that 'launch' and guard thematic governance processes, seems to be the pragmatic way forward. Indeed, we don’t need to go for a complete reform of our political society to make a concrete deliberative thematic governance process possible.

In short, a shift to ‘deliberative democracy light’ would imply a traditionally elected majority

- that recognises the need for ‘better knowledge generation’, ‘real justification’ and ‘process thinking’ in the interest of thematic 'good' governance of complex issues;
- that launches and guards specific thematic governance processes ‘outside of parliament’;
- that rewards the outcome of these processes with a special status when taken up in traditional parliamentary discussions and ministerial decision making;
- that ensures some continuity of the governance process beyond new elections;
- that critically revises existing legislation in this respect;
- that becomes the 'mediator of the learning process' who 'fosters reflexivity' by way of reforming the academy to give it a more transdisciplinary character (and by guarding over the realisation and preservation of this character) and by way of organising thematic public debate ('the agora') as a fully fledged practice of public reasoning and learning over societal issues.

In a national context, a government of a country can always decide

- to ‘delegate’ the deliberation of the energy theme to a commission that by itself can act as a ‘mediator of process’ and decide to organise participation and transparency arenas.
- to assign a ‘democratic authority’ to the decisions that come out of this process

On a global (supra-national) level, global thematic governance processes, in principle, already exist. One thinks of the processes on the WEHAB themes[5] led by the UN Commission on Sustainable Development. A general critique however is that the success of these thematic transnational governance processes depend on national 'political will and courage' in order to come to decisions with some binding character. However, this observation points at the existence of an obstructive vicious circle around the functioning and symbolic meaning of 'state sovereignty', and this is well known with many scholars and political observers alike.

[5] WEHAB = Water, Energy, Health, Agriculture, Biodiversity; see http://www.un.org/jsummit/html/documents/wehab_papers.html

9. *Experiences from using public participation processes*

(Phil Richardson, Galson Sciences, Matti Kojo, University of Tampere, Linda Soneryd, Stockholm University)

9.1 Knowledge basis, processes from other areas and other countries

Public and stakeholder involvement in NWM in most countries has been limited downstream local processes focusing on the site selection process and in a limited number of candidate communities. According to a comparative study of public involvement in different countries, Belgium, Sweden and Finland have pioneered local stakeholder involvement processes, while the UK has moved towards a more national upstream process and "opened up a greater variety of domains of decisions" (Bergmans et al 2008:36). The experiences of public participation processes in different countries however also need to be seen in relation to the variation in the definition of radioactive waste itself (ibid: 37). The background to the Finnish experiences (described below) can for example be seen in relation to its earlier definition of spent nuclear fuel as a resource.

9.2 Public involvement in radioactive waste management in Sweden

As noted above, earlier research has pointed out the experiences from participatory processes in Sweden have mainly been about *local* involvement on the *where* question (ibid). Neither the development of the KBS technical concept nor the safety analyses were subject to broad discussion, but controlled by SKB alone. The technical concept was however subject to a review process. The review procedure in Sweden is widely viewed as a political process, providing 'a formal mechanism for elements of society, holding very diverse opinions and values, to express their opinions as to whether a proposed action is acceptable, as distinct from whether it is technically possible' (Johansson & Steen 1981: 60). In the NWM case however, due to the wording of the Stipulation Act and the dominant interpretation, that the review should be about the safety of the KBS concept, the selection of reviewers in this case showed that this was not to be treated as a traditional review, but a more purely technical one.

SKB has since 2002 undertaken mainly two types of formal consultative activities in connection to the legal requirements on EIA. *Regional consultations* have involved SKB, the County Administrative Board, representatives from the municipalities and the authorities SKI and SSI as participants, and the general public, including environmental organizations as observers. This has been subject to debate since the environmental organizations have demanded to be able to participate on equal terms. *Public consultation meetings* have been open to the public, including interested parties such as environmental organizations.

What has been more important for the Swedish process than the formal consultation process however is the partnerships that have been developed between SKB and the two candidate municipalities Oskarshamn and Östhammar.

Another specificity in the Swedish case is the possibility both for the candidate municipalities and interest organizations to receive funding from the nuclear waste fund to finance their participation in the EIA process.

While the formal consultation activities organised by SKB have been typical examples of downstream engagement there have been efforts by other actors to organise processes that involves a broader set of actors also in discussions about the format and agenda of the NWM discussions. Examples of this can be seen in the *Dialogue Project*, initiated by the safety authorities in the 1990's and following projects with similar aims. The aim in most of these projects was to reach key actors and stakeholders rather than the general public: SKI, SSI, The Swedish Environmental Protection Agency, nuclear municipalities and environmental organizations. When the Nuclear Waste Council's *transparency programme* was initiated, 15 years after *the dialogue project*, many of the participants already knew each other well. SKB however has never showed much interest in these types of activities, which makes the link between the discussions in these projects and the decisions and discussions at SKB problematic.

The actors that have participated most frequently in the different dialogue projects are the authorities, municipalities, the industry and environmental organizations. Many activities in the dialogue projects have made efforts to reach the general public, but public participation has been limited and it is more or less the same stakeholder groups that frequently return to the projects and they share, as the consultant involved in all dialogue projects said, their own 'community'. It is more or less the same people that have initiated these projects, and the organizers behind the dialogue projects are familiar with, but also seem content with, that this community is rather constant and in no need of being radically reformed with participation from new actors. The activities have been initiated in relation to the process run by SKB and the focus for participation can therefore be assumed to have been chosen in relation to what has been considered missing. The dialogue projects have increased the participation from many actors, but the fact that the organizers have not made further efforts to reach new groups outside this established nuclear waste community can be seen as an argument for the projects being a complement to the process run by SKB.

9.3 Public involvement in radioactive waste management in Finland

Before we get into public participation experiences in Finland we will first give a brief background to the nuclear waste policy and the site selection process.[6] The site selection process started in the early 1980s as the license-holder Teollisuuden Voima (TVO) was obliged by the governmental policy decision of 1983 to prepare for final disposal in Finland. According to policy decisions the primary objective for TVO was to negotiate a reprocessing agreement and transport all spent nuclear fuel abroad permanently.[7] The other nuclear operator, the state-owned Imatran Voima (IVO, since 1999 known as Fortum Power and Heat, FPH) transported all SNF to the Soviet Union, and later to Russia, between 1981–96. Thus the aim of the Finnish nuclear waste policy was to be involved in international reprocessing. Direct final disposal was presented as an option only for that part of the SNF which would not be reprocessed.

[6] For a more detailed picture of the Finnish nuclear waste policy and the site selection process (see Kojo 2009; McEwen and Äikäs 2000).

[7] Interestingly, according to Juhani Vira, the vice president for research at Posiva, the governmental guidelines of 1983 ruled that "*TVO should either seek international arrangements similar to those already in place for the Loviisa plants, or it should start preparing to dispose of is spent nuclear fuel directly, in Finland. In practice TVO chose the latter route.*" (Vira 2006, 69.) The quotation indicates firstly an interpretation of Finnish NWM history without any governmental priority, and secondly the power of TVO in implementing NWM.

As the available reprocessing capacity decreased in the 1980's the option of direct disposal became even more attractive. However, it was only after the amendment of the Nuclear Energy Act of 1994 that import and export of nuclear waste was prohibited in Finland. The year after, in 1995, TVO and FPH established a joint nuclear waste management company known as Posiva. Thus, international factors, namely the collapse of the Soviet Union and later the integration of Finland within the European Union, served to reform the legislation and brought the nuclear operators together. A "national" instead of an "international" solution was the key result going forward.

In 1985 TVO had introduced a list of 102 potential sites. Of these 101 were selected based on systematic geological, geographical and environmental criteria. In 1987 TVO announced five sites for preliminary investigations and by 1993 the number of sites for the detailed investigations had decreased to three due to geological issues. In 1997, after the establishment of Posiva, a new investigation site for the repository was added, for reasons of balance (Vira 2006, 71). In all of the four candidate municipalities local opposition groups against repository siting were established and in two of the municipalities there was also local anti-nuclear activism.

Public engagement framed by legislation

Finnish society is very much oriented towards representative democracy with strong preparatory powers vested in the authorities but with a relatively modest capability for civic activism (see more about the Finnish societal context in Litmanen 2009; and about the legitimacy of Finnish democracy in Melin 2009). This was also the case in local struggles against the siting of the SNF repository. The tactics employed by local groups were peaceful and non-violent, and thus in line with Finnish traditions.

The governance style of Finnish NWM had changed gradually since the late 1980s. For example the decide-announce-defend approach that TVO had applied in the mid 1980s was first changed towards education and then towards more interactive communication and local negotiations (Kojo 2005; 2009). However, there was not any major event that caused a complete reform of the governance style. The learning process of TVO/Posiva took place in gradual steps. Perhaps the lack of a 'real' crisis is one reason why pure voluntariness never guided the site selection in Finland.

The socio-economic studies concerning NWM (see Litmanen 2008), especially the surveys and opinion polls focused on the residents of candidate municipalities, do seem to have influenced the governance style.[8] For example, Vira (2006, 71–72) reports that analysis certainly supported the view that the public held many ungrounded beliefs about nuclear waste disposal and that these attitudes could be influenced by well-targeted information policies. Results also showed that only a few people, especially those outside the candidate municipalities, were interested in learning more about the issue. According to Vira the lack of interest was due to a lack of motivation (see also Ämmälä and Ryhänen 1995, 201).

According to Vira (2006, 71–72) the industry also took seriously the recommendations of social scientists that they should have more interaction with local people.[9] These recommendations, according to Vira not always objective from the industry's point of view,

[8] For example Kurki (1995) and Harmaajärvi et al (1998) carried out surveys. Annual opinion surveys regarding local acceptance has been carried out by Kiljunen (2008) since 1983 with the funding by the Finnish Energy Industries.

[9] One of the first Finnish social scientists who raised the issue was Tapio Litmanen (Litmanen 1994).

were initiating a reframing of the nuclear waste issue in the early 1990s. The reframing was institutionalized as the second and third phases of the government-funded Public Nuclear Waste Research Program (JYT2 in 1994–96; JYT2001 in 1997–2001; see Rasilainen 2002) included perspectives of social and media research into issues concerning final disposal. The general objective of these studies was to produce information for authorities, municipalities and citizens regarding the assessment of the environmental impacts of final disposal of nuclear waste. Most likely these social scientific studies, which were intended to offer generalized, if not even representative, information on local attitudes and decision-making, directed the focus these aspects instead of developing novel engagement measures.

