Fennovoima Ltd

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STATEMENT

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ENVIRONMENTAL IMPACT ASSESSMENT PROGRAMME FOR FENNOVOIMA LTD'S NUCLEAR POWER PROJECT; STATEMENT BY THE CONTACT AUTHORITY

On 30 January 2008, Fennovoima Ltd submitted an environmental impact assessment programme (the EIA programme) to the Ministry of Employment and the Economy (hereinafter the MEE) in accordance with the environmental assessment procedure (the EIA procedure), pursuant to the Environmental Impact Assessment Act (468/1994; EIA Act), on a nuclear power project. Prepared by the organisation responsible for the project, the EIA programme presents a plan for the necessary studies and implementation of the EIA procedure. The EIA programme also includes a description of the present state of the environment in the area likely to be affected.

Pursuant to the EIA Act, the MEE will act as the contact authority in the EIA procedure.

A public notice announcing the launch of the EIA procedure was published on 5 and 7 February 2008 in the following newspapers: Helsingin Sanomat and Hufvudstadsbladet, and the following regional newspapers: Kristiinankaupunki area; Ilkka, Pohjalainen, Suupohjan Sanomat, Syd-Österbotten, Vasabladet and Satakunnan Kansa; Pyhäjoki area; Kalajokilaakso, Keskipohjanmaa, Pyhäjokiseutu, Raahelainen, Raahen Seutu, Vieskalainen; Ruotsinpyhtää area; Borgåbladet, Uusimaa, Kymen Sanomat, Loviisan Sanomat, Östra Nyland – Kotka Nyheter, Etelä-Suomen Sanomat; Simo area; Kaleva, Lounais-Lappi, Meri-Lapin Helmi, Pohjolan Sanomat.

The public notice, the assessment programme, and the comments and opinions received by the MEE during the consultation can be found on the MEE's website at HYPERLINK "http://www.tem.fi" www.tem.fi

Members of the public were able to view the assessment programme between 5 February and 7 April 2008 in the following local government offices or the environmental offices: Pyhäjoki, Ruotsinpyhtää, Simo, Kristiinankaupunki, Raahe, Alavieska, Vihanti, Merijärvi, Siikajoki, Oulainen, Kalajoki, Pyhtää, Lapinjärvi, Pernaja, Elimäki, Loviisa, Anjalankoski, Keminmaa, Tervola, Ranua, Ii, Kemi, Karijoki, Isojoki, Merikarvia, Kaskinen, Teuva and Närpiö.

In partnership with the organisation responsible for the project, the Ministry organised the following public meetings: Kristiinankaupunki 7 February 2008, Pyhäjoki 13 February 2008, Ruotsinpyhtää 11 February 2008 and Simo 12 February 2008.

The comments and opinions invited and presented on the assessment programme are summarised in Chapter 3. A summary of the comments received on the nuclear waste management programme is presented in a separate annex.

The Espoo Convention (67/1997) will be applied to the assessment of the project's cross-border environmental impacts. Correspondingly, the parties to the Espoo Convention have the right to participate in the EIA procedure. The Ministry of the Environment is responsible for the practical arrangements for conducting the international hearing and has notified the following countries of the project: Sweden, Denmark, Norway, Germany, Poland, Lithuania, Latvia, Estonia, Russia and Austria.

1 Project information

1.1 Organisation responsible for the project

The organisation responsible for the project is Fennovoima Ltd. Its consultant in the environmental impact assessment has been Pöyry Energy Oy.

1.2 Project and its alternatives

Fennovoima is preparing to build one or two nuclear power plant units in one of the following plant locations and municipalities: Norrskogen and Kilgrund in Kristiinankaupunki, Hanhikivi in Pyhäjoki, Kampuslandet and Gäddbergsö in Ruotsinpyhtää or Karsikkoniemi and Laitakari in Simo. Two nuclear power station options are being assessed, the first involving the construction of a nuclear power station unit with a production capacity of some 1,500–1,800 MW and thermal input of 4,500–4,900 MW.

The second alternative involves the construction of two reactors with a production capacity of around 1,000–1,250 MW respectively and a combined thermal input of 5,600–6,800 MW. A pressurised water reactor and a boiling water reactor are both being considered. For the purposes of this document, 'project' means the entire Fennovoima nuclear power plant project. Wherever the alternative involving two nuclear power plant units is discussed, the definition 'nuclear power plant units' is used.

The project also includes the intermediate onsite storage of spent nuclear fuel generated by the new unit, the treatment of low- and intermediate level waste, and the final disposal repository. Moreover, the

project includes the implementation of the necessary power transmission link to the national grid.

Should the project be implemented, Fennovoima's objective is to begin the construction of the new nuclear power plant in 2012. The plant could be deployed sometime around 2018. In the case of two reactors, the first construction site would be finished one or two years ahead of the second one.

As a zero option, the EIA programme presents a situation in which the project would not be implemented. Fennovoima would not consider building another type of power plant instead of the nuclear power plant. The zero option would entail increasing the import of electricity to Finland and/or implementing other organisations' power plant projects in order to meet Finland's increasing electricity requirements. The environmental impact of the zero option is illustrated by providing an overview of public estimates of the environmental effects of different methods of power production.

2 Licencing of nuclear facilities

The Nuclear Energy Act describes the licensing procedure required for a nuclear plant. Decision-making and the licensing system is based on a principle whereby safety is continuously reviewed, the assessments being further defined throughout the procedure so that the final safety assessments are only made at the operating licensing stage.

Environmental impact assessment

Fennovoima will draw up an EIA report based on the assessment programme and the contact authority's statement, followed by a public hearing on the EIA report. The responsible organisation estimates that the EIA report will be finished in the autumn of 2008.

The EIA procedure constitutes part of the safety and environmental impact assessment for nuclear power plants laid down in a decision-in-principle under the Nuclear Energy Act (NEA 990/1987).

Decision-in-principle

The planned nuclear power plant complies with the definition of a nuclear plant of considerable general significance, as laid down in the Nuclear Energy Act, requiring the Government's project-specific decision-in-principle on whether the construction project is in line with the overall interests of society. The application for a decision-in-principle can include the option of building two nuclear power plant units. In accordance with the Nuclear Energy Decree (NED 161/1988), the application for a decision-in-principle shall include an EIA report complying with the Environmental Impact Assessment Act. The scope of the project, outlined in the application for the decision-in-principle, may not exceed that described in the EIA report.

The application for the decision-in-principle is not solely based on the material provided by the applicant. The authorities will acquire supplementary reports, both those required pursuant to the Nuclear Energy Decree and other reports deemed necessary, providing a broader analysis of the project. In preparation for the processing of the application, the MEE will obtain a statement from the council of the local authority intended to be the site of the power plant, and from its neighbouring local authorities, the Ministry of the Environment and other authorities, as laid down in the Nuclear Energy Decree. In addition, the MTI will obtain a preliminary safety assessment from the Radiation and Nuclear Safety Authority (STUK).

Pursuant to section 24(h) of the Nuclear Energy Decree, the decision-in-principle shall include an overview of the applicant's plans and available methods for arranging nuclear waste management. The submission of plans based on binding agreements involving matters such as the nuclear waste management of the nuclear power plant project cannot be expected during the decision-in-principle stage. This rule also applies to fuel supply management (section 24(g) of the Nuclear Energy Decree)).

The MEE will provide local authorities, residents and municipalities in the immediate vicinity of the power plant with an opportunity to express their opinions in writing before the decision-in-principle is made. The Ministry will arrange a meeting, where members of the public will have the opportunity to express their opinions verbally or in writing. These responses will be submitted to the Government.

