Pride-effect in a nuclear community
Local perceptions regarding spent nuclear fuel repository in the municipality of Eurajoki, Finland – 10192

Matti Kojo*, Mika Kari**
*University of Tampere, Department of Political Science and International Relations, Finland
**University of Jyväskylä, Department of Social Sciences and Philosophy, Finland

ABSTRACT
The aim of the paper is to analyse local people's opinions regarding the siting of a spent nuclear fuel (SNF) repository in the municipality of Eurajoki, Finland. The municipality is seen as a nuclear community as it hosts two NPP units and has a third unit currently under construction. In addition, excavations for an underground rock characterization facility have been underway at the Olkiluoto site since 2004. The paper argues that a level of community pride exists among the local residents, which is based on a nuclear identity that is favourable to the expansion of nuclear activity. This is referred to in the paper as the pride-effect in a nuclear community. Understanding this pride-effect is important when building a long-term relationship between the nuclear industry and the local community.

The paper deals with two hypotheses based on concepts of nuclear oasis and industry awareness. From the view point of the nuclear oasis hypothesis, favourable opinions of residents in a nuclear community can be explained at least to some degree by familiarity, but mainly by dependency. According to the nuclear oasis hypothesis, nuclear communities are products of unequal power relations and the process of peripheralization. Another interpretation is offered from the view point of industry awareness. According to the industry awareness hypothesis, communities that already have nuclear installations within their locality have an existing cultural basis for facility development, as they have integrated the industrial activity and cognitive understanding into their culture. The perceived pride-effect appears to be related to industry awareness.

Analysis of the survey data collected in Eurajoki suggested that understanding towards SNF siting issues is more likely to be found among men and more prosperous residents. Women and less-advantaged people seem more likely to repel SNF from "their backyard". The postal survey was carried out in June 2008.

INTRODUCTION
Spent nuclear fuel (SNF) management has gained major progress in Finland and Sweden. In Finland, the Olkiluoto site located in the municipality of Eurajoki was approved to be the site for the SNF repository. The decision was taken first in January 2000 at the local level. At the national level, the Finnish government issued a Decision-in-Principle (DiP) in December 2000 and Parliament ratified the DiP later the same year. Since 2004, the nuclear waste management company Posiva has excavated an Underground Rock Characterization Facility which is planned to be part of the SNF repository in the future. Expansion of the repository is also under

preparation due to the applications regarding further construction of nuclear power in Finland [1]. In Sweden, the Swedish Nuclear Fuel and Waste Management Company, SKB, decided in June 2009 to select the Forsmark site in the municipality of Östhammar as the site for the final repository for Sweden's SNF. According to the SKB schedule, the licensing application will be submitted in 2010.

An important aspect in both countries' cases is the voluntariness of the municipality. In Finland, the municipality of Eurajoki announced its willingness to host the SNF repository already over a decade ago [2]. Before the siting decision, the municipality of Eurajoki even competed against the town of Loviisa, which was one of the four candidates in the Finnish site selection process in the late 1990s. In Sweden, the two final candidate municipalities chose a more egalitarian approach by negotiating together with SKB for an Added Value Programme to secure benefits also for the municipality that was not proposed to host the repository [3]. The progress made in Sweden and Finland raises the question why these municipalities were willing to host a repository when numerous surveys have indicated that nuclear waste facilities – even those for low-level waste – are perceived by the public to be high-risk and are highly unpopular?

The aim of the paper is to analyse local people's perceptions of the SNF repository in the municipality of Eurajoki, Finland, from the point of view of two conflicting interpretations. Literature proposes two interpretations: the nuclear oasis hypothesis and the industry awareness hypothesis. Based on the nuclear oasis hypothesis, the favourable opinions of a nuclear community's residents towards nuclear activity within their community can be explained to some degree by familiarity with nuclear technology, but mainly by economic dependency on the nuclear industry and by unequal power relations and the process of peripheralization. This interpretation represents the 'mainstream' explanation for the local decision-making in Eurajoki regarding the SNF repository siting [4, 5].

