Nuclear Development

Society and Nuclear Energy

Case Histories of Practical Communication Experiences

NUCLEAR ENERGY AGENCY
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

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

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

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

FOREWORD

Communication with society on risks and benefits of nuclear energy is a key issue for policy makers. The study published in 2002 under the auspices of the Committee for Technical and Economic Studies on Nuclear Development and the Fuel Cycle (NDC) provided a comprehensive review of issues to be considered by policy makers to develop a consensual decision-making process in the nuclear energy sector. In order to investigate the relevance of findings and conclusions of the 2002 study, the NDC decided to carry out in its 2003-2004 programme of work a second study focusing on case histories of practical applications. The main outcomes of this second study are compiled in the present report.

Thirteen case studies were contributed by experts from the industry or governmental bodies of seven member countries. The case studies describe concrete experiences in communication between stakeholders on nuclear energy projects and issues. The analysis of the case studies concludes that the desk study succeeded in identifying the economic, environmental and social dimensions of communication in the field and the respective roles of decision makers and civil society. It highlights the importance of collecting and making widely available feedback from experience in various countries and circumstances to establish a knowledge base for future use by communicators.

The report was prepared by the Secretariat with the assistance of a consultant. Although it benefited from a review and comments provided by the NDC, it does not automatically reflect the views of member country governments. It is published under the responsibility of the Secretary-General of the OECD.

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1. INTRODUCTION

Background

A desk study on Society and Nuclear Energy[1] was performed during the 2001-2002 work programme of the Committee of Technical and Economic Studies on Nuclear Energy Development and the Fuel Cycle (NDC). It was recognised that the discussion of nuclear issues is no longer limited to experts, and that many types of interaction take place between nuclear players, political decision makers, and civil society. Communication about risks was identified as one important means to enhance mutual understanding, particularly to increase rational understanding among stakeholders.

The NDC decided to conduct a project in 2003-2004 to review member countries' practical experiences in communication and consultation with Civil society in connection with nuclear energy policy decisions. A questionnaire asked member country experts to report such cases, highlighting the details of experience – whether positive or negative – and the lessons learnt. The present document analyses those case reports, with the intention of providing background for NEA future activities.

A number of transversal themes were selected, a priori, to frame the analysis and structure this background paper. After a summary presentation of the original case reports (Chapter 2), each transversal theme is dealt with in a separate chapter:

3. Identify generic and country- or case-specific aspects of communication and consultation on nuclear energy issues.
4. Investigate perception of the various benefits and risks related to nuclear energy among decision-makers, experts and society, identifying both gaps and agreements.
5. Clarify and identify participatory frameworks of communication among decision-makers, experts and society.
6. Examine further lessons learnt as highlighted by the case authors.
7. The document concludes with suggestions for structuring future work and allows member country experts and representatives to draw on the case experiences in order to shape future societal communications and decision-making around nuclear energy.

Material

Chapter 2 of the present document contains a summary presentation of the thirteen case reports received from member countries. These are ordered according to the type of situation, event or experience reported.

Decision-making processes (DMP) on national nuclear energy policy

Five case reports are provided. Most give excellent insight on the complex socio-political context of national policy decisions, describing and analysing the different positions of a large range of players, their stakes and strategies.

- A report from Finland presents the communications surrounding the Environmental Impact Assessment (EIA) and, in more detail, the "decision in principle" (DiP) to build a new nuclear power plant.

1 OECD/NEA (2002) *Society and Nuclear Energy: Towards a Better Understanding.* ISBN 92-64-18494-5. Paris: OECD Publications.

- Three reports from Belgium give details on:
  - ⇒ The experience of AMPERE (an expert Commission to Analyse the Production Modes of Electricity and the Redeployment of Energies.
  - ⇒ The actions, attitudes and impact of concerned parties during the Parliamentary DMP on nuclear phase-out.
  - ⇒ A public consultation concerning the implementation of sustainable development.
- A report from the United States concerns a communication campaign to inform and influence key actors regarding a congressional vote on the Yucca Mountain federal waste repository.

Interim storage of spent fuel and radioactive waste

Three case reports from widely divergent contexts deal with outreach and information to stakeholders on dry-cask interim storage for spent nuclear fuel.

- A report from the United States concerns the construction and activation of the Independent Spent Fuel Installation Project at the State of Iowa's only nuclear power plant. The outreach was not required by the federal licensing process, and took place well after construction had begun.
- A report from Hungary details efforts furnished by the Paks nuclear power plant to obtain local understanding, support, and required municipal authorisation for on-site interim storage.
- A report from Spain highlights communication among different decision bodies in the context of seeking required local approval and regulatory permits for on-site storage at Trillo nuclear power plant.

Restart of nuclear power facilities after extended shut down

Two case reports recount extensive efforts by purpose-made teams to form good bi-lateral relations with the communities affected by nuclear installations.

- A report from Canada shows how Ontario Power Generation's Pickering A station sought transparent and open conduct to gain good will and support for renewal of the operating licence.
- A report from Japan recounts Japan Nuclear Cycle Development Institute (JNC) efforts to regain Tokai residents' trust and understanding, in response to one municipal requirement on restarting installations after serious safety lapses.

Safety and security

Three case reports from Spain provide examples of crisis response and media relations in regard to very different incidents:

- A radiological incident at the (non-nuclear) Acerinox steelworks caused significant media repercussions and tested the Nuclear Safety Council (CSN) risk communications capacity
- A non-radiological incident (ingress of rainwater) at the Juzbado Fuel Element Manufacturing Facility; rapid and objective information to the media transmitted the image that plant safety was at no time threatened
- A site invasion by environmentalist groups produced overwhelming television coverage and a bad image difficult to counter by Zorita nuclear power plant management.

2. BRIEF CASE PRESENTATION

The thirteen original case reports provided by experts from member countries covered four different types of situation, experience or event. Brief abstracts of each case are provided below, ordered by situation (national decision-making processes, interim storage, restart, and safety/security).

Two cases are particularly interesting to compare and contrast. They form the two ends of the spectrum of reports. These are the Finnish case of the decision in principle to build a new reactor unit, and, the Belgian parliamentary decision on phasing out nuclear power. Additional in-depth discussion of these two cases is provided.

Decision making processes for nuclear energy national policy

Finland: "Decision in principle to build a new nuclear power plant unit in Finland"(Utility report)

Case report prepared by TVO

In 1993 the Finnish Parliament rejected the "decision in principle" (DiP) that would have opened the way to building a new nuclear power plant unit in Finland. In the years since that decision, however, electricity consumption has risen 2-2.5% per year. Net import of electricity has grown to about 15% of consumption and this proportion would be difficult to augment.

The Finnish government analyzed this situation in its 1997 "Energy Strategy Report". It concluded that preparation should be made for the option of possible future new build. TVO and Fortum, the two utilities operating nuclear power plants, each started an EIA process to build a new unit at its existing nuclear site. Communication during the Environmental Impact Assessment (EIA) phase centred on fulfilling information needs in the local population of the potential host communities. The EIA reports presented in 1999 were judged to be in accordance with legislative requirements. The two companies then agreed that TVO would carry on the new build project giving equal weight to the two potential sites, Olkiluoto and Loviisa.

In 1999, the new government issued an energy policy statement profoundly influenced by the Kyoto protocol and European burden-sharing commitments. TVO submitted the application for a "decision in principle" (DiP) regarding the construction of a 5th nuclear unit in November 2000.

The communication programme was planned according to the legal framework imparted by the EIA and DiP application procedures. The local municipality council has to accept the building of a new nuclear facility before national government can make a positive DiP, and is also a key decision maker in permits under conventional construction and land-use planning laws.

Communication during the DiP application phase sought to integrate the new unit as an essential part of the national energy and climate policy, securing stable and predictable electricity price, and reducing the dependence on electricity import.

TVO focused its efforts on the official process. The parallel, spontaneous process of communication engaged interest groups, organisations, individual citizens, politicians and mass media. This spontaneous process is analysed in detail in the case study report.

Two pro-nuclear players had great influence in the informal process: labour unions and the Finnish Confederation of Industry using its Economic Information Office (EIO). The EIO published a brochure

combining the basic arguments for a new nuclear unit with facts and figures. This was distributed on a national basis, and live presentations were made in seminars throughout the country. These pro-nuclear players concentrated on the positive economic impact of the 5th unit on business and investment, and in turn the contribution that economic activity makes to funding public services in the welfare society.

The government accepted the DiP (10 votes for, 6 against, one absent) in January 2001. The parliament then debated the DiP on three occasions, with a committee study and reports in the meantime. The vote in May 2002 retained the DiP by a scant majority (107 or approx. 54% in favour, 92 against).

Discussion

An outstanding dimension of the Finnish case is the strategic unity showed among different players: "networks between experts, political parties, trade unions, industrial organisations and non-governmental organisations". The Confederation of Industry in particular took an active and high-profile role alongside the utility to plead in favour of a new reactor unit. According to TVO the goals of communication during the national phase related to the decision in principle "were to integrate the new nuclear power plant as an essential part of the national energy and climate policy". To this "political argument", the industrial partners added arguments demonstrating the economic value of this new electricity supply source and linking it specifically with the maintenance of the welfare state.

In Finland, anti-nuclear players argued in the public forum against a new reactor unit by attempting to show that nuclear power could be entirely replaced by renewable energy sources. In contrast, the broad coalition of industrial and economic players strongly communicated that *both* nuclear power and renewable energy are needed and should be developed simultaneously. In support of this position, the industry made the commitment to build power plants relying on biomass like wood residues from the important Finnish forestry sector.

This holistic energy vision matched the Ministry of Trade and Industry programme in favour of developing renewable energy sources. Moreover, this vision corresponded to the governmental policy statement of 1999, itself profoundly influenced by the Kyoto protocol and European burden-sharing commitments: "New generating capacity must be based on less-polluting options. No options that are technically, economically and environmentally feasible should be excluded".

In this way, the strategic position of Finnish industry had at least four qualities that probably made it easy for other players to accept and align. The espoused energy vision could be understood as appealingly sensible and pragmatic. Active, demonstrated support by industry for both nuclear and renewable energy showed:

1) good *political sense* by matching national policy, lending a sense of harmony and possibly facilitating government and parliamentary alignment;
2) good *ecological sense* by favouring a range of less-polluting options;
3) good *common sense* by refusing to place "all eggs in one basket"; and
4) good *business sense* by favouring economically attractive nuclear power and at the same time exploiting bio energy like wood residues.

The lesson to be learnt here is: a unified set of partners should build and communicate a role for nuclear power as a single part of an energy mix - a mix that appeals to good sense and cannot be criticised as misguided, partial or partisan. Clearly, this is not simply a recommendation for strategic communication. More profoundly it is an observation that a diversified energy mix staunchly supported by a range of players may have better chances of finding acceptance on a "good sense" basis.

The national policy instrument "decision in principle" is another interesting strategic tool for public communication about the role of a nuclear facility. It is a stepwise decision-making instrument, specifying that the project is *considered to be in line with the overall good of society*. This is a very noble evaluation to bestow, and leaves little room for political partisanship. There is a great symbolic difference between national government or parliament deciding simply that a particular energy installation should be constructed, and, judging that a project proposal is in line with the overall good of society. The unified communication by the economic players linking the new unit with the maintenance of society welfare is an echo of this heartening concept. Trust in the Finnish nuclear industry based on an excellent operating record, according to TVO, allowed safety issues to fade into the background of this decision engaging the good of society.