Local decision making was also framed very much by the Nuclear Energy Act of 1987. According to the Act the municipality in which the proposed site of the new nuclear facility is planned to be located, is granted the right of veto over the siting. The government cannot overrule the decision by the municipal council. Thus the Act emphasizes municipal empowerment and autonomy. Apart from this, the requirements laid down in the Administrative Procedure Act were applied in the preparation of the Nuclear Energy Act. The procedure included in the Act is called the Decision-in-Principle procedure, in which the Council of State decides whether the application is in line with overall good of society. As part of the procedure a general hearing is arranged by the ministry. (Ruostetsaari 1986, 166; Manninen 1994.) However, the hearing is strictly limited to the recording of the opinions presented to the authorities. As Manninen (1994, 213) states "*no opportunity to ask questions was given, or rather, there was no one present to answer questions*." The idea of a general hearing is to offer a possibility of direct citizen input – without discussion – to the national decision makers. In 1994 this highly formal procedure was accompanied by a new Act on Environmental Impact Assessment which emphasized the involvement of the public.[10] However, it was not self-evident how the EIA procedure would be incorporated into the existing decision-making process regarding nuclear facilities and how in practice it would actually be implemented.

As a civil servant in the Ministry of Trade and Industry (MTI), Jussi Manninen, has noted, the new EIA requirement was in fact "*not expected to bring any substantial change to the rules governing the procedure for the licensing of nuclear facilities"* (Manninen 1994, 211). The licensing procedure according to the Nuclear Energy Act which was characterized as the basis of the legal-administrative framework of Finnish nuclear energy policy (Säynässalo 2009) was thus to be annexed with one more appendix, the EIA report. Manninen (1994) noted that the Nuclear Energy Act explicitly states that a licence-holder whose operations generate nuclear waste shall be responsible for all nuclear waste management measures and their appropriate preparation. Furthermore, the licence-holder shall also assume responsibility for the expense of these measures.

The general objectives of TVO's information activities were also clearly influenced by the veto right. As Ämmälä and Ryhänen (1995, 199) state, the aim with TVO's information activities was "*to make possible the studies needed for siting according to the schedules without too much opposition [and] to achieve adequate public acceptance by the time that local and national bodies take stand on the construction of the final disposal facility.*" Later for example Hokkanen (2007) has demonstrated that gaining local acceptance was a clear aim of Posiva's EIA procedure in the late 1990s.

[10] For more details on the preparation process of the EIA Act and the conflicting interpretations of stakeholders on public participation as part of the Act (Hokkanen 2007, 127–152).

The most important target group in the candidate municipalities was that comprising the local councillors who were regularly informed of the investigations and technical plans for final disposal in liaison committee meetings. TVO had already initiated these committees in the late 1980s in all candidate municipalities. Gradually the importance of tailored information for target groups other than the liaison groups representing the municipalities was realized (Ämmälä and Ryhänen 1995; Vira 2006, 72).

The preparatory work for the EIA procedure was launched from the mid 1990s by TVO. The procedure was given a political role. For example after the local election of 1996 Veijo Ryhänen, the then managing director of Posiva, commented in the local newspaper on the initiative by the opposition group to arrange a municipal referendum on siting in Äänekoski. According to Ryhänen (A letter to editor, *Sisä-Suomen Sanomat* 21 November 1996) the local group obviously aimed at having the municipal decision on siting before the impacts of the plan on environment and individuals could be widely assessed. Thus, he argued that the arrangement of a local referendum would be too early as the implementation of the EIA procedure was about to begin (see more about consultative municipal referendum and nuclear waste disposal in Finland in Sutela 1999).

In April 1997 Posiva delivered the first EIA information leaflet to every household in the candidate municipalities and later in the same year Posiva arranged, with the help of a consultant, a series of four meetings in each municipality to gather the local views that should be taken into account in the EIA programme (Leskinen and Turtiainen 2002, 15; Hokkanen 2007, 169–176). This was something new as public participation was usually focused on commenting on an already finished document. However, during the procedure, arenas were established which excluded those local people who did not have a certain position or status in the local decision making process. For example, local councillors and experts participated in meetings that were not open to everybody (Hokkanen 2007, 255). The EIA programme was submitted to the MTI in February 1998.

The EIA procedure included four sites (in the municipalities of Eurajoki, Kuhmo, Loviisa and Äänekoski) as alternative locations for the spent nuclear fuel repository. Alternative options presented in the EIA report were reprocessing, direct final disposal and transmutation (Posiva 1998; 1999). A focus on final disposal as the main option with no so-called ‘zero alternative’ in the EIA was, it was argued, in accordance to Finnish legislation. According to the Nuclear Energy Act nuclear waste “*shall be handled, stored and disposed of in Finland in a manner intended to be definitive*” (Nuclear Energy Act of 1987). From the perspective of effectiveness of the EIA the public was engaged too late in the process. The project had been planned for a long time. Thus, there were no alternatives available (Hokkanen 2007, 262). Nor the developer neither the liaison authority (MTI) was eager to open up the discussion. Furthermore, there were other decision-making processes that were launched even before the EIA procedure was completed. These were the Decision-in-Principle (DiP) procedure and the local compensation negotiations (the so-called Vuojoki negotiations between the municipality of Eurajoki, Posiva and TVO, see Kojo 2009).

The EIA report was annexed to Posiva’s application for a DiP for the spent nuclear fuel facility (Posiva 1999b). The submission of the DiP application to the MTI launched the DiP procedure before the statement of the liaison authority (MTI) on the report. In the application Posiva proposed that the Olkiluoto site in the municipality of Eurajoki should be selected as the location of the facility. The municipality of Eurajoki issued a positive response to the DiP application by 20 votes to 7 in January 2000. As the municipal council did not use the right of

veto granted by the Nuclear Energy Act, the siting process could proceed. Later, in December 2000, the government issued the DiP and in May 2001 the decision was ratified by Parliament by 159 votes to 3.

The local anti-siting groups reacted differently to the public participation in the EIA procedure. For example, the opponents in Loviisa saw the procedure merely as a theatre intended to legitimise earlier decisions (Rosenberg 1999). In Kuhmo the local group was, at first, careful and reserved towards involvement, but later decided it would be best to take part in the arrangements by Posiva. Although the local groups took part in EIA discussions organized by Posiva, the opponents also considered it very important to organize activities of their own. Thus all kinds of local activities, petitions, rallies and seminars, were put forward. Local groups did not want to be dependent on the participation arrangements provided by the nuclear industry and they found more effective ways to have an input on local decision making. For example, during the decade long siting struggles opponents decided to put up their own candidates in local elections. In some candidate municipalities, like in Äänekoski, opponents succeeded in establishing locally new party groups of Greens whereas in Kuhmo the opponents considered it better to be part of the already established party groups. (Kojo 2002, 128–131.)

Responsibilities in accordance with the Nuclear Energy Act of 1987 strictly framed the roles of the main players in relation to public engagement in Finnish nuclear waste management. In particular the ministry[11] responsible for preparation of decision-making has been reluctant to reform its role. STUK, the Radiation and Nuclear Safety Authority, however, applied the features of a new governance style in the late 1990s (Varjoranta and Hautakangas 2001). Also the company responsible for nuclear waste management (TVO, since 1996 Posiva) has reformed its own repertoire of activities since the mid 1980s.

One explanation for the Finnish engagement style not being favourable for intensive and broad public participation measures is the emphasis put on the idea of representativeness in decision-making. Instead of engaging individuals in face-to-face discussions, which is connected to a fear of giving too much space to outspoken stakeholders, Finnish engagement practice is implicitly aimed at supporting representative democracy which is aware of opinions of general public. In practice, this can be seen in the implementation of surveys focused on local residents in the candidate municipalities (Kurki 1995; Harmaajärvi et al 1997; Harmaajärvi et al 1998; Kiljunen 2008; Kojo et al 2009). A clear difference to Sweden is that in Finland no equivalent to the dialogue projects initiated there by the other actors than the nuclear waste industry (see Elam et al 2009) were ever implemented as part of nuclear waste management.

9.4 Public involvement in radioactive waste management in the UK

The UK has been rather unsuccessful in implementing radioactive waste disposal programmes in past years and separate waste management policies have until recently been followed for low-level, intermediate-level and high-level waste. With regard to Low-level Waste (LLW), current Government policy is to continue to dispose of solid LLW in the national repository (LLWR) near the village of Drigg, in west Cumbria, which has been operational since the 1960s. A consultation was launched in June 2009 to explore management options for these

[11] Since 1 January 2008 the Ministry of Employment and the Economics (MEE), before that the Ministry of Trade and Industry (MTI).

wastes, especially those arising from decommissioning activities, with a view to disposal of some lightly-contaminated materials in controlled landfill in order to preserve space at the LLWR.

With regard to High-level Waste (HLW) resulting from reprocessing of spent fuel, a national disposal programme was suspended in 1981 after intense public opposition to studies at several sites in Scotland. Until 2006 (see below), Government policy favoured continued temporary storage of HLW, mostly at Sellafield where spent fuel is reprocessed, while an alternative management strategy was developed (NB spent fuel is not currently regarded as a waste).

With regards to Intermediate-level Wastes (ILW), in 1982 the Government set up Nirex to examine potential sites and disposal options for ILW and LLW that was unsuitable for disposal at the LLWR. Early proposals from Nirex included the shallow disposal of LLW and short-lived ILW. Sites were identified and investigations carried out, but without any public involvement, and there was intense local opposition at every site. In May 1987, immediately prior to the general election of that year, a decision was made to develop plans to co-dispose ILW and some LLW in a single deep repository, based mainly on cost considerations.

An extensive national survey was carried out by Nirex between 1987 and 1989 to identify deep repository sites in several potentially suitable geological environments. This was accompanied by a limited public consultation on the development of the potential environments but not on potential sites. Nirex gradually reduced the number of potentially suitable sites from 500 to 12, again without any public involvement, and in 1989 announced the intention to investigate only Sellafield and Dounreay, an approach that was endorsed by the Government. Finally, in 1991, Nirex announced that it would concentrate investigations at Sellafield.

