On May 18, 2001, the Finnish Parliament voted 159-3 in favor of the government’s decision-in-principle (DiP) on the geological disposal of spent nuclear fuel in Finland. The government based its decision on the application of Posiva Oy, the nuclear waste management company owned by Finland’s two nuclear power plant companies. It meant that the repository could be sited in the Olkiluoto area near the Olkiluoto nuclear power plant in the municipality of Eurajoki, and the disposal could be based on a technical approach originally developed by SKB, the Swedish nuclear waste management company. This was the first time in the world that a site was selected for a high-level nuclear waste repository and was accepted by the majority of local people.

Only a few years earlier this outcome looked far from likely. Opinion surveys showed a consistent lack of trust in the long-term safety of geological disposal, and the Eurajoki municipality had an official policy opposing any high-level nuclear waste repository. To the extent that the topic was discussed in the public media, most opinions were sceptical if not completely negative.

The DiP meant that Posiva could begin its underground research to characterize, or thoroughly examine, the bedrock at the Olkiluoto site. A few years earlier an official inquiry in the United Kingdom had stopped similar plans at the Sellafield site in Cumbria. In northern Sweden, referenda had stopped the SKB’s plans to investigate sites. In this context, the Finnish siting decision seemed to come against all odds. Its very existence suggests that something new
was perhaps learned or discovered. The decision was a clear commitment from all major stakeholders—the regulatory agency, the national government, the Parliament, the local government, and the municipality council—to move in the direction of geological disposal of the waste. It can also be seen as another step in the long process that had started in the early 1980s when the reprocessing of spent fuel was found to be economically impossible in Finland—and could hardly be defended on any other grounds, either.

The siting decision was not based on the idea of volunteerism: local communities electing to be considered as a prospective site for nuclear waste disposal. That principle was later adopted in Sweden, Japan, and France and is also proposed in the United Kingdom. However, since in Finland the local residents of any given municipality have the legal right to veto the siting of the repository in their municipality, their acceptance was ultimately required—and in this case they gave it!

Throughout this process we learned and we adapted: technical and rational discussion was valid and necessary, but it was not enough. Instead of simply “informing” we began to listen to stakeholders and the public at large and to acknowledge diverse perspectives. In the end, even the Green Party members voted in favor of the DiP.

On May 18, 2001, the Finnish Parliament voted 159-3 in favor of the government’s decision-in-principle (DiP) on the geological disposal of spent nuclear fuel in Finland.

MY ROLE AND PERSPECTIVE

I am analyzing the successful siting process in Finland from an insider’s perspective. I came to work in the nuclear waste program in 1990 when quite a lot of groundwork in the siting process had already been carried out. The history had started in the early 1980s, so I could only learn about it from colleagues and documents, but I lived through the most active phase of the public dialogue and decision-making in the late 1990s, and also took on the public discussion as a personal challenge. I have followed the debate around nuclear power since I began to work in the nuclear energy business in the mid-1970s. In this article I will try to combine my personal experience with facts and statements from various documents. However, it should be taken as a personal account, not as an objective description of what happened. A more multi-faceted analysis of the experience evolved during a workshop organized by the OECD Nuclear Energy Agency (NEA) in Turku in late 2001.
The Finnish government’s decision of 1983 is often seen as the beginning point of the program to dispose of spent fuel. The first Finnish nuclear power plant units were built in the 1970s; at that time the thinking was that all spent fuel should be reprocessed. For the Loviisa power plants this was to take place in the Soviet Union; the Finnish and Soviet governments had agreed on this. The reprocessing wastes would remain in the Soviet Union.

Teollisuuden Voima Oy (TVO), the private company that owns the Olkiluoto nuclear power plant, was engaged in negotiations for reprocessing with both the British nuclear fuel cycle company BNFL and the French reprocessing company Cogema, but finally withdrew from them without any contract. In this context, in 1983, the Finnish government decided on guidelines for nuclear waste management in Finland: it ruled that TVO should either seek international arrangements similar to those already in place for the Loviisa plants, or it should start preparing to dispose of its spent fuel directly, in Finland. In practice TVO chose the latter route.