In the final analysis, national communications about a proposed new reactor in Finland appear to have avoided any suggestion that a favourable decision would be taken on weak grounds, the result only of *e.g.* partisan dealings, a blind favour for the high-tech nuclear solution, or an incomplete energy vision. Unity among players, communicating their concern for maintaining the good of Finnish society with a sensible energy vision, provided a strong basis on which a new reactor could be accepted by a slight but sufficient majority of political representatives and, in turn, their decision accepted by citizens in general. TVO's comment that "the communication process must be transparent and open to all actors" should also be recognised.

Belgium: "AMPERE"

Case report prepared by a consultant for Belgonucléaire

Based on a ministerial initiative a commission called AMPERE (Commission to **A**nalyse the **P**roduction **M**odes of **E**lectricity and the **R**edeployment of **E**nergies) was set up including 16 Belgian experts, mostly university professors, in April 1999, to develop recommendations for future electricity generation, to evaluate the potential technologies, and to inform the public on the key findings.

In July 1999, the new Belgian government declared that it will phase-out nuclear energy after nuclear plants reach their designed lifetime. The new Secretary of State in charge required that particular attention should be paid to the nuclear phase-out.

The Commission presented its report in December 2000 with the suggestion to keep the nuclear option open and to develop shore-line wind farms in parallel. The Secretary of State requested an international review of the report, which concluded that the effect of renewable energy source uses was somewhat overestimated.

The international review was widely used in the debate of the AMPERE conclusions, however as the report was requested by the government, the decision-making process didn't foresee the communication of its results on a public basis. The review was discussed only at the highest level in parliament.

The international experts confirmed that the Commission played its scientific role and gave an objective analysis; however the conclusions of the Commission practically were not taken into account by political decision makers. The second case study provided by Belgium demonstrates that these decision makers decided to phase out nuclear power.

Discussion

Absence of political support to the nuclear industry allowed political decisions to be made with reliance neither on scientific input nor on broad public involvement. According to the projections provided by the validated scientific report, such purely political considerations could result in a serious insecurity of energy supply in the long term.

Belgium: "Phase-out" debate

Case report prepared by Electrabel

The Belgian Chamber of Representatives and Senate passed a bill aimed at gradually phasing out the use of nuclear power in the country after the designed lifetime of the units from 2015 to 2025. The law prohibits the building of new reactors; however a situation of "force majeure" would be grounds for extending the lifetime of the existing nuclear power plants.

Two groups emerged through the communication process: defenders and opponents of the phase-out. The key person in communication in the pro phase-out group was the Secretary of State for Energy and Sustainable Development, a former leader of Greenpeace Belgium. There was clear evidence that the responsibility and the mission of the Secretary of State were defeated by a priori positions.

The communication goal of defenders of the phase-out was to fulfil the main intention of the green parties in the government and to take advantage of their position to discredit nuclear power furthermore.

The decision-making process at the highest parliamentary level - the Senate - took almost 4 years. Input was limited to the information gained during the activity of the Ampere Commission, and no public involvement of any kind was initiated by the government.

Pro-phase out players relied on basic arguments such as: nuclear power is an "old fashioned" technology that now may be replaced by plenty of alternative means for power generation; nuclear waste management is not solved; consequences of a nuclear accidents are enormous and there is always a danger of weapon proliferation.

Main messages of the opponents to phase-out aimed at convincing the public: that there are no technical, ecological or economic reasons to justify the decision to shut down nuclear power plants from 2015; nuclear energy helps to keep energy prices down, improving in this way the competitiveness of Belgian companies; nuclear energy is a necessity to meet Kyoto requirements; there are no credible alternatives to nuclear energy on a large scale which would be as secure and as respectful to the environment. The communication programme targeted all the interested stakeholders: defenders of the phase-out, the public through mass media and different levels of decision-makers.

The Green Party and the mass media played a significant role in communication; others played a limited role. The item being far from popular, no communication action had a real impact on the public; furthermore the Belgian political world (except for the green parties) was not prepared to play an active role in the debate.

The pro-nuclear communication programme did not reach its objectives, failing to raise public interest or encourage any political players to explore the issues on an objective level.

Discussion

In contrast to the Finnish case report the Belgian case reflects a complete deficiency of public involvement. It is a challenge to generate public interest and to get all the stakeholders into a decision-making process in an anti-nuclear political environment. The Finnish case report shows evidence of harmonisation of different stakeholders' interests in favour of extending nuclear power generation, resulting in political acceptance; the Belgian report reflects only the harmony found between political party interests.

Most of the case reports indicated the necessity of a well developed communication strategy and an almost permanent communication process. In the case of Belgium an open discussion with the public would have been the only way to enforce the pro-nuclear position in decision making. In the absence of such a long-term dialogue there was much more space for politicians to monopolise the final decision.

To complete a successful communication programme the pro-active communication should be intensified to enforce continuous dialogue with the target groups with parallel involvement of all the participants in the nuclear field. There is a strong need for a positive political climate to succeed with any kind of nuclear power programmes.

One of the conclusions of the case report is that there is a need to inform the public in an objective and less defensive way; this may rely on restyling the nuclear "look" as well as coordinating nuclear communication via a society of the nuclear sector.

Belgium: "Decision making process for national sustainable development (SD) policy"

Case report prepared by SCK-CEN

Based on a legal requirement the Belgian government through its Interdepartmental Commission on Sustainable Development (SD) compiled a Federal Plan on SD dealing with a long term vision on energy policy, water, education, know-how transfer, gender issues, transport, etc. The first draft based on the government compilation was presented to the general public for comments. Such a large scale and broad initiative was rather unique for Belgium, especially as a country not having as much experience with public consultation as a decision making tool.

A total of 1 887 valid reactions (1 540 from individuals, 347 from "interest groups") were registered along with 15 750 remarks on specific parts of the text of the Plan. The majority of the people learned about the initiative through mass media.

Discussion

The OECD NEA (2002) desk study on *Society and Nuclear Energy: Towards a Better Understanding* differentiates 7 level of public participation in decision making. The Belgian case report appears to be close to the top level, reflecting "public participation in assessing risks and recommending solutions" (see Chapter 5 of the present document). The broad range of participants involved, the possession of communication channels to reach the public and to get comments, the openness of the process are all prerequisites of a high level of democratic decision making. The number of comments and remarks reflected a high level of interest from the public also in respect of decisions planned in areas like energy policy. The general goal was to collect but not to respond to the comments and remarks; still the 2004 revision of the Plan could have an effect in the direction of further improvement of the country's vision of the future.

United States: "Decision-making process for nuclear energy national policy and interim storage of waste"

Case report prepared by the Nuclear Management Company

Two projects were reported which are related to communication. The first campaign was to inform and influence stakeholders on the permanent repository in Yucca Mountain; the second project related to the construction and activation of the Independent Spent Fuel Installation Project at the Duane Arnold Energy Center, Iowa's only nuclear power plant.

The approach was similar for both cases: first brief elected officials and other major stakeholders then inform media on the issue through different forms of communication. Trade unions were also active participants in the process of communication.

The report gives an overview on how to manage communication with the highest levels of decision makers, and how to obtain their involvement.

Discussion

In most cases, there is a lack of understanding about the nuclear industry, but this can be turned around by an aggressive campaign towards opinion leaders and the media. There is a need for revision of the messages and the forms of their communication. When introduced directly to the activities inside an installation, or when presented with facts about how the nuclear installation benefits the state economy, such stakeholders may form and communicate in turn a very positive view.

Interim storage of spent fuel

Hungary: "Interim storage of spent fuel"

Case report prepared by the Paks *Nuclear Power Plant operator*

As spent fuel shipment to the original manufacturer in the former Soviet Union was interrupted in 1992 the Paks nuclear power plant operator had to find a solution for onsite spent fuel management. To get the public support for interim dry spent fuel storage and to convince people of the necessity of the construction of the storage facility, the plant initiated a communication program. For that purpose a civil organisation called Social Control and Information Association (TEIT, in Hungarian) was established involving 13 settlements within a 12 km radius around the plant to co-operate in distribution of all relevant information related to the safety, security, and environmental effect of the facility. There was a great variety in ways and forms of communication to attract the interests of residents and influence the process of forming their position.

Finally the facility obtained 57% acceptance in the region, opening the way to construction.

Discussion

The benefit of this communication programme is that the civil organisation still exists, and co-operates in the dialog with the public, resulting in much higher public acceptance for the Paks nuclear power plant in the region.

Spain: "Trillo – Interim storage"

Case report prepared by Foro de la Industria Nuclear Española

Since there is no centralised facility in Spain for the storage of spent fuel, the Trillo nuclear power plant had to increase its storage capacity before the saturation of the existing spent fuel pool in 2002.

ENRESA started the process of acquisition of the regulatory permits in August 1995, but the construction work for a dry fuel interim storage facility could not be started before 2000 because of the complexity of the decision-making process, and the involvement of stakeholders with greatly differing positions on the subject.

The communication process helped to inform the public of the necessity of the facility installation through different media channels.

Discussion

The lesson to be learnt here is: in the case of installation of a nuclear facility, political support is needed to bring the process to term; therefore the communication process should alert, inform and involve high level decision makers.

Restart of nuclear power facilities after extended shut down

Canada: "Pickering-A return to service"

Case report prepared by Ontario Power Generation

After the significant nuclear improvement programme undertaken at the Pickering Nuclear Power Plant in 1997, in preparation for return to service a communication programme was initiated to explore the environmental assessment findings and recommendations associated with the restart of the unit and the renewal of the reactor operating licence.

The objectives were to dispel public myths, misconceptions and fear about the safe operation of Pickering "A" through education, community relations, open and proactive communications and good corporate citizenship. Management, structural and financial problems were solved by the new management, and the employees of the plant participated actively in communication initiatives towards the local residents. Finally the acceptance rate was increased to 72% by 2001 as a result of the well defined and well organised communication programme.

Discussion

One of the major lessons here is that public trust can only be built through proactive, consistent communications and opportunities for dialogue, and that the communication should have a balanced and persistent character.

Japan

Case report prepared by the Socio-economic Research Centre, Central Research Institute of Electric Power Industry

The need for interaction and dialogue among nuclear and community partners evolved in Japan in the 1990s in the context of serious safety lapses. After a sodium leakage accident in 1995, governors of the three nuclear facility host prefectures made a direct proposal to the Prime Minister seeking public discussion of nuclear matters. The Atomic Energy Commission took this opportunity to make a policy statement "Toward building a national consensus". Two suggested actions have been realised to date: increased disclosure of information, and "Atomic Roundtable Sessions", moderated by non-experts from outside the nuclear industry. Critical opinions about nuclear power were voiced.

While national policy making processes benefited in this way from some public input, local support and confidence in nuclear power operations (as measured by referendum and opinion polls) did not improve.

The report describes the communication strategy and process, as well as the participants involved before and after the JCO criticality event at Tokai village. One local requirement placed on Japan Nuclear Cycle Development Institute (JNC) as a condition before restart of facilities was to address risk

communication issues. The goals of the process were to enhance interest in local communication about technological risks, to help the village and JNC to develop risk communication capability and to communicate and consult with local residents on nuclear risks and fears.

Discussion

No lessons learnt are highlighted by the case study authors, who prefer to point to the ongoing discovery process. However the report clearly indicates that the communication programme informed and influenced local decision making, as well as the relationship between the local municipalities and the government.

Safety and security

Spain: "Acerinox case"

Case report submitted by Foro de la Industria Nuclear Española

A scrap containing a Cs-137 (Caesium 137) radioactive source was smelted in the Acerinox steelworks in Los Barrios, Spain in May 30th 1998. The resulting contamination was notified by the steelworks and inspected by the Nuclear Safety Council (CSN). Spain's atmospheric radiological surveillance network stations did not register any abnormal releases (their threshold detection level is set close to the level judged of concern for public health protection). However, the CSN received news that Cs-137 had been detected in France, as well as in Italy and Switzerland. The mass media treated this event as a sign that CSN was deficient, and distributed false information about the time and the manner of detection of the radioactivity. This became the most important piece of environmental news in Spain for June and July 1998. In response, the communication of the national regulatory body targeted the public, to supply valid information on the event and attempt to recover image.

