

Radioactive Waste Management

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# **Stakeholder Involvement in Decommissioning Nuclear Facilities**

## **International Lessons Learnt**

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NUCLEAR ENERGY AGENCY  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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## FOREWORD

Set up by the Radioactive Waste Management Committee, the Working Party on Decommissioning and Dismantling (WPDD) brings together senior representatives of national organisations who have a broad overview of decommissioning and dismantling issues through their work as regulators, implementers, R&D experts or policy makers. These include representatives from regulatory authorities, industrial decommissioners from the NEA Co-operative Programme on Exchange of Scientific and Technical Information on Nuclear Installation Decommissioning Projects (CPD), and cross-representation from the other NEA Committees. The European Commission is a member of the WPDD and the IAEA participates as an observer. This broad participation provides good support for the co-ordination of activities in the international programmes.

At its sixth meeting, in Paris, 14-16 November 2005, the WPDD held a topical session on Stakeholder Involvement in Decommissioning Projects. The topical session was jointly planned and run with members of the NEA Forum on Stakeholder Confidence (FSC). The Topical Session is documented and publicly available on the NEA webpage [www.nea.fr/html/rwm/docs/2006/rwm-wpdd2006-5.pdf](http://www.nea.fr/html/rwm/docs/2006/rwm-wpdd2006-5.pdf). The Topical Session provided a stimulus to review the contributions in the area of stakeholder involvement that the WPDD has received since its inception. This report contains the result of such a review, focusing on lessons to be learnt, and including examples of key statements by representatives from different NEA member countries involved in or affected by decommissioning projects. It has been approved by the stakeholders cited. The FSC also contributed to and endorses this report.

Each decommissioning situation is a product of its specific context. There is no “one-size-fits-all” solution, and in each context, stakeholders will have to work out views and agreements in a way consistent with both their legal system and national culture. The findings in this paper about national practice and experience are offered to stimulate reflection and discussion.

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## SUMMARY

The expectation that significant numbers of nuclear power plants will reach the end of their operating lives in the coming decade or so, or will be shut down for economic or other reasons, is resulting in increasing emphasis being given in member countries to the involvement of stakeholders in the associated decision procedures. Although the need for public involvement during the siting process for a new nuclear facility is well established – given the potential for community disruption in terms of population changes and construction nuisance (as well as because of safety and environmental concerns) – the role of stakeholders during the shutdown and decommissioning phases is perhaps less well understood.

The decision to shut down a nuclear facility before the end of its design lifetime is usually taken for economic, safety or political reasons. In general, there is no requirement in legislation to involve stakeholders directly in this decision; though (at least in some cases) there can be substantial consequences for local communities in terms of decreasing employment rate and an eventual reduction of revenues for the host municipality. On the other hand, stakeholders do generally have the legal right to be involved in the consequential decision about the strategy for decommissioning the shutdown plant – i.e. the actions taken to facilitate the end of regulatory oversight of the facility – typically through participation in an environmental impact assessment process. In this document, the arguments advanced in favour of stakeholder involvement, and the fostering of relationships with affected communities that are based on trust, are generally applicable to both the above decisions.

Although those likely to be most affected by a decision to shut down a nuclear facility are those living nearby, it needs to be remembered that such decisions will sometimes have wider consequences, perhaps even at a national level, e.g. in the event that alternative sources of electricity need to be found to replace that from the shutdown plant. In these situations, there is a need to consider also views of stakeholders that represent national interests. As the decision process moves from issues concerned with the shutdown of the plant to strategies for its dismantling, the importance of purely local interests becomes greater. For this reason, it is necessary to develop dialogue and co-operation

among regulators, implementers, and local stakeholders as early as practicable. The host municipalities for nuclear facilities tend to focus their attention on the day-to-day issues arising from the activities at the plant and, as regards decommissioning, will generally favour the early reuse of the site for economic or cultural purposes.

As in other phases of the nuclear facility life cycle, it is necessary to develop trust among stakeholders in decommissioning and dismantling projects. This may be accomplished through involving local and regional actors in decision-making, but also in monitoring activities, so as to have a better grip on the continuous changes taking place at the site. Transparency is needed in decision-making and in the respective roles played by regulators, implementers and local authorities. At all times, proactive information, and efforts to “translate” technical information into language meaningful to the chosen audience, will contribute to building mutual understanding and trust. Partnership arrangements, by which institutions enter into structured project-management relationships with local communities, have been found beneficial.

Decommissioning in both nuclear and non-nuclear areas may be viewed as an opportunity to improve the sustainability of the host community. The creation of added cultural or economic value can contribute to increasing quality of life over the years. More recent designs integrating reflection on the end use of the facility and site, or technical provisions for quick transitions to other types of facilities, provide better assurance to the host community that there will be flexibility in future planning capacity.