The decision of 1983 was a “modern” one in the sense that it defined a step-by-step process with several opportunities to evaluate progress before the actual disposal operations would begin. The first evaluations were related to progress in the process of siting the repository, which was assumed to be critical in developing the disposal solution. The emphasis on the siting process was possible because the Swedish firm SKB had already developed a technical approach for disposal; it was also considered suitable in Finland because the geological conditions in the two countries are so similar. According to this approach, given the name “KBS-3,” the spent fuel assemblies are packaged in copper canisters and then buried deep in the crystalline bedrock. Tunnels are excavated at the depth of about 500 metres in bedrock, holes are drilled in the floors of these tunnels, and the canisters are placed in these holes. Between the canisters and the rock walls a “buffer” of bentonite clay is installed to protect the canisters from mechanical and chemical loads. In this way a very long expected life-time can be achieved for the canisters. After all canisters have been disposed of, all tunnels are backfilled and access routes from surface to the underground space are closed and permanently sealed.

TVO embarked on the site selection process by screening the entire coun-
try for possible sites to investigate; in 1987 it began preliminary investigations on five candidate sites. Since Finland is situated in the Baltic shield area, where nearly all the bedrock is crystalline, TVO actually had little choice in geological terms. So they believed the possible sites differed very little, but they had to confirm this by investigating. We were required to study the variability of Finnish rock conditions at depth. Actually all the five sites represent crystalline rock type (because, as it is stated earlier, there is no choice in this respect in Finland) but the sites do represent different geologic domains in the sense that their geologic histories are different. For instance, although they are all old geologic formations, their ages vary from 1.6 billion years to almost 3 billion years.

Two of the site candidates (Hyrynsalmi and Kuhmo) were situated in northern Finland, and two others (Sievi and Konginkangas, later Äänekoski) in central Finland; the fifth candidate site was Olkiluoto itself, where TVO’s nuclear power plant was located (see Figure 1). TVO selected the candidate sites largely by considering geological, geographic and infrastructure factors and various constraints of land-use plans. The selection was not tied to volunteerism in the same way as it has since been applied in many other countries. However, TVO did inform the municipal administrations about its plans.

In the same year that TVO started the geological investigations a new nuclear energy act was passed by the Finnish Parliament. The new law included specific stipulations for nuclear waste management, and defined the DiP
that would henceforth be needed for any new nuclear facilities. The decision would have to be made by the government and ratified by Parliament, but first it had to be endorsed by the municipality at the proposed site and the regulatory authority. Thus the law gave the municipalities a right of veto to prevent the siting of any nuclear facilities, including waste repositories, in their areas. Many said this veto power would make it impossible to site any nuclear facilities.

In 1992 TVO shortlisted three sites it would continue to investigate: the Olkiluoto site near the power plant and two inland sites, Kuhmo and Äänekoski. At that time most public opinion was still opposed to the siting plans in all three municipalities. Active opposition movements against the repository had been formed in some candidate communities. Since the TVO was the only organized entity in these areas supporting the provisional siting plans, most discussion in the public media was between TVO and the opposition groups.

INTERNATIONAL EVENTS CHANGE THE RULES

The 1980s and 1990s saw great changes in Eastern Europe; in particular the collapse of the Soviet Union led to fairly chaotic conditions in Russia. Although the government decision of 1983 had endorsed “international solutions,” more and more Finnish politicians now started saying that the return of spent fuel to Russia was not ethically defensible. Meanwhile they were becoming more concerned about the implications for Finland of its accession to the European Union. What if the European Union were to decide to build a nuclear waste repository for all European wastes in a country like Finland? Why not just prohibit any such practice—including exports, for the sake of balance? In 1994 the parliament voted to ban both the import and export of nuclear waste.