In 1992, Nirex announced its intention to develop a Rock Characterisation Facility (RCF), adjacent to the Sellafield site, prior to construction of a full-scale repository for ILW. Nirex applied for permission to begin development of the RCF in 1994 but this was rejected by Cumbria County Council, primarily on planning grounds, but also because of a perceived lack of involvement in the siting process. This was followed by a public inquiry in 1995/6 into an appeal by Nirex against the council's decision. In 1997, on the recommendation of the inquiry Inspector, the Secretary of State for the Environment rejected the appeal and the proposal was abandoned.

Following the failure to develop the Sellafield facility, a number of initiatives took place designed to explore possible ways forward for the management of radioactive materials other than LLW. These included a Consensus Conference in 1999 involving randomly selected members of the public, who concluded that it was necessary to develop a strategy that was both publicly and technically acceptable, and which involved the public much more than had been the case previously. Nirex held a series of workshops to explore how such involvement could take place, and in 2001 the Government launched the Managing Radioactive Waste Safely (MRWS) process, designed to develop management options for all higher-activity radioactive wastes in the UK.

As part of the MRWS process, the independent Committee on Radioactive Waste Management (CoRWM) was established in 2002 with a remit to determine the most suitable management option for these wastes. CoRWM undertook a wide ranging public and

stakeholder engagement programme, involving local communities, NGOs and technical experts over a 3-year period. CoRWM published its final report and recommendations to government in July 2006, and proposed that a siting process based on voluntarism should be implemented. This process would identify a site for a deep geological repository, identified by CoRWM as the best available technical solution, following a period of robust interim surface storage and intensified research and development. In CoRWM's view, a repository should be sited by means of a partnership arrangement with a voluntary, willing, community, which would be supported for its participation and receive a package of negotiated benefits in recognition of its agreement.

On 25th October 2006 the government confirmed that all higher-activity radioactive wastes will be disposed of in a deep geological repository as proposed, accepting CoRWM's recommendations for implementation, subject to a short public review. It gave responsibility for developing a programme to implement the strategy to the Nuclear Decommissioning Authority (NDA), absorbing the functions of Nirex into the NDA and winding up the company. CoRWM was reformed with a different membership and a revised mandate as an advisory body to government.

The government launched a public consultation on its proposals to implement CoRWM's recommendations on June 25th 2007. The Consultation closed on 2nd November 2007 and Government issued an initial response on 10th January 2008 followed by a White Paper published on 12th June 2008. The White Paper lays out the details of a voluntary approach to siting, in which local communities will initially be invited to express an interest in being considered for subsequent investigations. Those that come forward will be expected to demonstrate sufficient local support. Local geological conditions will then be assessed before the formation of a siting partnership representing local interests and those of the implementing agency, in this case the Nuclear Decommissioning Authority in the first instance. Communities will receive financial support to enable them to take part in the partnership process. The plan envisages identification of at least 2 sites for detailed examination. It could take several decades for a facility to be located and developed.

Once a community has formally expressed an interest, the British Geological Survey will undertake a desk-based screening of the area to determine whether there are areas that are unsuitable for repository development. If this screening indicates that suitable areas exist and comprehensive community discussions support it, the community will submit a report and submit what is described as a 'Decision to Participate'. Following this a partnership will be formed between the community and the NDA, and funds will become available from Government to enable it to take an active part in the process to determine whether suitable sites exist. If they do, it is expected that the local authority will support NDA and its contractors to undertake surface-based exploration, in order to gain detailed geological information that will enable assessment of the sites to begin.

On 25th June 2008 Copeland Borough Council, where the Sellafield site is located, formally expressed an interest in being considered as a site for the deep geological repository. Allerdale Borough Council, which borders Copeland to the north, also agreed to express an interest in January 2009, as has Cumbria County Council, indicating that west Cumbria is its preferred location. Although the process has yet to move forward to the initial geological survey, Copeland and Allerdale have already formed the West Cumbria MRWS Partnership, which has met around six times to date. This group is intended to explore the issues related to possible repository development, and to make recommendations to the two councils as to

whether they should proceed to the next stage of the MRWS process, the so-called 'Decision to Participate'. The partnership will begin a comprehensive public and stakeholder engagement programme in west Cumbria in November 2009 in order to develop its recommendations further.

Radioactive waste management initiatives in the UK have encountered intense public opposition in recent years due to an almost total lack of public participation. Since 1997, when the RCF proposal at Sellafield was abandoned, government and the authorities have realised the importance of involving the public and stakeholders in developing policy and implementation strategies. The MRWS process has moved forward because of, and not in spite of, this renewed commitment to openness and transparency.

Not every government decision has been accepted by all parties, but the decision by three councils to express an interest in being involved in initial investigations (without any commitment to continue) indicates a general feeling that this time the process may be more acceptable and could ultimately lead to the identification of a potential repository site. It remains to be seen whether the local consultations in west Cumbria demonstrate that there is actually sufficient support among the population.

Government still hopes that other communities in the UK might come forward for initial examination, as this would reduce the suggestions being made in some quarters that the entire MRWS process is an elaborate ruse to allow a site at Sellafield to be developed, even after the earlier refusal in 1997.

9.5 Assessment of public involvement approaches -development of a methodology

One of the planned outcomes of the ARGONA project has been to gain some appreciation of the success, or otherwise, of several public involvement approaches in general and of various involvement activities and techniques in particular, especially any that appeared to be novel in their content and/or application. This is intended to assist in addressing an often-identified gap in the literature which currently fails to offer a methodology for comparing approaches and allowing selection of appropriate techniques for use in particular circumstances, as illustrated recently by Bayley and French (2008).
In order to assess the success or otherwise of a particular approach or activity it is necessary to understand the purpose for which it was intended and then to attempt to gain some insight into how those involved consider that the original aims were achieved. The starting point for this exercise, in common with much of the other effort within the ARGONA project, has been the output of the RISCOM-2 project (Andersson *et al*. 2004), in particular the evaluation criteria. Whilst recognising the caveats provided in RISCOM, namely that '*Individual dialogue processes would need to develop their own evaluation criteria based on the aims and objectives of the dialogue process*', the criteria used here closely reflect those from RISCOM-2, namely:

- transparency,
- legitimacy,
- equality of access,
- ability to speak,
- presence of a deliberative environment,
- openness of framing,
- development of insight, elicitation of inclusive and 'best knowledge,

- production of acceptable/tolerable and useable outcomes/decisions,
- improvement of trust and understanding between participants,
- development a sense of shared responsibility and common good

In order to begin to address this lack of a suitable methodology, and to contribute to its ultimate development, work in ARGONA has investigated ways of developing a knowledge base founded on two specific processes at very different stages in their respective national programmes, namely the development of a Best Practical Environmental Option (BPEO) for low-level decommissioning wastes from Dounreay, in Scotland, and the subsequent facility siting, and the development of a dialogue on the management of long-lived radioactive wastes in the Czech Republic.

These criteria have been used, with suitable flexibility in application to account for the particular situation, as the basis of an assessment matrix against which particular approaches and activities used in these situations have been judged. It is not possible, or desirable, to attempt to derive 'scores' using such a matrix, given the difficulties associated with comparisons between different techniques and situations due to inconsistent reporting and differences in application, so that any such judgement has necessarily been objective in nature. As Bayley and French (2008) point out, comparison between approaches and techniques with a view to using this to identify suitable tools for other situations is however severely hampered by the paucity of international comparative studies and by the inadequacy of many assessment exercises, where different parameters and success factors are used and which do not enable satisfactory comparisons to be made. It has been possible here to gain an appreciation from participants' views as to what appears to have worked in particular situations and what has not, and why, but again, differences in reporting have limited the interpretation in some instances.

In order to judge the success of the activities and approaches used during the Dounreay BPEO process and subsequent facility siting, we have had access to a range of documentation, including project reports, stakeholder feedback submissions, questionnaires and telephone interviews with programme managers. This has allowed us to gain insight into the reactions of both sides in the discussion, as reported in Deliverable 15, although of course none of these data were originally collected for the purposes they have been used for here. It is important to recognise that this exercise is specific in nature to the particular situation at Dounreay and therefore cannot provide a simple template for use in other situations when seeking selection of appropriate tools. Rather it can act as a guide and contribution to the developing knowledge base which can be used to illustrate what approaches and techniques one might consider for use in similar but distinct circumstances.

In a similar way, the review we have carried out of the ARGONA activities undertaken in WP5 by project partners in the Czech Republic illustrates the shortcomings of attempts to use a single process or approach to develop an all-embracing template for use elsewhere without taking into account the particular historical, cultural and social factors specific to the particular country and situation (as discussed in detail in Deliverable 5, from WP4 and elsewhere in this report). The three stakeholder meetings held in the Czech Republic (focused science shop; consensus panel and interaction panel) have begun to develop a more meaningful dialogue between parties where previously this had been difficult to achieve and in that way alone would have been incredibly valuable to the continuing process in that country. As for the Dounreay process, we have had access to meeting minutes, participant

feedback and other reports from these meetings. In addition, we were able to elicit responses to specially designed questions following the interaction panel in May 2009.

Examining the approaches and techniques used through the lens of the adapted RISCOM criteria is a somewhat crude way of determining some measure of success, but these are early days in the Czech process and their study allows us to make comparisons with the Dounreay situation where policy was decided early and a specific site identified. In the Czech Republic the dialogue is in an early stage to get stakeholders involved in dialogue as a moratorium in site selection is coming to an end.

In parallel to the various activities studied here, a RISCOM reference group has been established in the Czech Republic to examine ways of taking the overall dialogue process forward whilst adhering to the RISCOM model. Whilst it has not been possible within the ARGONA project to evaluate this effort, a great deal of success seems evident as Czech Partners and the reference group itself recommends the model for others and intends to continue the activities of the RISCOM reference group. For the future, the methodology presented here could be used in a future evaluation, using questionnaires, interviews, and analysis of observation and recordings of the events to be used as input to the developing knowledge base.