There is an increasing recognition in member countries that, although there is a gradual convergence in terms of the technical approaches to decommissioning, and in the overall decommissioning objectives, there is also a need to retain a certain flexibility as these are implemented, in order that local considerations can be adequately accommodated. For this reason, actual practices will necessarily differ from context to context. The work reported in this paper reflects successful processes in certain countries, but different cultures may require or even dictate other approaches. Matters like the extent of government commitment and involvement, legal provisions, and so forth, are an important consideration in dealing with the stakeholders. The purpose of this paper is to contribute to an understanding of the underlying concepts and principles of stakeholder involvement in D&D, and incite new thinking about how to meet the challenges.



## INTRODUCTION

Decommissioning and dismantling (D&D) are the last elements of the life cycle of any industrial facility. Issues of public concern during this phase are partly the same and partly different from those of the preceding phases (planning, construction and operation). Public concerns about the nuclear industry, radioactive waste, and perceived risks may be similar at every phase. Other concerns tend to vary along the life cycle. Thus, in the course of construction and operation, the main challenges include meeting expectations for greater quality of life, accommodating a growing population, mitigating construction nuisances, and assuring the safe operation of the facility, while in contrast, the main concerns in the D&D phase are decreasing employment rate, the eventual reduction of revenues for the municipality, the future use of the affected land and negative social impacts (e.g. out-migration).

Stakeholders in D&D contexts are many and varied: members of the public, directly or indirectly affected by decisions; government, industry, environmental interest groups and, in some cases, international stakeholders. Plant workers are a particularly important stakeholder group, as the implementer will want staff knowledgeable about the history and operations of the facility to stay on as part of the decommissioning team. Regarding the public, local views are often considered more important than national views in planning the overall approach and schedule for decommissioning. However, interdependencies between sites undergoing decommissioning and associated impacts on communities hosting waste management facilities and along waste transportation routes can blur the distinction between local, regional and national stakeholders (OECD/NEA WPDD, 2007).

Although the tensions arising in connection with D&D differ from the conflicts of the earlier phases, this phase too is characterised by heterogeneity of stakeholder interests and values and the difficulties of reaching consensus or compromise. Difficulties arising in connection with the harmonisation of energy production, environmental protection and sustainable socio-economic development considerations, as well as tensions between local and regional decisions are also typical. Public concern about e.g., radiation risk, and the need to associate stakeholders in decisions about decommissioning may arise too in

industries outside the nuclear site regulatory framework, for instance those extracting and processing ores and minerals containing naturally occurring radioactive material (Lauria, 2006). As in other phases, during decommissioning, the building of trust between stakeholders is crucial. Social lessons learnt from the siting and development of nuclear facilities and radioactive waste management facilities are widely applicable in the area of D&D as well.

## THE NATIONAL DIMENSION

### **Link to national energy policy**

The decision to decommission a nuclear facility may reflect the end of its lifetime, an unexpected event (e.g. accident), or a political decision. In all these cases, decommissioning entails environmental, economic and social impacts on both the region directly involved and on the whole country (stemming, for example, from a likely change in energy prices or from measures to compensate for shortages in energy supply). Hence, the phasing out – just like the opening – of nuclear facilities should be accompanied by impact studies and should include public debate and dialogue. While in most countries it is prescribed by law that the affected stakeholders should be heard during the decommissioning phase, local stakeholder involvement is not required in decisions on stopping plant operations or redirecting energy policy.

Extending to the close-out phase the experience from the siting of nuclear power plants, one may observe that when the decision to close down nuclear facilities is part of a widely accepted national energy policy framework, decommissioning activities are more likely to find support. That acceptance is enhanced through open and fair national debates on the preferable mix of various energy sources, where environmental, economic, social and political impacts are addressed. Stakeholders will be particularly interested in “how and from where the diminished electricity supply is to be replaced”, since this may affect local, regional, national, and also international interests.

Local stakeholders’ views may be like those of other citizens, or they may have heightened interest in national energy policy. In either case, the decision to decommission ought to benefit from a timely dialogue with affected communities. The lack of such a dialogue is one of the reasons for conflicts related to the shutdown of several nuclear power plants, as exemplified by the Barsebäck nuclear power plant (NPP):

*“As a mayor I often meet people that are aware that the closure of Barsebäck is contributing to the higher energy prices. They would like to see a better dialogue between the national politicians and the*

*community. ... We and most citizens living close to the NPP Barsebäck wanted to know why it was closed and above all how and where its production would be replaced! So far we know that we probably will buy more dirty electricity from the old Danish and German coal fired power plants, causing severe airborne emissions to our ... lakes and forests in southern Sweden. We also know that the Government is approving upgrading the capacity at Ringhals NPP, already a fact, and at Forsmark and at Oskarshamn. This was too inconvenient to be explained by a Government officially favouring the total phasing out of nuclear production in Sweden.” (Palmqvist, 2005)*

Recognition that the long-term mission of a site has been completed or changed may come with a decision to close a facility. Alternatively this recognition may be come to only reluctantly after a period of years of progressive reduction in demand for the site’s services. In both cases, this recognition can signal that a new direction is needed. The future for such sites can take many different forms. Some may be decommissioned and cleared for unrestricted release for use by others. A specific reuse may be planned for the long term or perhaps only for the short term, possibly for equipment storage, temporary offices, waste storage, etc. In some cases, it may not be possible within the available budget and resources to release a site for unrestricted use, but the site may be compatible with some form of restricted use. Where it is deemed essential to complete decommissioning, institutional controls and monitoring are maintained until some time in the future. (IAEA, 2006)