This case has lead to a proposal for new EU legislation in the area of control and management of high-activity sealed sources, which should help to harmonise the different national practices in EU Member States relating to preventing and managing such situations. The Commission's proposal is in document COM(2002)0130 – "Proposal for a Council Directive on the control of high activity sealed radioactive sources".

Discussion

The event invites nuclear experts to reflect on the role of communication in responding to an incident in the nuclear sector. The risk communicator has to make urgent decisions on whether speediness or information certainty is the most important when communicating an event through the media to the public. The risk communicator also has to know to what extent transparency helps to improve credibility. The more specialised the issue that has to be explained, the more difficult it will be to transfer the information to the target group.

Spain: "Water ingress into Juzbado Fuel Factory"

Case report prepared by Foro de la Industria Nuclear Española

On 21 September 1998, the Juzbado fuel element manufacturing factory was flooded by a cloudburst. The plant manager in the role of emergency manager activated the emergency organisation and undertook the management and coordination of activities. He activated communication as well as alerted the national nuclear safety regulator and the civil defence organization in charge. This way public communication was quick and transmitted not only correct information, but also, the message that the incident was under control.

Discussion

The main message of the event is that the existence of a well defined communication strategy and highly tuned official communication channels helps to achieve objective communication towards the public and avoid an outburst of media interest.

Spain: "Invasion of Zorita NPP by environmentalists"

Case report prepared by Foro de la Industria Nuclear Española

In October 2002, the Ministry of Industry and Energy granted the second renewal of the Zorita nuclear power plant operating permit through 2006. On 25 April 2003, a group of Greenpeace activists trespassed the security area of the plant. Six persons climbed up the containment building, and unfurled a banner calling for the immediate closure of the plant and an end to nuclear energy in Spain. The plant emergency support centre decided to shut down the plant to assure plant safety. The Nuclear Safety Council proposed the maximum sanction for non compliance with protective measures.

The act of intrusion produced widespread repercussion in all the media.

Discussion

The event highlights the need for year-round communication readiness by plant managers. The media picks up unusual or dramatic information very quickly, so the response should be as quick, but technically proper. Nuclear power plant operators should be ready for such extraordinary events as well as more predictable events.

3. GENERIC AND COUNTRY-SPECIFIC ASPECTS OF COMMUNICATION AND CONSULTATION ON NUCLEAR ENERGY ISSUES

The case reports, like the contexts and situations they describe, are heterogeneous. It is not easy to provide a simple analysis or a table of similarities or differences among the communication experiences. However, outstanding messages can be highlighted.

Generic or transversal observations and outstanding messages

Nuclear energy is actively considered as an integral part of the energy mix in many countries

The case study reports clearly show that reducing contributions to the greenhouse effect is a major societal target. Kyoto commitments make energy mix and the avoidance of greenhouse gas emissions a high-profile policy concern in many countries today. Nuclear energy is actively considered in Kyoto deliberations in a majority of OECD member countries, and is purposefully left aside by very few.

Judgements differ more strongly on whether nuclear energy should be considered as environmentally friendly or just part of an ecologically less-stressful solution.

Arguments in favour of nuclear energy describe it as a tool to secure stable and predictable electricity price. Nuclear energy use also is seen as a means of reducing dependence on electricity imports (and in some cases dependence on a single supplier). Nuclear energy increases the security of energy supply.

Need for nuclear industry to influence the political sphere and civil society

A variety of situations and decision frameworks are described in the case reports. However, in every case, nuclear industry players are confronted by the need to influence political decision makers and civil society, including the population potentially affected by a nuclear installation.

National deliberations on energy policy engage technical experts and economic partners, but the final decision is political. Green parties are part of that picture. There is a need to anticipate the confrontation with groups aiming at phasing out nuclear power.

Countries which reported case studies in general have phased licensing and permit procedures, involving tiered levels of decision. Environmental assessment and other conventional planning and land use laws are in place. Each has a number of requirements for involving affected publics. Some methods (brochures, public hearings) typically are used to meet these requirements but the case reports suggest that a great variety of initiatives can be employed.

The case reports on national policy highlight direct influence on key political decision makers through active lobbying. This influence is achieved most successfully when a strong network of societal partners supports a given position, or, when privileged relations are developed between high political authority and a certain interest. Civil society, in contrast, appears to be solicited indirectly, through the media or by using information tools like brochures or websites.

When a decision has to be justified locally, however, more active involvement with and outreach to local communities must be undertaken. In some cases explicit local authorisation is needed before decisions can go to a higher level. In some countries (Finland, Hungary, Japan, Spain…) this is (or amounts to) a formal veto power. The proponent therefore must satisfy municipal decision makers and moreover, build awareness and support in the community to provide a solid basis for political acceptance. Even when no local authorisation is required, it is considered to be good practice to perform outreach and “open up” the facility to the media and curious inquirers.

The *restart* case reports highlight the need to seek actively and develop the good will of local opinion leaders, neighbours of the installations and their political representatives. This has impacts on the entire organisation and draws in employees to cooperate and act as ambassadors. Other case reports, too, highlight the involvement of labour unions as a tool to extend communication and to reach the public through credible persons.

The *safety and security* cases are described as crisis situations. They indicate the need for nuclear players to be prepared to gather very detailed information fast, to disseminate it actively and generally to create the impression of being strongly in control of the situation. When there is social amplification of risk, the authoritative or organisational response must be similarly "amplified".

All the case reports suggest that the media must be considered to be a major player and shaper of societal perceptions. Nuclear-related events, decisions, and incidents of whatever nature can generate great volumes of media attention (much of it negative), sometimes concentrated in a short period of time. Some cases explore the value of reaching out to the media before they are influenced by anti-nuclear players. The Finnish case showed that when national debate is carried out over a period of months and all arguments for and against nuclear power are aired the media can pay sustained attention and give balanced reports. The outcomes in Finland were a gradual reduction of negative media reports in regard to the new reactor unit decision, and one year later the absence of nuclear issues from electoral debate.

Opponents of nuclear power are aware of the value of "occupying the field" whether by actively disseminating information and viewpoints, or by creating events to focus media attention. Other players in society, including nuclear proponents, may be unprepared for the impact of such tactics and in any case cannot match them point for point. The cases indicate that more successful responses are produced when a variety of societal actors form a unified network to communicate and defend a point of view.

There is a definite movement toward "opening up" the nuclear energy world

The case reports show that nuclear plants are not "off limits", but rather, they are part of a community and increasingly opened up to that community. Decision-making about nuclear energy has come out from behind closed doors. In such a context, information and communication are time consuming: even for specific decisions, they are year-round, multi-year efforts. They require dedicated human resources and infrastructure, as well as a myriad of channels.

Different degrees of openness are seen in the case reports:

- Nuclear installations are opened up through visitors' centres and active provision of information to surrounding communities through *e.g.* periodicals.
- Visits and guided tours are much used in the objective of gaining understanding and support for site operations.
- A greater degree of openness is achieved through active community outreach. In the reports by Hungary, Japan and Canada, outreach is more than an information effort, but also stimulates local partners to engage their knowledge and reflection about nuclear energy.
- Nuclear site employees and unions are mobilised to share their perceptions of their working world with their neighbours and fellow citizens, as well as with decision makers through lobbying.
- Different generations or population groups are reached by mobilising pensioners and specialty organisations (*e.g.* the "Youth for Nuclear Energy" group in Finland, or "Women in Nuclear" in Hungary).

- Environmental Impact Assessment consultations imply reaching each and every household that may be affected by a decision. In each letterbox, written information may be provided not only on the proposed new installation but also on the entire decision-making process; including how and where people can express their opinion. When the assessment procedure is completed, the same public may be informed in detail of the outcomes.
- Some nuclear installations have a permanent two-way communication organ in the form of a local monitoring commission.
- A greater degree of transparency is found when a nuclear player accepts its role as a major member of the community and takes responsibility for active sharing of site information. In Canada, an example is seen in the Pickering A policy to provide safety incident reports in real time to town officials.

According to their degree of openness, these actions have mounting impacts on site organisational and safety culture. Site managers (as in Canada) and regulatory authorities (as in Japan) are fully aware of this and are taking it into account.

In general, all these actions are described as "business decisions": they aim to allow the nuclear facility to operate, the utility to continue providing a competitive product. As well, various "neighbourly" attitudes lie behind the public invitation to know more about nuclear operations: operators may ask stakeholders simply to come and learn about a valuable service provider, or more significantly to grant trust, support, and acceptance.

Not only are the nuclear operators becoming more open. In parallel, nuclear energy and its benefits or risks are widely discussed on the policy level and in the media, with active provision of information and positioning by experts on different sides of the question.

Moreover, despite such active efforts and the presence of nuclear debate in the public forum, the general public often is not well-informed or knowledgeable about nuclear matters.

Outstanding country or case-specific aspects

A number of aspects appear to differentiate countries, or cases, in a potentially significant way.

Spatial characteristics and issues of scale

- Large territory, sparsely populated vs. smaller, more densely populated countries.
- Number of persons considered to be directly affected by an installation (rural vs. urban setting).
- National reliance on nuclear energy:
  - ⇒ Percentage of nuclear electricity in energy supply.
  - ⇒ Number of suppliers or units.

To reach a single goal, Finland initiated two new reactor unit siting projects in existing host communities (Olkiluoto and Loviisa). If one of the potential sites failed because of local disapproval, the second could still be considered. If both were approved, that created a potential to extend the nuclear programme further.

Legislative or decision-making frameworks

- Federal character vs. centralised decision making structures.
- Formal or informal channels for expression by qualified experts.
- Public involvement process, areas for active participation.

Finland's "decision in principle" enables an extensive parliamentary hearing process with the opportunity for many stakeholders to express their position. It also places the decision on the level of "the good of society", above partisan considerations.

Policy profile

- Integrated energy policy, short-, mid- and long-term plans for energy system development.
- Promotion of green electricity.
- Taxation system, supportive taxation policy.
- Ability to demonstrate capabilities in radioactive waste management.

Roles and responsibilities

- Who requires acceptance/authorisation for nuclear projects? Who is responsible for gaining it? Which other players intervene in the process?
- Degrees of inter-reliance between different stakeholders.
- Relationships of cooperation or antagonism.
- Hierarchical relationships among stakeholders (veto power, decision-making circuit, etc.).
- Which governmental organisation manages the nuclear sector.
- Market conditions of nuclear stakeholders (golden share).
- Supportive involvement of pro-nuclear organisations, networking them.
- Active and supportive involvement of governments.
- New role of trade unions as champions for excellence in extension of communication channel capacity.
- Extent of discussion: how many players, for how long, in what context?
- Presence, status and activity of local monitoring groups.

According to the different roles and responsibilities found in the case reports, nuclear players are placed in varied positions and obliged to adopt diverse initiatives to defend their stake. Information and communication seem to be more commonly used than are consultations or stronger forms of dialogue or co-decision.

The broadest variation appears to be between Paks nuclear power plants' role in Hungary (a vital national utility has sole and complete responsibility to obtain local authorisation for an essential installation) and the situation seen in Finland (a powerful, unified network of industries sharing the same economic interest and societal values took a major role in persuading national decision makers).

Development of benefit/risk and safety culture

- Degree of sophistication and knowledge in the relevant decision sphere or in the affected or general public.
- Ambition by nuclear players, experts or decision makers to foster knowledge or increase awareness of benefit/risk and safety issues in society.
- Labelling individual energy bills to make the consumer aware of his personal energy burden.