The industry awareness hypothesis offers an alternative interpretation. According to this hypothesis, communities that already have nuclear installations within their locality have an existing cultural basis for facility development, as they have integrated the industrial activity and cognitive understanding of it into their culture. The industry awareness hypothesis suggests that in a community with this capability, social construction of the SNF disposal project is in line with the perceptions and interests of local residents. The differences in cultural resonance with the SNF repository have been compared between the Finnish candidate municipalities from point of view of social constructionism [4, 6]. It has been suggested that familiarity with large industrial technology systems, such as the forest industry in the Finnish case, offers a base for cultural resonance with nuclear waste technology [4]. This assumption has, however, proven false in the case of the heavily forest industry-dependent Finnish town of Äänekoski, where the majority of local residents, despite heavy exposure to the forest industry, wholly opposed the idea of hosting the SNF repository. The latest results suggest that industry awareness is actor-dependent. In Eurajoki, cognitive understanding seems to be related to familiarity with the existing actor. The survey data also indicated that local acceptance is not based on nationality, as not all domestic nuclear companies are welcome. Thus, acceptance within nuclear communities cannot be automatically attained with respect to all nuclear activities [7]. Industry awareness, if it does exist in Eurajoki, does not mean that newcomers will be welcomed with open arms. The

perceived pride-effect among the local residents of Eurajoki also seems to be connected with the nuclear industry's long-standing history within the host municipality.

The main argument of the paper is that the municipality of Eurajoki is entering a new phase in the nuclear community life-cycle. The once highly rejected siting of the SNF repository is turning into a project of local pride – at least partly. The relationship of the nuclear community with the nuclear industry is no longer defined as matter of dependency, but as voluntariness and willingness to co-operate and create added value for the contracting parties.[1] However, a split in attitudes towards the siting of the SNF repository does seem to exist [7, 8]. Clearly, therefore, not all residents view the repository with pride.

The paper is structured as follows: Sections 2 and 3 introduce the main concepts and hypotheses applied in the paper. Section 2 is based on the paper written for the ICEM'09 Conference [7]. In Section 4, the development of nuclear community in the case of the Eurajoki municipality is discussed in the light of the abovementioned hypotheses. In Section 5, basic information on the postal survey is given. The survey introduction is based on the article by Kojo, Kari and Litmanen [8]. In Section 6 empirical data concerning the pride-effect is analysed. This is done by comparing the residents' perceptions between an established actor and a newcomer. In the last Section, conclusions are drawn.

THE TWO HYPOTHESIS: NUCLEAR OASIS AND INDUSTRY AWARENESS

'Nuclear communities' can be characterised as "communities who host nuclear activities and are conscious of their nuclear identity" [9]. A community's inhabitants are familiar with nuclear activity, which in turn is often seen as a mixed blessing: bringing economical advantages but also a psychological burden and, possibly, problems with respect to the community's image. Trusted community members with experience in the nuclear sector are often in a bridging role between the ordinary citizens and the nuclear experts. [9]

The term 'nuclear oases' was introduced by Andrew Blowers at the turn of the 1990s. Blowers points out that nuclear waste repositories have been rejected when proposed for greenfield locations. Sites that already host waste sites or other nuclear facilities, and their adjacent communities, are the only places where they may be welcomed. Blowers acknowledges that these sites may welcome nuclear waste partly due to familiarity with the industry and growth within the nuclear culture, but primarily emphasises the aspect of dependency. According to Blowers, nuclear oases are products of unequal power relations and the process of peripheralization. A dependent workforce, economic leverage and government support gives a nuclear industry power, whereas communities themselves tend to be remote and economically and politically marginal to start with, and dependence tends to render them monocultural, subject to economic risk and relatively powerless, their fortunes controlled by external influences. [10, 11, 12]

[1] The Vuojoki Mansion and Foundation (www.vuojoki.fi) and the Eurajoki Business Development Fund are examples of locally shared aims to create added value.

'Communities with industry awareness' is a phrase used to promote the opposite view to that presented by Blowers. The NEA report [13] claims that readiness to consider hosting a radioactive waste management facility should not be seen as (or at least not primarily as) a sign of dependency. Instead, the reason for this lies in cultural integration. Communities that already have nuclear installations within their locality have an existing cultural basis for facility development, as they have integrated the industrial activity and cognitive understanding into their culture. The NEA report [13] states that "Developing joint solutions consists of building on and adding to that existing cultural basis." Where others see threats, these communities see needs that can be met using a familiar energy source. From this point of view, the SNF facility could even be viewed as a point of pride.

All in all, communities hosting nuclear activity where waste is already stored or produced have a level of familiarity with the subject, some knowledge of the risks and impacts that nuclear facilities bring, as well as an interest in continued co-operation with the industry. Added to this, the nuclear industry is already present within the community. It is no wonder, therefore, that it is easier for the nuclear industry to develop a dialogue with these communities than non-nuclear communities and "…experience worldwide shows that it is with nuclear host communities that progress in facility siting has been made quickest." [14].