### **Link to the national radioactive waste management policy**

Decisions on decommissioning are linked to national radioactive waste management policies in a number of ways. For instance, while the primary decision to phase out a given facility may be taken, as discussed above, in the context of an overall national energy plan, the focus from that point onwards may shift to how dismantling wastes are to be handled. Decisions are made easier if there exists a facility for the storage or disposal of the waste, or at least a radioactive waste management programme that holds out the promise of the establishment of such a facility in the foreseeable future. When these conditions are not met, the current installation may be seen to operate as a de facto waste storage facility. Moreover, without a transparent national policy, the decommissioned site may appear to be pre-destined to become a waste management site whereas the host community may look forward to other uses:

*“We have to demonstrate [to regional stakeholders] that new [industrial] developments are possible when decommissioning is over. [...] Nuclear territories are open to accept other kinds of*

*power plants. They are willing to defend their activity as a power production site. This goal makes necessary some proceedings which ensure that the land will be suitable for production when decommissioning is over. As a definitive solution for high level radioactive waste has not been set yet, the local populations are afraid of the possibility that the site will be transformed into a radioactive waste storage facility. This could prevent the site from being used for other industrial activities.” (Vila d’Abadal, 2001)*

At the same time, the problems arising in the course of decommissioning may have an impact on energy policy decisions:

*“All decommissioning proceedings, including both treatment and storage of radioactive waste, are the main subjects of the debate in relation to the future of nuclear energy. So, decommissioning is fully involved in the general debate about a solution to radioactive waste.” (Vila d’Abadal, 2001)*

All these issues point to the importance of the interactions between national policies and local/regional decisions.

NEA member countries may wish to look into whether a forum and opportunities have been organised for local stakeholders to provide input to national debates and consider in what ways local decisions need national involvement. It is of note that groups and/or federations of local stakeholder representatives increasingly take an active role on the national or international scene, voicing their views on energy and waste management policy. Examples include Spain’s AMAC or Association of Municipalities Affected by Nuclear Power Plants, France’s ANCLI or National Association of Local Information Commissions, Canada’s CANHC or Canadian Association for Nuclear Host Communities and GMF, the Group of European Municipalities with Nuclear Facilities.



## **THE LOCAL DIMENSION**

### **The need for early involvement and co-operation**

Decisions concerning the phasing out of certain facilities are similar to facility siting decisions in the sense that concrete geographic locations are affected. In addition, the closing of certain facilities may be accompanied by the expansion of others. The population of candidate sites, the affected local and regional authorities, the operator and the employees of the affected facilities should be involved early in making these decisions (Moding, 2002; Palmqvist, 2005). In such debates, there will be special interest in the following questions: what environmental and socio-economic gains and losses will accompany the planned shutdown (expansion)? How and when will the affected communities be aided in adjusting to these changes and by whom? NEA member countries may seek how best to engage affected communities in assessing the impacts of D&D and addressing these appropriately.

Although decisions on closing down or expansion are similar to the ones associated with choosing a site for a facility, there are some differences as well. In most countries, local communities have a say when it comes to the decision of siting a new facility and in several countries, municipalities have even the informal or formal right of veto. They have less power in the case of a decision to close a facility and no municipality has the right of veto. Nevertheless, the operator should initiate a dialogue with the affected municipalities and try to find mutually agreeable solutions. These solutions are likely to pertain to public information and local monitoring and control of dismantling activities, as well as the mitigation and/or compensation of negative socio-economic impacts.

Regulators note that the decommissioning and dismantling of NPPs brings new issues, such as conventional hazards associated with large-scale demolition projects and the handling and disposal of large quantities of non-radioactive waste. This typically requires new cooperative working relationships between national and regional authorities, some of which have limited experience with the nuclear industry. This requires early, frequent and open communications between the various authorities with an interest in the decommissioning project

to determine roles and responsibilities and develop a streamlined and co-ordinated decision-making process. It was noted that the challenges become more significant as the number of authorities involved in NPP decommissioning and dismantling increase – for example, in one German case, there were as many as 50 organisations involved. The implementer must comply with the requirements of all authorities, and thus from the standpoint of the implementer, it is beneficial for the various authorities to designate a “lead” authority to ensure consistency between the various requirements, and co-ordinate the review process to allow for timely decision making (OECD/NEA WPDD, 2007). Clear assignment and communication of roles, as well as the designation of a principal regulatory interlocutor, will be useful also to local and regional stakeholders such as elected representatives.