Pursuant to the Nuclear Energy Act, before making the decision-in-principle, the Government shall ascertain whether the municipality comprising the planned location of the nuclear facility is in favour of the facility, and ensure that no facts indicating a lack of sufficient prerequisites for constructing and using a nuclear facility in a safe manner and not causing injury to people, or damage to the environment or property, have arisen in the statement from STUK or elsewhere during the processing of the application. The Government's decision-in-principle shall be forwarded, without delay, to Parliament for its consideration. Parliament may reverse the decision-in-principle or decide that it should remain in force as it stands.

Construction licence

The actual licensing procedure follows the Government's decision-in-principle. Construction of the nuclear power plant requires a licence issued by the Government, stating that the construction project is in line with the overall interests of society. Furthermore, sufficient safety, the protection of workers, the population’s safety and environmental protection measures must be taken into account appropriately when planning the operations, and the location of the nuclear power plant must be appropriate with respect to the safety of said operations.

Any decision regarding the construction licence shall describe how the EIA report and the related statement by the contact authorities have been applied (section 13 of EIA Act).

During the construction licence application, checks will be made to ensure that a site has been reserved for construction in the town plan and that the applicant has possession of the site, as required for the operation of the plant (section 19(4) of the Nuclear Energy Act)). Therefore, the planning process must be finalised by this stage (cf. section 9 of the EIA Act). In practice, the MEE takes this to mean that during the EIA, the arrangements required by the planning process, such as the hearings, cannot be combined with similar arrangements laid down in the EIA. However, the information and reports produced by the EIA procedure can be used in the planning process.

The EIA will be finished considerably ahead of the planning. A planning officer from the local environmental office was involved in a consultative role in the four public hearings organised by the MEE in February 2008.

A hearing procedure involving municipalities, authorities and citizens will be established during the application process for the construction licence.

Operating licence

Operation of a nuclear power plant requires a licence issued by the Government. In order to receive such a licence, the operation of the nuclear facility must be arranged so that it is in line with the overall interests of society, and so that the protection of workers, safety and environmental protection have been taken into account as appropriate.

A hearing procedure involving municipalities, authorities and citizens will be established during the operating licence application process.

3 Summary of comments and opinions

The following organisations were invited to comment on the assessment programme:

Ministry of the Environment, Ministry for Foreign Affairs, Ministry of the Interior, Ministry of Social Affairs and Health, Ministry of Defence, Ministry of Finance, Ministry of Transport and Communications, Ministry of Agriculture and Forestry, Radiation and Nuclear Safety Authority, State Provincial Office of Western Finland, State Provincial Office of Southern Finland, State Provincial Office of Oulu, State Provincial Office of Lapland, Western Finland Environmental Permit Authority, Northern Finland Environmental Permit Authority, Finnish Environment Institute, Regional Environment Centre of Lapland, Regional Environment Centre of North Ostrobothnia, Regional Environment Centre of West Finland, Regional Environment Centre of Uusimaa, Occupational Safety and Health Inspectorate of Northern Finland, Occupational Safety and Health Inspectorate of Vaasa, Occupational Safety and Health Inspectorate of Uusimaa, Safety Technology Authority, Northern Ostrobothnia TE Centre, Kainuu TE Centre, Southern Ostrobothnia TE Centre, Lapland TE Centre, Uusimaa TE Centre, Council of Oulu Region, Regional Council of Ostrobothnia, Regional Council of Lapland, Regional Council of Itä-Uusimaa, Confederation of Finnish Industries, Finnish Energy Industries, WWF, Greenpeace, Finnish Association for Nature Conservation, the Finnish Society for Nature and Environment, Central

Union of Agricultural Producers and Forest Owners, Confederation of Unions for Professional and Managerial Staff in Finland (Akava), Central Organisation of Finnish Trade Unions, Finnish Confederation of Salaried Employees, Federation of Finnish Enterprises, Fingrid Oyj, Posiva Ltd, Fortum Oyj, TVO Oyj, Finavia, Finnish Civil Aviation Authority, Ostrobothnia Fire and Rescue Services, Lapland Fire and Rescue Services, Itä-Uusimaa Fire and Rescue Services, Jokilaaksot Fire and Rescue Services and the following municipalities: Pyhäjoki, Ruotsinpyhtää, Simo, Kristiinankaupunki, Raahe, Alavieska, Vihanti, Merijärvi, Siikajoki, Oulainen, Kalajoki, Pyhtää, Lapinjärvi, Pernaja, Elimäki, Loviisa, Anjalankoski, Keminmaa, Tervola, Ranua, Ii, Kemi, Karijoki, Isojoki, Merikarvia, Teuva, Kaskinen and Närpiö. The MEE invited the National Board of Antiquities to submit a comment on 30 April. Consequently, the comment was not yet available at the time of writing this report but will be made available to the responsible organisation as soon as it is received.

Comments were not received from the following organisations: Ministry for Foreign Affairs, Ministry of Defence, Ministry of Transport and Communications, Finnish Environment Institute, Occupational Safety and Health Inspectorates of Northern Finland and Vaasa, WWF, Central Union of Agricultural Producers and Forest Owners, Finnish Confederation of Salaried Employees and the following municipalities: Vihanti, Anjalankoski, Lapinjärvi, Alavieska, Ranua and Ii.

In the assessment procedure with respect to cross-border environmental impacts, the Ministry of the Environment notified the authorities of the following countries: Swedish Environmental Protection Agency (Sweden), Ministry of the Environment (Denmark), Ministry of the Environment (Norway), Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Germany), Ministry of the Environment (Poland), Ministry of the Environment (Lithuania), Ministry of the Environment (Latvia), Ministry of the Environment (Estonia), Ministry of Natural Resources (Russia) and Federal Ministry of Agriculture, Forestry, Environment and Water Management (Austria).

Sweden, Lithuania, Norway, Poland, Germany (State of Mecklenburg-Western Pomerania), Estonia and Austria are participating in the EIA procedure and have commented on the EIA programme. Latvia has replied to the Ministry of the Environment that it will not participate in the EIA procedure.

The Ministry of the Environment has not received replies from Denmark and Russia. If any of the potential participants in the cross-border procedure submit a comment, it will be delivered to the organisation responsible for the project.

3.1 Comments invited by the MEE

Comments from the authorities

In the following presentation of the comments invited by the MEE, the comments on the entire EIA programme are followed by the comments submitted by each area in which the proposed plant is to be located. The

annex to this statement includes a summary of the comments and opinions received regarding nuclear waste management.

According to the statement submitted by the Ministry of the Environment, the assessment programme generally describes matters laid down in section 9 of the Government Decree on the environmental assessment procedure (713/2006).

However, the Ministry finds the programme to be a very general description and deficient in several key parts. Consequently, the programme fails to provide sufficient information on how environmental assessment will be taken into consideration in the EIA report regarding each area.

In the summary of its statement, the Ministry of the Environment advises that the EIA report on the planned nuclear power plant should provide further details on the following matters in particular:

- Main alternatives to the project's location combined with the technical alternatives and, in conjunction with the zero option, opportunities to increase energy efficiency;
- The project's nuclear safety in relation to the location and technical alternatives;
- All stages of the project's fuel cycle and nuclear waste management;
- Environmental impacts of other projects closely related to the project, such as the building of transport links and power lines;
- Impacts of cooling water on the state of the sea according to the various intake and discharge alternatives.

The Ministry of the Environment also considers it advisable to submit any application for a decision-in-principle only after the contact authority has submitted a statement on the EIA report following the hearings.

Furthermore, the Ministry of the Environment finds it crucial that the necessary environmental decontamination measures during the after-care stage, to follow any emergency that might transpire, be assessed by the EIA. The Ministry has also identified several other points to be included in the EIA report.