4. PERCEPTION OF THE VARIOUS BENEFITS AND RISKS OF NUCLEAR ENERGY AMONG DECISION MAKERS, EXPERTS AND SOCIETY: SPECIFIC CONCERNS AND GAPS

The case reports provide brief information on a wide variety of benefits and risks that emerge in the discussion of nuclear energy issues.

After a summary of perceived benefits and risks, the case studies are reviewed for the specific concerns expressed by different categories of players, highlighting the gaps between them.

Perceived benefits related to nuclear energy or to a specific installation

- Impact on the environment
  - ⇒ Kyoto value (avoidance of CO_2 emission).
  - ⇒ Environmentally acceptable energy production.
- General economic value
  - ⇒ Stability of price and supply.
  - ⇒ National energy self-sufficiency and security of energy supply.
  - ⇒ Judged most economical technique, counting decommissioning and waste management.
  - ⇒ Base load option to meet demand.
- Impact on quality of life through direct and indirect economic benefits for industry and for host locality
  - ⇒ Favours production and profit by industry.
  - ⇒ Favours employment in all sectors.
  - ⇒ Improves local tax base and therefore service provision.
  - ⇒ Provides for maintenance of welfare state.

Perceived risks of nuclear energy or a specific installation

- Safety and security
  - ⇒ Low probability/high consequence accident risk.
  - ⇒ Reactor safety organisational aspects (safety culture).
  - ⇒ Radiological hazards for workers and the public.
  - ⇒ Vulnerability to terrorist attack.
  - ⇒ Nuclear weapons and proliferation risk.
- Decision consequences
  - ⇒ Ill effect on development of alternatives; *e.g.* renewable energy sources.
  - ⇒ Provisional fix (interim storage) does not solve problem of final disposal.
  - ⇒ Interim storage may put a vital constraint on nuclear power plant operation and on nuclear industry (note that several case studies explicitly recognise this risk or handicap, in contradiction with usual discourse by waste managers who prefer to communicate that “a solution is possible”).

- Local impacts
  - ⇒ Ecological impact of cooling water outlet.
  - ⇒ Increased traffic.
  - ⇒ Stigma effects.
  - ⇒ Trojan horse effect (interim storage becoming permanent repository, or, becoming national or international storage/disposal site).
  - ⇒ Inequity: more distant communities support risk without receiving direct benefits.
- Risks related to non-realisation of nuclear projects
  - ⇒ Loss of economic electricity supply.
  - ⇒ Massive direct and indirect job losses.
- Negative public opinion is itself described as a risk to nuclear operations

Specific points of concern and gaps

The major points of concern expressed by different players, and the outstanding gaps between categories, are identified case by case.

Decision making processes (DMP) on national nuclear energy policy

Finland

Decision makers are concerned about climate policy and overall good of society.

Proponents are concerned about providing sufficient, stable, predictable and competitive supply.

Civil society is concerned about radiological hazard but shows general high trust and confidence in safety performance.

However, the case study identifies some gaps between proponents and civil society. Sufficient supply to meet electricity demand turned out not to be a major concern for society. Opposition to nuclear energy was not attributed to safety concerns, but "[was] due to anti-establishment views impossible to address by any technical communication programme". A major shift into a modern low-energy society was demanded by some stakeholders and a new nuclear power plant unit was regarded as a step backwards.

Belgium

Decision makers are concerned about accomplishing the phase-out of nuclear power during Green tenure in government and about the conflict of governing parties in case of disagreement on the nuclear issue.

Proponents are concerned about potential loss of national economic competitiveness if nuclear energy phased out, loss of objectivity in the decision-making process, and societal need for information on scientific, technical, economic, social aspects of nuclear energy; failure of public authorities to properly inform and involve public.

Civil society was concerned about very low public interest shown for phase-out debate.

Gap between proponents and civil society:

- The subject is emotional; deep conviction is not enough to transmit information.

- Broad public seen to believe that nuclear energy can be replaced entirely by renewable energy sources.
- Nuclear proponents played limited role, lacked visibility, had no common strategy.
- "Politics clearly follow other rules of the game."

United States

Decision makers are concerned about economic value of nuclear industry to state.

Proponents are concerned about outstripping misinformation of public by anti-nuclear organisations, proper management of radioactive waste and economic viability of nuclear industry.

Gap between proponents and civil society.

- Limited knowledge of public on nuclear waste issues.
- Anti nuclear organisations sometimes able to reach civil society before proponents.

Interim storage of spent fuel and radioactive waste

Hungary

Decision makers are concerned about terms, cost factors, responsibility for nuclear plant and radioactive waste management, obtaining compensation for risk, achieving local monitoring of nuclear plant affairs, and improving local knowledge about nuclear issues.

Proponents are concerned that exhausting the capacity for spent fuel storage at the plant site may hamper reactor operation, that the language used in nuclear engineering resembles a jargon, and that anti-nuclear organisations get involved in decision-making.

Civil society is concerned about additional risks to local residents introduced by the new dry vault store.

Gap between proponents and civil society:

- Low level of public knowledge on nuclear issues.
- Logical argument is ineffective in fighting against emotions.

Spain

Proponents are concerned about a clear division of roles and responsibilities of different actors in the decision making process, and the efficiency of decision making process.

Civil society is concerned about becoming a centralised storage installation for radioactive waste in Spain.

Gap between proponents and civil society relates to the availability of the necessary amount of information on the new facility, its environmental effects and its future role.

Restart of nuclear facilities after extended shutdown

Canada

Decision makers are concerned about safety and security of the plant, trustworthiness of plant managers, and opacity of plant information.

Proponents are concerned about continuation of the negative image of the plant in the surrounding region, loss of jobs in case of failure to secure a restart decision.

Civil society is concerned about the unavailability of responsible plant managers, and the safety and security of plants.

Gap between proponents and civil society:

- Residents' mistrust and negative opinion on the plant due to former opacity and weak, reactive communication strategy.
- Residents' fear for health and safety due to negative or false information from anti-nuclear groups.

Japan

Decision makers are concerned about the effectiveness of risk communication, and the "live and let live" relationship between town and nuclear industry with a healthy atmosphere.

Proponents are concerned about the return of serious events undermining the credibility of any nuclear initiative, and the need to co-habit in a healthy atmosphere with local residents and decision makers.

Civil society is concerned about the safety of Tokai nuclear installations, and its own psychological acceptance of dangerous facilities that also represent an economic livelihood.

The main gap between proponents and civil society is the existence of "taboos" about nuclear issues in the public.

Safety and security

Spain

Proponents are concerned about the growing misinterpretations concerning the event (Acerinox), preserving their image in the face of unfair tactics, and restoring exact facts in case of misinformation.

Civil society is concerned a lack of information regarding a radioactive incident (Acerinox), and the security of nuclear facilities (Zorita).

Gap between proponents and civil society:

- Lack of information on the origin of the radioactive source (Acerinox).
- "The first messages issued are the ones that most permeate public opinion" (Zorita).
- No one from the nuclear power plant assumed responsibility for communication during the first stage of the event. Media communication was established at utility level. (Zorita).

5. PARTICIPATORY FRAMEWORKS OF COMMUNICATION

A multicoloured picture of *information, communication, dialogue and participation* emerges from the Nuclear Energy and Society case studies. As will become clear from the analysis offered below, these concepts mean very different things in different contexts. Some communication practices are framed by legal requirements. In other cases, organisations mount information campaigns outside of any formal framework. Players on opposite sides of the nuclear question make use of sometimes similar strategies and approaches.

The Society and Nuclear Energy desk study (OECD NEA, 2002; p. 81) cited the "public participation ladder" in which the bottom rung is the "public right to know"[2]. Increasing (but still limited) degrees include public information, and the public right to object. Somewhat higher degrees are "public participation in defining interests, actors and determining agenda", followed by "public participation in assessing risks and recommending solutions". The top rung is "public participation in final decision".

Today there are greater public demands for input into decisions, especially about technologies that can affect health and the environment. A growing consensus among analysts suggests that policy decisions can be improved by public input. However, as the desk study notes, the legislation in different countries will determine "how high" the public may climb the ladder of participation.

Overall, it appears that most of the case studies reported in the present document do not describe arrangements offering a high degree of participation. Most cases concern *information and outreach* initiatives. These involve stakeholders and members of the public in defining interests, but even more, they target influencing these players' perception of nuclear projects. These initiatives support decision-making processes, but they are not examples of participatory decision making. It is not clear in every case how a higher degree of participation might have affected outcomes.

While there are signs of excellence in some of the practices reported, it is difficult to derive uniform rules by which nuclear organisations may achieve "successful" communication, "meaningful" dialogue, or "effective" participation. Still, the case reports give insight on different approaches and contexts, and offer food for thought.

National decision making process for nuclear energy policy

The five cases dealing with national decision making reveal different requirements, types and degrees of communication and public involvement.

The Belgian report on AMPERE deals with an interesting mobilisation of expertise to formulate recommendations for national energy policy. A scientific expert group of 16 persons, mostly university professors, was formed with the primary mandate to provide "objective, rational and scientifically based data and analysis to the federal government to evaluate the potential of available or future technologies for electricity production". This was in the context of the new 1999 government's wish to phase out nuclear power within 40 years; the feasibility of this plan was to be evaluated. The second mandate was to inform the Belgians of the study results and particularly to give facts and data to responsible persons in the industry and the economy to develop their own views which they could then go on to make known.

2 Most, but *not all*, countries contributing a case study to the present report have national "freedom of information" legislation.

The AMPERE Commission held a public hearing to collect information about energy choices. Some 200 participants, mainly industry and university representatives, attended. The Commission also received position papers or statements from various industry or economic representatives. This part of the Commission's activity therefore mainly concerns communication among experts and proponents of various energy options. The final conclusion of the expert Commission was very favourable to nuclear energy as a significant part of an energy mix targeting CO_2 reduction, and economical and stable supply.

The next phase of the Commission's work was to inform various decision makers and stakeholders. The expert opinion on energy choices was presented in discussion sessions to parliamentary bodies and almost all the political groups represented in parliament. The full report was placed on the websites of the universities and administrations involved. The AMPERE report therefore was publicly available to all interested parties, and has been referenced in a large number of scientific papers and articles. It is interesting to note that if this release of the information is considered as a "broadcast", from this point the fidelity of broadcast becomes problematic. "Twisted" information concerning the report and its conclusions was disseminated over internet by "mostly Green" groups. Greenpeace published an antagonistic report, prepared by a German university on the basis of only an unofficial and apparently incomplete English translation of the Commission's recommendations. A footnote of the German report states that the detailed reasoning of the Commission was not analysed. The case study authors ask whether this missed opportunity represents a "communication gap or political shrewdness".

The AMPERE Commission took seriously the mandate to inform the Belgians about their conclusions. Alongside university teaching, presentations were made to groups of opinion leaders and notables, and also to teachers' groups. Discussions were held with technology students aged 16-18. The case study notes that the experts have often been asked to give lectures and contribute to public debates. This phase of activity therefore reflects an active exchange of information in an educational context; as such it has a participatory component. This educational effort has become a personal commitment by the experts independent of any state or professional funding. Through analysing energy choices, they became convinced that changing people's attitudes about daily energy use and their opinion about energy choices is a long term action. The experts considered too that it is an essential part of their own citizen role to foster such reflection. The AMPERE case therefore shows an interesting evolution from a fact-finding mission to a citizen education mission. However, because the expert conclusions did not agree with the dominant philosophy of the governing party, these conclusions were not taken into account on their own merits in the subsequent parliamentary decision on phase out, and no support was given to their wider dissemination in Belgian society as part of a national policy decision process.