This vote, which amended the Finnish Nuclear Energy Act, also meant that the spent fuel from Loviisa would have to be disposed of in Finland. For this purpose the two nuclear power companies then decided to establish a joint company, Posiva, that would take over the spent fuel disposal program that TVO had been managing. For reasons of balance, the companies also decided to consider the Loviisa power plant area as another candidate for siting.

REFRAMING THE ISSUE

The general sentiment about nuclear waste disposal continued to be sceptical, if not totally negative. Judging by opinion polls, none of the candidate municipalities looked ready to accept a repository. Nor could Posiva overrule the local right of veto. Thus far, the site selection process had emphasized geological investigations and interpretations and related safety research, but now it became clear that the nuclear waste issue was not merely technical or scientific; it was also a societal and social issue. In the late 1980s and early 1990s sev-
eral social scientists and media researchers had come to focus on the local waste debates, and they tended to be more sympathetic to the opposition voices. Still, they recommended more interaction between TVO—later Posiva—and the local people. And the industry took them seriously.

TVO had, of course, informed local people and the media about its activities, but until the early 1990s most interaction with local stakeholder groups was restricted to liaison groups representing the municipality. Now a clear change in attitudes was evident. Now the industry was interested in dialogue and debate. But how could it engage in a dialogue the public and stakeholders—those listed in the introduction, as well as local landowners, local business, and all others potentially acting by, or affecting, the implementation of the siting plan—if the active local interest was only on the opposition side?

The industry was not alone in reframing the nuclear waste issue: in the early 1990s the scope of the government-financed Public Nuclear Waste Research Program was extended to include research into social and media topics. At first most research focused on improving communication between Posiva (as the implementer of the plan), the authorities, and the local stakeholder groups. Posiva thought that repositories were most likely to be accepted if it could give more and better information to the public and the politicians. Here the media often looked like the main challenge for Posiva, as they seemed more opposed to nuclear power than the public itself—as long as the public could be given better, non-biased information about Posiva’s plans and their safety aspects.

Posiva conducted several extensive opinion surveys, all carried out by consultants. Some looked at general attitudes toward nuclear energy and nuclear waste, but others went into the details behind people’s opinions and tried to find out what people actually knew about nuclear wastes and ways to handle them. The survey results and their analysis certainly supported the view that the public held many ungrounded beliefs about nuclear waste disposal and that the attitudes could be affected by better targeted information policies. However, the results also showed that few people, especially outside the candidate site municipalities, were interested in learning about nuclear waste and plans for its disposal.

Their lack of interest was clearly due to lack of motivation: why should they be interested? Personally, I understood this attitude. If people in the municipalities had not been asked for opinions when the nuclear power plants were built, why should they now get involved? Many people apparently thought the industry should solve its problems itself and not bother ordinary people with them.

Given that view, should Posiva force people to take a stance? After the 2001 NEA workshop I mentioned earlier, I talked about this with Claire Mays, a social psychologist and rapporteur at the workshop; she found the lack of participation to be a considerable problem in processes like this. In a democracy,
she felt, everyone should participate in discussing matters that could potentially affect their lives. My view is different: in a developed society the laws and institutions should protect the citizens even if they do not actively pursue their interests in every matter that potentially affects their lives.

ENVIRONMENTAL ASSESSMENT
AS A TOOL TO INFORM AND ENGAGE CITIZENS

In any case, the lack of interest among the municipalities was an issue for us, especially since the apparent lack of interest could easily change into an absolute “no” if the municipality later had to take a position on the siting proposal. In this situation, the environmental impact assessment process came in handy from our point of view. As the law on environmental impact assessments (EIAs) was enacted in 1994, many industries saw it as a new burden. For us, it was a helpful instrument. It gave us a legitimate way of involving various stakeholders in discussing the nuclear waste policies and methods.