According to the Department for Rescue Services of the Ministry of the Interior, the EIA programme has been comprehensively prepared and the Department for Rescue Services does not have any major suggestions for changes at this stage of the project. However, the Department for Rescue Services deems cooperation between local rescue services and any other related parties, and the organisations implementing the programme, to be important. The programme should include an assessment of the potential impact on the rescue services. While considering the plant location, an assessment should be made of whether it is appropriate to have key power production facilities located in close proximity to each other. When the location alternatives are assessed, the multiplicative effects of an emergency taking place in such a concentration should be considered.

The Ministry of Social Affairs and Health finds that, based on the EIA programme, Fennovoima is well-informed of its national and international obligations. The programme establishes that the company is familiar with the questions of radiation/human health protection both during the construction and operation of a nuclear power plant. Fennovoima will apply the best available guidelines on the assessment of the effects on humans. The Ministry considers the EIA programme sufficient and in compliance with the legislation in effect.

The Ministry of Finance finds no cause to criticise the content of the EIA programme. However, the Ministry of Finance points out the project's major social significance and would encourage the MEE to carry out a thorough assessment of the project's economic, social and environmental impacts, should a decision-in-principal be made later, pursuant to the Nuclear Energy Act.

The Ministry of Agriculture and Forestry points out that the national climate and energy strategy includes an adaptation strategy, which calls for stronger capabilities for meeting the challenges posed by climate change, such as extreme weather conditions. Rising sea levels in particular must be taken into consideration, and in order to ensure sufficient provision, the best available expertise must be applied.

The Ministry further points out the necessity of further analysis of the impacts on fish stocks and waterways, based on more specific data and concentrated effort. The impacts on agriculture, forestry and food production should be assessed as part of the EIA procedure.

The Radiation and Nuclear Safety Authority (STUK) maintains that, according to the general principle, nuclear power plants must be located in relatively sparsely populated areas and sufficiently removed from significant population centres since, during the plant's operation, the possibility of a radioactive leak following an emergency cannot be dismissed. The drawing of a protection zone for the prospective power plant site and restrictions on its population level will be subject to the requirements set out in the Ministry of the Interior's decision no. 01285, TU-311, VAL 1.1 of 15 June 2001, "Guidelines on radiation protection in the event of radiation risk", on civil defence measures and their effective implementation.

STUK further mentions that the creation of the regional, comprehensive and town plans required by a new nuclear power plant will be undertaken in accordance with the Land Use and Building Act (132/1999). Pursuant to section 58 of the Nuclear Energy Act, STUK must be consulted prior to the outlining and approval of a town plan for the area intended for the site of a nuclear facility.

The EIA report should account for and describe in more precise terms the intake and discharge of cooling water in the facility, including any possible remote intake and discharge options. A comprehensive dispersion calculation for waterway warming should cover the seasons and a range of weather conditions. In addition, the combined effect of cooling waters from the Fennovoima project and the three nearby units in Hästholmen must be assessed.

The Safety Technology Authority finds no cause to criticise the EIA programme, but points out that the assessment report must include a review of the risks associated with the construction of the plant and possible emergencies there during its operation. Kemi's Veitsiluoto area and a deepwater harbour are located in the Karsikko and Laitakari area of Simo. These areas involve sites which are monitored by the Safety Technology Authority and which are subject to safety reporting. The Loviisa power plant and Fingrid operations are located in the Ruotsinpyhtää area and the Valko port is located nearby.

A combined statement by the Northern and Western Finland Environmental Permit Authorities draws attention to the cooling water impact assessment.

3.2 Opinions by area

Kristiinankaupunki area:

The Regional Environment Centre of West Finland is of the opinion that the EIA programme is clearly structured but the current status, adjoining areas and nearby operations have not been fully and equally assessed. These should be presented in the report in a way which allows objective comparison of the alternatives. A review of the current environmental state and the impact assessment should be closely interlinked in the report. Furthermore, the report should pay attention to presenting the comparison methods and their background information in a clear and understandable manner.

The Centre regards the environmental impact assessment to be comprehensive on the whole and acknowledges the programme's glossary to be a good and necessary feature. However, the Centre makes a general point about the environmental impact assessment of construction and use, as well as the assessment of adequate reporting and monitoring, being badly undermined by the fact that the programme fails to provide a clear description of the location of the plant or the necessary infrastructure, aquatic construction, roads etc. for the various alternatives.

Furthermore, the Centre points out a number of specific areas, which must be taken up in the assessment report, such as the fisheries located within the initially planned site of the project. Therefore, the Centre considers the review of the current environmental state, as presented in the programme for the Kristiinankaupunki area, to be inadequate and imprecise.

The State Provincial Office of Western Finland considers Fennovoima's EIA programme adequate and appropriate.

Kristiinankaupunki considers the EIA programme to be in compliance with legislation but points out that the programme should be supplemented in a number of ways, as described in further detail in the Kristiinankaupunki statement.

As part of the EIA procedure, the municipality of Karijoki calls for a more in-depth assessment of the impacts of a nuclear power plant on agriculture, potato growing in particular, and on the area's ground water.

The town of Kaskinen and the municipalities of Isojoki and Merikarvia find no cause to criticise the EIA programme.

The municipality of Närpiö makes a number of detailed comments on the EIA programme to be dealt with in the EIA procedure.

The municipality of Siikajoki considers the project significant to the sub-region, and this should be taken into account when the impacts on the sub-region are being assessed.

According to the municipality of Teuva, the EIA programme has some shortcomings and requires, among other things, a more detailed review of the regional economic effects during and after the plant's construction, and specific, more in-depth traffic reviews.

The Ostrobothnia Fire and Rescue Services draw attention to the nuclear power plant's location in a new area and propose that this be taken into account in the assessment of the fire and rescue services' operations, including a number of questions regarding the available resources and evacuation. The assessment should also include a review of the handling of hazardous substances.

The Fishing Industry Unit of the Ostrobothnia TE Centre notes that the fishing industry section of the EIA programme is only cursory and, based on that review, it is not possible to assess whether the EIA programme will take account of all of the key factors influencing the fishing industry. As sufficient background data is lacking at this stage from the areas of Skaftung and Siipyy for a comprehensive EIA procedure, the assessment should first make use of the basic data on the area's fish stocks.

According to the Regional Council of Ostrobothnia, the EIA programme remains deficient in parts. For example, the programme lacks information on different transport routes and power transmission, and with respect to Kristiinankaupunki, the environmental review is poorer than the reviews of the current status of other areas.

Pyhäjoki area:

The Regional Environment Centre of North Ostrobothnia finds the assessment programme clearly structured. Its mode of presentation facilitates a comparison of the conditions found in the four alternative locations. The review of the current environmental situation in the area of Hanhikivi in Pyhäjoki is fairly comprehensive. Although lacking in some aspects, it highlights the need for a further review in order to provide background information to be used in the impact assessment. Questions regarding land use, waterways and environmental protection, in particular, require supplementary information. The Environmental Centre advises that the municipal building permission be clearly presented in the EIA report and the entire planning process explained, illustrating the nuclear power plant in the regional plan, the

comprehensive plan and the town plan, and showing the area reservations for the project in each of the above.

Sources used for the cooling water dispersion model and questions affecting the review must be clearly explained in the assessment report so that the reliability of the dispersion model can be validated. Any possible room for error in the model must be clearly stated. Moreover, the impact assessment report on the effect of cooling and waste water on water quality and biology requires more detailed information. Water quality covers both the physical and chemical properties of water. The Environmental Centre also highlights a range of subject matters requiring further information, such as fishing, the presentation regarding protected areas and the procedures carried out under the Nature Conservation Act. Among the proposed alternatives, the Centre finds the Hanhikivi alternative to be the one in most serious conflict with the agreed protection decisions and biodiversity.