The Finnish case regarding the construction of a new reactor unit describes a blend of proponent practices: local public information and consultation efforts by the managing utility in response to national requirements (Environmental Impact Assessment and decision in principle legislation), and, a high-powered information campaign led across the nation by representatives of the economic sector.

The local public information/consultation practice appears to be of a classical nature: brochures are delivered to all households within a defined radius, public hearings are held, results are fed back to both the authorities and the public. These steps, complemented by web-based materials and a local information centre, were performed mainly by the proponent nuclear utility.

Noteworthy is the fact that the first round of brochures and hearings informed households about the EIA procedure itself and told these local residents how they could participate. A questionnaire, too, was prepared by the power companies, to collect views on the information needs, perceptions and wishes regarding the new power plant project. We do not learn how many people used and submitted the questionnaire, nor its results, aside from a reference to concerns about increased traffic. The objective of both the questionnaire and the first set of hearings was to enable consideration of the "wishes and worries

expressed by the local people and their opinions" when the actual Environmental Impact Assessment reports were written. Once accepted by authority, these reports were summarised for household distribution and a second set of public meetings informed about their content.

When an application was then made for a decision in principle, a general description of the new nuclear unit was developed by TVO, approved by the Ministry of Trade and Industry (MTI), and again distributed to all households neighbouring the two candidate sites. Public hearings too were organised by the MTI. The local municipality council was a privileged target of information, for this council must accept the idea of building a new nuclear facility before national government can make a decision in principle.

All in all these practices, while performed conscientiously, were carried out principally as the response to a requirement. In contrast, another proponent practice – active lobbying and argumentation carried out in localities across the nation by the Confederation of Industry and other business organisations - was of a different nature. It was an all-out effort to put before the public the reasons why industry (and labour) was strongly in favour of a new reactor. This self-funded effort was made in response to no legal requirement, but displayed the conviction of the economic players and also their solidarity with the nuclear energy provider.

Requirement and lobbying came together in the exceptionally extensive process of hearings organised by parliamentary subcommittees. A great number of players, experts, and NGOs took advantage of the "direct access" offered to national decision makers in order to shape deliberations on the decision in principle.

The US case "Yucca Communications" is an example of a lobbying and marketing approach applied by a nuclear organisation in the context of a national decision process, but in response to no requirement. The management of the Iowa site operator perceived the urgent need to help "influence a positive (national congressional) vote" regarding the Yucca Mountain federal repository project. "A negative vote had the potential to harm the nuclear industry and ultimately our nuclear facility." Management and staff actively engaged the State of Iowa congressional delegation with personal briefings and site tours. They mounted media outreach as well, interacting with journalists and editors, and submitting both letters to the editor and op-ed opinion essays to the local or regional newspapers.

This case reports a small but significant part of a national decision process: influencing voting representatives. "Participation" here is indirect, and organised by a particular stakeholder with a strong interest.

This information strategy focusing on key political actors had a favourable outcome: the influence sought was achieved. Perhaps this may be attributed to two complementary factors. The stakeholder defended, competently and persuasively, the value of nuclear resources and their safety. As well, congressional delegations perhaps are accustomed to formulating decisions on the basis of what they learn from ardently convinced State economic players, rather than arranging for dialogue and debate with their constituents.

A parallel of sorts may be drawn with the Belgian nuclear phase-out decision case. Although the political decision context was a very different one, here too political decision takes precedence over organised public involvement and debate. Political players (Green members of federal government and their environmentalist allies) mounted an all-out persuasive information campaign both among the media and among other members of government and the parliament in order to push through a positive vote to phase out nuclear energy production in the short term. They did not invite broad public debate nor facilitate the faithful circulation of information developed by the AMPERE Commission. Despite the positive support for nuclear energy that earlier had been offered by AMPERE, the stakeholders opposed to a phase-

out (*i.e.* the nuclear industry) found themselves on the defensive, with no organised alliance among their industrial partners (in contrast to the Finnish case). Nuclear proponents were able neither to create comparable media impact nor to secure a strong core of support amongst elected representatives.

This case shows an interesting reversal of traditional positions. Here, pro-nuclear players – a societal category typically accused in the past of ignoring public opinion – condemn government failure to foster public debate and involvement. The Green minister exploits an aloof and autocratic position that classically in past situations has been identified with technocrats. More typically, it is the underdog in this conflict who calls for direct public input in the hope that this might sway the decision in his favour. This case report spotlights the highly political nature of the situation, and underlines the power plays that lie at the heart of the decision process.

The Belgian report on the sustainable development debate forms an interesting contrast. Rather than a pitched battle in which each side tries to sway a decisive point, this is a case of phased and deliberative national decision making using direct public consultation. Volunteer citizens showed that they were interested in the sustainable development theme and that they had precise and detailed input to give on its implementation as well as on the wording of the policy document. While broad access to this consultation was organised using both electronic and institutional means, the initiative ultimately failed in the final steps. The actual analysis, integration, and feedback on public input were under-resourced. Therefore, the citizen input finally did not have much influence on this policy step.

The five case reports on national decision processes offer food for thought on the issue of power and political influence. The cases as presented above indicate that power, as opposed to simple factual analysis, is an outstanding dimension of decision. The pure weight of information rather than its objective value is an instrument of power. The case studies seem to show that players who can occupy the field and ensure the dominance of their own information or point of view have better chances of winning a decision. Minority groups ask for more public participation in hopes of seeing their point of view represented.

No matter who is involved, the use of raw power causes feelings of outrage in those who do not exercise it. The information tactics used by some phase-out proponents in Belgium and the ministerial refusal to involve the public in debate seem just as unfair as did the former decisions about nuclear power taken behind closed doors in many countries.

The Belgian nuclear industry, analysing the phase-out debate, reflects that they needed pro-active information and communication of their point of view through a tighter network of players. The politicians in Belgium obeyed a version of this model: Green parliamentarians pursued their interest of eliminating nuclear power, while other politicians agreed to go along with this point of view in order to obtain cooperation on future votes closer to their own concerns. In cooperative networks of this sort, similar but non-identical interests can all be served. This model also seems to correspond to the Finnish case: different industries grouped together to opt for and successfully defend a single point of view.

The national decision-making process cases indicate that power can be independent of content. The Green minister had no need for a scientifically validated position on the feasibility of phasing out nuclear power: indeed, the AMPERE conclusions in favour of nuclear energy were essentially ignored. However, such power is not absolute: the democratic system provides a moderating force. In this way, the Belgian parliament's phase-out decision was not as radical as its proponents had hoped; a clause was inserted leaving the door open for nuclear power should it be found necessary in the future. In a very different context, the strong industry argument in favour of a new reactor did not convince the entire Finnish parliament that this decision was in line with the good of society. The parliamentary decision in principle gained a simple and short majority in favour, not a massive consensus. In both cases cited, democratic processes moderate the decision and prevent even powerful coalitions from determining it completely.

These two national policy decisions show how difficult it is to come to a full and unanimous consensus on any single position. Democracy, or the expression and weighing of multiple viewpoints, in this way is a rampart against totalitarian decisions. Although democratic processes are not a complete protection against unfairness, they do allow reasonable compromises to be formed.

The national decision-making process cases in general do not describe truly participative frameworks that allow decision making to be shared with the broader public. However, they suggest the value of creating more room for reasoned, deliberative, democratic processes of formulating nuclear energy policy. Part of achieving such good governance[3] will be enlarging the information base and ensuring broad access to diverse information for decision makers and for the public. When the information base is large and visible, then potentially manipulative power practices - whichever camp may exercise them - may be prevented from hastening or foreclosing important energy decisions.

In this context the case report from Belgium on public consultation in the area of sustainable development is particularly enlightening. It shows the potential for citizen participation in policy making: in most cases citizens are interested and capable of giving input. The case hints at the value of informing and involving greater numbers of people in policy reflection and of gathering their views. At the same time, the case shows how resource-consuming are the tasks of capturing and integrating citizen input. Clear improvement can be made in the provision of public input to support elected and non-elected policy makers. Consensus conferences, as used by *e.g.* the Danish Technology Board to inform parliamentarians, are one example among many of participative methods to improve policy making.[4]

It is interesting to consider the Finnish case once again. National opinion data indicate that while the "general public is not in favour of building more nuclear power […] it has accepted the positive democratic decision [in favour of a new unit] made by the parliament". Case study authors suggest that the "balanced discussion and tone" of media coverage over the course of months made the DiP "possible and tolerable" for the general public. These observations shift the focus away from the content of decisions, away from the struggle to convince the public of a given position. They shift focus back to the necessity for legitimate, accountable decision making processes, accompanied by full information, whose outcomes can be supported by the public.

Interim waste storage

The US case discusses a spontaneous information initiative to support the Independent Spent Fuel Installation Project at Duane Arnold Energy Center in Iowa. The dry cask storage project was under the federal oversight of the US Nuclear Regulatory Commission; no local or state approval is required, and the case report mentions no public consultation in the context of *e.g.* an environmental impact assessment. The outreach programme was begun well after construction started on the installation. Goals were "simply to keep our stakeholders, and ultimately the public, informed of this significant site endeavour. We could have been quiet about the project, but we feel it is better to be proactive with communications than reactive". The plan was to inform primary stakeholders, including politicians, and then the media. A threat was perceived that anti-nuclear organisations might reach and influence the media first, thereby making it difficult for site representatives to obtain that the media present "a balanced view of the waste issue" to the general public. Another threat was that safeguards information *i.e.* the fuel transfer schedule, might become known to opponents; the communications personnel worked hard to ensure that this information

3 The *Society and Nuclear Energy* desk study defines good governance as "policies designed on the basis of reasonable decisions that are well communicated and discussed with the public" (p. 35).

4 See for example NEA/RWM/FSC(2003)10 : *Stakeholder Involvement Tools, Criteria for Choice and Evaluation; Proceedings of a Topical Session at the 4th meeting of the NEA Forum on Stakeholder Confidence on May 22, 2003*.

did not become disclosed. They sought both to influence the views of key targets through providing information, and at the same time to limit the circulation of information.

Outreach involved issue briefings to elected officials and other stakeholders, then media influence through editorial board meetings, letters to the editor, plant tours, guest opinions, and routine media interaction. A Speakers Bureau was created to provide talks to business and civic organisations. The communications programme therefore was not participatory, except in the sense that individuals could *e.g.* visit the site and obtain answers to their questions. The availability of an inspired nuclear expert, able to respond informatively and convincingly, was counted as a plus; so was the media outreach experience of another communication manager.

The outreach programme appears to have successfully demystified the storage facility for those who visited it. Influence on the media was successful if measured by the positive tone of stories and editorials. Perhaps because no public input or approval is required for the installation, the case report does not give any indication of effects or attitudes in the general public. It was enough to secure the attention of key players in politics and the media.

A very different context is reported from Hungary regarding the construction of an interim fuel storage facility at the Paks nuclear power plant. The utility has full responsibility for securing required local authorisation of the project. The Information Group had to create events, mobilise populations, inform, and involve gaining active support for the facility. They had to create a base of popular interest and support in such a way that elected officials could legitimately grant their authorisation. The methods the Paks group chose appealed to the sense of participation, and interestingly, to both the intellectual and playful side of citizens.

Without improved interim storage capacity, the nuclear power plant could not go on operating indefinitely. The facility was thus key to the continued electricity supply of Hungary. Most striking to the reader is how the plant operator could take himself the responsibility for proponent activities, although the issue is national. Plant management had to convince the public of the necessity of constructing the facility. Local approval had to be won before any national airing. The Paks plant staff do not appear, from the case report, to have been in a difficult starting position vis-à-vis local decision makers, but clearly approval was not secured in advance. For one thing, tension was present in different settlements surrounding the plant because it was felt they shared the physical risks without receiving clear benefits.