THE RECENT DEVELOPMENT IN GOVERNANCE OF NWM

Bergmans *et al.* [9] note that radioactive waste managers across Europe have turned to more participatory and voluntary approaches, with a focus on existing nuclear communities, such as the municipality of Eurajoki[2] in Finland. Voluntariness as a holistic approach was never explicitly included in the Finnish site selection strategy as in Sweden [15]. However, due to the veto right granted in the Nuclear Energy Act for the host municipality, local approval by the municipality council was required during decision-in-principle phase [2]. The 'participatory turn' of the Finnish nuclear waste governance took place gradually in the 1990s [2, 5, 16]. When compared internationally, the turn in Finland was a rather modest one. The effectiveness of the environmental impact assessment (EIA) procedure in decision-making in Finland has been criticized [5, 17]. One explanation for the ineffectiveness of EIA is the existence of alternative, more prominent, yet closed, arenas. The narrowly and in advance framed alternative [5] and local compensation arrangements [2] can be given as examples.[3]

One aspect which seems to be missing from many assessments of the Finnish case [21, 22, 23, 24] is the local negotiations conducted regarding the location-related benefits of the repository. For example, Vira[4] [25] refers to this aspect only by reporting how the representatives from the municipality of Loviisa and Eurajoki started talking with Posiva "*about possible forms of*

[2] The Olkiluoto area in the municipality of Eurajoki currently hosts two nuclear power plant units, and a third is under construction. TVO, the company that owns and operates NPP in Olkiluoto (including the unit under construction) has also submitted an application to the Council of State for a Decision-in-Principle for the construction of a fourth NPP unit at Olkiluoto. Regarding waste storage, TVO also has on-site pool-type interim storage for spent nuclear fuel, and a low- and intermediate-level radioactive waste repository (bedrock disposal) at the power plant site.

[3] SNF management as a part of the Finnish political system and culture has not been evaluated in detail to date. Two general overviews are, however, available [19, 20].

[4] Dr Juhani Vira is Vice President for research at Posiva.

support and cooperation in case either of their areas was chosen". According to Vira, this took place in 1998. On the other hand, the importance of the veto-right of the proposed host municipality granted under the Nuclear Energy Act of 1987 was well understood by the nuclear industry management. The possibility of an impasse, with all four candidate municipalities saying "no" was also considered by the industry [25, 26] and by the ministry [27]. This situation was, however, avoided due to the 'pragmatic acceptance' and/or 'industry awareness' of the local politicians of the Eurajoki municipality.

The most recent development in the governance of nuclear waste management is the emergence of discussion on the arrangement of benefit/safety packages. Benefits are viewed, for example, in terms of concepts of community partnership and durable relationship. Although many different kinds of arrangements have existed over the years, it is only relatively recently that such benefit-sharing arrangements have been openly discussed, at least in Europe. Literature [3, 13, 28, 29, 30, 31] offers an overview, although not very detailed, of the broad spectrum of benefit types applied in the field of nuclear waste management.

Bergmans *et al.* [9] refer to various forms of 'pragmatic acceptance' (or 'tolerability') of nuclear communities. They state that (some) nuclear communities are more prepared than non-nuclear communities "*to place their faith in the safety cases of additional facilities*". Furthermore, according to them "*these communities have already been taking calculated chances (consciously or unconsciously) with nuclear activities for years and are relatively accustomed to what outsiders would regard as 'living dangerously'* [9]. In fact, Vira [25, also 2] gives a kind of insight into the perceptions of a nuclear community. Vira states that, for the municipality of Eurajoki, the choice was between the already existing interim storage and geological repository. The former would always need maintenance and supervision, whereas the latter would require no attention from future generations. Thus, a safer place than the storage pools already familiar to the local residents was provided. Furthermore, this option offered potential benefits.

The concept of pragmatic acceptance seems to be related to industry awareness. Bergman et al. (2008) suggest that in volunteering nuclear communities the 'culture of confrontation' is less present and there is perhaps more trust in the manageability of the nuclear waste question. The whole problem tends to be framed in a more nuanced and pragmatic way. This 'pragmatic acceptance' certainly helps to open up local negotiations on benefits. For example, Vira [26, 32] reports how Posiva also wanted to avoid a culture of confrontation, as the company chose a site between the municipality of Loviisa and Eurajoki. The company preferred a host municipality with a permissive political culture, ensuring that the interests of the nuclear industry are taken into account at local level [2].