Ideally, armed with such insight from a number of reviews of the type described here and in Deliverable 15, it should then be possible to continue the development of the knowledge base and populate it with descriptions of particular approaches, activities and techniques and to map these onto specific situations and stages within strategy development and related facility siting processes. The result of such an exercise is intended to act as a bridge between academically-based ‘experiments’ similar to those conducted by Bayley and French (2008), which examined a range of situations and approaches covering various issues (pesticides; campylobacter contamination in chickens; emergency management following food chain contamination and e-coli outbreaks in milk), and studies of ‘real-life’ involvement processes associated with a range of socially-relevant or contentious issues (detection of the H5N1 strain of bird flu; outbreaks of foot and mouth or bluetongue) as well as the radioactive waste management focus of ARGONA. Of course such an outcome has not been attempted within the limited scope of this study, but the intention forms an important recommendation for future activities across this range of socially-important issues which are becoming increasingly relevant across the whole of the EU.

A number of basic observations can be made based on the work described here:

- There is a lack of consistency in the reporting and evaluation of public involvement techniques across the literature and across the EU
- It is not possible to apply a simple template of public involvement and approaches in order to select ‘successful’ tools, without a deep appreciation of the cultural and historical background to a specific national situation
- It is however possible to map approaches and techniques against RISCOM- 2 type criteria using a range of information, including feedback forms, questionnaires and interviews. This can inform about how particular approaches are perceived by both sides and assist in development of more suitable methods for the future
- There is an urgent need to develop a comprehensive knowledge base comprising consistently applied reviews of a range of public involvement approaches and techniques as

applied in a number of socially-significant topic areas. Such reviews should apply a common set of criteria to judge suitability and performance of the approaches.

Evaluation of the different activities has allowed insight into several common factors, such as timing, purpose of the involvement, scale of the involvement, and development of suitable discussion arenas and we feel this makes a contribution to responding to the absence of such a methodology.

The resulting knowledge base should be developed in the form of a library of relevant approaches (techniques, meeting types etc) that can be 'indexed' in terms of what the desired end result might be (a requirement for advice; development of societal consensus; provision of clarity regarding a contentious issue etc) and cross referenced as to their suitability at different stages of an involvement process. The intention would then be that a 'customer' agency could consult the knowledge base and identify possible approaches and techniques that would be suitable for use (and adaptation) in the particular situation and at the relevant process stage in question.

ARGONA has only taken the very first steps toward the initial development of such a knowledge base by the work done evaluating the UK and Czech examples. Whilst it has been possible to compare at a relatively detailed level different formats for meetings and approaches in the two countries, comparison between the two countries, or across the EU as a whole, is difficult at this stage.

As a way to begin to communicate with policy makers about the benefits and limitations of different methods, it is possible at this stage to propose an indicative version of the proposed knowledge base. This is shown in Figure 9.1 for the main characteristics of five methods of which two have been directly used in ARGONA (Transparency Arena and Focus Group), in terms of the ARGONA criteria and the principles of mediation described in chapter 7.

In the indicated example, if achieving consensus (at least in the short term and within a limited group) was the main aim, it would seem obvious to employ a consensus conference approach, and if transparency (in the meaning of RISCOM) was the priority, one should ensure the development of a Transparency Arena. On the other hand, if open framing was the aim, so as to allow a broad discussion as per the ARGONA criterion, then mediation by demonstration should be avoided as this does not allow for such involvement. Similarly, if inclusiveness is required, a focus group cannot be used as it is only for a limited number of persons.

Figure 9.1, however, also raises questions that illustrate some problems with building a knowledge base like this. For example, different persons may understand "transparency" in different ways, and the concept must therefore be clearly defined, as is also the case for "inclusive", itself being a rather broad concept. The colours of the squares in Figure 9.1 are at this stage the result of qualitative judgement rather than the application of easily applied objective criteria.

The approach could be developed more widely to include a large number of processes and a large number of "requirement criteria" as components in the knowledge base. It should be emphasized again, however, that such an approach should be used for communication about what it means to use certain processes, and not as a calculation tool to decide on which method to use in a simple objective manner.

Czech Republic	Breadth of discussion and Involvement	Consensus forming	Transparency	Inclusiveness
Consensus conference	Suitable			
Mediation by demonstration	Unsuitable	Requires care		
Mediation by dialogue				
Transparency arena				
Focus group				

Figure 9.1: Example of the 'Knowledge Base' approach: Green cells indicate positive attributes whilst red cells indicate attributes that cannot be accommodated by the activity. Amber cells lie someway in between in that achieving the attribute requires careful application

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10. ***Local Compensation***

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The compensation negotiations in Finland between the municipality of Eurajoki, the nuclear waste management company Posiva and the nuclear utility Teollisuuden Voima (TVO) on the SNF repository siting reflect the relationship of the key actors. Table 10.1 summarizes factors that impacted the local negotiations on compensation. Table 10.2 introduces some aspects of practise applied in the Eurajoki case. Furthermore, suggested aspects to be taken into account in development of compensation strategy are given in Table 10.3.

Some observations can be drawn from this case study (sub WP 5.3). First, general preconditions, such as political context, and role of local level in nuclear waste management in accordance with the Nuclear Energy Act gave the municipality a very powerful position as the local council was vested with right of veto which could not be overruled by government. The municipality also had a strong tradition of representative decision-making, but with very little public engagement. Thus the municipality had a clear and independent position in the negotiations. Furthermore, it was clear that the negotiations on site selection could be carried out directly with the nuclear industry. No direct government involvement was needed, although the second government of Prime Minister Paavo Lipponen (Social Democratic Party) had expressed its commitment to timetable of nuclear waste management in the 1999 government programme. Timetable included site selection by 2000. The possibility of 'governmental actions', that is the fear of involvement of the government in site selection (see Kojo 2009, 179), was one motivation for some local politicians to keep the initiative in their own hands.

Second, one should take into account that the compensation negotiations did not take place out of the blue. The relationship between the key actors had developed over a long period and there had been different phases. In the early 1990s the municipality of Eurajoki was still against locating the SNF repository in its area, but by the end of the decade the local council had begun to take a positive view (see Kojo and Richardson 2009; Kojo 2009, 174–185.) Thus, in a relatively short period of few years the attitude of local councillors was changed. Also public opinion changed towards more positive attitude in the late 1990s. However some 30% were still against the repository siting in Olkiluoto (see Figure 10.1).

Third, the Finnish site selection strategy became more pragmatic in the 1990s which gave room for local negotiations between the nuclear industry and the candidate municipalities (Kojo 2009, 168–174). Although the nuclear industry had had its eye on the Olkiluoto site for years, the crucial initiative for compensation negotiations was taken by some local politicians. The leading politicians were able to have intra-community negotiations and they were given mandates for negotiations from their political groups. The co-operation agreement of 1995 between the municipality and TVO and the Olkiluoto Vision of 1998 had paved the way for the final step (Kojo 2009, 177–180). Thus, the supporters of the plan were active in local decision-making. There was interest not only in the location of the SNF repository but in the development of nuclear industry in general. The local politicians in favour of the Finnish nuclear industry could even be regarded as some kind of mediators (see Elam et al. 2009, 6–9) acting within the local representative decision-making system. These persons had close relationships with the nuclear industry but at the same time they were also well aware of the interests and needs of the municipality. Perhaps partly due to this dual position the compensation request of the municipality was modest (e.g. compared to the financial support

worth of US$ 315 million offered in South Korea for locating a radioactive waste facility, Chung et al. 2008, 1024).

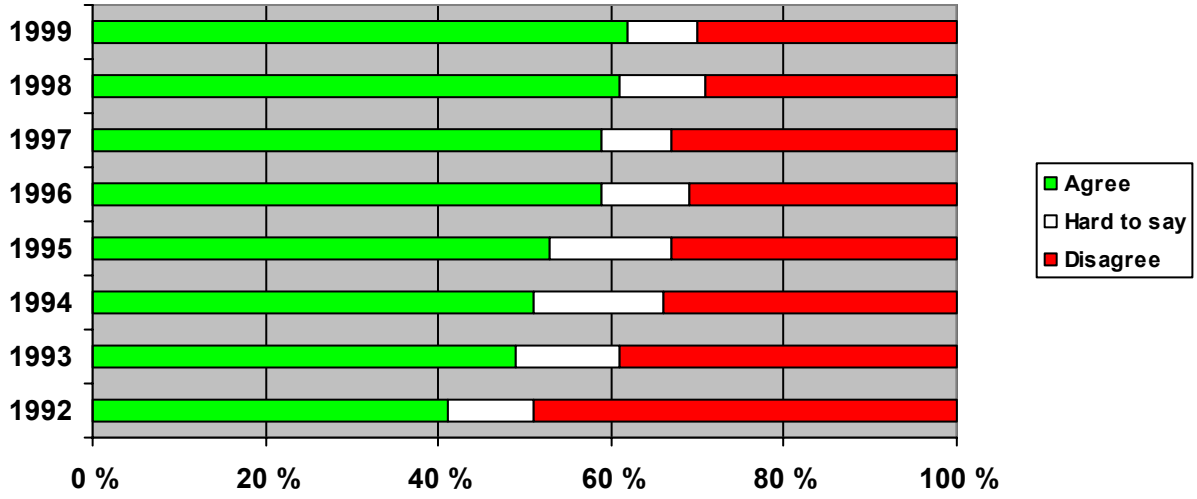

Figure 10.1. Distribution of opinions within Eurajoki in 1992–1999. Those interviewed replied to the question: "If the research shows that my municipality of residence is a safe place for the disposal of nuclear waste, I would accept the disposal of the Finnish nuclear waste in the area of my municipality." Source: Based on surveys by Pentti Kiljunen; see Kojo 2006, 67.

This local understanding of the interests of the nuclear industry has also been explained with cultural integration. The NEA report (2007, 40–41) states that readiness to consider hosting a radioactive waste management facility should not be seen as a sign of dependency. Instead, the reason for this lies in cultural integration. Communities with already located nuclear facilities within their territory have according to NEA report an existing cultural basis for facility development as they have integrated the industrial activity and cognitive understanding into their culture. The NEA report (2007, 40–41) states that "developing joint solutions consists of building on and adding to that existing cultural basis." However, according to the survey data collected in Eurajoki in 2008 this cultural integration is not self evident and it seems to be actor dependent. Thus a nuclear utility needs to "earn" its trust and it seems to be difficult to exploit local existing cultural basis by a new comer. Furthermore, 'industry awareness' seems to be stronger among certain social groups. (Kojo, Kari and Litmanen 2009.)