### **Maintaining stability**

Municipalities want to maintain a suitable level of economic activity and are ready to enter into negotiations on socio-economic benefits on behalf of the communities. Decommissioning in itself can provide some boost to the local economy for at least a few years, especially if negotiations between the operator and the local community are aimed at maximising local benefits:

In the course of the Vandellós-I decommissioning process, the implementer Enresa tried to mitigate the negative socio-economic impacts of NPP shut-down by hiring local and provincial companies to participate in dismantling activities. As a result of these policies, about 65% of the personnel were composed of local and provincial workers. A total of 1 800 people were involved during the period 1998-2001. Other significant contributions to the local economy included revenues from licenses and permits, compensation in the form of a fee for waste storage, and payments to the administrations of the area to promote economic, cultural, and other activities (Castellnou, 2003; Lang Lenton, 2007).

Assurance of stability can also be offered to the employees of the affected nuclear facilities. For example, in the case of decommissioning the Barsebäck NPP, its former owner, Sydkraft Co., gave employees a five-year job guarantee after the decision was taken to close the facility (Moding, 2002). In general, employees of the affected nuclear facilities are amongst the most important stakeholders when planning decommissioning. They may also constitute an important human resource during the dismantling phase.



## **Local interest in site re-use and redevelopment**

Decisions on decommissioning concern the activities to be conducted in the area of the nuclear installation (e.g. the demolition or transformation of buildings, the treatment and storage of radioactive waste), the timing of these activities, and the future use of the land. Generally, the communities demand the earliest possible restoration to the original state. An example of the speedy execution of D&D operations and the involvement of regional and local actors is the case of the Lubmin nuclear power plant:

According to Bäcker (2005) and Palmqvist (2005), at the site of the Lubmin NPP in Greifswald (Germany), the decommissioning and dismantling activities were carried out expeditiously. Decisions were based on a broad stakeholder dialogue, involving federal, regional (Mecklenburg/Western-Pomerania) and local government organisations, affected communities and the general public. New facilities, including a gas terminal and harbour infrastructure have been established around the site (Bäcker, 2005; Palmqvist, 2005).

The interests of different stakeholders may diverge at the end of useful facility life, requiring at times third party mediation or significant actions by national players:

The Whiteshell Laboratories were established in Pinawa (Manitoba, Canada) by Atomic Energy of Canada Limited (AECL) in the early 1960s. Since AECL provided half of the revenue for the local government, the community strongly depended on their operation. In the mid-1990s a decision was made to close the facility and decommission it over a 60-year period. Initiatives between AECL, regional and local stakeholders, and the federal government were undertaken to identify and create new business opportunities for the area. Still, some stakeholders perceived that local development was unjustly frozen (Simpson, 2002). While AECL's decommissioning plan met the requirements of a federal environmental assessment, local stakeholders wanted the decommissioning work to be completed more quickly. The Canadian government adopted a new long-term decommissioning strategy in 2006, and announced a five-year, \$520 million commitment to begin cleanup of "nuclear legacy liabilities" resulting from research and development activities that date back to the beginning of nuclear technologies and medicine in Canada. The overall strategy contains a concrete action plan to clean up

contaminated lands and nuclear waste, and to decommission outdated infrastructure, among them the Whiteshell Laboratories.<sup>1</sup>

Site operators or responsible parties are not always government-owned organisations, and private companies may own and operate nuclear power plants and fuel cycle facilities. While private sector operators will of course need to address all regulatory, safety and environmental requirements in decommissioning a facility, in some cases they are not obligated to address a host community's socio-economic issues. This is typical of other industrial sectors. Societal expectations and demands for the D&D of nuclear facilities however may be much higher.

Theoretically, various possibilities may arise in connection with future land use: industrial vs. non-industrial use and, in the former case, establishing nuclear vs. non-nuclear facilities. Typically, municipal governments are ready to consider new energy-type installations, since the necessary infrastructure is largely available. Examples of non-nuclear land use also exist. With respect to land use, local municipalities typically have a certain degree of legal control:

*“UK land use legislation (contained in the Town and Country Planning Act 1990) in general terms requires an application to be made to the local planning authority for permission to execute any works that involve construction of new buildings or a change to the appearance of existing buildings. No consent is required for total demolition.”* (Woollam, 2003)

In Sweden, municipalities have the right to veto any proposal to establish new installations. This may become relevant, for example, for the Kävlinge community, which plans to establish a green field and a new, seaside housing area at the place where the Barsebäck NPP is currently located (Palmqvist, 2005):

*“..the municipality does not appreciate the views of the governmental authorities, especially Energimyndigheten, to maintain the Barsebäck site as a possible location for alternative energy production (i.e. not nuclear power) in the future. Their argument is that the power lines and infrastructure are already in place. The State's present declaration concerning “Barsebäck after Barsebäck” thus clashes head on with the municipality's declared intentions as expressed, for example, in its latest Municipal Comprehensive Plan. A Swedish municipality has a very strong position in questions of future land use as it has a so-called municipal planning monopoly. Each municipality, according to Swedish*

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1. [www.nrcan-rncan.gc.ca/media/newsreleases/2006/200614\\_e.htm](http://www.nrcan-rncan.gc.ca/media/newsreleases/2006/200614_e.htm).