EURAJOKI: A NUCLEAR OASIS OR A HOST WITH INDUSTRY AWARENESS?

The nuclear oasis hypothesis has been used to some extent to explain the local decision-making regarding the SNF repository siting in Olkiluoto [2, 3, 4]. The economic dependency of the municipality on the nuclear industry has been seen as one of the main motivations of local politicians to approve the siting. The reform of the real estate tax system in the early 1990s and the resulting financial crisis of the municipal economy caused local politicians to reconsider their relationship with TVO. They wanted to safeguard tax revenue, while at the same time the interest

of the nuclear industry was to safeguard a more stable local political setting for their business activity. The attitude of the municipality towards the siting changed in four years. In December 1994 its former negative statement was withdrawn, in August 1995 a co-operation agreement was signed with TVO, and in December 1998 the Olkiluoto Vision, including a positive statement on the SNF repository siting, was approved. [2.]

How did this change take place? And how can it be explained? According to the nuclear oasis hypothesis, the dependency of the municipality on the nuclear industry should have increased. This interpretation is verified, for example, by the fact that the state needed to compensate the losses in municipal finances caused by the early 1990s tax reform. Later, the municipality and the nuclear industry agreed on co-operation aimed at safeguarding the interests of the contracting parties.

On the other hand, there is also some evidence of industry awareness. For example, according to annual surveys, the confrontation culture decreased in Eurajoki during the 1990s. In 1992 over 50% of residents of Eurajoki disagreed with disposal of nuclear waste in Olkiluoto, whereas in 1999 some 30% disagreed. At the same time, the number of those agreeing increased from around 40% to over 60%.[3, 33.] The analysis of local decision-making regarding the siting process and the development of the relationship between the municipality, or more precisely the leading politicians, and the nuclear industry indicates that relations started to become closer already before the mid 1990s and the implementation of the EIA procedure. However, local discussions regarding Posiva's EIA procedure seem to have had an input towards the launch of a vision project for the Municipality of Eurajoki.[2.] The Olkiluoto Vision of 1998 is evidence of industry awareness. The municipality was not only ready to locate a SNF repository for legacy waste, but it was also willing to locate a possible new nuclear power plant unit. Another sign of industry awareness is the modest level of compensation claimed (Kojo and Richardson 2009, 72). Local politicians were, to at least some extent, aware that they could push for more, but remained modest in their demands.[5] Politicians were not unanimous regarding compensation, but the intracommunity disagreements have not paralyzed the relationship with the industry. In addition, the numerous liaison groups set up over the years to liaise between the municipality and the nuclear industry have played a part in the gradual institutionalization of industry awareness.

THE SURVEY DATA

As the municipality of Eurajoki was selected as the site for the repository, the main focus of our survey was the residents of Eurajoki itself. However, the neighbouring municipalities were also covered as they, too, have a role in EIA and Decision-in-Principle (DiP) procedures. The survey was focussed on the 16–75 year age bracket. The purpose of lowering the age limit below 18 was to enable comparison of the opinions of the youth population with those of the adult population. The questionnaire was conducted in Finnish only, and only Finnish-speaking residents were included in the target population.

[5] Local discussions in Eurajoki gradually became more benefits-focused. TVO's nuclear waste office raised the issue of local benefits already in the mid 1980s [34], although benefits were not assessed and discussed systematically until the EIA procedure. At that time, compensation negotiations were not mentioned and the issue has remained something of a taboo in relation to nuclear waste facility siting.

The survey was carried out as a postal survey. The four-page questionnaire was sent to 3,000 recipients on 3 June 2008. Recipients were chosen by stratified sampling conducted by Statistics Finland, which also supplied the addresses. The reasons for using stratified sampling were purely pragmatic. Postal survey response rates typically tend to be low and, in addition, Eurajoki is a highly studied area. The sampling method therefore needed to take into account possibility of survey 'weariness' and a very low response ratio. The aim was to ensure that there would be an adequate number of respondents from Eurajoki and decent representation from all neighbouring municipalities of Eura, Kiukainen, Lappi, Luvia, Nakkila and Rauma.