The TEIT, a Social Control and Information Association, was composed of representatives of 13 settlements within a 12 km radius of the plant. This grouping is supported by national law but in fact was established originally at the request of the plant operator. Goals were to ease the tension produced by inequities through direct compensation, to demonstrate a degree of civil control over the plant operations, and to establish trust.

A relatively massive programme was then undertaken to encourage public involvement and learning about the interim storage issue. Basic information was assured through *e.g.* large-scale mailings to households, publications in regional and local media, and a mobile exhibition. Events and activities included public information sessions, debates on local television stations, and quizzes. One such knowledge competition targeted 1 500 children aged 13-14 years; another targeted adults and found 5 000 participants in a 5 km radius (winners and representatives of local government visited the Wylfa plant and storage facility in the United Kingdom). Both the Women in Nuclear Chapter and the Pensioners Club of Paks went into the community to talk with individuals and groups. Personal meetings and direct dialogue were called the most important tools.

There is little co-decision in this wide-reaching involvement effort. The persons involved in knowledge competitions, debates, or information activities themselves (*e.g.* employees and pensioners) were not consulted and their views had no direct influence on decisions. The methods target familiarisation

with plant issues, but even more, they target active personal identification with the plant and facility. Participants became stakeholders in the decision process by engaging their intelligence and their sense of competition.

Like the US case, this was a pro-active outreach effort based on no formal requirement. Unlike the US project, however, it did not target opinion leaders and major stakeholders, but sought to involve a broad population. The Paks initiative appears to have encouraged the public airing and working out of issues in debate and dialogue as well as playful competition. These conversations were not limited to the confines of a site visit, but took place in a variety of community settings. The outreach was an appeal to civic intelligence and curiosity. Relationships had to be established not just with key decision makers, but also with the broad base of local stakeholders.

The case report from Spain concerns the submission of a project for the on-site dry-cask storage of spent fuel generated by the Trillo nuclear power plant. The plant had to request a municipal licence from the Trillo Town Council. Here, dialogue had to be established not only with the local and regional decision authorities, but also with the national level of authority.

Similarly to the preceding cases, the Trillo plant operator had to engage activities to inform key stakeholders not as a formal requirement but as a means to an end. However, the case report does not detail outreach efforts. Instead, it is a description of the transactions among proponents and different decision authorities. The case allows the reader to reflect on how decisions are made legitimate within given legislative structures. After design approval by the Nuclear Safety Council, the plant requested a works licence from the Trillo Town Council. The Mayor's office within one month referred the question to the Ministry of Industry and Energy. Municipal by-laws expressly prohibited the construction of such a facility, but the Mayor considered that the licence request transcended purely municipal interest and the opinion of a national governing authority was required to judge whether there were reasons of urgency or public interest to construct the storage.

No answer, however, was forthcoming, and the Town Council formally shelved the project until such time as the Council of Ministers would reply. One year later the plant operator solicited the Ministry directly, requesting action on the basis of the Legal Land and Urban Development Act. After another transit through the Town Council, which denied the licence, and then the regional Supreme Court, which rejected the plant challenge to that denial, the decision to authorise the storage facility construction was finally taken on Cabinet level.

This case therefore highlights the participatory framework of communication and decision provided by legal means. It contains little information on concrete means of involvement, but it summarises the different points of view and negotiating positions of political stakeholders (including the different parties represented on the Town Council) in the formal democratic decision process. The various viewpoints are summarised in Chapter 4 of the present document. The outcome appears to indicate that local sensibilities and viewpoints were not betrayed, while authorisation for a vital operating facility could still be granted at the national level.

The three interim storage facility cases portray situations in which information and involvement of the community or key stakeholders outside the nuclear power plant operator is not a requirement, but corresponds to strategy.

Different shades of strategy are seen according to the decision making process at hand, but also according to the culture of political relationships between stakeholders.

In the US case, proponents target opinion leaders and media players, seeking to assure positive opinions and to fill a media vacuum before it might be filled by negative content provided by anti-nuclear organisations. It is interesting to notice that indeed the media seem to act as a vacuum to be filled, rather

than a forum in which debate takes place between opposing viewpoints. The culture of information seems to call for crowding out possible opposition. The reported strategy plays on an apparent lack of interest and understanding in the general population; it does not seek to directly engage that population in thinking about the issues and does not invite direct participation.

In Hungary, the Paks power plant operator cannot follow a strategy of crowding out opposition; it must work to create active support and public engagement, and address tensions stemming from risk inequities. By seeking public understanding of the necessity of the storage facility, the plant operator seeks to create the grassroots justification for its authorisation. Trust-building is mentioned; indeed, a shared perception that an industrial activity is justified is a necessary prerequisite for forming social trust and confidence around that activity.[5]

The Spanish case highlights the manner in which a tiered decision framework can allow contradictory debate to take place at different levels. Viewpoints are expressed and recorded, and a final decision is taken by central authority on the basis of the greater public interest. Still, the reader can pose questions about the apparent breakdown of decision between levels. The case shows that a driver is needed to ensure that within a tiered framework, a decision process will move forward smoothly.

Restart of nuclear facilities after extended shut down

The case from Canada portrays Pickering A's aggressive multi-media outreach effort to gain good will and acceptance by the municipal government for restart. The campaign was meant to counteract negative and false information on plant safety, and make the Pickering A's voice heard. The nuclear power plant operator appears in this case to be determined to lift taboos, become a significant presence, foster dialogue and build a positive image in the community corresponding to the positive value and actual safe operation of the plant.

The outreach programme is a public relations effort but on a strong, solid basis: it is not a band-aid campaign to fix a bad community image, but a thorough-going organisational action to merit and to broadcast a good image.

This effort is strongly targeted on key economic and political players or "influencers" in the surrounding community. Residents and employees themselves are also targets for this image-building campaign.

The plant image appears to have suffered in the past from a dearth of communication with its environment concerning safety performance in particular. Opponents to nuclear power made their cautionary warnings heard instead. A lively mistrust was revealed when a municipal council member stated to a plant manager "I won't believe a thing you say". Recovering a voice meant that Pickering A managers had to provide information constantly and systematically. Real-time incident reports to local government, no matter the magnitude of the event, showed that operations were transparent and that safety assurance was high.

An emphasis too is seen on strategic decision analysis and on "showing up" at the right time. The Environmental Assessment (EA) was identified as a key decision phase on the way to restart; employees were urged then to write letters in support of EA findings and recommendations. This action furnished a large sum of positive opinions on which EA acceptance could be based by authorities. It also provided

5 The positive relationship between the justification of an activity and the formation of social trust was investigated by the European Commission-supported research network TRUSTNET; consult the model and supporting case studies at [http://www.trustnetgovernance.com].

evidential proof that employees were aware of the findings and recommendations and motivated to support them in practice, *i.e.* in future plant operations.

Among the actions targeting business and opinion leaders, a Community Advisory Council was initiated by the plant (it is not a regulatory requirement). Like the cooperation set up between management and employees for the EA campaign, this is another case of partnering. It both shows willingness to cooperate and sets up the means by which cooperation can be achieved. The fifteen-member Council, including the Pickering Nuclear public affairs manager, met monthly over a period of years to identify and resolve community "issues". Examples of such issues are not detailed in the case report but we learn that of 160 issues identified, 40 had been resolved in the critical decision year of 2001. Also mentioned are "stakeholder meetings" which may have served to collect information on so-called community issues. These were attended as well by the press.

A set of actions targeting residents involved employees spreading throughout their own community, ringing doorbells and providing information packages to 24 000 households. When desired, the employees answered questions about plant operations and their own job activities. In this way residents get to know the people who work at the plant; a "human face" is created for plant operations. Again, this initiative responds to no regulatory requirement, but indicates a tremendous level of motivation.

These neighbourhood visits do not directly answer an instrumental need in the context of restart authorisation; they are not a formal consultation in the context of *e.g.* a social impacts assessment. However, they form an example of participatory communication that comes close to usual social interaction, or "natural" communication and dialogue among members of the community. These visits target a positive image of the plant in order to obtain good will and support for the restart (video and written materials left at the households are designed in consequence) but they are not a cynical exercise.

The one-on-one dialogue that is created relies on mutual willingness by site representatives (employees) and neighbours; it is free-form and its outcomes are essentially open. This framework for communication does not provide a direct route for Pickering A neighbours and beneficiaries to influence plant operations or decisions. On the other hand, it is reasonable to assume that these 24 000 conversations affected organisation and safety culture inside the plant, by sharpening the consciousness and responsibility felt by employees for good plant performance.

Other actions directed at residents drew them in to learn about the plant. In this way, an "advertorial" campaign (in itself hardly a participatory framework) was successful in attracting visitors to the plant open house and information centre, creating opportunities for one-on-one, question-and-answer dialogue.

The restart of nuclear facilities in Tokai, Japan, was subject to more stringent requirements for public acceptance and approval. While developing a positive image in the community was a good strategic move for Pickering A to gain symbolic endorsement by the city council, the JNC restart proposal literally relied on building a threshold level of community approval to be gauged by local government.

The fire and subsequent environmental release of radioactivity from the PNC-Tokai reprocessing plant in 1997 resulted in closure of the facility and a major organisational overhaul. Subsequently, authorities levelled more criticism at safety management. Seeking local acceptance for restart, the new organization JNC conducted neighbourhood information actions, including open house receptions at the reprocessing facility, public meetings and door-to-door explanations. These opportunities for knowledge development and dialogue, however, are reported not to have regained public confidence in safety assurance at the plant.

Because the Tokai village economy is dominated by nuclear research and development activities (1/3 of the population is employed in this sector) there was political pressure to restart the reprocessing plant. However, the unrelated criticality accident of 1999, at a JCO facility, interrupted the countdown to JNC's restart.

Three years after the fire and explosion/release of radioactivity, and following checks and improvements in criticality management, JNC again made a restart proposal to local governments in March 2000. Here a number of interactive communication frameworks came into play. The Mayor of Tokai village conducted six public meetings on village policy at community centres. The Tokai village office canvassed residents' opinion on the restart of the reprocessing plant through e-mail, fax and postal questionnaires. These two initiatives by village government indicate that the Mayor was determined to ground his recommendations to the Ibaraki Prefecture in his constituents' viewpoints.

In November 2000, Tokai village council authorized the plant restart, while imposing nine supplementary conditions. One of these required community risk communication activities, and resulted in the creation of the JNC-Tokai risk communication study team. Two types of initiatives were organised: a "Cycle Friendly Talk", described as a "social event", allowed residents to interact with experts, air their opinion and learn about plant issues. This event was held ten times. With financial support from the Nuclear and Industrial Safety Agency a risk communication project entitled C-cube ("Communication and Collaboration with Community") was launched with the participation of voluntary residents, village officers, nuclear professionals and social scientists.

The case reports little on the content of this risk communication exchange. On the other hand, interesting observations are provided on the evolution of risk perceptions in the Tokai population. These residents' view of nuclear safety was more positive than national perceptions (although it was shaken by the accidents in local facilities). Their attitude was interpreted as a result of "cognitive dissonance"; *i.e.* individuals' justification for living in the nuclear zone depends on the belief that the facilities are relatively safe. However, the Tokai accidents seriously challenge the maintenance of this type of belief, resulting in "an environment in which people cannot express their anxieties freely, or consider conversations about nuclear power as taboo". The risk communication programme can therefore be considered as a delicate intervention, loosening taboos. It opens up to question such beliefs that have been firmly held in the community.

Both restart cases indicate the need to regain residents' trust and approval for an installation in their midst. Employees, especially in the Canadian case, play an active role in canvassing the community and in demonstrating support for improved plant safety.