In the State Provincial Office of Oulu's view, the assessment programme clearly describes the project's preconditions, the operational principles of a nuclear power plant, the purpose of the EIA process, the official and permission procedures of the project, and the monitoring of operations.

According to the municipality of Pyhäjoki, the basic data of the programme appears comprehensive and the mode of presentation appropriate. However, the EIA report must be supplemented with more detailed information on the area's marine biology, fish stocks, bird life and terrestrial animals. With regard to cooling water intake, the impact of, and provision for, pack ice formations should be investigated. Pyhäjoki points out that there is actually only one prospective site on the Hanhikivi peninsula, which falls within the borders of the municipality.

The town of Raahe draws attention to a careful impact assessment of the use of cooling water on the relatively shallow and closed coastal area of the Gulf of Bothnia. An impact assessment of land use (planning development) must be undertaken, paying attention to the impact on properties in the area belonging to the town of Raahe. Furthermore, the EIA report must comment on the impact on the value and potential conservation of sites with specific natural and landscape protection interest. Raahe also highlights the project's value to the sub-region.

The town of Oulainen and the municipality of Merijärvi find no cause to criticise the EIA programme.

Jokilaaksot Fire and Rescue Services maintains that the EIA procedure should take as its starting point a scenario where the prospective nuclear plant construction site and the deployed power plant may lead to a completely new situation. The review should also take account of the practical aspects of population evacuation.

The Northern Ostrobothnia TE Centre finds it essential that the impacts on the regional economy and employment during the further stages of the assessment be described.

The Fishing Industry Unit of Kainuu TE Centre notes that Hanhikivi in Pyhäjoki falls within the Unit's remit. Carrying out an impact assessment

on the fishing industry, based on the impact on the waterways, requires data on fish stocks and fishing in the area under review. However, there is little prior research on the Hanhikivi area.

According to the Council of Oulu Region, the key environmental impact of the nuclear power plant is the warm water mass produced by the plant. The Council hopes that the impact of the plant on waterways will be assessed comprehensively. The multiplicative effects of the project on the economy, the area's image and the travel industry should also be assessed.

Ruotsinpyhtää area:

Uusimaa Environmental Centre finds the EIA programme structurally clear but the planned impact assessment has been presented in such a general way that it is difficult to assess whether the assessment will be adequate.

At the next stage of the review, the Centre suggests proposing an adequate number of both individual and combined cooling water intake and discharge points in order to present all available options. It would be particularly important to pay attention to the special conditions in Ruotsinpyhtää and to undertake a thorough assessment of the combined key effects of the current power plants in Loviisa.

The Centre also points out the importance of assessing rising sea levels and nature protection (for example, an assessment of the prevalence of the Siberian flying squirrel) in the case of a new power plant site.

The Rescue Services Department of the State Provincial Office of Southern Finland maintains that certain safety aspects of road and sea transport must be taken into account in further reviews, such as the increased traffic volume on the Archipelago Route and the route following on from it, Reimarsintie, during and after the implementation phase of the project, and the increasing volume of sea transport in the Gulf of Finland.

The municipality of Ruotsinpyhtää finds it important that the further reviews investigate aspects such as cooling water, traffic solutions, water supply arrangements and reclaiming heat from cooling water. With regard to the project's impact on the regional and town economy, issues such as the development of real estate tax should be examined.

According to the town of Loviisa, the environmental impact assessment of cooling water should take account of the fact that the current, and possibly the future, plants in Hästholmen discharge their cooling water into the same mass of water as the prospective Fennovoima project.

The municipality of Pernaja finds the EIA programme's review of the current state deficient in a number of areas. The nuclear power plant sites should have been marked on the maps at the programme stage rather than using the two large ellipses, which were not suitable for the purpose. Pernaja further observes that heat from the cooling water will represent a crucial environmental impact of the nuclear power plant. Therefore, the combined effect of all existing and planned power

stations in the area should be fully accounted for in the assessments and reviews. Pernaja also comments on other issues, such as the assessments and reviews of exceptional weather conditions.

The municipality of Pyhtää finds Fennovoima's EIA programme comprehensive and sufficient for creating the basis of the assessment report. The municipality of Elimäki finds no cause to criticise the EIA programme.

Itä-Uusimaa Fire and Rescue Services point out that the distance from Fennovoima's site in Ruotsinpyhtää is less than five kilometres to the Hästholmen site in Loviisa. The EIA should assess the effects of the two separate nuclear power plants on each other in exceptional circumstances, emergencies and in disasters during so-called normal times. In any circumstances, the personnel and operations of two separate power plants located a short distance apart would form a significant concentration, which should be taken into consideration in the reviews.

The Occupational Safety and Health Inspectorate of Uusimaa finds that the Occupational Safety and Health Act and its decrees do not impose any additional demands on the current EIA programme.

Uusimaa TE Centre reviews the EIA programme with a special interest in the impact on waterways and consequently on the fishing industry. The Centre finds that in the case of Ruotsinpyhtää, the data presented might prove viable to some extent, since Hästholmen has been under monitoring, but the data does not necessarily apply to the other sites suggested by Fennovoima. The Centre emphasises the importance of gathering comparable data on the fishing industry at the different sites and recommends consulting the Finnish Game and Fisheries Research Institute for any further reviews.

The Regional Council of Itä-Uusimaa finds the EIA programme fairly comprehensive and illustrative of a broad range of issues. However, the EIA report must present the project's impacts on the regional structure and economy. It should also include an assessment of the combined effect of cooling waters from the current and planned Hästholmen projects and the Fennovoima project.

Simo area:

According to the Regional Environment Centre of Lapland, the EIA programme is generally unambiguous and illustrative, and the main alternatives have been presented clearly. However, the programme is deficient in terms of presenting alternatives within the suggested locations: several factors have not been discussed and therefore cannot be assessed. These include the cooling water intake and discharge alternatives, the location of the dock, the road and power transmission routing options, and the marine transport routes. All of the above factors should be discussed in the EIA report.

With regard to the environment, the location of Karsikko and Laitakari in Simo on the north-eastern part of the Bay of Bothnia means that the southerly and south-westerly storms have a strong impact on the area. Special attention should be paid to rising sea levels due to storms, in addition to changes affected by post-glacial rebound and climate change. In any case, the assessment must account for the possible effects of extreme weather conditions (particularly the combined effect of ice and wind). With regard to assessing the impact on waterways, the effects caused by warming sea water are the most important. Similarly, more effort must be devoted to assessing the project's impact on community structures, such as access to employment during the plant's operation and commuting needs. The Centre also comments on the linking of the EIA and planning procedures.

According to the Department of Social Affairs and Health of the State Provincial Office of Lapland, the report should discuss issues involving areas of permanent habitation and holiday homes within the plant's protection zone in particular.

The municipality of Simo finds no cause to criticise the EIA programme but asks for some factual mistakes to be rectified. The municipality of Tervola has no cause to criticise the EIA programme.

The municipality of Keminmaa finds that the assessment programme has been professionally prepared and finds no cause to criticise it. While a number of questions remain open in the EIA programme at this stage, these will be answered later in the EIA process.

The town of Kemi requires that the opportunities to reclaim the cooling water from the nuclear power plant be mapped. One of the options is to keep the Ajos deepwater harbour open with the help of cooling water discharge. Kemi also notes that the plan to build a housing estate in the area of Satamakangas would be prevented if the power plant were built, and this should be taken into consideration in the EIA.