Fourth, although there was clear understanding of the interests of the nuclear industry there was also a heavy local economic dependency on it. In the case of Eurajoki a reform of the tax income system had caused economic problems to the municipality, thus the need to safeguard tax incomes was a clear motivation for local councillors to approve the siting. Although the municipality would get the tax revenue income, the local council also wanted to have extra benefits, which were agreed in the compensation negotiations (Kojo and Richardson 2009).

Fifth, however, as has been indicated in the compensation theory literature (Kojo and Richardson 2009), money alone does not necessarily guarantee success in a site selection process. This was the case in Eurajoki, too. Local politicians had trust both in STUK and in Posiva in relation to health and safety issues and therefore the siting negotiations could take place. It should be also noted that in Eurajoki there was no strong external pressure by a local opposition movement during the compensation negotiations. Thus media reported on progress of the negotiations based on press releases by the contracting parties.

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Table 10.1. Summary of the case study of Eurajoki. (Source: ARGONA Del. 16b, p 68)

Categories	The case of the Municipality of Eurajoki	Impacts on the local negotiations on compensation
1) General preconditions		
Political context	Nordic welfare state with relatively high public trust in societal institutions Strong local government based on representative democracy and preparatory power of civil servants Weak culture of public participation	Basic trust in societal decision-making although the EIA procedure was criticised for example in respect of the breadth of coverage
Role of local level in NWM	The municipal council was granted the right of veto over nuclear facility siting in accordance with Nuclear Energy Act of 1987. No independent expertise in the municipality	Right of veto forced the industry to cooperate with the municipality, cooperation groups between the nuclear industry and the municipality established
2) Safety and trust		
Protection of health and safety	Trust in STUK and Posiva in safety related issues	Trust in STUK and Posiva about safety helped discussions to focus on economic aspects
3) Legitimacy and voluntariness		
Site selection strategy	Site selection based on pragmatic approach in which the investigations by Posiva were reviewed by STUK	Eurajoki originally opposed the siting in Olkiluoto until 1994, but subsequently issued a positive statement on the DiP application in 2000 following agreement on economic issues
Public participation in NWM	Public involvement took place as part of the EIA process and public hearing as part of DiP process	Compensation was not discussed in either of these processes
4) Moral evaluations		
Opposition group	In the late 90s over 30% of the residents of Eurajoki disagreed with siting in Olkiluoto, however there was no strong, coherent local anti-siting group	Two appeals against the municipal decisions afterwards but no external pressure (for example in local media) on local negotiations, unlike was seen in the municipality of Loviisa
Media	Posiva had good connections with media	Local media framed agreements in positive way
5) Compensation strategy		
Potential benefits of the SNF repository	Jobs, real estate tax revenue, the Vuojoki Working Party established for negotiations	Eurajoki heavily dependent on tax revenue paid by TVO with respect to the NPP, liquidity problems in late 1990s due to reform of taxation system resulted in desire to gain from repository development
New build of nuclear power plants	Debated since the 1980s, in 1998 the municipality announced a positive attitude to locating the new NPP unit and the repository in Olkiluoto	Eurajoki wanted to safeguard its relative advantage as a Finnish nuclear oasis and potential location of the new NPP unit

Table 10.2. Practices of mitigation, incentive, benefit and compensation in the case of Eurajoki.

Main type	Sub type	Under control by	
		public sector (the state, the municipality)	**the nuclear industry (TVO and Posiva)**
Mitigation			
- Engineering*			
- Institutional	Local involvement	*Nuclear Energy Act (veto right), EIA Act*	*Implementation of EIA procedure*
	Capacity building	*Funding NGOs***	*Co-operation group with the local politicians*
		STUK's local information activities, municipality representatives in publicly funded nwm research program	*Study visits*
Incentive			
- Monetary	Tax revenues	*Real estate tax of nuclear facilities*	
Social benefit Measures	Employment	*Tax income*	*Posiva predict creation of up to 150 jobs during operation of the proposed repository*
	Infrastructure Improvement	*Renovation of the Vuojoki Mansion*	*Renovation of the Vuojoki Mansion*
			Construction of an ice-hockey stadium
	Development projects		*Funding of the Eurajoki Business Development Fund*
	Relocation		*Posiva headquarters from Helsinki to Eurajoki*
	Public relation		*Sponsoring local associations*
Compensation	Loan		*Posiva loaned money for the municipality and leased the Vuojoki Mansion owned by the municipality. Loan paid back with rent income.*
			TVO granted a loan for the municipality to help it to overcome liquidity problems.
	Transaction		*TVO bought a water area owned by the municipality*

* Not in the scope of this study.

** One time funding by the Ministry of Trade and Industry in 1999.

Table10.3. Aspects of development of a compensation strategy package.

Aspects	Practise in the case of the municipality of Eurajoki	Suggested aspects to be taken into account
Initiator of negotiations	In the final phase this was local politicians, who also wanted to take into account the interests of the nuclear industry. The aim of the 'partnership' was to create added value for all the contracting parties.	A community perspective is recommended in order to identify and address local needs and interests.
Intra-community negotiations	Local politicians asked for a mandate for negotiations from their groups. The mandated politicians held their own meetings during the negotiation process with the nuclear industry.	A broad political mandate is recommended in the early phase of the negotiations to provide cross-party confidence and consistency.
Role of nuclear industry	Both Posiva and the nuclear operator TVO were involved as contracting parties.	Multiparty negotiations are needed, as is clarity about the role of all stakeholders.
Role of the state	The governmental energy strategy of 1997 hinted at the possibility of paying real estate tax for the repository in advance. Legislative initiatives were taken by the municipality concerning the real estate tax and tax equation procedure.	There will almost certainly still be a need for some negotiations even if benefits are related to legislative requirements. It is important to identify the relevant responsibilities in these situations.
Role of other candidate Municipalities	There was a competition with Loviisa, with negotiations with the industry taking place behind closed doors.	Cooperation of all candidates is recommended in order to avoid competition and secrecy, perhaps along the Oskarshamn - Östhammar 'model'.
Role of local residents	Did not have a role, they were only informed by media based on press releases from the negotiators.	At the very least the local public should be informed from the very early phases onwards.
Health and safety	Despite trust in STUK and Posiva, politicians still planned to refer to increased safety risks as an argument, but withdrew the idea following comments by industry.	Local perception of safety is very important. Safety should be discussed and demonstrated clearly before initiating any negotiation on compensation.
Institutional mitigation / incentives / local empowerment measures	Not discussed during the negotiations.	Need to make a clear distinction between incentives aimed at local empowerment without any binding obligations (voluntariness) and possible other benefits.
Means of sharing benefit	Number of tools and agreements applied (cheap loans etc).	Need for a community perspective to negotiate the suitable tools, with the possibility of multidimensional packages.
Moral	Two appeals against the municipal decisions but no strong bribe-effect perceived by the community.	Need to make a clear distinction between community benefits and support and bribery. Vocabulary related to forms of benefits should be clarified and defined also from local perspective.

11. *Stakeholder perspectives – ARGONA End Users Conference*

Maria Lidberg, Karita Research)

To provide ARGONA with the perspective of stakeholders, as well as to provide the stakeholders and end users with research results, ARGONA initiated and arranged the ARGONA End Users Conference which took place 17 – 18 March 2009 in Uppsala, Sweden. The conference was intended to provide a forum for end users and researchers to discuss the outcome of research in the field, and to reach their own respective positions about their needs for participation and transparency in the future. Practical implications of research were in focus and the main question was: How can recent research improve the governance of nuclear waste management in Europe?

11.1 Contents of the conference

The conference provided an opportunity for communication and dissemination of preliminary results from the ARGONA project and to give the project feedback and recommendations. The intention was also to get a wider view of the state of knowledge about participation and transparency in radioactive waste management in Europe by the active participation of three other major on-going or recently ended projects. Except ARGONA, the participating projects were:

CARL (Citizen stakeholders, Agencies responsible for radioactive waste management, social science Research organizations and Licensing and regulatory authorities), an independent, self-supporting consortium of organisations from countries that have experience with stakeholder involvement in radioactive waste management;

OBRA (European Observatory for long-term governance on radioactive waste management), a coordination action under the 6th Framework Programme of the European Commission that includes a feasibility study for a European Observatory for long-term governance on radioactive waste management; and

CIP (Community Waste Management in Practice), a research action part-funded under the 6th Framework Programme of the European Commission.

Apart from researchers from the four projects, the conference attracted a number of different stakeholders. About 110 people participated, representing local municipalities, regional and national councils, the European Commission, authorities, the industry and environmental organizations. They came from Belgium, Czech Republic, Finland, France, Luxembourg, Norway, Slovenia, Spain, Sweden and the UK.

The one and a half day conference involved presentations from various actors and the research projects, a stretching panel that “stretched” the researchers, working group discussions and plenary discussions. After the conference, a questionnaire was sent out, which will be summarized here together with the results from the working group discussions.

11.2 Stakeholder views

In the first day's final session, the participants were divided into groups for discussions. The groups were divided based on the different stakeholder groups, partly because there were interpretation matters that made it hard to mix the groups further, partly that it was deemed valuable to get a picture of the different stakeholder groups perspectives. Three groups consisted mainly of local and regional representatives. These groups had interpretation. One group consisted mainly of researchers, one with different NGO:s and one with industry representatives.
The questions they had to discuss in the groups were:

- Having heard form the presentations and discussions today - what do you think is most important for the type of stakeholder you represent? Does cooperation like ARGONA/CARL/CIP/ OBRA make a difference? How?

- The four research projects presented today will all be ended within 2009. How would you like to proceed?

- What would you like to see take place in your country? In EU? How would you/your organization like to be involved?

- To what extent are we prepared to bring in ideas, methods and approaches over the boarders from other countries? Are we too locked into existing structures?

- What can be done with safety analyses? Should it be communicated or is it just too complex to understand?

Following is a summary of the working group results12.

A municipality perspective

The group consisted mainly of local representatives from Belgium, Slovenia, Spain and Sweden. They found the presentations about the research projects valuable and interesting: "*One of the most interesting things for municipalities is that discussion arenas are provided by different kinds of EC projects*. *One can however pick the best from the different projects and use it in a way that is adapted to the own country"*. They meant it is impossible to compare or generalize amongst the projects since they are different and deal with different issues. They found that the EC projects seem to be of greater interest for those countries whose NWM governance processes are still in an early phase compared with those who have a longer history in these matters.