This employee involvement may build trust in the community, or inversely, it could open the door to doubts. Employees, some observers may reason, could be under pressure to show support for their company, without possessing the capacity to carry out plant operations safely. The potential for bias, or for a public perception of bias, may undermine the public relations value of this broad employee support. This potential is not analysed. Should it be assumed that in the contexts described, employees are not perceived as subject to management pressure? Is a strong showing of support by unionised employees always perceived by the public to be a failsafe indication of safe plant operations?

The answer to this question probably carries a strong cultural component. It would be interesting to go deeper into analysis of the various country cases in which employees (or pensioners) become primary agents in defending plant stakes.

Another aspect that merits further study and discussion is the trustful and cooperative relation between plant management and employees shown in these cases. Employees are used as community trust-building agents; what are the trust-building mechanisms established between management and employees? Are these free of tension? What specific efforts had to be made?

Safety and security

The three cases (Acerinox, Juzbado, Zorita) from Spain dealing with safety and security events characterise different types of communication required to manage the proper reflection of the nuclear installation in the media. All three case reports underline the importance of the time factor, to compile a technically proper and well founded press release concerning a certain event, and to be able to manage its distribution to the interested stakeholders before nuclear opponents or the media pick up the subject.

The Acerinox Case discusses an event in which a radioactive source used for radiographic tests was smelted in the blast furnace of Spain's most important steelworks in Cadiz. The event was notified to the Spanish Nuclear Safety Council (CSN) by the steel factory itself. According to the results of the on-site inspections held by the CSN the plant was contaminated internally, however the 25 automatic atmospheric surveillance network stations operated by CSN and the 900 operated by the Directorate General for Civil Defence had not indicated nor registered any abnormal value concerning radioactive contamination. In the following days French, Italian and Swiss laboratories detected the radioactivity in the atmosphere originating from the Acerinox steelworks.

Based on the technical information provided by the Spanish Institute of Meteorology and its French equivalent, the CSN was able to scale the hypothesis of the evolution of the process of radioactive release.

The communication was initiated by the CSN, and concentrated on dispelling the two false myths regarding the incident: the idea that the event had occurred a few days earlier, and that the CSN had found out about it from France. In spite of the second press release one of the main accusations levelled at the CSN was that it was trying to make little of the event.

There is a long list of lessons that can be drawn from the case report on water ingress into the Juzbado Fuel Element Factory. Such an event could occur at any kind of nuclear installation. There are well developed emergency procedures in force to manage a situation like this. It is important to check the availability of such emergency procedures for situations caused by extraordinary weather conditions and in particular their completeness regarding communication requirements, messages and channels.

The facility faced a thunderstorm with rainfall levels 2.5 times higher than the historic record. The conditions exceeded the drainage capacity of the rainfall network, causing water to run into the manufacturing shed from both the roof and the floor. The plant manager undertook the management initiative activating the Emergency Organisation (EO). The EO started immediate actions to assess the situation, to maintain safe conditions in the facility and to initiate the communication to the competent organisations transmitting the relevant issues to the public through the media. The communication network worked properly; as a consequence media releases were objective and moderate. The event had no repercussions from the point of view of nuclear or radiological safety.

The plant security related case report from the Zorita nuclear power plant has one common point with the Juzbado case: it reveals the need to be prepared any time for an unexpected event. The event in this case wasn't related to extraordinary natural forces, but extraordinary human initiatives. The power plant submitted the request for extension of the operating permit for a 5 year time period. That evoked the demonstration of the Greenpeace organization trespassing the outer area of the Zorita plant. Concentrating the attention of the plant's security people at the main entrance gate 12 Greenpeace activists jumped over the security fence at the opposite side of the site, activating the alert signal. The plant security forces intercepted these intruders, firing warning shots into the air. However six of the activists quickly climbed up to the upper part of the plant containment building dome, where they unfurled a banner calling for the immediate closure of the plant and an end to nuclear energy in Spain.

The plant operating personnel acted according to the corresponding procedure: activating the Emergency Plan, and shutting down the reactor. The plant was subsequently penalised for serious

infringements of procedure earlier in the day, *i.e.* for non-compliance with physical protection measures. This act produced widespread repercussion in all the media.

Safety and security related events can be characterised as urgent and very sensitive in regard to the means applied and the content of communication. This kind of communication is qualitatively different from "normal"; it must be considered by the communicators always as unfolding with real risks. All three case reports highlight issues of accuracy and complete technical correctness in communication, requirements that come into contradiction with the simultaneous need to deliver information fast. Decisions must be made in a very short time frame and a wide range of communication channels taken into account. If managers, decision makers or people responsible for communication cannot meet three requirements (time, data accuracy, technical correctness) simultaneously, the image or reputation of the nuclear player can collapse.

One of the important lessons learnt from the Acerinox case is the need for reliable technical data in support to effective communication. In that case, rapidly available measures of very low radioactivity levels would have helped the communication process and avoid the feeling of the public that relevant information was hidden.

A lesson to be drawn is that the information released to the media should be simple and comprehensible. It should be complete enough that transmitters of the information are unlikely to misinterpret, or to substitute a private opinion on the event. The more specialised the issue to be explained, the less easy to compile the needed press release.

The Juzbado case points to the conclusion that a good public image relies on information showing the facility is in order. Image is not only a question of communication. A good image is based on proper and safe operation, indicating excellence in all areas of normal operations. "History doesn't forgive" – whenever in issues relating to nuclear power an organisation is given a label, it is unlikely that this label will be removed. The weak links, both human and material, of the Zorita nuclear power plant security system required a long-term effort of reorganisation and accompanying communication; it could not be swept away by short term communication.

Establishing communication links with the media on a regular basis, even when there is no incident or accident to report is an efficient means to implement good relationship and mutual confidence. This will help to make sure that, when it becomes important to communicate about an incident or accident, the information from the operator is treated on equal footing with the information provided by anti-nuclear groups. Another important lesson has been learned from all three case reports: a specialised communicator should meet a given media transmitter (television, national press, regional press, local media…) based on its potential impact. The power of television in communicating is tremendous; one should consider it.

6. LESSONS LEARNT AS HIGHLIGHTED BY THE CASE AUTHORS

The outstanding reflections on the lessons learnt by the case study authors from their communication experiences are summarised below.

Content of communications about nuclear energy

- To gain political acceptance for a new nuclear power plant unit an information campaign is not enough. First of all, plants already in operation must have been well managed, with high availability factors, possibly having successful modernisation projects and reliable waste management programmes, thereby reinforcing the general confidence in the nuclear industry. In the Finnish case these conditions were met. This allowed the safety issues of nuclear power to recede in importance, and other issues to come forward.
- Carbon dioxide avoidance, in some countries to meet Kyoto commitments, is clearly an overarching societal goal. Meeting the growing demand for electricity - a primary argument by nuclear energy proponents - appears to have much less importance.
- In case of expansion of nuclear power capacity, the parallel use of renewable energy sources is also possible. When campaigning for more nuclear energy no other source of energy should be undermined. The fact that both nuclear and renewable energy sources contribute to carbon dioxide avoidance should be recognised. The simultaneous building of nuclear power and “green” energy can be a cornerstone for a national strategy to reduce the risk of climate change.
- Utilities offering ecologically friendly energy are likely to be the winning companies in the near future – receiving both public approval and government support.
- Debates take place in different circumstances and the arguments must be chosen accordingly. At a local level important aspects are cooling water outlets and traffic arrangements. At a national level important aspects are security of energy supply and carbon dioxide avoidance. Only a minority of actors are interested in technical details like safety systems or specific reactor designs. Therefore the focus of public debate can’t be on reactor safety or risk perception. Questions like risk perception and reactor designs are rather scientific for the public; there are a number of qualified scientists who are interested in and capable of entering these discussions in appropriate occasions, but they are not the main subjects to be approached in a general public campaign.
- Nuclear operators have to inform the public in a more objective way, reorienting the nature of nuclear-related messages into a less defensive and more objective direction.
- To be more credible and attractive, nuclear stakeholders should reflect on the restyling of the nuclear “look and feel” (logo and brand).
- The public likes spectacular information, thus the journalists look for it. Luckily, nuclear energy seldom has dramatic events to present. But how could this industry develop spectacular presentation of positive progress to raise curiosity and interest? A project to build a new nuclear power plant unit is one of the the biggest single industrial investment in some countries. This is spectacular enough and it can be continuously and actively followed and reported by the media. Media contacts should be maintained on a regular basis by the project management.
- The subject is emotional for most people but is usually treated by the nuclear industry communicators in a rational way. Should they adapt? Logical arguments have proved so far to be ineffective in responding to emotions.

Networking among nuclear proponents and those offering support

- When national installations are at stake, in a number of cases it is the nuclear operator himself that undertakes communication initiatives in the surrounding area in order to inform of the need for the facility. Better coordination among all the parties and an attitude of solidarity by the competent authorities would surely facilitate appropriation of the installation.
- If the government is not prepared to open the debate on the energy issues, the opponents to phase out may feel isolated.
- Networks among all potential proponents - experts, political parties, trade unions, industrial organisations and non-governmental organisations - are very important. A united front, arguing in favour of nuclear power from different standpoints, helps establish a solid basis for political decision.
- Nuclear energy stakeholders should develop a common platform, a solid and coherent joint framework and approach to communicating with the public. This could be achieved through coordination by a professional society of the nuclear sector.

Organisation of communication

- It is not a one-shot action but a continuous task to inform, communicate and update data.
- Several communications strategies may need to be implemented to determine which are effective and which are not.
- Communication campaigns must be continued in such a way that there is no perception of a reduced effort once the goals has been reached.
- Communication professionals have to be prepared to take risks in terms of innovative approaches, information shared and easy accessibility of senior management.
- There is a need for round of the year oversight by responsible managers who can take on emergency communication tasks in case of events of importance.
- Governments should define clearly the role of local authorities in a consultation process and thoroughly inform the social actors on how they can contribute to the process and what they can expect of it.

Targets of communication

- To enforce counterbalance between pro- and anti nuclear communication it is necessary for the nuclear sector to intensify pro-active communication and continuous dialogue with target groups (politicians, journalists, associations, mass-media, young generations).
- As transparency in communication about nuclear energy is absolutely necessary it is highly advisable to make documents available on a web site, to use the latest communication technologies to target different groups of society.
- Sometimes the media are targeted in order to fill a nuclear news “vacuum” before it might be filled by negative content provided by anti-nuclear organisations. Although in such cases the media habitually do not invite their audience to think critically about the issues, it might help familiarise the public with nuclear energy.
- Visiting newspaper editorial boards to inform them about the issues, and bringing stakeholders, elected officials and the media to tour nuclear facilities can help facilitate more meaningful discussion.

Interface with the political sphere

- A positive political climate is needed to obtain a positive decision on nuclear energy matters; if it does not exist, expert input and communication programmes will have little effect.
- Effective, concrete cooperation with the local governments – information supply and financial support – and, above all, personal meeting and dialogue are means to develop mutual understanding and political backing for a nuclear facility.
- It is not easy to be pro-active in communication with politicians. In most cases, true that it takes time to get politicians to accept to visit an installation or learn more about a nuclear project. Their first priority is to remain in harmony with what their voters expect from them.
- The public has the right to be informed about the energy policy in a correct way by the means of objective arguments. This is a duty of the State.