The Lapland Fire and Rescue Services maintain that a systematic approach to security in the nuclear energy industry would involve preventing emergencies and limiting their consequences. From the Rescue Services' perspective, key issues to be investigated include warning and evacuating the population in the event of an emergency and ensuring that the rescue services have operational capabilities in the area. The Rescue Services point out that other environmental impact assessments are also required, for example due to the shipping lane in the vicinity of Karsikko and Laitakari in Simo (possibility of oil tanker emergencies). The Rescue Services also note that, in the EIA procedure, the impacts of the alternatives will be compared through first identifying the key areas, one of which must be safety.

The Fishing Industry Unit of Lapland TE Centre draws attention to the need for further reviews, which should focus on gathering new biological data on the Simo area in order to assess the project's impact on fish stocks and the fishing industry. These reviews should include the comprehensive mapping of spawning areas and the dispersion of nutrients from seabed sediments into the area's fish stocks following changes in the flow conditions.

The Regional Council of Lapland reports that it has agreed to launch the regional planning process as a stage plan for a nuclear power plant. The Council recommends that, in the future, planning and EIA processes be aligned more closely and in greater detail, both in terms of their schedule and content. Generally, the Council considers the EIA programme illustrative and well-presented. However, some inaccuracies and generalisations can be found in the description of impacts in the Simo area.

3.3 Other comments invited by the MEE

The Confederation of Finnish Industries EK finds the assessment programme comprehensive. It provides a comprehensive and balanced picture of the key issues and reporting needs arising from the EIA procedure under section 9 of the EIA Decree.

Finnish Energy Industries consider the EIA programme comprehensive and professionally prepared.

The Central Organisation of Finnish Trade Unions considers uninterrupted operation and safety in all circumstances to be the key points of the assessment. The Organisation regards assessing the impact on employment important. All in all, the Organisation finds the EIA programme sufficient and notes that it will enable the undertaking of the EIA procedure in compliance with the legal requirements.

AKAVA has submitted the opinions of three of its unions (the Finnish Medical Association, the Finnish Association of Graduate Engineers and the Union of Professional Engineers in Finland). The Finnish Medical Association points out that, with regard to assessing the environmental impacts, the new locations suggested by Fennovoima are more demanding than the old power plant concentrations, but decentralisation would also bring benefits. The Finnish Association of Graduate Engineers and the Union of Professional Engineers both find it important in the EIA procedure that equal terms be applied by the authorities to all similar projects.

Greenpeace states that the environmental impacts of the entire production chain of nuclear fuel should be considered as environmental impacts of the project. It further maintains that the effects of a serious nuclear emergency should be considered as potential environmental effects. According to Greenpeace, the impact assessment of a nuclear emergency should start from the premise that a significant share of the plant's total activity can be released into the environment. Moreover, with regard to nuclear waste management, Fennovoima's reference to the project investigating nuclear waste disposal in Olkiluoto is not sufficient to solve the problem.

The Finnish Association for Nature Conservation observes that, even though the EIA programme describes the EIA process appropriately and provides a great deal of background information, the assessment programme itself remains short and cursory. The Association identifies the presentation of the alternatives as an example and recommends

that, in the EIA report, each site should include three alternatives: the zero option, one plant and two plants.

All in all, the Association finds that building a power plant on a greenfield site is a poorer option than building on a brownfield site, set aside for this kind of industrial activity and not having any environmental or cultural value. According to the Association, the EIA programme should be expanded when the sites (the plant sites, power lines, roads, lanes etc.) have been specified, and the EIA process should be discontinued until this has been achieved.

The Regional District of North Ostrobothnia of the Finnish Association for Nature Conservation observes that the visual image of the EIA programme has been emphasised at the expense of the content, and the programme itself remains general. The District also points out that post-glacial rebound must be taken into consideration in the Hanhikivi peninsula in Pyhäjoki.

The Regional District of Ostrobothnia of the Finnish Association for Nature Conservation finds the EIA programme a beautiful publication with a number of illustrations but very poor content. The District emphasises that a power plant of this size should be a combination plant where condensation heat can be fully reclaimed. In further reviews of the state of waterways, the risks to the reproduction of Ctenophora should be taken into consideration.

The Regional District of Lapland of the Finnish Association for Nature Conservation requires that the infrastructure of the Simo area be taken into account in further reviews. It also points out that there is a lack of information about the fishing industry in Karsikko and that some studies, such as field studies on migrating birds, cannot be carried out in the summer.

The Regional District of Kymenlaakso of the Finnish Association for Nature Conservation observes that, in the main, the EIA programme complies with the current requirements but that, in the case of four municipalities, it has perforce remained fairly general. The District would find it particularly worrying if the plant were to be located in an area where there is no existing industry. In the case of Ruotsinpyhtää, this would mean breaking up continuous forested areas with an industrial site.

According to the Regional District of Northern Finland of the Finnish Association for Nature Conservation, more attention should be paid in further reviews to the problems or fuel sourcing and nuclear waste management. In addition, radioactive emissions from the plant operation should be specified and the hazard they pose and their impact on the local ecosystems assessed in more detail.

The Finnish Society for Nature and Environment proposes several improvements to the EIA programme and finds Chapter 7 particularly deficient. The Society indicates that an environmental impact assessment should be carried out for three alternatives: 1) the zero option, 2) one nuclear plant unit (1,500-1,800 MW) and two nuclear plant units (2x1,000-1,250 MW).

Sydbotten's Society for Nature and Environment states that nuclear power does not provide a solution to climate change. It suggests that Fennovoima should review radioactivity in the bottom sediment and food chain of the entire Baltic Sea. Referring to the proposed Kristiinankaupunki site, the Society questions Fennovoima's motives for building a nuclear power plant in an untouched and attractive natural setting.

The Federation of Finnish Enterprises finds no cause to criticise the EIA programme.

Fingrid Oyj has investigated the possibilities of connecting Fennovoima's project to the national grid and the necessary reinforcement of the grid for Fennovoima's facilities. Fingrid's grid reports are expected to be submitted by the end of the year.

The necessary reinforcements for connecting the power plant to the grid, and elsewhere in the national grid, will be taken into account in provincial planning, carried out in partnership with the regional councils alongside land use planning. The EIAs for the power lines, required to strengthen the national grid, can be launched after the network reviews have been carried out and the solutions related to the plant's site defined.

The Finnish Civil Aviation Authority reports that one of its duties under the Aviation Act is to process and issue permissions for obstacles to aircraft in flight. However, according to the Authority, this is not relevant at this stage of Fennovoima's EIA programme.

Finavia points out that, in the EIA programme, the impact of the project on the operation of airports and aerodromes has not been identified. Finavia expects this to be rectified in the programme due to the vicinity of the Simo site and the Kemi-Tornio aerodrome.

Fortum Oyj observes that among Fennovoima's proposed locations, the island of Kampuslandet and the Gäddbergsö peninsula in Ruotsinpyhtää are in the immediate vicinity of Fortum's Loviisa nuclear power plant on the island of Hästholmen. In addition, Fortum is in the process of carrying out an EIA procedure with the purpose of investigating the possibility of expanding Loviisa's power plant with a third power plant unit.

With regard to the EIA of Fennovoima's project, Fortum considers the impacts of power transmission lines, cooling water intake and discharge particularly important to the extent that they affect Fortum's plants. With regard to the cooling water intake and discharge sites, Fortum hopes that the EIA report will provide sufficiently clear and precise definitions so that any possible impacts on the current and planned power plant units in Loviisa can be assessed.