*law, has the right, in most cases, to decide over the future use of the land within its own boundaries, even in a case such as this.” (Moding, 2002)*

The main question is: what is the planned future use of the site, and what is required to make the remaining facilities and site suitable for those uses? This is especially relevant when no storage facility exists for the disposal of radioactive waste:

*“There is a requirement to assess the alternative options in detail to answer questions about what would happen in the event that planning consent [for proposed new infrastructure] was not granted. In the case of, say, a proposal to build a supermarket this is straightforward: if no consent is granted no store is built. But when no disposal route exists for the waste from decommissioning, as in the UK, the options for dismantling a nuclear power station are limited.” (Woollam, 2003)*

At the site of Dounreay NPP in Scotland, the process of setting decontamination priorities and radiological target levels will take some years. UKAEA (United Kingdom Atomic Energy Authority) and local stakeholders are currently working to find agreement on which surface buildings should be maintained, which areas should be accessible to visitors, and which new uses should be created. An iterative process focuses in turn on local wishes and assessment and evaluation of the costs associated with bringing each building and area to acceptable radiological levels (Love, 2006):

The remote location of the UKAEA site at Dounreay creates different redevelopment challenges. A recent study by the Highlands and Islands Enterprise (HIE) Network evaluated how it might secure economic benefits from the decommissioning of Dounreay. The report recognised the importance of diversifying the local economy in order to reduce the reliance on the current employment base, and the need to develop the local business infrastructure. It also highlighted the opportunities for inward investment and prioritised how the HIE Network would support the growth of new and existing businesses, develop the local skills base and strengthen the community. Two recent examples of these redevelopment activities are the following. Firstly, the Learning, Education and Development (LEAD) Centre was opened early in 2004. It provides high-quality training and skills development opportunities for employees of UKAEA and contractors at Dounreay and other nuclear sites in the United Kingdom. Secondly, the Dounreay Visitor Centre attracted more than 8000 cosmopolitan visitors within a few months of its opening in April 2004 (IAEA, 2006).

## **Trust building**

### ***Involving local/regional actors in monitoring activities***

Communities build confidence in the D&D activities by being directly involved. Affected communities usually demand safety and security guarantees. Many stakeholders find that an adequate and transparent system consists of involving the local actors in monitoring D&D activities:

- During the decommissioning period of the Vandellós-I NPP (Spain), a Municipal Monitoring Commission was created, made up of representatives of affected municipalities, the regional government, a local business association, trade-unions, the local university, the NPP management and the implementer, to monitor the dismantling process and regularly inform the local public. Attention was paid to issues primarily of work progress, safety, waste management, environmental surveillance, and contracted personnel (Castellnou, 2007).
- In Canada, a Legal Agreement concerning the safety and financial aspects of cleaning up historic LLRW sites was signed between the Federal Government and the affected municipalities in the Port Hope area. To monitor the cleanup process, the Agreement Monitoring Group was established, which consists of representatives of the implementer, some federal government agencies, and the affected municipalities (Austin and Stevenson, 2005).

Redevelopment can be facilitated by involving elected officials at an early stage of the planning process. Elected officials (local, regional, national) can facilitate site redevelopment by promoting the redevelopment plans in the community and providing advice and notice of funding opportunities for redevelopment/site enhancement.

The role of elected officials at all levels is very important, since they are charged with making decisions in the best interest of their jurisdiction. Generally these officials are supportive of beneficial and productive reuse of facilities being decommissioned, especially when attracting new industries can offset declines in employment. In conjunction with local government staff, like planning and zoning authorities, these officials are tasked with decision-making regarding land use within their jurisdictions. They control what types of infrastructure may be available to support redevelopment of a site, and can often provide resources from the jurisdiction's budget or by virtue of its access to regional or national grants for economic development (IAEA, 2006).

### ***Transparency and proactive information***

In all contexts, transparency and proactively providing information to the public are key factors in communicating safety and building confidence. Accurate and accessible information should be provided on a regular basis, and operators/communicators should maintain a continued presence in the community also during the decommissioning phase. The relevance of some stakeholders may be recognised for the first time at decommissioning, as when small radionuclide facilities are dismantled and residents in homes adjacent to the facility must be informed and kept up to date (Griffiths, 2006).

A broad range of community involvement techniques may be applied in the field of decommissioning, including, for example, newsletters, web sites, press releases, fact sheets, community workshops, public meetings, the opportunity for site tours, interviews and surveys in the community, as well as tools providing access to official documents (Keyes, 2004):

- During the Vandellós-I dismantling project, a number of communication tools and channels were used, e.g. public information meetings, an information centre, the municipal magazine, the municipal radio station, and meetings with representatives of the local press. Academics from the local university helped with “translating” technical information to facilitate public access (Castellnou, 2007).
- In 2002, the UKAEA launched their stakeholder engagement programme associated with the decommissioning of the nuclear reactors at Dounreay. Tools applied in course of the programme included a newsletter, a bulletin, a web site, stakeholder panels, an independent stakeholder group, and a consultation steering group (Harrison *et al.*, 2005).
- Within the framework of the Superfund programme, the US EPA conducts stakeholder interviews to help the authority determine major concerns and needs of the affected community. These are taken into consideration when choosing the preferred remedial action. EPA also creates an information repository and an administrative record and makes it available to residents. In addition, funding is provided to the community so they may obtain technical assistance (Walker, 2005).