The group's perspective regarding the future research needs revealed that those needs could be seen as separated from the concrete problem of finding a solution for the waste: "*We are in a hurry and cannot wait for research results. We must find a site and a solution for the waste"*. However, research are not useless, rather much needed as guides and providers of pathways: "*Guidelines are needed as well as a forum for discussions. Relations have to be*

[12] At the moment, there is only material from 3 out of 6 groups available. Hopefully the rest comes soon…

established where all are involved". And they ask: *"Will the research show results of practical use? Will there be any discussion fora provided by EC in the future?"* In a municipality perspective, these questions seem to be very important for future projects to keep in mind. The coming ARGONA guidelines are mentioned, as that they would be of great help if they were transformed into something that could be of local use.

Cooperation among the different stakeholders and the governments as well as good communication and involvement of NGOs are important elements to create a good process. The group also highlighted the problem of this question being a long-term process, while political leadership changes much faster. Therefore, there could be a need for a common model, a common policy, in Europe, and here guidelines are important.

The group considered that ideas from other countries (than the already participating ones) at a European level should be brought in. Regarding the safety analyses, the group considered it should be communicated, both on expert level and lay man level.

A researcher perspective

The group consisted of 18 researchers from the four projects and a few other researchers. They found the projects are all struggling with the link between science and society. The benefit of several projects is that it is possible to look at the issue from a number of perspectives but on the other hand, it is hard, if not impossible, to produce a common answer applicable in all countries due to cultural and historical situations. A lot of work has shown "how" to do, but what about "why"?

The group found that they face problems with explaining project details in short time and that it is difficult to demonstrate their knowledge about the process, also, that it can be difficult to give strong recommendations since it can be too political. They found it important that they manage to contextualize results and explain theoretical assumptions. Research has shown that meaningful discussions can be arranged between those who have different views, but the conditions vary in the EU countries. They ask: *"Are comparisons between countries useful?" "How to implement lessons learnt, given local variations in approaches?"*

For the future, the group would like to distribute the results widely and also try to draw recent project outcomes together. It is important to recognize that different countries are at different stages, but at the same time continue the process so as to allow people to continue meeting. Areas that the group found important to explore were e.g. *"can we develop criteria to judge "success"?"* and *"what is the role of community benefits?"*

The group definitely saw a need for an exchange of ideas and methods amongst the European countries. They also found it important to communicate the relevance of the safety analysis and they ask if the "black box" really exist in terms of safety analysis.

An NGO perspective

The group consisted of 7 persons, all from three different Swedish environmental NGOs. The group wanted to highlight the fact that they were all from Swedish NGOs[13] and that no member in the group was participating in any of the research projects. They asked: "*Had the NGO group existed if the conference had been held in another country?"* They explained the existence of the group as a result of the strong environmental movement in Sweden, a movement that has knowledge of the nuclear waste issues and has funding (€ 300 000 per year) to take part in the consultation process for nuclear waste repositories. For the future, the group wanted to highlight that "*if participation of environmental NGOs in projects is considered important, an extra effort has to be made"*. Financial support is needed to get NGO participation.

The group stressed the long-term safety in this issue, as well as the importance of being open to new ideas, methods and approaches. The group recommended the European Commission to stress environmental NGO participation in calls for projects and in negotiations. The group saw communication of the safety analysis results as necessary, but not only the implementer's results. Controversies with regulators and environmental NGOs can in this case be used to explain uncertainties. Finally, a recommendation from the group is to use open knowledge databases instead of building new closed databases for knowledge distribution.

11.3 The Questionnaire

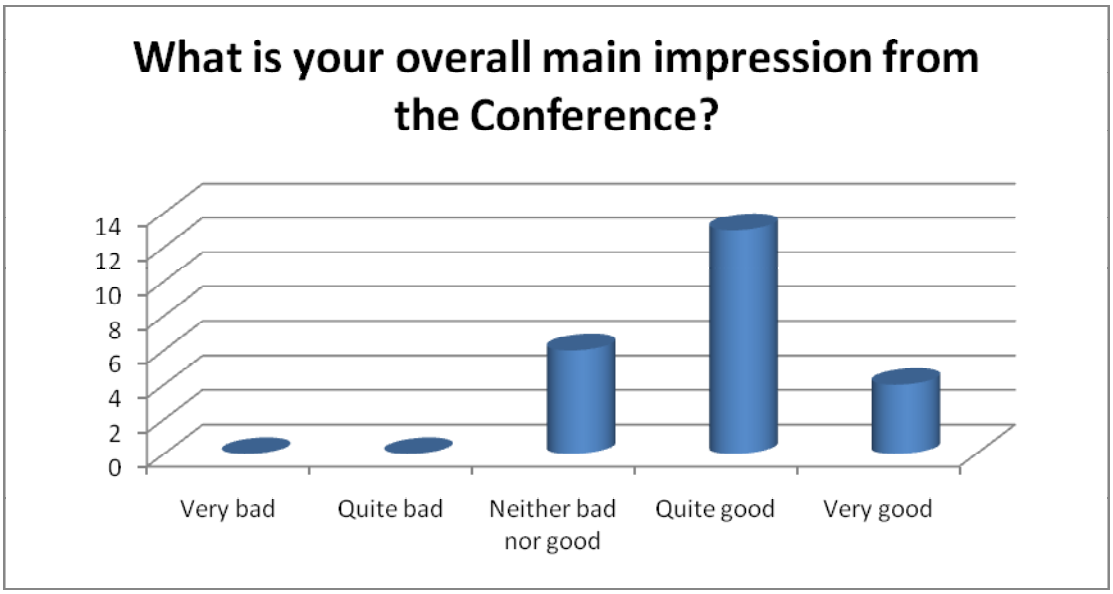
A few weeks after the conference, a questionnaire was sent to all participants. The questionnaire was only provided in English, so for the countries whose participants were not comfortable with English, the contact person for each country were asked to help with the translation. 25 responses of the questionnaires were received. The respondents were divided into the following stakeholder groups:

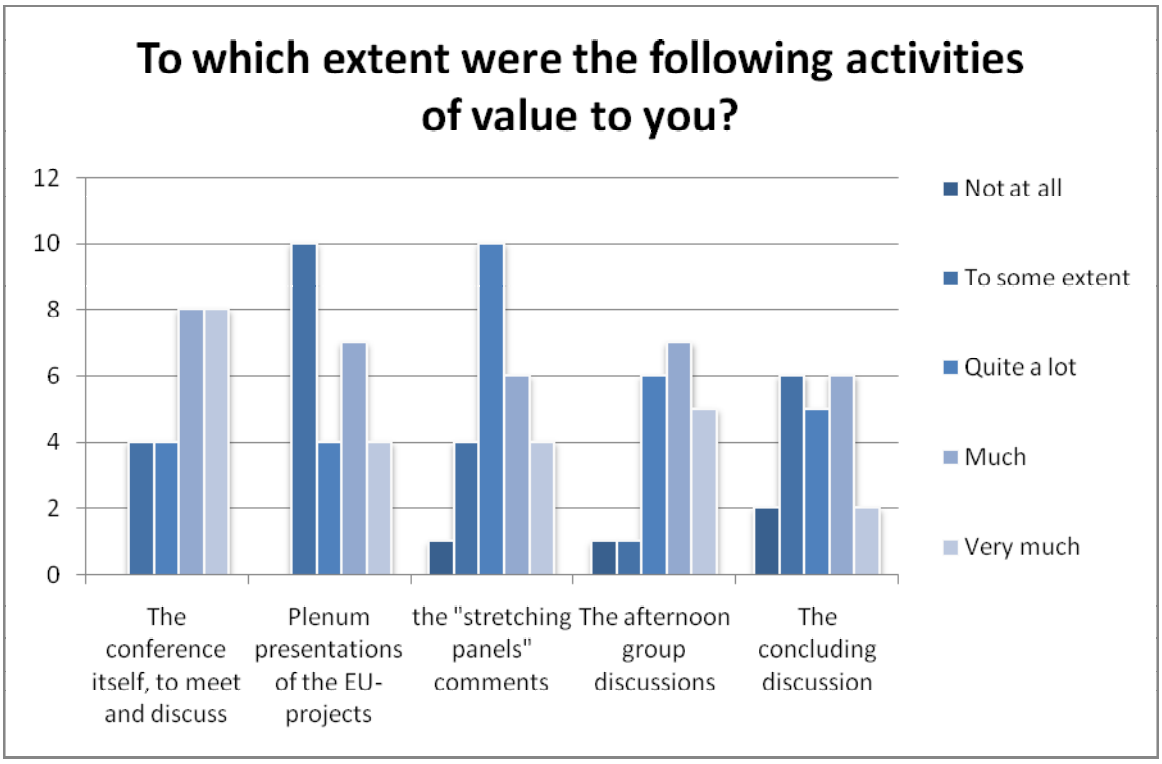
3 Municipal council or similar work	1 National authority
3 Regional authority	1 European Commission
8 Research group	3 NGO
4 Implementers / industry	2 Not specified

Main impression about the conference

The comments from the respondents revealed that the End Users Conference was a needed gathering. What the meeting provided was mainly two things: the gathering of the four governance projects in the same arena and the possibility for different stakeholders from different countries to meet, network and learn from each other. The initiative was found intriguing: *"Overall it was a very good initiative; similar events should be organized for all Community research projects in order to overcome the risk of "l'art pour l'art".*
Not as successful was the lack of concrete outcome from the conference and that the time schedule was too tight, both for presenting the different projects and for discussion. The stretching could also have been more exhaustive and stringent.