Posiva Oy and Teollisuuden Voima Oyj discuss the final disposal of spent nuclear fuel, please see the appendix.

3.4 Opinions from the international hearing

Sweden's environmental authority, Naturvårdsverket, has held a public hearing forming the basis of a statement. It received comments from 20 authorities and 15 organisations, and 41 comments or opinions from private individuals. These comments and opinions can be found on the Internet at htpp://www.naturvardsverket.se/sv/Nedre-meny/Aktuellt/Remisser/Aktuellapagaende/Finland-planerar-for nytt-karnkraftverk/.

According to Naturvårdsverket, the key authorities consider the main points of the EIA programme adequate. The sea will be significantly affected, and data on this is being gathered under the environmental monitoring programmes of the current facilities.

Sweden's state provincial offices (Norrbotten, Västerbotten, Västernorrland and Uppsala) draw attention to the impacts of any serious emergency in Sweden. The municipalities and towns which commented on the programme (Kalix, Kiiruna, Piteå, Skellefteå, Timrå, Uumaja, Örnsköldsvik and Haaparanta) suggest that the impacts any such emergency be assessed at local level in Sweden, with regard to the different plant alternatives. The municipalities require that all of the environmental impacts on Sweden be discussed in a separate chapter.

Other comments and opinions received by the Swedish environmental authority emphasise the assessment of radioactive emissions from several perspectives. In particular, the organisation's or person's view on the general use of nuclear energy has influenced their comments and opinions. These comments and opinions draw attention to the weakness of the zero option, the long-range transport of, and preparedness for, possible radioactive emissions, the mitigation of possible adverse effects in Sweden, and the impact of cooling water and waste management on the Gulf of Bothnia and the Baltic Sea.

Acting as the environmental authority, the Norwegian Ministry of the Environment welcomes the assessment of radioactive emissions from any serious reactor emergency up to a radius of 1,000 kilometres. The comments invited and submitted by the Norwegian environmental authority also emphasise the assessment of radioactive emissions from several perspectives. Particular attention should be paid to the potential long-range transportation of radioactive emissions and the related preparations, and mitigating the potential harmful effects. The impact of emissions on the environment and industries should be assessed, e.g. vegetation, animals, and cattle and reindeer husbandry.

The Lithuanian Ministry of the Environment has no comments on the extent of the EIA programme at this stage but will participate in the EIA procedure.

Innenministerium Mecklenburg-Vorpommern in Germany proposes taking consideration of the long-range transport of air- and waterborne pollutants in the assessment of radioactive emissions, including an impact assessment of long-term transport and a description of how Germany, among other countries, will be informed in an emergency. The Ministry suggests that the impact assessment be enhanced by

examining the environmental effects of nuclear fuel production and the management of new nuclear fuel, should Mecklenburg-Western Pomerania be involved in these areas.

The Polish Ministry of the Environment draws attention to the fact that the distance from Poland's northern coastline to Kristiinankaupunki and Ruotsinpyhtää is 1,000 kilometres but the other two proposed sites are further away. Poland would like to extend any further reviews of serious reactor emergencies to cover the possible long-range transport and impact of radioactive substances in Poland.

Acting as the environmental authority, the Estonian Ministry of the Environment stresses the description of cross-border emergencies from several perspectives. This description should identify any impacts requiring protection from radiation and the methods of informing neighbouring countries in emergencies. Estonia's Ministry of the Environment also expects the EIA report to include a review of the energy policy. However, in section 4.1 the MEE states that these do not fall under the remit of the operation in question but are the concern of the Government, should the project proceed to the decision-in-principal stage.

In Austria, the Federal Ministry of Agriculture, Forestry, Environment and Water Management is the national representative in the process, pursuant to the Espoo Convention. In a letter addressed to the Finnish Government, the Ministry affirms that Austria will participate in the EIA procedure under certain conditions.

Enclosed with the letter is a report by Österreichisches Ökologie Institut "Fennovoima Oy Scoping Phase of the EIA Program for an NPP", Expert Statement, Vienna 2008. This report also comments on the EIA programme. In practice, Austria requests that any possible impacts of Fennovoima's project on Austria be assessed. A worst case scenario should be used as the starting point for dealing with radioactive emissions in an emergency. Use of International Nuclear Event Scale (INES) class 6 as Fennovoima's starting point must be justified in the EIA report.

The report must also justify the need for the project, discuss the risks of nuclear fuel production, and assess the risks of the nuclear power plant's normal operation in more depth than outlined in the EIA programme, paying attention, for example, to the latest German research findings on the link between nuclear power plants and leukaemia in children.

3.5 Other comments and opinions

This summary introduces the issues and views that have been presented or highlighted in other comments or opinions. A total of 153 other comments or opinions were submitted. Some 35 of those were from national communities and organisations, four from foreign organisations and 113 from private individuals (several comments or opinions were signed or sent by more than one person) from various countries.

Six petitions were submitted to the MEE, in which the signatories opposed the project in its entirety. The number of signatures totalled over 6,300. The Piehinki Village Association's petition was signed by 54 people (in addition to a separate comment), Kristiinankaupunki Landowners' statement was signed by 239 people, the "Petition against nuclear power in Siipyy – Skaftung" from the Kristiinankaupunki area was signed by 1,517 people, and the "Pro Sideby/Siipyy – Kilgrund – Skaftung Petition against nuclear power" from the same area was signed by 4,512 people. Five organisations signed the petition, "Skrivelser mot kärnkraftsetablering i Sideby - Skaftung".

The sixth address, "Opinions expressed by residents in the neighbourhoods of Skaftung and Siipyy in Kristiinankaupunki regarding Fennovoima's nuclear power plant project" encloses an official letter based on the meeting held on 13 March 2008 and attended by 60 people representing 23 associations. The discussion and letter examine the EIA programme. In the summary, it is concluded that the area (in Kristiinankaupunki) is in no way suited to building a nuclear power plant. The organisations and persons attending the meeting were unanimous in their opinion that the power company's project should be discontinued.

The following organisations presented a comment or opinion: Samkommunen för Hälsovårdscentralen i Kristinestad-Bötom, Närpiö Health Centre, Skaftung Village Association, Nylands Fiskarförbund, Stiftelsen Kilens Hembydsgård, Hepola Residential Association, the Association of Professional Fishers in Finland, Parhalahti Fishing Club, Pyhtää Nature–Pyttis Natur, Skärgårdens Vänner i Strömfors rf (Pro saaristo), Ii Environmental Association, Itä-Uusimaa Association of Nature and Environmental Protection, Pyhäjokialue Nature Conservation Association, Kemi Area Nature Conservation Association, Raahe Area Nature Conservation Association, Östra Nylands Fågel- och Naturskyddsförening, Miljöringen rf – Ympäristörengas ry, South-West Finland's Green Party, Loviisa Area Green Party, Green Party Women's Association in Lapland, Parhalahti Hunters Association, Suupohja Ornithologic Association, Northern Ostrobothnia Ornithologic Association, Raahe Area Bird Club Surnia, Maksniemi Common Waterway Partners, Siipyy Reparcelling Unit, Perämeri Fishing Area, Ostrobothnia Australis, Women Against Nuclear Power, Women for Peace in Finland, the Edelleen ei ydinvoimaa popular movement against nuclear energy, the Lappilaiset Uraanivoimaa Vastaan popular movement against nuclear energy, and Pro Hanhikivi Association.

Two individuals and the following organisations presented comments or opinions from other countries: Reseau Sortir du nucleaire, Friends of the Earth Europe, Miljöorganisationernas kärnavfallsgranskning MKG, and Atomstopp atomkraftfrei leben!.