Regarding public information, it is suggested that facts rather than partisan arguments should be communicated, and communicators should avoid using technical jargon. Transparency requirements should be balanced by sensitivity to commercial and security interests. Meeting these contradictory requirements is, however, not without problems:

*“Nuclear matters are complex and the nuclear community tends to suggest [that] decommissioning is technically straightforward. Hence we may assume others have understood the technical evidence, even if they dispute it. This is often not the case.*

*Every strategic decision should have a robust rationale and should have resulted from a detailed options analysis. Anti-nuclear groups [as well as others] want this analysis to be visible and transparent. In some cases commercial considerations make this difficult: public domain reports should be prepared that present as much information as practicable. In some cases, this will never satisfy all objectors”* (Woollam, 2003).

Experience in the area of decommissioning an industrial site with NORM (naturally occurring radioactive material) in Brazil showed that local stakeholder interests can be varied and sometimes contradictory (for instance, when the valuable land occupied by an installation may become available for other uses). There may be concerns among neighbours about radiation risk and the level of potential contamination, and there may be a low level of knowledge about radiation protection and site characteristics. In such cases it may be useful that the industrial decommissioning actors be assisted by communication professionals, notably to “translate” technical information to the public.<sup>2</sup> The regulator has a role to play not only in monitoring or controlling decommissioning, but also in making certain that information circulates to all stakeholders (both local communities and public ministries) and generally guaranteeing transparency (Lauria, 2006).

Appropriate flexibility in regulatory requirements can contribute to local acceptance of decommissioning approaches through the accommodation of local issues and preferences. Further, a flexible approach allows authorities take account of site-specific circumstances and tailor requirements to the planned future use of the site. Flexibility also allows implementers be innovative in developing approaches and solutions to increase safety or efficiency, or reduce costs. There are potential stakeholder confidence benefits to be gained from harmonisation of higher-level safety principles and approaches. Ultimately, good communication is seen to be more important than common numerical criteria. Regulators need to be able to explain how they arrived at specific numerical criteria in a clear and transparent fashion, and how meeting the

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2. A similar lesson was learned in the context of the Vandellós-I NPP decommissioning in Spain, where academics from the nearby Tarragona University were employed to make technical information understandable and accessible to the public.

criteria will assure safety. At present internationally accepted criteria are the exception as opposed to the rule; however the use of such criteria, where they are available, will promote general acceptance and confidence in them (OECD/NEA WPDD, 2007).

### ***Partnership between institutions and host communities***

Research indicates that when a partnership has been developed between the affected communities, the operator and the authorities during the planning, construction and operation of a facility, it is more likely that cooperative rather than contentious approaches will dominate in the decommissioning phase. In order to build confidence in the institutional actors, the affected stakeholders (including the public) must be involved in decision making as early as possible in the decommissioning process as well (Keyes, 2004):

According to local leaders, the three main pillars of trust are “Safety, Participation and Local Development”. Therefore, it is crucial that representatives of local governments participate in the decommissioning process in order to defend local interests; control decommissioning activities as far as general local responsibilities are concerned; and be involved in the preparation and management of socio-economic plans (Vila d’Abadal, 2001).

The participation of local/regional authorities is of key importance, since they are in charge of public information and they are also the ones facing the local population and the media. With regard to local responsibilities, although environmental protection may be within the powers of local/regional authorities, nuclear safety and security, radioactive waste management, and emergency plans are typically not within their domains. The latter issues are, however, central to decommissioning debates, and the question arises as to which organisation should “carry” such debates. One possible answer is for local and regional actors to develop their own competence and enter into partnership (and thereby share responsibility) with the national-level decision makers:

*“Signing the Legal Agreement has made us partners in the process and provided us with greater influence over the outcome of EA. We learned that, along with this partnership, comes the responsibility of balancing our interests with those of the federal government. Some may observe that the two municipalities of Clarington and Port Hope are now managing federal-scale responsibilities. Indeed, few if any other cities in Canada require their Councillors to be conversant in matters of nuclear engineering, epidemiology, health physics and the social sciences.”* (Austin and Stevenson, 2005)

Another possible mechanism for the collaboration of national and regional/local actors is for the regulator to play an active role in D&D activities not only by overseeing the process, but also by acting as the expert of the affected communities.

During the decommissioning of the Vandellós-I NPP a Dismantling Information Committee was created, in which representatives of the regulator (CSN), other national government agencies, and affected regional and municipal governments took part. Within the framework of this Committee, the CSN appointed a Resident Inspector to oversee ongoing activities and provide for public information. By reporting to the Parliament and informing the general public and the media about its oversight activity, CSN played the role of a “guarantor” of safety in this project (Revilla, 2005).