Besides actually assessing the social and environmental impact of a proposed project, the purpose of the EIA process is to allow those who may be affected by the project to influence its planning and implementation. In Finland the EIA is guided by several formal requirements, but in practice the process—for instance the way the public interaction is organized—depends very much on the implementer. Posiva decided to give the local stakeholders the main role in determining the contents of the EIA. The idea was to bring together the experts and the local people: the experts would bring their knowledge and experience on the issues, and the local people would provide information on what those facts and findings meant to them locally. Working together like this, perhaps they could build a coherent picture of the project and its alternatives.

In 1997 Posiva organised an extensive public interaction campaign—including meetings, publications, exhibitions and opinion surveys—to gather information on what people wanted to see in the EIA. For example, at the end of the campaign a special structured seminar was organized in each candidate municipality to list the issues the participants wanted covered in the EIA report. These seminars were led by an outside facilitator, who helped formulate the issues in an unbiased way. Posiva then used the opinions gathered during the campaign as the basis of its EIA process.

Of course, there was little hope of consensus on every issue related to nuclear waste disposal, but local actors generally appreciated Posiva’s offer to openly discuss all their issues and concerns. Although a limited number of people participated in the meetings directly, interest in the issue was clearly growing, and the first proponent lobby groups formed. In addition to the voices crit-
ical of Posiva’s work, an increasing number of letters to the editor in local newspapers pointed out possible locally realized benefits from the repository—primarily from increased employment opportunity, revenue derived from a special tax on nuclear facilities, and business derived from demand for certain services needed by the nuclear waste facilities and their employees. In the two municipalities that already had nuclear power stations—Eurajoki and Loviisa—writers raised an ethical point: having enjoyed the various benefits from the nuclear power plants, the people should now recognize their responsibility for the wastes as well.

Although the opinions in most municipalities continued to be critical of a repository in their neighborhood, local politicians began to notice the changing tone of the public discussion—from sheer opposition to curiosity. In Eurajoki and Loviisa, representatives of the local government began to talk to Posiva about their mutual interests in case their municipality was chosen. In Äänekoski, the situation remained unsettled: none of the major parties wanted to become stigmatized by taking an active interest in nuclear wastes. In Kuhmo the main political parties explicitly stuck to their earlier opposing position even though new voices favoured a more versatile position, seeing the repository as a possible cure for the region’s poor economic situation.

THE IMAGE PROBLEM

Posiva formulated its EIA based on the outcome of the public interaction campaign. Not surprisingly, people were interested in the safety of the disposal, both operational and long-term, and also in the safety of spent fuel transportation. However, many people seemed concerned about an aspect they called image. They were afraid that the repository would spoil the image of their home community.

The interest in operational and transportation safety was often quite technical: What could happen? How could that be prevented? How serious could it be for public health? The interest in long-term safety was different. Few people were directly interested in the geological, physical or chemical details of the safety assessment; instead they wanted to question the basis of expert knowledge. Could the experts really say anything meaningful about the safety of disposal in the long term? The issue here was our scientific credentials.

As the aspect of bad image seemed to pop up in discussions everywhere, we gave it special scrutiny: What is image? How is it formed and affected? What would a repository mean for the image of a community? Various definitions were proposed for image but in general we interpreted it to mean a kind of mental picture that an individual or a group of people hold on a certain matter or object. We were curious about the current image of the candidate site municipalities. It turned out that the image of Loviisa was closely associated
with nuclear power. Äänekoski’s image was of an industrial town with pollution problems in its past. Kuhmo elicited an image of a natural wilderness with nuances of chamber music because of its well-known summer festival. And Eurajoki was hardly known at all, as the nuclear power plant is named after Olkiluoto island, located in the municipality of Eurajoki.

Some argued that the repository would give the region’s agricultural produce a negative image. We studied possible similar effects in related contexts but found out they were minimal. These days, people rarely know where their food comes from, and in fact much agricultural produce originates near existing nuclear facilities, but that has no effect on either demand or prices. Only in the case of an accident or serious incident would the repository create a negative labelling effect.