[13] There were a couple of other representatives from NGOs from other countries attending the conference, but due to interpretation matters, they participated in other groups



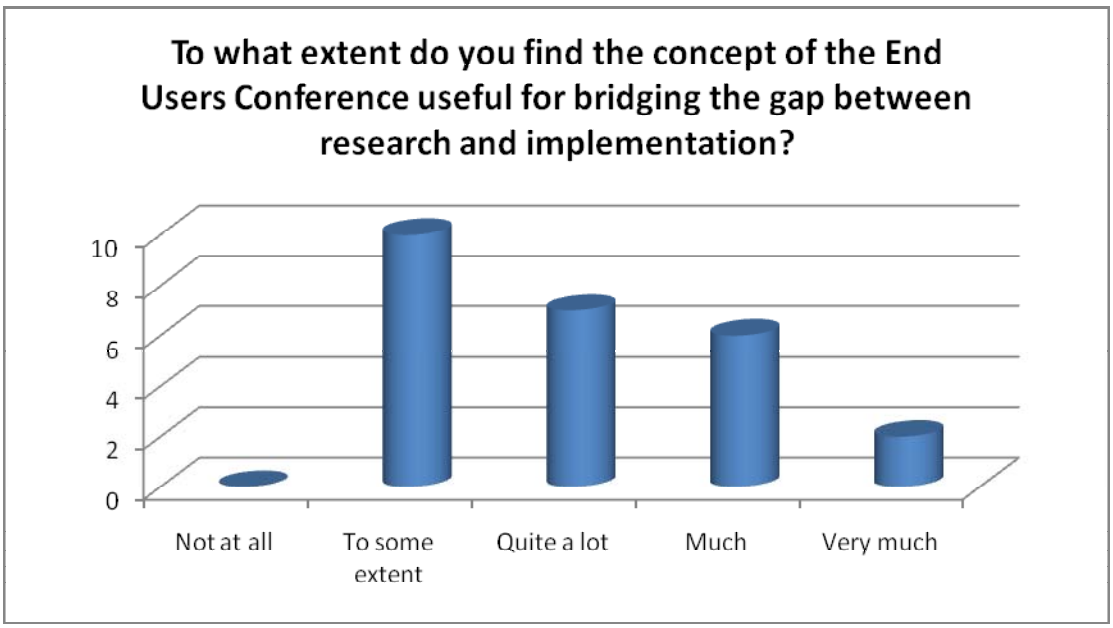


The chart above shows that most valuable was the possibility to meet and discuss with other stakeholders. Also the afternoon group discussions were found valuable. The respondents were a bit less positive about the project presentations and the concluding discussion, which got a medium grade. The stretching panel got a grade slightly better than medium for their comments to the different research projects. There were no specific patterns visible when comparing the answers between the different stakeholder groups. The answers varied much among the groups.

Some found the stretching of the research projects very useful, others wished it had been more provocative. Focus on fewer, deeper questions was requested and the researchers should have had time to prepare themselves for the answers beforehand. Few mentioned any missing actors and many seemed pleased with the mix of stakeholders. Those who mentioned that a broader participation of stakeholders could be favorable highlighted national government representatives, national authorities, international organizations, natural scientists, the media and more radical environmental NGOs.

The End Users Conference format

The respondents had mixed opinions about the usefulness of the End Users conference concept for bridging the gap between research and implementation. As the graph above shows, several respondents only found it useful to some extent, but others found it useful quite a lot or much. The respondents gave many valuable suggestions to how the conference could be improved and they had mainly three major concerns: that there should be a more clear focus on the end users; that there is a need for more concrete results, useful for the end users and finally, that there could be more time dedicated to group discussions in various groups.



The answers revealed that many, also those who did not represent the local perspective themselves, saw research results useful for the local communities as most important. The research presentations should have been more structured and distinct, with focus on the useful parts and presented in a form accessible to all stakeholders. Clearly, many found concrete results and recommendations from the research projects as most valuable. Some were requesting more time for the project presentations, to enable a more detailed exploration of them but others rather asked for summaries of the most useful results of direct use and of good evaluated examples.

There was also a clear call for more time for discussions. This part could be extended to include several small group discussions with a variety of mix of the participants. For example, researchers and end-users could meet in smaller groups: *" The idea of having working group discussions among researchers, stakeholders and implementers in separate groups was useful. However, next to that, it would be good to include also working group discussions that mix researchers and stakeholders and that focus on specific topics"*.

ARGONA Guidelines

ARGONA is anticipated to propose guidelines for governance of nuclear waste management and the conference showed a strong demand for guidelines by the end users. As one respondent put it: *"I certainly did notice the strong demand by end users for guidelines – whatever they may be. I saw that the end users have pretty strong trust in the researchers to formulate these"*. So, the need for ARGONA to give good recommendations of relevance are there, and the respondents were asked what they found most important to bring forward. The guidelines suggested can be divided into two different "forms":

1. General guidelines or principles of NWM governance, relevant for all EU countries. For example concerning transparency, openness and participation. Responsibilities were also clearly mentioned as important to state in guidelines.

2. More specific and pragmatic guidance, using f. ex. best practice and examples. Several respondents mentioned the value of presenting good examples and experiences from reality, or to learn from "bad experiences".

Other comments around guidelines regarded the importance of:

- full involvement of the host community
- communication
- public access to official records and to provide arenas where information and experiences can be exchanged
- guidelines for how to go from R&D to action
- support to enable participation from different groups, both the public in general and NGOs.
- defining the roles of stakeholders clearly

Future needs of research initiatives

The questionnaire also asked what needs future initiatives (in research or otherwise) should especially address. The answers were spread and only a few gave actual suggestions on research areas. Instead, the same issues as earlier were standing out as in need of improvements:

1. Bridge the gap between the scientists and the lay people - Communication of already existing project results should be improved, as making documents more accessible to

all stakeholders. The practical aspects needs to be better addressed or better communicated.

2. Sharing information and experiences - Absolutely necessary to continue support the pluralistic and transnational sharing of experience, creating arenas where viewpoints can be presented safely.

3. Evaluation of current practices – A need to review the national NWM programs in terms of participation and transparency, their societal and political contexts, as well as the current existing public participation process on both national, EU and international level.

The more concrete suggestions regarded: Public concerns about waste issues; decomposition of HLW; the link between HLW and nuclear weapons; comparative political science research over EU countries; legal research on instruments for good governance; morality, ethics, insurance, safety and responsibility for future generations; public acceptance; impacts for NWM of revival of nuclear power programs and retrievability.

11.4 Final reflections

What can be seen from the discussion results and the questionnaire responses is that the meeting provided a valuable and anticipated arena for different stakeholders to meet and discuss. In detail, things could have been done differently, and many elements of the conference could be developed further, but overall, just the fact that all these stakeholders from different countries and with different perspectives, facing the same problem to solve, met and discussed, were proved to be of great value.

Maybe it is difficult to combine the different aims and needs of all participants in one conference. One participant put it like this: "*Know all too well this isn't easy. Problem is that different end-users groups have very different expectations as regards output. E.g. scientists want output to be 'academic', local stakeholders want it to be practical ... Not easy to match that".* The arena for research projects and the end users arena are both proved wished-for, but are maybe not suitable to combine, or at least, the different aims could be divided more. At the end users conference, focus should be on the end users needs, which seem to be to hear results of direct relevance and use for them and to exchange experiences with others. To judge what is important or not could however be hard for the researchers, why there is also important to open up discussions among researchers for a broader public. The more detailed stretching of research projects could be more suitable to have among researchers, but with free access for others to attend.

12. Discussion and Conclusions

The ARGONA project intended to demonstrate how participation and transparency link to the political and legal systems and how new approaches can be implemented in radioactive waste management programmes. Thereby, studies have been done of the institutional and cultural context within which processes of participation and transparency take place in order to understand how the processes can be applied. The project has also included studies of theory in order to build participation and transparency on a firm ground, a number of case studies in Czech Republic, Finland, Sweden and UK, as well as implementation in Czech Republic to make a difference, learn and demonstrate.

Here some key conclusions are given with regard to the future of processes of participation and transparency in radioactive waste management. For more practical guidance on the setting up of such processes, the reader is also referred to the ARGONA Document "*Suggested Guidelines For Transparency And Participation In Nuclear Waste Management Programmes"* (ARGONA Deliverable No. 22).

A large degree of freedom for participation and transparency

Perhaps the most important conclusion is that there are institutional settings at hand that can be used for the purpose of participation and transparency (PT), although it is also recommended to arrange formally organized transparency arenas as a way to make regular intermediate 'checkups' of the status of factual and value-laden issues as well as of the actors´ intentions and interests. For example, EIA ands SEA directives and national legislation give frameworks for information and participation, but they also provide a rather open framework for what can be done in practice and they can be followed with a higher or lesser degree of ambition. In any case, EIA and SEA consultations, as any PT process, must not be approached in such an instrumental way as to seemingly promise participation but without serious intention to actually take stakeholder contributions into account to have an impact on the end result. Such instrumental use of PT processes would seriously increase distrust among citizens and engaged stakeholders. Support to "weaker" stakeholders is also essential for their possibility of taking part in transparency and participative initiatives.

Local settings are important

These conclusions and also the suggested guidelines in ARGONA Deliverable No. 22 are intended to be of a general character, i.e. they should be valid under most circumstances. However, it is also a very important conclusion from the project that in application careful attention must be paid to the local setting, be it a country or a municipality, although at the same time recognising that such local settings are developed over time and within circumstances steered by strong external forces. This overall conclusion implies that there cannot be a standardized recipe readily available and applicable to all countries or nuclear waste management scenarios. We suggest, however, that much can be achieved by sharing experience and communication between interested groups.

The diversity in local prerequisites may also be an important source for providing additional insights and tools for improved communication processes, although it raises concerns and doubts with respect to attempts to find an "ideal" or prototypical best practice. It may be that "best practice" is locally defined to a great extent, given that the locality is situated within a "satisfying" overall governance structure. It may also be the case that intensified information processes and exchanges of ideas on several societal levels are necessary before similarities across countries become a prevailing feature of European radioactive waste management.

It is possible to make a difference!

It may sometimes be frustrating that radioactive waste management programmes don't seem to move forward enough by using the large amount of already existing knowledge about participative methods that have been developed and tested over time. It should be possible to bring new processes on board with a open attitude and start using them in practical situations. Experience from ARGONA tells us that this can actually be done. Especially, establishing the RISCOM reference group in the Czech Republic meant a significant shift in the cooperation between key stakeholders in the management of nuclear waste in the country. I provided a "safe space" for discussions in the meaning of a process where different stakeholders could move forward together to increase their understanding of the issues and also of their respective views without being felt like hostages for a certain purpose.