### **Sustainability and foresight<sup>3</sup>**

In essence, any facility is meant to move off the active register and be decommissioned one day. While the active period of construction and operation may generate palpable economic benefits for the host region, this will not always be the case later. Building a sustainable host relationship implies addressing the entire life cycle of a facility and site. Where diminishing economic returns are to be expected, attention should be given to creating added cultural and amenity value for the host region (OECD/NEA, FSC, 2007):

The UKAEA reported experience in the preparation and implementation of the first Socio-Economic Development Plan (SEDP) at the Dounreay nuclear site in Scotland. (McWhirter, 2006) The National Decommissioning Authority (NDA) is tasked with decommissioning 20 civil nuclear sites in the UK and to consider the social and economic implications of the decommissioning upon the local communities. NDA responds to this notably by requiring the incumbent contractors to prepare SEDPs. The sustainability of the communities “requires action now to identify new employment opportunities and to encourage these to develop in such a way as to ensure a gradual transfer of staff from the management and operation of the decommissioning sites to new businesses in the area.” At Dounreay, UKAEA used an existing socio-economic baseline study to prepare the first SEDP. In retrospect UKAEA advises that a fit-for-purpose baseline would be needed to successfully develop SEDPs. Highly accurate projections should be

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3. This contains material from an upcoming publication by the FSC dealing with fostering a durable relationship between a facility and the host communities (OECD/NEA FSC, 2007).



obtained of the human resources (skills) needed for the decommissioning across its different phases. Of great importance, a vision should exist of the socio-economic state of the community wanted after decommissioning (the plan will be directed towards achieving that). Review, updating and monitoring will be needed, and an individual or organisation must be identified with the responsibility to prepare the plan and to drive it to completion (McWhirter, 2006).

NEA member countries will likely be brought to examine what must be created to maintain high socio-economic potential and quality of life in the host community. A valuable example may be drawn from the field of long-term radioactive waste management. Partnership initiatives in Belgium and Spain have called for community sustainability funds as part of the siting “package”. This may become a preferred strategy in the future. Such funds target not only the integration of the radioactive waste management project in the life of the community, but also, increasing community capacity to play a future guardianship role:

The multi-stakeholder research programme Cowam España has investigated the role of financial support to host communities in ensuring sustainable development. Moving beyond the concept of short-term compensation or incentives, future instruments should enable local and regional development, help the community assume responsibility for waste generated in the benefit of society at large, and serve to create and maintain local knowledge and competence to monitor management over the coming decades and generations. Cowam España suggests that stakeholders including local and regional authorities should focus on devising mechanisms for social learning, economic development and environmental protection over the long term; these would be supported by the grant funds. The Vandellós-I decommissioning has paved the way, and Spain’s planned national interim storage facility could serve in this connection as a tool for research, training and social learning.<sup>4</sup>

Important sustainability lessons may be drawn from the mining industry in which there is experience with declining activity and decommissioning:

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4. “The Role of Compensation in Siting Radioactive Waste management Facilities”. Presentation by Ms Meritxell Martell, Enviro et al. at the ICEM’05, September 4-8, 2005, Glasgow, Scotland and also “Estudio comparativo de la eficiencia de los fondos de ENRESA y las ayudas económicas al sector energético” Presentation by Ms Meritxell Martell, Enviro, at the COWAM España seminar in Madrid, April 27-28, 2005. [www.cowam.org/dav/esp/Casos%20estudio/compensaciones\\_v0.ppt](http://www.cowam.org/dav/esp/Casos%20estudio/compensaciones_v0.ppt)

- In the far north of Canada where uranium is mined, the traditional aboriginal culture is still dominant locally. It is important to organise sustainable modern economic activity in harmony with ongoing traditional activities. A miner gets more community respect and satisfaction from being a skilled and experienced trapper. Cogema has recognised that miners should enjoy working conditions (time schedules, geographic placement) such that they can still devote themselves meaningfully to traditional skills. Sustainability here implies provision of resources enabling people to preserve their environment and perpetuate the traditional culture despite modern economic pressures. Furthermore the uranium industry has committed to the long-term goal of offsetting diminishing mineral resources by the creation of other economic opportunities. Specialised academic and technical training allow greater numbers of northern people to move up into the mining management ranks. As their economic and educational level rises, the work force is becoming more flexible and competent. Successful northern-owned as well as joint-owned service industries have taken root.<sup>5</sup>
- An existing European regulation<sup>6</sup> relative to mining in general stipulates that host compensation funds must not all be ear-marked for short-term needs, but must be directed in part to generating economic and cultural resources that will sustain the community over the long term.

NEA member countries may also consider how foresight at the outset of facility development can ensure, later, a graceful transition of the inactive facility and site to new uses. When creating a new facility, it is necessary to foresee the end of its useful life. If future needs are not anticipated, there is a risk that the facility will become a liability for the community. Proper foresight – on the end use of the facility and site, or technical provisions for quick transitions to other types of facilities – provides better assurance to the host community that there will be flexibility in future planning capacity:

- In Kävlinge, the town hosting Sweden’s Barsebäck nuclear power plant, the municipality views that the operating reactor is a valuable asset and should go on running for economic and environmental reasons. If Government decides to decommission the community does

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5. Development Opportunities for Northern Aboriginal Communities from Saskatchewan’s Uranium Mining Industry, A. Richards, Cogema, Presentation at the FSC workshop “Public confidence in the Management of Radioactive Waste: The Canadian Context” held in Ottawa, Canada, 14-18 October 2002.