The number of returned questionnaires amounted to 616 (of 3,000 sent), giving us return rate of 21%, and of those 616 as many as 606 qualified for analysis, resulting in a total response rate of 20%. The number of respondents stating that they were residents of Eurajoki numbered 245. The number of respondents from each municipality corresponded very well with the stratified sample sizes. (Table I.)

Table I. Survey sample sizes and respondents.

	Sample sizes		Respondents		
	n	%	n	%	Valid %
Eurajoki	1200	40	245	40	41
Other municipalities	1800	60	353	58	59
Eura	300	10	51	8	9
Kiukainen	300	10	59	10	10
Lappi	300	10	61	10	10
Luvia	300	10	55	9	9
Nakkila	300	10	60	10	10
Rauma	300	10	67	11	11
Missing			8	1	
Total	3000	100	606	100	100

In this paper we look in to the data formed of those 245 stating that they were residents of Eurajoki. A non-response analysis was performed on this data by comparing the respondents' gender, age, marital status, level of education, type of education, line of work, occupational status, political affiliation and income with information obtained from the Official Statistics of Finland, the public authority Statistics Finland, and the Finnish National Board of Education. As a result, three biases were observed that should be taken into consideration. Firstly, those who were married or in registered relationships were overrepresented by 9%. Secondly, supporters of the Centre Party were underrepresented by 9%. Thirdly, respondents were better educated than the inhabitants of the Satakunta region as a whole. In addition, it seems that, those in the low income group were somewhat underrepresented, although the extent of underrepresentation is difficult to assess as a high proportion of respondents (12%) declined to report their income.

ANALYSIS

How, then, did the residents of Eurajoki feel about the siting of the SNF repository at the Olkiluoto site? In the survey, five statements relating to acceptance of the SNF repository and its

expansion were posed [7]. In Figure 1, the respondents are classified into three groups: supporters, neutral respondents and opponents, according to the responses given to the statement "Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto". The survey respondents were given the response options in a five-step Likert style scale from 1 'Totally Disagree' to 5 'Totally Agree'. For this analysis, the scale was changed to a three-step scale as shown in Figure 1.

According to the survey, less than half (42%) of the respondents agreed with statement and 36% disagreed. Almost every fourth respondent had a neutral attitude. Women were clearly more critical than men towards the final disposal of SNF in Olkiluoto, as 43% of women disagreed whereas more than half of men (52%) agreed with the statement. The issue is gendered in Eurajoki. Age-wise, the rising generation (those born after 1990–) was highly critical towards the SNF disposal (54% disagreed; 31% agreed). On the other hand, the new generation (1980–89) seemed to have adopted a very positive attitude towards the SNF disposal (29% disagreed; 41% agreed).

Attitudes were affected by the respondent's position in working life. Those in the top leading positions were more likely to agree than those not working or unemployed. Workers held more critical attitudes than farmers or the self-employed / employers. The same trend was seen when attitudes were classified in relation to personal income per year. Of those earning more than 60,000 euros annually, almost 70% agreed and only 17% disagreed with the statement. Supporters of the three main political parties (Finnish Centre Party, National Coalition Party and Social Democratic Party) had the most positive attitude towards the statement. Supporters of the Left Alliance, Green League and Christian Democrats are more likely to be opponents of the disposal plan [8].