Societal dynamics of communication

- A mutually beneficial agreement to be concluded with the local authorities provides a kind of a guarantee for the civil control, safety and operation of a nuclear facility.
- The dialogue with the local inhabitants is very important.
- The communication process must be transparent and open to all actors.
- Public trust can only be built through proactive, consistent communications and opportunities for dialogue.
- Once a message having a given orientation or intention has managed to penetrate, it is very difficult to change course. History doesn't forgive. Whenever in issues relating to the environment and nuclear energy an organisation is given a label, it is unlikely that this label will be removed.
- The need for legitimate, accountable decision-making processes, accompanied by full information, to produce outcomes that can be supported by the public is illustrated by the Finnish case. In that country, national opinion data showed that while the "general public is not in favour of building more nuclear capacity […] it has accepted the positive democratic decision [in favour of a new unit] made by the parliament".
- Some organisations are speaking publicly much more than others, for example Greenpeace or consumer protection organisations. Although they may know little about the subject, they are considered as neutral and objective speakers by the public. Possibly this is because they often act as "whistle blowers". The nuclear industry might learn to be less shy in communication and be more vocal when appropriate, as it does (but with possibly too much caution) about being almost CO_2-free.
- It is critically important to start the communication process and to provide stakeholders early information before anti-nuclear groups engage with the media. For example those opposing the Trillo interim storage project alleged that there was a danger of the facility's becoming a centralised storage installation for all the Spanish nuclear power plants. This argument was unfounded since this possibility was never even considered. The availability of more information before the project became an urgent issue would have facilitated the process.
- Scientific data and evidences are not enough to convince politicians or the public. Decisions to shut down a nuclear facility or to phase out nuclear energy maybe purely political.
- A scientist has certainly a responsibility towards society. He/She should make his/her points of view widely known and continue to play a role but outside politics.

- Ensuring effective stakeholder participation may be difficult when there is no legal obligation to organise involvement. Political actors in power typically will not facilitate stakeholder participation if they are not assured in advance that its outcomes will correspond to their expectations.
- Deep conviction is not enough to transmit information. The question remains open: what more can be done?
- Is speediness more important than complete certainty? The paradox here is that if information is given as soon as it becomes available, there is a risk if it is being incomplete, requiring subsequent modification. If, on the other hand, the information is not provided quickly, accusations of trying to cover up things immediately emerge.
- What there is to tell might not be what the public wants to hear. It might occur that, despite all efforts to inform, the "we have not been informed" complain remains.
- Is credibility related to transparency? The more specialised the issue that has to be explained, the less likely it is that the organisation concerned will emerge unscathed. In a sector such as nuclear energy, it is assumed that the official version of the events will never be truly independent, credible, complete or transparent. Very often, a journalist ceases to be a simple transmitter of information and becomes a transmitter of opinions, albeit only by way of the testimonies included in the information provided. And these testimonies are very often not comprehensive because it is assumed that the official version will be biased and based on vested interest.
- One should consider the power of television in communicating messages. The images of the Zorita nuclear power plant in Spain, whose invasion was filmed by an environmentalist group and rapidly distributed to all the country's television channels, had a great impact on public opinion. Without these images, the news would not have reached the national media.

7. TENTATIVE CONCLUSIONS, PENDING QUESTIONS

The Nuclear Development Committee desk study "*Society and Nuclear Energy: Towards a Better Understanding*" made a major step forward in analysing the relationship between decision makers and members of a society. The study determined the major components influencing this relationship.

In the desk study six levels of public participation in nuclear-related decision making are identified. The bottom level is the "public right to know", and the top level is "public participation in final decision". Today there are greater public demands for input into decisions, especially about technologies that can affect health and the environment. A growing consensus among analysts suggests that policy decisions can be improved by public input. However, as the desk study notes, the legislation in different countries will determine "how high" the public may climb the ladder of participation.

The present document analyses 13 case studies submitted by experts from OECD member countries and describing experiences in communication between nuclear stakeholders, decision makers, and civil society. One of the aims of the present project is to give feedback on the statements on communication from the literature, reference documents and the NDC desk study itself, through analysis of concrete experiences.

The analysis of the country case studies leads to the conclusions that overall, the desk study succeeded in characterising the real economic, environmental and social dimensions of communication; the roles and tasks of different stakeholders were also determined properly. However, in some special areas, *e.g.* parameters characterising appropriateness of communication, there is room for further investigation or follow-up activities. The case studies showed that nuclear energy provides a colourful range of events requiring extensive communication, making further discussion on directions for improvement valuable. As well, the knowledge basis of communicators in the nuclear industry can be improved by further collection of national experiences.

The preceding chapter of this report reviews the lessons learned from different case studies and contains important messages for each stakeholder in the nuclear field. Key conclusions from a reading of the case studies are summarised below, some in the form of open questions. These might be considered for further discussion.

Description of communication experiences

- Most of the case studies concern information and outreach initiatives. These involve stakeholders and members of the public in defining what is at stake in decision making on nuclear energy issues. However, the initiatives' primary target often is to influence these players' perception of nuclear energy projects. These initiatives support decision-making processes, but they are not examples of a high level of participation in decision making.
- A wide range of communication tools and methods exist, which proved to be effective in certain situations for involving the public in nuclear energy discussions.
- It is important to inform the surrounding region on what is going on – in general – in a nuclear facility; however the communication tools can be different. Examples ranged from site visits to incident reports addressed in real time to local authorities.
- Signs of excellence for communication can be derived from the case study reports and shared among nuclear operators. Such signs include: clear/understandable messages, openness, addressing "taboos", quick response after a critical event, coordinated network for all pro-nuclear participants, extensive knowledge on anti-nuclear strategies, authentic professional communicators, routine

ambition to improve answering skills of communicators, proactive engagement of stakeholders, engagement of high level politicians, anticipation of false and anti-nuclear new generation by disseminating objective news, extensive use of internet as an effective tool to address the younger generation, separate strategies targeting the public at large and the surroundings, involvement of "independent" experts (scientists) in improving the knowledge of younger generation with a parallel improvement of the learning skills of the targeted groups for communication.

- A communication programme in most cases is resource-intensive throughout the phases of preparation, implementation and follow-up or evaluation.
- Some authors in their case studies pointed out the importance of comparative assessment of risks, burdens and benefits of different means of energy production. This assessment could serve as a sound basis for communication in a context where environmental issues and safety-related questions are understood and addressed by operators through risk-oriented or risk-based regulation.
- Although communication between major stakeholders – nuclear industry, government, the public and the external experts – worked, gaps can be identified in the communication system.

Crisis communication

- One should be well prepared for the fact that any nuclear issue may be subject to amplification by the media.
- Some of the reports indicated that the capacity to measure very low levels of radioactivity in the case of low releases to the environment is of great importance to support communication. This issue has to be addressed by both nuclear operators and the regulatory bodies.
- There is a need for year-round oversight by responsible managers ready to take on emergency communication tasks in case of events of importance.

Political decision making

- Some national policy decisions show how difficult it is to come to a full and unanimous consensus on any single position. Although democratic processes are not a complete protection against unfairness, with the expression and weighing of multiple viewpoints they do allow reasonable compromises to be formed.
- A great number of players, experts, and NGOs can take advantage of the "direct access" offered in the process of public hearings organised by regional or national authorities, or parliamentary subcommittees.
- In one of the reports the solution of the question of spent fuel disposal gave support for the construction of a new nuclear unit. Although specifically dimensioned only to the existing reactors, the decision in principle favourable to disposal alleviated the impact of an important argument against nuclear power: the waste problem.

Suggestions for future work

Additional information required

- Case reports were submitted concerning events where communication played an important role. However there have been similar outstanding events alerting the attention of the public since the questionnaire submission, which were not reported. Some of these events were presented at the PIME 2004 conference, or at the NUCNET workshop which also dealt with risk communication. This underlines the relevance of future work to collect additional information.

Environmental impact

- It can be scientifically demonstrated that the environmental stress induced by nuclear power is among the lowest for base load electricity generation. Whether this is enough to gain public support for nuclear energy needs to be further debated.
- Can member countries meet the Kyoto protocol targets without relying on nuclear energy, in particular when a decision has been made to phase out this technology? How will member country governments address this issue in their policy and their communication with the public? These questions need further analysis.
- It has been indicated in some case studies that people are not aware of their load to environment; however each individual creates a certain amount of environmental impact using energy at home or in the areas of everyday life. Whether to incorporate this argument into the communication strategy or not may be discussed.

Improving public awareness

- There is a large potential to better inform young generations about energy policy, strategies, and needs, and to transmit more knowledge on nuclear energy issues to the public at large. What can be done in this area is a subject for further discussion.
- Energy policy decisions are complex, based upon multi-criteria analysis, political issues and scientific assessment. Should communication on nuclear energy embark on investigating those issues?
- Like the desk study, the case reports show that the public is not aware of nuclear energy issues. Answers to the questionnaire reflected possible methods and ways to improve the level of public awareness and understanding of nuclear energy issues. New ideas and presentation of successful good practices needed to improve public involvement for a better understanding of nuclear-related arguments and facts by society.
- The subject of nuclear energy is emotional for most people but is usually treated by the nuclear industry communicators in a rational way. Should they adapt?

Improving communication skills

- There is a need to improve the communication ability of the nuclear communicators using most of the lessons learned and detailed in Chapter 6. What kind of communication strategy favours success for nuclear communicators? Is there a need to change the existing communication strategy? What are the lessons learnt from successes and failures? Are those lessons universal or specific to national/local context?
- How to reach balance between the four major stakeholders in communication (nuclear industry, government, public, external experts) should be analysed.
- How quick and how detailed should the information release be in situations when risk communication is a necessity? Is speediness more important than complete certainty? What are the most relevant communication methods, channels and organisations by which urgent situations may be handled? How to anticipate crises through training and normal operating procedure during time periods without major events?
- The public likes spectacular information, thus the journalists look for it. Luckily, nuclear energy seldom has dramatic events to present. But could this industry develop spectacular presentation of positive progress to raise curiosity and interest? Nuclear energy may have spectacular visions to

offer. For instance it could be maintained that nuclear energy would help in solving some of the most difficult global problems like global warming or deficiency of drinking water.

- Deep conviction is not enough to transmit information. The question remains open: what more can be done?

Political decision making and nuclear energy

- Almost all the country reports indicated the importance of the political environment in the public communication process. What should be done to improve the communication between government, politicians, and the nuclear energy sector?
- The economic, societal and political context varies from country to country as does the degree of public and governmental involvement in energy policy making. Case reports indicate that political decision makers may come to different answers on questions having the same technical basis in different countries (*e.g.* the Belgian Ampere case and the Finnish case). How can this happen, what are the driving forces of decision making, and can communication improve the way nuclear energy is assessed by politicians?

Employer-employee interaction in communication

- Employees can play an active role in communication with local community. Their involvement may build trust in the community, or inversely, it could open the door to doubts. Employees may be perceived as biased, or influenced by their hierarchy, or even not knowledgeable enough to provide comprehensive information. Further analysis is needed to investigate the benefits and drawbacks of employees' involvement in communication.
- Several cases highlight the trustful and cooperative relation between plant management and employees. How are trust-building mechanisms implemented, how beneficial are they, is there room for improvement in this field?

Annex 1

LIST OF MAJOR CONTRIBUTORS TO THE STUDY

Austria
Mr. Manfred HEINDLER

Belgium
Mr. Gaston MESKENS
Mr. Alain MICHEL

Canada
Ms. Donna MCFARLANE **(Chair)**

Finland
Mr. Martti KÄTKÄ

France
Mme Fanny BAZILE

Japan
Mr. Taketoshi TANIGUCHI

Spain
Mr. Santiago SAN ANTONIO

United States
Ms. Patricia BRYANT
Mr. John F. LOHMAN

European Commission
Mr. Odissefs PANOPOULOS

OECD/Nuclear Energy Agency
Nuclear Development Division
Mr. Koichi SHIRAGA (Secretariat)
Mr. Pál KOVÁCS (Secretariat)