Several comments suggest that the environmental impact assessment should be enhanced in order to consider the entire life cycle of the project, including the environmental impact of processing and transporting uranium, the decommissioning of facilities, nuclear waste management and transport.

The comments also mention the project's social significance and address the need to assess other alternative means of energy production. Several comments and opinions do not present views relating to the EIA programme in addition to the aforementioned comments, but oppose the use of nuclear energy in general. The following is a summary of some of the special questions presented in certain comments or opinions.

Pyhäjoki Fishing Club stresses that, should the project be located in Pyhäjoki, attention should be paid to the changes in the marine ecosystem caused by the thermal load of the project. The Club is worried about the preservation of fish stocks, particularly with regard to fish species, which spawn during the cold water period. Several other associations and private individuals from different localities have observed that matters regarding fishing should be further investigated, such as the Association of Professional Fishers in Finland, Nylands Fiskarförbund rf. (Ruotsinpyhtää) Parhalahti Fishing Club (Pyhäjoki) and Perämeri Fishing Area (Simo).

In a statement dated 5 April 2008, Pro Hanhikivi Association points out that its previous comments on the EIA programme draft have not been accounted for and urges that the comments presented in its statement of 5 April 2008 to the MEE be acted upon in the EIA report. Furthermore, the Association delivered a Pro Hanhikivi publication to the Ministry on 24 April 2008.

Maksniemi Common Waterway Partners point out that, since all operations of the power plant will be carried out in the area managed by the Partners (the Simo area), an overall impact assessment of waterways, and flow conditions in particular, must be undertaken as part of the EIA procedure. Sideby Skifteslags - Siipyy Reparcelling Unit for the waterways in Kristiinankaupunki area also presents a number of points regarding nature conservation and legal matters.

4 Contact authority's statement

The MEE states that Fennovoima's EIA programme meets the content requirements of EIA legislation and has been handled in the manner required by the legislation. The comments submitted consider the programme to be, in the main, appropriate and comprehensive. However, the Minister is of the opinion that the assessment programme should be reviewed and the EIA report outlined so that all points made by the contact authority in this chapter are given the appropriate level of consideration.

Moreover, the organisation responsible for the project should also account for the additional questions, notes and views presented in the comments and opinions, answering as many of them as possible in the assessment report.

Any shortcomings or inaccuracies identified in opinions and comments regarding the EIA programme must be rectified. The Ministry proposes that the organisation responsible for the project would attach a table to the EIA report, listing the issues identified by the contact authority,

together with the response of the organisation responsible for the project and possible references to the relevant section of the EIA report.

Answers to the questions presented in the international assessment must be included in the summary to be prepared of the international assessment. The Ministry requires that the material, to be translated into the native languages of the countries in question, is adequate and includes the information listed in Annex II of the Espoo Convention. The EIA report shall include, as a separate chapter, a description of transboundary impacts. The material shall also indicate how the comments of nations participating in the EIA procedure within the framework of the Espoo Convention have been taken into consideration.

The EIA should include a comparison between the different alternatives, as balanced and diverse as possible, and the comparison should be included in the EIA report. Different alternatives refer for example to the sites, the thermal input volume (the number of plant units), the cooling water intake and discharge alternatives and/or cooling water reclamation. The proposed sites for the power plant units must be clearly defined as part of the general presentation and assessment of land use, even though the preliminary definitions outlined in the programme have been sufficient. In addition, the project's impact on the cultural environment must be assessed.

4.1 Project description and the alternatives

The assessment programme presents a summary of the power range and potential types of the planned power plant, including the operational principles of the boiling water reactor and the pressurised water reactor.

In the Ministry’s view, the EIA report should include an evaluation of current nuclear power plants on the market which are suitable for the project under review. Similarly, the safety planning criteria for the nuclear power plant must be presented with respect to the limitation of emissions of radioactive substances and environmental impacts, as well as an assessment of the possibilities of meeting the safety requirements in force. The Ministry suggests that, for the purposes of communicating the project, it may prove advantageous to include a brief description of the cost structure of the project and its alternatives in the assessment report.

The assessment programme briefly describes a zero option, the environmental impacts of which are illustrated by providing an overview of public assessments on the environmental impacts of different methods of power production.

In accordance with the Nuclear Energy Act, the MEE must provide the Government with a review of the importance of the nuclear power plant to Finland’s energy supply, in order to enable the Government to make its decision-in-principle.

The programme further proposes that energy conservation should not be analysed as an alternative, since the organisation responsible for the

project does not have access to any energy conservation means that would allow the replacement of the quantity of electricity produced by the nuclear power plant. However, in addition to the aforementioned review, several comments propose assessments of conservation and the more efficient use of energy. The Ministry maintains that the organisation responsible for the project is a company that generates power only for its shareholders. Therefore, it cannot access any significant means of energy conservation or efficiency. However, the Ministry recommends that the assessment report briefly introduce the energy efficiency and conservation efforts undertaken by the applicant's owners.

Pursuant to the Nuclear Energy Act, the Ministry of Employment and the Economy shall submit a report on the importance of a new nuclear power plant to the national energy supply, supporting the Government's decision-making with regard to reaching the decision-in-principle. This report will include information on energy conservation and efficiency. However, the perspective of this report will cover the Finnish energy supply as a whole and thus could not be applied to the issue of replacing the power plant under review. The Ministry points out that the Government is currently preparing a long-term climate and energy strategy.

4.2 Impacts and the assessment

In the EIA programme, the impact of cooling and sewage water on water quality, biology, fish stocks and the fishing industry are assessed on the basis of existing studies and the results of dispersion model calculations. The possibilities with respect to utilising cooling waters will also be assessed.

Several comments remark on the significant impact of cooling water on the state of the marine environment around the power plant. The effect of warming on the fishing industry is also mentioned in several comments.

The Ministry is of the view that the impacts of cooling waters form the most significant environmental impact during normal plant operation. Consequently, when analysing the environmental impacts of sea water warming, any background material available must be utilised extensively. Uncertainties in calculation results must be illustrated clearly. Also, the alternatives for cooling water intake and drainage options must be presented clearly, and any possibilities for remote intake and drainage must be examined.

The calculations for cooling water should be presented in a conservative way, so that the combined thermal stress caused by all existing and planned power plants in the area is fully taken into account. The Ministry further recommends that, for all prospective localities, an option for one power plant unit should be considered, with a maximum production capacity of 1,800 MW and thermal input of 4,900 MW, alongside an option for two power plant units with a maximum production capacity of 1,250 MW and thermal input of 6,800 MW.

A new nuclear power plant would require an improvement in power transmission and a connection to the national grid. Fingrid Oyj has investigated how the nuclear power plant might be connected to the national grid, and examined the reinforcement of the grid, based on information provided by Fennovoima on the facilities.

The necessary reinforcement in connecting the power plant to the grid, and elsewhere in the national grid, has been taken into account in the provincial planning, carried out in partnership with the regional councils alongside land use planning. The company has commenced the preliminary planning of the necessary power lines, and will launch an environmental impact assessment of the power lines during 2007–2009. In its own EIA report, Fennovoima is obliged to provide information on the environmental impact of the required power transmission in the area of the proposed locations.

Assessing the impacts of exceptional and emergency situations must not be limited to the exclusion area or the emergency planning zone for rescue operations. The Ministry is of the view that the EIA report must present various emergency scenarios involving radioactive emissions and, with the help of illustrative examples, should describe the extent of the affected zones and the impacts of emissions on people and the environment. An account describing after-care following any serious emergency must be included in the EIA report.