All in all, looking at previous projects, we found little evidence of significant image effects that were likely to arise around a nuclear waste repository. Personally, the more I discussed the subject with people, the more I became convinced that they were using the concept of image to denote something negative in general, something that made them uneasy. In effect, that is, they used the word to denote their negative attitudes about the matter as a whole: something that concerned or frightened them or was simply unfamiliar. It seemed that many people referred to bad image to avoid technical discussion of risks. Lennart Sjöberg’s studies in Sweden suggest similar interpretations of individual attitudes toward risk.5

**TECHNICAL—AND EMOTIONAL—IMPACT ASSESSMENT**

Of course the EIA included a technical safety assessment based on geological data from the candidate sites. The results confirmed earlier conclusions that geological disposal would not have any significant effects on present or future generations, or on the natural environment. Moreover, the assessment concluded that no one of the candidate sites would be significantly more safe than another. The sites differed, of course, but they all had both negative and positive aspects, and it would not be possible to rank them in order of safety.

The safety assessment was reviewed by the regulator, the Radiation and Nuclear Safety Authority (STUK), and its international review panel consisting of experts in various sciences relevant to geological disposal. In January 2000 STUK concluded (on the basis of the report of the international review panel) that geological disposal, as Posiva planned it, was not only a possibility, but a necessity. In their opinion geological disposal could be made safe, provided that Posiva continued its research and investigations.

We tried to explain the contents and conclusions of the safety analysis to the public and stakeholders. Personally, however, I do not think these attempts had much effect. Much more important were the face-to-face meetings and dis-
cussions with various stakeholders as well as interest groups—nature conserva-
tion associations, local business associations, and other non-governmental
organizations. Few people were truly interested in how many “becquerels of
releases” or “microsieverts of doses” our repository might be responsible for in
the distant future. Instead, many wanted to learn more about our credentials so
they could judge whether or not they should take us seriously. Some said they
were afraid in any case.

Judging from the psychosocial research and the interviews that were part of
the opinion research we had no reason to doubt these statements. This was how
we learned to distinguish between the “objective” risks as defined and estimat-
ed by the technical and scientific experts, and the “subjective” risks the lay peo-
ple talked about. Moreover, the sub-
jective risks would be decisive. In the
end the most important decisions
would be made by the public—and
the politicians who depend on them.

We could try to inform the decision-makers about the expert’s judg-
ments of the risks and explain the
basis of these judgments, but we
could not directly persuade anyone to believe in them. What we could best do
face to face was acknowledge the different views and learn about individuals’
backgrounds. I am sure that this acknowledgement gained us more in trust
than we ever won through our attempts at public education in safety assess-
ment.

In the late 1990s a significant change took place at the regulatory agency,
STUK. Previously, STUK had refrained from participating in local discussions
about nuclear waste issues. Now it took a more active role, making spokesper-
sons available to the media and at public meetings at the candidate municipal-
ities—provided that the invitation came from the local community. STUK
tried to keep a distance from Posiva’s public activities at the municipalities, and
they succeeded in demonstrating that a body of independent expertise exists on
the issues. Thus the public could compare the message of these independent
experts with the message coming from Posiva. Although STUK was reticent
about the current maturity of the plans, Posiva could usually share STUK’s
view of the future primary needs for research and development work in the
area of geological disposal.

**ALTERNATIVES ASSESSED**

The closer we came to the decision, the more we talked about alternatives. In
1998 the local communities were forming their positions about the siting issue.
In Loviisa and Eurajoki, representatives from the municipality had started talking with Posiva about possible forms of support and cooperation in case either of their areas was chosen. The Eurajoki municipality had officially changed its position on the siting issue and the majority of local residents seemed ready to accept a repository. In Loviisa the majority opinion was also favorable, but a vocal minority opposed it. In Kuhmo the opposition against nuclear wastes seemed to persist despite some individual attempts to organize a public movement in favor of the repository. In Äänekoski the interest in siting began to wane as the opposition movement succeeded in the local elections; now the ruling parties became more cautious about their future support lest they be seen as eager to site a repository in the municipality.