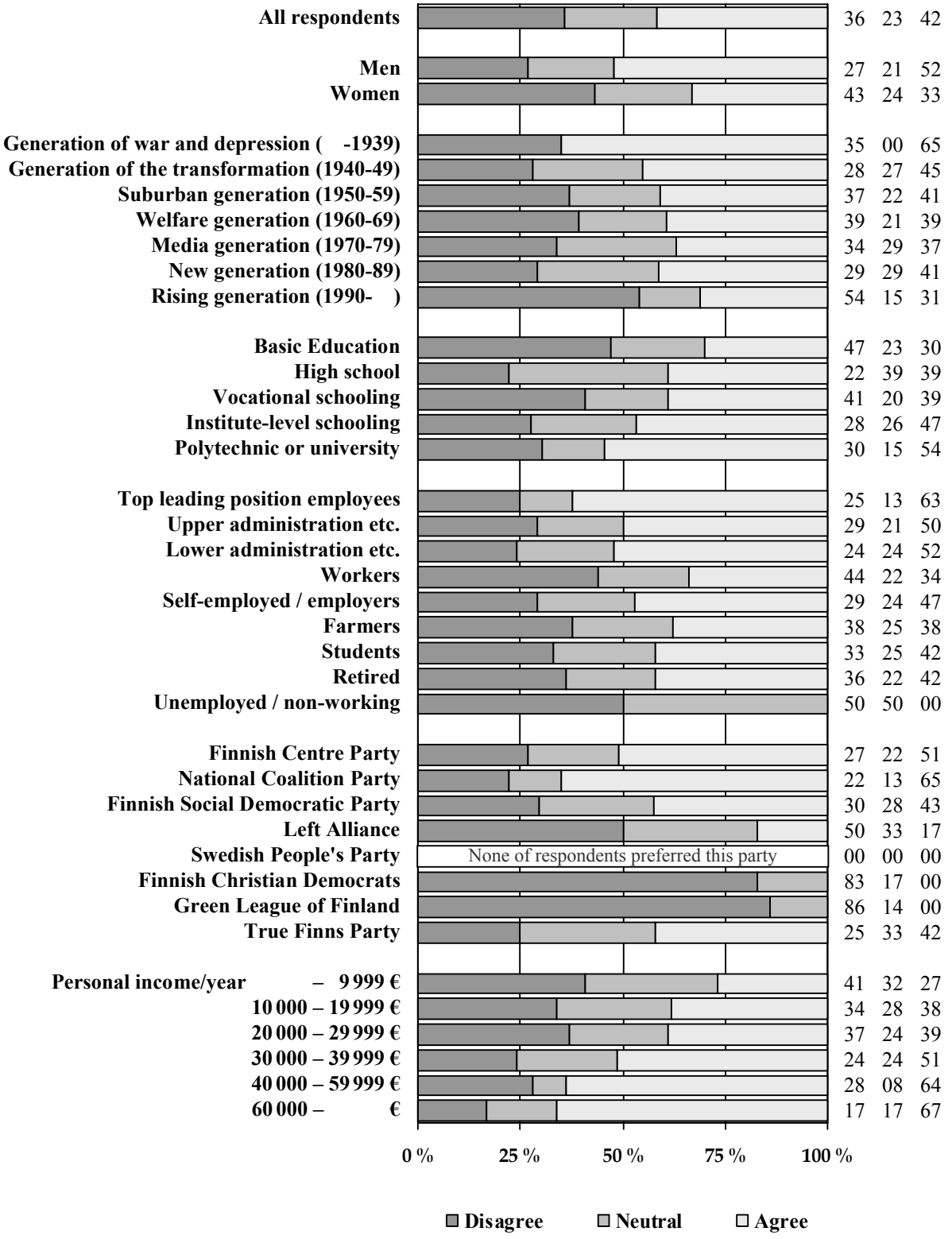

Fig. 1. Attitudes towards the statement 'Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto' per socio-economic group (%).

Survey respondents were presented with the question 'In your opinion, how does constructing the final disposal facility in the proposed area effect following issues?', followed by a list of 20 issues[6]. Answers were given in a five-step Likert style scale from 1 'Negatively' to 5 'Positively'. For this analysis, the scale was changed to a three-step scale to give more cases in different subgroups. The reported correlation coefficients are Kendall's rank correlation coefficients (Kendall's tau-b). Kendall's tau-b is a non-parametric measure of association that takes ties into account. Of the list of twenty issues, nineteen correlated statistically highly significantly and one (traffic connections) almost statistically significantly with the statement 'Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto', demonstrating that the perceived impacts of the final disposal facility have a concrete affect on the residents' opinions towards the SNF facility. The issues showing the highest correlation with our statement regarding disposal at Olkiluoto are shown in Table II.

Table II. Highest correlations ($\tau > .400$) between the benefits / impacts named in the survey and attitudes towards the statement 'Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto' (Kendall's tau-b).

Perceived benefit or impact on	Correlation with statement
Respondents' own image of Eurajoki in particular	.455 (p= .000, N=237)
Respondents' own satisfaction with the area as a place to live	.442 (p = .000, N=234)
Respondents' own expectations for the future of the area	.424 (p= .000, N=236)
Respondents' own image of the area	.421 (p= .000, N=235)
Functioning environment / atmosphere of the area	.414 (p= .000, N=234)
State of the natural environment near to the final disposal facility	.406 (p= .000, N=234)

It is notable that issues such as employment, economic development and attainability of services do not feature in the list of top ranking correlations. Of these, economic development ($\tau = .302$) ranked 11th, employment ($\tau = .274$) 15th, and attainability of services ($\tau = .259$) 18th. This indicates that acceptance is more closely related to industry awareness factors than nuclear oasis factors. The issues highlighted relate to general wellbeing in the community rather than economic pressures.