The assessment may use the classification system (INES) of the International Atomic Energy Agency (IAEA), and the EIA report must present a clear summary of the basis of the review. The assessment must also include a review of the environmental impact of radioactive substances on the states around the Baltic Sea and on Norway. In addition, a more comprehensive assessment of the above impacts on Sweden must be undertaken in relation to all plant locations by the Gulf of Bothnia.

As exceptional situations, any eventual phenomena caused by climate change and the related preparations for coping with such phenomena must be examined (changes in sea level and other exceptional weather phenomena). The effects of post-glacial rebound must be taken into consideration.

The impact on water quality and biological factors must be assessed thoroughly and to a sufficient extent. Moreover, the state of the aquatic ecology in the affected area must be investigated at all levels of the ecosystem. The reviews should examine species both in terms of their numbers and distribution, and the quality of their habitats. Following these basic mappings, the impact of thermal load and waste waters on the aquatic ecosystem, in terms of both individual factors and the overall system, will be assessed.

The project's impacts on the natural values of the Natura 2000 areas must be investigated in detail and to a sufficient degree, by habitat and species, in order to provide an appropriate assessment of whether the project will undermine, alone or combined with other projects, those natural values which have formed the basis of the areas' selection for the Natura 2000 network.

With regard to the socio-economic review of the EIA procedure, a detailed assessment should be provided of the project's impact on employment, during both the construction and operational stage of the power plant, taking the special characteristics of all localities and areas into consideration.

According to the EIA programme, the organisation responsible for the project will examine the environmental impacts of nuclear fuel production and transport, including mining, concentration and fuel manufacturing. The environmental impact assessment is based on existing studies. Some comments point out that the environmental impacts of the entire production chain of nuclear fuel should be considered as environmental impacts of the project. The Ministry finds it reasonable that the organisation responsible for the project examine the environmental impacts of the entire fuel supply chain in general and, additionally, the company’s opportunities to influence this chain.

The locality-specific additional questions, which do not fall under the above general requirements, are as follows.

4.2.1 Special questions regarding Kristiinankaupunki

With regard to the Kristiinankaupunki area, the EIA report must pay attention to the comments (for example by the Ministry of Agriculture and Forestry, several associations and private individuals), which in particular recommend reviewing the state of the area's fisheries and agriculture, should the project be implemented. The questions presented by Sideby Skifteslags-Siipyy Reparcelling Unit concerning waterway ownership and planning must be examined in the EIA report in an appropriate manner.

4.2.2 Special questions regarding Pyhäjoki

The points made by the Pro Hanhikivi Association concerning energy conservation, nuclear waste management (See Appendix 1), pack ice and the Hanhikivi glacial erratic must be investigated in the EIA report.

With regard to the Pyhäjoki area, the assessments must pay attention to the impacts on conservation areas of interest with respect to specific bird life and bird-watching interests, as implied in several comments and opinions.

4.2.3 Special questions regarding Ruotsinpyhtää

As part of the environmental impact assessment of cooling waters, Fennovoima must also address a scenario in which there are three nuclear power plant units on the island of Hästholmen in Loviisa (Fortum Power and Heat Oy) and Fennovoima's proposed plant units in Ruotsinpyhtää. The MEE will also require Fortum to investigate this scenario, taking account of the fact that Fortum submitted the EIA report to the MEE on 3 April 2008.

(Although Fortum Power and Heat Oy has submitted an EIA report on 3 April 2008, it must also review the combined effects of the five power plant units with regard to its own solutions for cooling water.)

The Itä-Uusimaa Fire and Rescue Services have reviewed, in broader terms, the possible effects of two major power plants in close proximity to each other. Concerning preparedness planning and the rescue services, the combined effects of two power plant areas in exceptional circumstances and emergencies must also be taken into account. Skärgårdens Vänner i Strömfors r.f. and Pro Saaristo-komitea/Pro Archipelago Committee set forth questions regarding the status of the Gulf of Finland, the flow conditions of the area, and related thermal loads. The EIA report shall review these issues in an appropriate manner.

4.2.4 Special questions for Simo

Since Finavia has pointed out that the Fennovoima project to be placed in Simo has an effect on aviation service methods and aviation methods at the Kemi-Tornio aerodrome, the interdependence of the nuclear power plant and the aerodrome must be discussed in the EIA report.

Maksniemi Common Waterways Partners has commented on issues such as water flow, which must be addressed when preparing the EIA report.

One of the reclaiming methods for the nuclear power plant's cooling water, keeping open the Ajos deepwater harbour, as suggested by the town of Kemi, should be investigated.

4.3 Nuclear waste management (summary of comments and opinions, see annex)

The MEE maintains that the EIA report should review nuclear fuel and nuclear waste management as entities.

The environmental impacts of management and final disposal repository of low- and intermediate-level operating waste should, however, be assessed by site. This assessment should include a separate review of the management of waste decommissioning. The structure of the final disposal plant must be clearly presented, for example with the help of illustrations. The licensing plan for the plant must also be described in the EIA report.

The management of spent nuclear fuel must be described in general, on the same level as nuclear fuel supply management. Site management of spent fuel must be described with regard to each site and the intermediate storage of spent fuel must be described with the help of visual elements. The description of spent fuel management must also include any possible spent fuel transports from all alternative sites using transport methods deemed appropriate by Fennovoima.

In sum, the Ministry concludes that, according to Fennovoima's EIA programme, the environmental impact assessment of Fennovoima's project does not cover the final disposal of spent fuel. Pursuant to the Nuclear Energy Act, this is permissible. Therefore, the environmental impact assessment of spent fuel from the Fennovoima project must be carried out separately, when Fennovoima's plans for arranging nuclear waste management are further defined, pursuant to the Nuclear Energy Act.

4.4 Plans for the assessment procedure and participation

The MEE considers that arrangements for participation during the EIA procedure can be made according to the plan presented in the assessment programme. However, sufficient attention should be paid in communications to the entire affected area of the project, across municipal borders and all population groups, and to interaction with that area. The Ministry further requests that the parties consider ways of presenting the impact of participation in the assessment report. The sampling methods used in surveys conducted among residents and the methods used in group discussions must be described and justified in the EIA report.

When the assessment report is finalised, the MEE will publish a public notice, make the report available and invite various authorities to comment on the report. The statement on the EIA report, prepared by the MEE in its capacity as a contact authority, will be delivered to the municipalities in the affected area and to the appropriate authorities.

4.5 EIA Report, contact authority's statement on it, and the possible application for a decision-in-principle

In the licensing system pursuant to the Nuclear Energy Act, environmental impact assessment procedure is followed by an application for a decision-in-principle. Under the Act, the application to the Government for a decision-in-principle can be submitted before the contact authority has published a statement on the EIA report.

However, the Ministry of the Environment considers it advisable to submit any such application for a decision-in-principle only after the contact authority has submitted a statement on the EIA report following the hearings.

The MEE does not consider it appropriate that an EIA report and an application for a decision-in-principle be presented for comments at the same time, since they relate to the same project. Therefore, the Ministry hopes that it would at least be able to submit the EIA report for comments before the application for a decision-in-principle is presented to the Government.

5 Communicating the statement

The MEE will deliver the EIA statement to those authorities which have submitted comments and the communities which have been invited to

submit a comment. The statement will be available in Finnish and Swedish on the Internet at www.tem.fi

The Ministry will provide copies of the comments and opinions concerning the assessment programme to the organisation responsible for the project. All comments and opinions received by the Ministry are published on the Internet.

The original documents will be stored in the Ministry's archives.

Mauri Pekkarinen
Minister of Economic Affairs

Jorma Aurela
Senior Engineer

Annex — Summary of comments and opinions on nuclear waste management

For information — Authorities which have submitted comments and the communities which the MEE has invited to comment on the programme