It was not difficult to understand the positions of the candidate municipalities. Loviisa and Eurajoki already had nuclear wastes in their areas; for them the choice was between interim storage and geological repository. Interim storage would always need maintenance and supervision, whereas a geological repository should not require any attention from future generations once it was closed. The plans included a “multi-barrier system”: a container for the nuclear waste itself, with bentonite clay surrounding the canister and then the bedrock around the repository. Together these should protect people and the environment from the dangers of the wastes without any need for continued maintenance. Thus the repository would provide a safer place for spent fuel than the water storage pools already familiar to them. In addition, the repository could bring economic benefits to the local community, as described above. In the other two municipalities the question was positioned differently: the repository would not lower any pre-existing risk to local people and the local politicians saw little reason to risk their careers for abstract benefits obtainable some time in the future.

For Posiva the situation became clear early in 1999. From the point of view of both geology and safety, all the site candidates would be suitable. However, according to the opinion survey, in both Kuhmo and Äänekoski about two thirds of the population opposed the repository, while in Loviisa and Eurajoki the balance was about the opposite. In many respects both Loviisa and Eurajoki would be equally suitable. Still, Loviisa had its strong, if small, local opposition movement and the siting was much less of an issue in Eurajoki. Moreover, the majority of the waste was already in Eurajoki and more would be generated there, so, the outcome of the site assessment was clear for Posiva. In its application for the DiP in May 1999, it proposed Olkiluoto in Eurajoki as the site of the repository. As mentioned above, STUK gave a positive assessment of the application in January 2000 and soon thereafter the Municipality Council of Eurajoki voted 20-7 in favor of the repository.
After the municipality decision the process moved to the national level. For the politicians and national authorities the question was again mainly about alternatives: What would happen if the application for the DiP were denied? What, in fact, would it mean to approve the application? Ultimately, then, the question revolved around available alternatives. At the time of the EIA some of the opposition groups referred to research on partitioning and transmutation (P&T) technology and suggested that in the future the nuclear waste could be made harmless; therefore disposal would become unnecessary and obsolete. They knew, of course, that nuclides can be changed to other nuclides by bombarding them with particles (“transmuting” them), but usually the nuclides to be transmuted must first be separated (partitioned) from each other. When first developed, the process was considered too laborious, but when geological disposal made little progress, some renewed their interest in these P&T techniques. However, those opposing geological disposal in Finland lost interest quite quickly as they realized that P&T technology would likely mean increased large-scale use of nuclear technology. Not to mention cost!

The discussion soon changed direction. Now the opponents of geological disposal focused on the alternative of “retrievable” underground storage, in which nuclear waste could later be retrieved from storage if desired. In practice, however, such storage must also be supervised and kept in good condition, in contrast to geological repositories, which could safely be forgotten.

Before the DiP application was submitted, the opposition to nuclear waste disposal was based on local groups with loose connections to national or international anti-nuclear organisations. Now international Greenpeace became more active, bringing in experts from abroad. Their main message was that the case for the safety of geological disposal was insufficient and that any decision towards such a solution should be postponed. Two British scientists, Helen Wallace and Stuart Haszeldine, were invited by some opposition groups to bring this message to the Finnish Parliament. Of course the British dimension was important because of the Sellafield inquiry a few years earlier. There, on the basis of insufficient data about underground conditions, the U.K. firm Nirex was denied permission to construct an exploratory shaft to study the bedrock in order to consider siting a repository.

Both Wallace and Haszeldine got some publicity in the media and Posiva was asked to respond to the points of safety they raised. We agreed that we still needed more information about the Olkiluoto bedrock, but that was exactly why we wanted to go ahead with our investigations and start constructing an underground facility to study the rock. According to the Finnish Nuclear Energy Act we would need the DiP to go underground.