On other hand, Tables III and IV show that the relationship between the perceived impacts of the final disposal facility and opinions regarding final disposal at Olkiluoto is not straightforward. As can be seen in Table III, if the final disposal facility is perceived to have a positive impact on

[6] Own image of the area, own image of Eurajoki in particular, own expectations for the future in the area, own satisfaction with the area as a place to live, outsiders' image of the area, functioning environment / atmosphere in the area, the state of the natural environment surrounding the final disposal facility, development of the area generally, demographic development in the area, employment in the area, economic development in the area, attainability of services in the area, tourism in the area, culture in the area, development of the education sector in the area, farming and forestry, rural non-farm based livelihoods (fishing, hunting etc.), recreational possibilities in the area, city/municipality organization in the area, and traffic connections in the area.

one's own view of Eurajoki, this correlates quite well with a positive view of final disposal at Olkiluoto and, vice versa, if the disposal facility is perceived to have a negative impact on one's own view of Eurajoki, this relates quite well (although not as closely) with a negative view of final disposal at Olkiluoto. From Table IV, however, can be seen that this is not exactly the case when we examine the correlation between the perceived impact of the facility on economic development and opinion towards final disposal. The relationship between perceived negative impact and negative view of final disposal at Olkiluoto seems to be quite strong, but if the final disposal facility is perceived to have a positive impact on economic development, this does not correlate nearly as closely with a positive view towards final disposal at Olkiluoto.

Table III. Attitudes towards the statement 'Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto' compared to respondents' own image of Eurajoki, per category of perceived impact of the final disposal facility (%).

Attitude towards the statement / Perceived impact	Disagree	Neutral	Agree
Positive	12	15	73
Neutral	30	34	36
Negative	61	21	18

Table IV. Attitudes towards the statement 'Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto' compared to economic development in the area, per category of perceived impact of the final disposal facility (%).

Attitude towards the statement / Perceived impact	Disagree	Neutral	Agree
Positive	27	21	53
Neutral	41	29	31
Negative	71	19	10

In the survey, residents' opinions regarding the possible expansion of the SNF repository were queried [7, 8, 35]. In 2008–2009 Posiva submitted two DiP applications for expansion for the needs of its owners Teollisuuden Voima (TVO) and Fortum Power and Heat (FPH), both of which have submitted a DiP application of their own for construction of a new NPP unit. However, competition for a license has tightened due to the entry of a new player, Fennovoima. This company also submitted a DiP application for a NPP unit, bringing the total number of companies currently interested in further construction in Finland to three. The Finnish

government is not likely to issue all applications.[7] The new company, which is not a shareholder of Posiva, is interested in co-operating with Posiva in final disposal of SNF at Olkiluoto. So far, Posiva has not negotiated with Fennovoima, most likely due to the abovementioned competition.

This situation enabled a comparison of residents' opinions regarding acceptance of the SNF repository expansion for the needs of different actors. As previously, the five-step Likert scale used with these statements was changed to a three-step scale. The results show that the number of respondents (42%) agreeing with the expansion for the needs of Posiva's owners (TVO and FPH) was precisely at the same level as acceptance of disposal of SNF at Olkiluoto [Fig. 1; 7]. Only a small increase in opposition took place as 39% of respondents disagreed with the statement "I accept the expansion of the final disposal repository for the needs of TVO and Fortum" and 36% disagreed with SNF disposal at Olkiluoto [see Fig. 1]. Opinions are, however, clearly different if the SNF repository expansion is done for the needs of other Finnish actors. The survey suggests that if that were the case, the local acceptance level would decrease. Only 19% of respondents agreed with the statement "I accept the expansion of the final disposal repository also for the needs of other Finnish actors" and 62% disagreed with it. Thus, if local acceptance is seen as an indicator of industry awareness, then the results suggest that the level of 'industry awareness' is different when comparing the two situations. It is not only the SNF disposal that is evaluated by local residents, the actor, too, is taken into considerable account.