Future will show how significant this was for the Czech programme, however it may be important to proceed step by step by setting limited goals within a well defined process format in a country such as Czech Republic which is in an early stage of a site selection programme. Czech partners believe the RISCOM model proved to be a very suitable tool for starting a dialogue among all stakeholders and that it could be very well be used also in other European countries, which are in a similar situation as the Czech Republic. They also believe it is necessary to continue the activities with the RISCOM reference group in their own country.

The role of mediators

What has already been said means that there is a great deal of openness for those who wish to set various participatory processes in motion. Such processes can be described as the work of *mediation.* In other words, mediation is about building connections and establishing shared knowledge among all those implicated in the governance of radioactive waste in any particular context.

The ambition of a mediator is to seed certain ideas and enable different parties to come together and interact in relation to them. Mediators seek to activate different parties in the government of their own affairs. They aim to act as catalysts, and as the ones capable of getting new policy programmes off the ground, and new social movements up and running. Ambiguities in how science can be communicated in public can be clarified through the distinction between *mediation by demonstration* and *mediation by dialogue.* The first is about showing "hard facts", while the other one is about involving citizens in activities where no final answer exists.

The links between the two forms of mediation can be intricate. On one hand, pursued in apparent isolation from each other, they may unnecessarily complicate the communication

about radioactive waste management. On the other hand, they can be organized by different bodies having different roles in a radioactive waste management programme, such as an implementer, a regulatory body or a local organization. In such a case, it may be better to clarify the different aims of the two processes. The suggested guidelines in ARGONA Deliverable No. 22 give more advice on how mediation by demonstration and mediation by dialogue can be used and combined.

Building a knowledge base

Whilst recognizing that individual dialogue processes would need to develop their own evaluation criteria based on their own aims and objectives, there is a need for a knowledge base of processes for participation and transparency. This would offer a methodology for comparing approaches and allowing selection of appropriate processes for use in particular circumstances. The resulting knowledge base should be a library of relevant approaches (techniques, meeting types etc) indexed in terms of what the desired end result might be (a requirement for advice; development of societal consensus; provision of clarity regarding a contentious issue etc) and cross referenced as to their suitability at different stages of an involvement process. The idea is that a ‘customer agency´ could consult the knowledge base and identify possible approaches and techniques that would be suitable for use (and adaptation) in the particular situation and at the relevant process stage in question.

Beyond participation and transparency

It is evident that participative processes and transparency arenas can improve the quality of societal decsion making in specific situations. But, as we have seen any project or programme with this purpose has it limits. Then somehow, society should be able to continue the process in a wider context than the explicit decision situations where transparency arenas take place. This wider context, or philosophical orientation, which we call *reflexivity* has two meanings; reflexivity as 'contextualisation' or 'becoming aware of how knowledge is produced', and reflexivity' in the meaning of 'self-confrontation' to become aware of the potential of and limits to own knowledge and own role in a discourse setting.

The political context

The ARGONA project has been dealing with two approaches (the deliberative and the transparency approaches) to handle complexity at the science-policy interface. The quality of governance essentially depends on what happens at this interface where facts and values, embodied by people, come together in a complex cocktail muddled by obstinate uncertainties and conflicting interests. The question arises if there should be some sort of institutionalisation connected at this interface linking the deliberative and transparency arenas to the system of representative democracy. Based on the analysis made in ARGONA it is recommended that formally organised transparency arenas should become a universal norm that should inspire and steer the practical political organisation of governance.

For any decision making process, to be legitimate it needs to have a certain degree of trust among those affected, those participating and citizens at large. If a stakeholder does not trust the organization of a particular deliberative or transparency setting he will not take part and

immediately it will lose legitimacy. This project highlighted four elements in building trust: 1) a jointly agreed aim to gain insight into the complexity of radioactive waste management, 2) real justification meaning that there is a real chance for stakeholders to influence the process, 3) looking back for understating "why things went the way they went", and 4) adaptability of a decision process to the social and physical reality including reversibility of decisions. With these four elements, chances are higher for consensus among actors that things are happening in a fair and good way, either in a positive sense or from the understanding that 'this is the best we can do'.

Besides promoting arenas for transparency and participation a number of measures can be taken to enhance awareness and trust, such as organised discussion with professionals, inviting foreign experts, or travelling of community leaders and citizens abroad to see similar projects. Furthermore, continuation and political responsibility for long-term stability is needed that people can rely on (not depending on current political majority). Small steps are needed, as well as a long-term vision.

Bridging the gap between science and policy – the need for action and guidance

From a local political level, at the ARGONA End Users Conference it was stressed that there is a need for immediate action meaning implementation of existing knowledge and research results in national and local settings. This means that the practical applicability of research results in the area of participation and transparency must be clarified in an effective way. In ARGONA, the End Users Conference itself with its *stretching* of research projects was used for that purpose. This was found very useful, although many wished the stretching had been more provocative, exhaustive and stringent. For similar activities in the future, one should focus on a few, deep questions and the researchers should have time to prepare themselves for the questions beforehand.

The End Users Conference also made evident that there is a need for guidance for the application of approaches to participation and transparency. It was suggested that such guidelines could be divided into two different forms: 1) general guidelines or principles for the governance of nuclear waste management, and 2) more specific and pragmatic guidance, using e.g. "best practice" and examples. The suggested guidelines in ARGONA Deliverable No. 22 has the purpose to be a first step towards meeting this need.

List of ARGONA reports

WP 1: Policy making structures

Tiderman, M., Andersson, K. (2007) , ARGONA Questionnaire survey for policy making structures. EU Contract FP6-036413. ARGONA Deliverable D1

Andersson, K., Falck, E. and Lidberg, M. (2008) Policy making structures in the EU and ARGONA countries. EU Contract FP6-036413. ARGONA Deliverable D2

WP2: Theoretical perspectives on participation and democracy

Meskens, G. (2009). Theoretical perspectives on participation and democracy – The possibility of bridging the gap between the science of the problems and the politics of the solutions. EU Contract FP6-036413. ARGONA Deliverable D13

WP3: Mediators of issues and mediators of process

Elam, M., Reynolds, L, Soneryd, L. and Sundqvist, G. (2007) Mediators of issues and mediators of process: A theoretical framework. EU Contract FP6-036413. ARGONA Deliverable D4.

Elam, M. Lidberg, M., Soneryd, L. and Sundqvist, G. (2008) Demonstration and Dialogue: Mediation in Swedish Nuclear Waste Management. EU Contract FP6-036413. ARGONA Deliverable D10.

Elam, M., Soneryd, L. and Sundqvist, G. (2009). Mediation by Demonstration and Dialogue - An Evaluation of Practices. EU Contract FP6-036413. ARGONA Deliverable D20.

WP 4: Risk communication

Drottz-Sjöberg, B.-M., Richardson, P., Engen, O. A., and Prítrský, J. (2008). Assumptions and considerations underlying current approaches in nuclear waste management.. EU Contract FP6-036413. ARGONA Deliverable D5.

Bolado, R. (2009). Format to Communicate Risk and Uncertainty about the Disposal of Radioactive Waste to Different Stakeholders; Questionnaire and Analysis of the Results of the Questionnaire. EU Contract FP6-036413. ARGONA Deliverable D8.

Drottz-Sjöberg, B.-M., Richardson, P., Prítrský, J., & Engen, O. A. (2009). Similarities and differences in risk communication strategies on nuclear waste management across countries. EU Contract FP6-036413. ARGONA Deliverable D9.

Bolado, R. (2009). On the adequacy of the format proposed to communicate risk and uncertainty. EU Contract FP6-036413. ARGONA Deliverable D17.

Drottz-Sjöberg, B.-M., Richardson, P., & Prítrský, J. (2009). Risk Communication Strategies. Conclusions and summaries of feed-back comments from participating countries. EU Contract FP6-036413. ARGONA Deliverable D18.

WP 5: Evaluation, testing and application of participatory approaches

Vojtechova, H. (2008) EIA and SEA processes in NWM in the Czech Republic. EU Contract FP6-036413. ARGONA Deliverable D3.

Vojtechova, H. (2008) Focused science shop - Potential environmental impact of radioactive waste disposal in comparison with other hazardous wastes. EU Contract FP6-036413. ARGONA Deliverable D7.

Vojtechova, H. (2009) Consensus panel - Spent nuclear fuel management alternatives. EU Contract FP6-036413. ARGONA Deliverable D11.

Vojtechova, H. (2009) Evaluation, testing and application of participatory approaches in the Czech Republic. Interaction Panel – The Siting and Safety EU Contract FP6-036413. ARGONA Deliverable D12.

Vojtechova, H. (2009) Evaluation, testing and application of participatory approaches. Application of RISCOM Model in the Czech Republic. EU Contract FP6-036413. ARGONA Deliverable D14.

Richardson, P.J., Hicks, T.W., Galson, D.A. and Greulich-Smith, T. (2009) Assessing Participatory and Dialogue Approaches. EU Contract FP6-036413. ARGONA Deliverable D15.

Vojtechova, H. (2009) The role of local referenda. EU Contract FP6-036413. ARGONA Deliverable D16a.

Kojo, M. and Richardson, P.J. (2009). The role of compensation in nuclear waste facility siting - A literature review and real life examples. EU Contract FP6-036413. ARGONA Deliverable D16b

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WP6: Guidelines for participation and transparency

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Appendix 1: ARGONA participants

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Work Package 1: Policy making structures
Work Package 2 Theoretical perspectives on participation and democracy
Work Package 3: Mediators of issues and mediators of process
Work Package 4: Risk communication
Work Package 5: Evaluation, testing and application of participatory approaches
Work Package 6: Guidelines for participation and transparency

Appendix 2: ARGONA Work Packages

Appendix 2 shows the links between the ARGONA work packages and chapters in this report

No	Work Package title	Lead contractor	Person in charge	Chapter in this report
1	Policy making structures	Karita Research	Kjell Andersson	4
2	Theoretical perspectives on participation and democracy	SCK.CEN	Gaston Meskens	8
3	Mediators of issues and mediators of process	University of Gothenburg	Göran Sundqvist	7
4	Risk communication	University of Stavanger	Britt-Marie Drottz Sjöberg	5, 6
5	Evaluation, testing and application of participatory approaches	NRI Rez	Hana Vojtechova	3, 9
6	Guidelines for participation and transparency	Karita Research	Maria Lidberg	10

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