It seems that few Parliament members bought the arguments of the British
scientists. Most of them saw two alternatives: either approve the DiP application, in which case the studies would continue and the case for safety could perhaps be substantiated during the coming years, or deny it and leave the situation open without any solution in sight. However, the first alternative would still leave the option of stepping back in the future, while offering at least a possibility of something better than open-ended storage in facilities that need continued monitoring and maintenance. In this respect, it was pointed out, the underground retrievable storage proposed by some of the opposition groups would not be any major improvement. Much of the final debate focused on comparing the risk of abandoned spent fuel in interim storage against the risks of geological disposal.

...AND ENDS

As it turned out, Parliament voted almost unanimously to approve the DiP. The vote was 159-3 in favor, with 37 members absent. Remarkably, the Green Party members also voted for the DiP. According to Janina Andersson, a Green member of Parliament, the party saw itself as following up on the discussion of the 1994 amendment of the Nuclear Energy Act. The Green Party had advocated for the amendment that prohibited all exports and imports of nuclear waste.

In fact, two years before the vote on the DiP the government had decided on the general safety requirements for spent fuel disposal—and that decision included the requirement on retrievability. It had not been included in the original draft prepared by the regulator, STUK, which considered it as potentially counterproductive to long-term safety, but during the EIA process it became clear that the majority of Parliament members considered retrievability to be an essential part of the solution. Finally STUK also gave in to that idea. At the time of the DiP vote, retrievability, or more generally, reversibility, was probably a key element that helped many politicians to make a positive decision despite contradictory advice and apparent uncertainties. For them the decision was mainly a conditional “yes,” in case nothing better would appear. For them, retrievability meant that the decision could be reversed in the future.

WHAT MADE THE FINNISH DECISION DIFFERENT?

As I mentioned above, in the mid-1990s it was still far from clear that we really could choose a site for the repository in 2000. Siting decisions had been very difficult in most countries in similar positions. So what was different in Finland?

Some media researchers have criticized the way the discussion in Finland was directed away from long-term safety issues to what they call a pragmatist debate on alternatives. For example, Pentti Raittila’s analysis of the media discussion around the DiP suggests that this was part of Posiva’s strategy. In my
opinion, we did not need that kind of strategy; we certainly did not see the DiP as a test of safety, but instead as a policy decision on alternatives for managing spent fuel. However, I think what most surprised Raittila was that the debate did not follow the example of other countries. The U.K. stopped the developments at Sellafield and the Swedish municipalities voted against site investigations. Why, then, was the Finnish parliament almost unanimously in favor of geological disposal?

One difference between the Swedish and Finnish situations is evident: in Finland the local right of veto is absolute (it can only be changed through a long legislative process) whereas in Sweden it can be overridden. Some of the opposition to site investigations in Sweden arose because local people did not know what else might evolve if they were to accept the site investigations. In Finland, I think it was important that we were given the chance to start the siting process—but people still knew they could say no in the end, if they wanted to.

A difference from the British case is also evident. We had gone through a long, well-defined siting process before the decision; in the U.K. the public was not sure why Sellafield was to be studied.

There are probably no simple explanations for the different decision in Finland. Ilkka Ruostetsaari, from the Department of Political Science and International Studies of Tampere University, suggested that the outcome of the DiP discussion could have been expected in advance, given the pragmatic political culture in Finland. For instance, he said, in Finland the authorities are still well respected. This may be part of the explanation: STUK’s involvement in the discussion and, later, its positive preliminary safety assessment, probably influenced the vote in the Eurajoki municipality council. However, on the national level people likely saw the DiP as just another step in a process that had started almost twenty years earlier and had proceeded through a number of milestones, of which the DiP was important, but not the final one. Pragmatism was an ingredient in the judgment by the majority of Parliament members that no real alternative was in sight for geological disposal. In 2006 similar conclusions were made in both France and the U.K..