In Table V, the correlations between acceptance of expanding the repository for different actors and different perceived impacts are shown. Table V indicates how strongly residents' positive understanding of their own home district correlates with acceptance of expanding the repository for the needs of TVO and Fortum. Understanding of the present and future positive situation of Eurajoki and satisfaction with the local area increase acceptance of expansion of the repository for the needs of TVO and Fortum. There is a weaker correlation between these variables and acceptance of expanding the repository for needs of other Finnish actors [35]. The order of the list of statements having the highest correlation is also slightly different. In the case of possible other Finnish actors, the statement suggesting benefits scores the highest correlations, whereas in the case of TVO and Fortum the highest correlation is with the statement related to the respondents' own satisfaction with their local area as a place to live. This suggests that slightly different issues, and in a different order, are valued in relation to actors in different positions. An established actor (in this case TVO and FPH as the current owners of Posiva) is perhaps already part of the local culture and, thus, more readily regarded as a subject of local pride, whereas a newcomer is evaluated initially in terms of possible benefits. The outsider needs to earn its place and respect in the eyes of the local residents. The newcomer will, however, be much less readily accepted than an established actor.

[7] According to the Nuclear Energy Act of 1987, a Decision-in-Principle must be first issued by the government and, if granted, the DiP must be further ratified by Parliament.

Table V. Highest correlations between the benefits / impacts named and the statements presented in the survey, and attitudes towards the statements regarding acceptance of expanding the final disposal repository for the needs of different domestic actors (Kendall's tau-b).

Perceived benefit or impact on	Correlation with acceptance of expanding the repository for TVO and Fortum	Correlation with acceptance of expanding the repository for possible other Finnish actors
Respondents' own image of the area	.567 (p= .000, N=235)	.394 (p= .000, N=236)
Respondents' own expectations for the future of the area	.582 (p = .000, N=236)	.356 (p= .000, N=237)
Respondents' own satisfaction with the area as a place to live	.592 (p= .000, N=235)	.384 (p= .000, N=236)
Economic benefits of final disposal of nuclear waste will not compensate the non-economic costs	-.544 (p= .000, N=235)	-.374 (p= .000, N=236)
Benefits of final disposal of nuclear waste will exceed the costs	.553 (p= .000, N=228)	.415 (p= .000, N=229)

CONCLUSIONS

The aim of the paper was to analyse the residents' perception of the SNF repository in the municipality of Eurajoki, Finland. According to the postal survey conducted in June 2008, less than half (42%) of the respondents in Eurajoki agreed and 36% disagreed with the statement "Nuclear waste produced by TVO and Fortum should be disposed of at Olkiluoto". The municipal council of Eurajoki issued a positive statement regarding the siting of the SNF repository in Olkiluoto, Eurajoki, in January 2000 [2]. The highest correlations ($\tau > .400$) between this statement and the perceived benefits / impacts listed in the survey indicated that local acceptance is more closely related to industry awareness factors than nuclear oasis factors. Issues such as employment, economic development and attainability of services were notably missing from the top ranking correlations list (Table II). Of those listed, economic development ($\tau = .302$) was 11th, employment ($\tau = .274$) 15th and attainability of services ($\tau = .259$) 18th in the ranking. Conversely, economic issues were ranked at the top of the agenda by local politicians during the compensation negotiations held in the late 1990s [2]. The nuclear oasis approach is also frequently used to explain the early phases of local decision-making regarding nuclear facility siting. The highest correlation ($\tau = .455$) was with the statement regarding respondents' own image of Eurajoki, and the second highest ($\tau = .442$) was with the statement regarding respondents' own satisfaction with the area as a place to live. This is seen as an indication of pride-effect in the nuclear community. Pride-effect during the post site selection phase seems to be related to perceptions of wellbeing in the host municipality. Pride is, however, closer related to an established actor than a newcomer. Furthermore, local acceptance is actor-dependent, suggesting that residents of a nuclear community do not automatically 'tolerate' all actors of the nuclear technology sector. Industry awareness is therefore not purely technology related, but has something to do with individual actors and their relations with the host municipality and its residents. This might be explained by a lack of social trust between the newcomer and the local residents.

ACKNOWLEDGEMENTS

This paper was accomplished as part of the following projects:
"Follow-up research regarding socio-economic effects and communication of final disposal facility of spent nuclear fuel in Eurajoki and its neighbouring municipalities" research project of the University of Jyväskylä and the University of Tampere. The project is funded by the Finnish Research Programme on Nuclear Waste Management (KYT2010 http://www.ydinjatetutkimus.fi).
Two theories – one reality. Analysing Eurajoki as nuclear community. Dissertation research project founded by the Finnish Doctoral Program in Social Sciences; Graduate School for Cultural Research of Power and Governance.

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