6. Regulation CE 1407/2002 of the European Council 23 July 2002.

not want to be tied to a restricted, unproductive site for 30 years. As mentioned earlier, municipal preference would be to turn the site very quickly into a new seaside housing area. The choice of land use reflects both the changing demography of the region and the municipal need to generate revenue. If the older type of reactor had been built with design provisions that favour a prompt dismantling – as current plants do – or if the plant had uses other than just producing energy, there would be a shorter lead time to dismantle or reconvert it and there would be a smoother transition to a final and accepted new condition (Palmquist, 2005).

- When mines are closed they have been transformed at times into mining museums, offering a new tourism industry while memorialising the activity that meant so much to the region and shaped it. In France, a tumulus formed of mining waste has been transformed into a ski site. A mining museum in Nord-Pas-de-Calais, France, also contains a cultural centre – where conferences and concerts also take place. Disused nuclear power plants or facilities are also being considered as tourist sites, e.g. the Dounreay site in the United Kingdom.



## DISCUSSION AND CONCLUSIONS

Implementing the three Pillars of Trust – safety, participation and local development – is key to successful decommissioning and dismantling projects.

Each pillar has particular meaning for the individuals making up the communities affected by D&D, as well as for the institutions involved in this activity.

*Safety* is necessary for any individual to be able to act, take decisions and make use of his/her freedom. Safety during the whole lifetime of a project is paramount and should constitute no undue burdens on both current stakeholders and those who will enter the scene at a later time – including future generations. The municipalities hosting nuclear facilities on their territory tend to concentrate not on debate about the relative merits or problems with nuclear power but instead, on dealing with the day-to-day issues arising from plant operation and with plans for its future. Assurance of safety, e.g., through the provision of adequate information, including plans for dealing with emergencies, is essential for communities in the locality of a nuclear facility.

A decide-announce-defend policy is not conducive to sustained progress. *Participation* in decisions is the most effective and best way forward for site operators to involve local politicians or community leaders, and to co-operate with any local committees set up to oversee the community interests. This means providing them with transparently valid information about plans and programmes, living up to commitments, and being constantly available to answer questions and hear comments. It also means providing valid information on safety and environmental matters including waste management and giving full consideration to concerns about the effects on society such as loss of employment, the need for alternative economic activity, future use of the site and about compensatory benefits for the community. At the same time, because decommissioning of nuclear facilities, and nuclear power plants especially, has more than just local dimensions, questions should be expected on links to the national energy and radioactive waste management policies. A communicated, clear structure of actors and their roles is helpful to clarify national and local responsibilities.

All techniques for communication have their place: these might include conventional meetings, seminars, debates, provision of information packages for local discussions to television programmes, and websites, supported with “chat-rooms” if appropriate. Timeliness is a key factor. Communities where facilities are shut down have additional special communication needs as a result of termination of local employment. The employees of the phased-out facility are special stakeholders who may become a resource in the subsequent dismantling phase.

*Local development* is the final pillar. While the sustainability of the host community has not always been a priority for traditional industrial operators closing down an automotive or manufacturing plant, there are demands on the nuclear sector to ensure high socio-economic potential and quality of life in the host community. Communities are eager to take part in deliberations about the suitability of decommissioning, to see the land restored to open and productive usage if the plant is dismantled, and to receive assurances of different natures that their economic viability will not falter. An example may be drawn from the “sister” area of long-term radioactive waste management, in which stakeholders see community sustainability funds as an important instrument.

Many examples of nuclear decommissioning projects can be noted that show an increasing attention to stakeholder involvement and are leading to successful outcomes. It is important to take these lessons on board as the nuclear age moves into large-scale decommissioning tasks. More than 500 nuclear power plants have now been constructed and operated worldwide. The NEA Member countries account for more than 80% of the total number of plants and most of these will need to be decommissioned in the next few decades. Decommissioning and dismantling constitute a test on which the nuclear sector will be judged. Operators and authorities who will seek to undertake new build have an interest in demonstrating that existing sites can be decommissioned and cleaned up quickly and neatly. They will be judged not only on the technical quality of their action, but also and perhaps especially, on how well they respect and uphold the pillars of safety, participation and local development on which stakeholder relations rely.

Today many persons involved in decommissioning believe that, on the international level, what is needed is a common understanding of D&D objectives, rather than a harmonised methodology or strategy. Stakeholder involvement may be taken up in the same manner. It is generally accepted today that stakeholder involvement offers positive benefits for substantive, procedural and philosophical reasons. However, actual practices will necessarily differ from context to context. The work reported in this paper reflects successful processes in certain countries, but different cultures may require or even dictate

other approaches. Matters like the extent of government commitment and involvement, legal provisions, and so forth, are also likely to be an influence in dealing with the stakeholders. The purpose of this paper is to contribute to an understanding of the underlying concepts and principles of stakeholder involvement in D&D, and incite new thinking about how to meet the challenges.





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