The discussion on the DiP for nuclear waste disposal took place before the decision to build a new nuclear power plant unit at Olkiluoto; it focused on the spent fuel arising from the existing plants. However, as the EIA was prepared it allowed for possible new units as well. Parliament had voted against nuclear
power in 1993, but then it became more popular among those discussing alternatives to ensure a future electricity supply, as the Kyoto Protocol placed ambitious requirements on countries like Finland. One year after the DiP on spent fuel disposal, Parliament ratified the DiP on the third nuclear power plant unit at Olkiluoto.

CONCLUSION

Since the 2001 Decision-in-Principle we have seen a lot of interest in Finnish nuclear waste management solutions. Masses of visitors have come from foreign countries and we have been invited to various meetings to describe how we did it. In particular, how was it possible to get local acceptance for the repository? Sometimes people seem to believe that if they follow what we did in Finland they will succeed in their own country as well.

I do not believe that our process, as such, can be duplicated anywhere else. But neither do I believe that the conditions were unique to Finland. What I think was important to our success was that we had a well-defined, sufficiently fair process that the main stakeholders could accept and follow. It was formulated as a stepwise approach from the very beginning because the authorities wanted to control the progress and decision-making. That control meant restrictions and extra reporting requirements for the waste producers, but it also legitimized activities connected to the site investigations in areas that had nothing to do with nuclear power. It also made the siting process a national task. Of course, by definition, the stepwise nature of the process meant that decisions could be made on the basis of incomplete information, because more information would be collected in the next phase. At the time of the DiP Posiva could simply acknowledge that more research and development issues still had to be solved before implementation. We never had to promise more than we honestly believed to be realistic.

Another important fact is that communities near nuclear power plants are apparently more trusting about nuclear waste solutions than communities elsewhere. In Sweden the siting process seems to be moving towards an outcome like the Finnish one, as in a couple of years SKB is likely to propose either Oskarshamn or Forsmark as the site of the repository. Both are nuclear power plant municipalities. Of course, such choices may not be available in all countries with nuclear power plants.

When I say that the process was “sufficiently fair” I admit that we could have done some things differently. One problem was the imbalance of resources in the EIA phase. One main purpose of the EIA is the stakeholder interaction in which all parties seek alternatives that can best minimize negative impacts and lead to a solution that will be acceptable for everyone. However, on issues like nuclear waste disposal, local stakeholders will likely lack the expertise they...
Juhani Vira

need to engage in such discussions. The Ministry of Trade and Industry showed an interest in the social dimensions of the waste issue by establishing a social nuclear waste research program, but it could not allot significant resources to the local communities themselves. The municipalities were empowered by the local veto on siting, but this possibility hardly encouraged them to spend money on independent experts.

Another thing that bothered me during the EIA was the apparent lack of real alternatives. The EIA was established to seek out and assess alternatives, but could we really offer any other realistic alternative than our own and the zero alternative (continued interim storage)? If we did not know of any reasonable alternatives, how could local lay people find them? Now, in 2007 I feel relieved: geological disposal has also been deemed a necessity in France and the U.K.; in the U.K. this happened after a lengthy consultation that must have considered every last possibility.

For us at Posiva the period 1990-2001 was a learning process in which some of our earlier roles were turned upside down. Instead of educating others, we started to listen to the public and other stakeholders and acknowledge different viewpoints and perspectives. This, I believe, brought us much more public trust than all the previous reports and brochures combined.

We invite reader comments. Email <editors@innovationsjournal.net>.

2. The name of the second nuclear power company was Imatran Voima Oy (IVO), now called Fortum Power and Heat Oy). For further information on Posiva, see <www.posiva.fi>.
3. Based on Finnish law the nuclear facility owners pay a special municipality tax proportional to the investment value of the nuclear facility. This is a significant source of income for “nuclear” municipalities.
7. NEA, op. cit.