The EIA process studied the impacts of the project on fishing and fishery in the sea areas. Fisherman's nets in Simo, 2008.

Cooperation with stakeholders is an important part of the business of a modern socially responsible company. The working methods and contacts created during the EIA procedure can also be utilized in the future both when monitoring the social impacts of the project and when communicating with the stakeholders.

11 Environmental impact monitoring program

11.1 Monitoring principles

In accordance with the Environmental Protection Act, a licensee must be aware of the environmental impacts of its activities. For a nuclear power plant, also the regulations and guidelines issued by virtue of the Nuclear Energy Act require environmental impact monitoring and reporting by the parties responsible for nuclear power plant projects and activities.

Legally binding obligations regarding monitoring are included in the permit regulations of the variety of permit decisions required for the construction and operation of a nuclear power plant. The environmental impacts of the project must be monitored in accordance with monitoring programs approved by the authorities. The monitoring programs define the specific details of load and environmental monitoring and reporting to be done. However, an environmental impact assessment report must already include the main principles of the project's environmental impact monitoring system.

Monitoring programs for radioactive and regular emissions of nuclear power plants are plans on how the project's (construction, operation and decommissioning of a nuclear power plant) emissions and their environmental impacts will be measured and monitored at regular intervals in the project impact area. The monitoring objectives are:

- Measuring and offering information on emissions caused by the project and their environmental impacts
- Investigating which changes in the environment have

resulted from the operation of the plant
- Investigating how the results of the environmental impact prognosis and assessment correspond to reality
- Investigating how the implemented measures for mitigating adverse impacts have succeeded
- Discovering any unforeseen adverse impacts or adverse impacts that have been more major than anticipated in order to start the necessary mitigating measures.

Regular reports on the monitoring results will be issued every couple of months or annually, depending on the monitoring program. The reports will be submitted to the relevant public authorities.

Below is a general outline of the project's environmental impact monitoring program.

11.2 Monitoring of radioactive emissions and radiation monitoring in the surroundings of the nuclear power plant

11.2.1 Measuring radioactive emissions

During normal operation of the nuclear power plant, an extremely small portion of the generated radioactive substances will be released to the environment in the form of emissions. Exhaust air and purified gases, which have been discharged from processes, will be released from the plant into the atmosphere. The main emission pathway into the air will be the vent stack of the plant. The plant process waters will be treated in the power plant's own liquid waste treatment plant from where they will be drained via a radiation control point to the cooling water discharge channel and from there to the sea.

The emission of radioactive materials will be monitored by continuous measurements and sampling. This is to ensure that emissions into the air or water will not exceed the plant-specific limits confirmed by the Radiation and Nuclear Safety Authority. The measurement methods to be used will be chosen on the grounds that their reliability and accuracy are as high as possible with the best available technology. The emission pathways can be monitored also when the system has an individual fault. Both sampling and measurement arrangements and operations will be implemented in such a way that adequate data on radioactive emissions can be obtained even in the event of a serious accident. The detailed results of the measurements of radioactive emissions will be reported to the Radiation and Nuclear Safety Authority at regular intervals (quarterly and annual reports).

Significant emission pathways of radioactive substances into the air will be monitored with continuous, fixed radiation monitoring systems. In addition, the emission flow of radioactive substances will be sampled, when necessary, to a separate sampling and measurement system. The vent stack will include a sampling system, and its particle filters will be replaced and analyzed at regular intervals. Isotope-specific samples will also be regularly collected from the gas for more detailed analysis. In addition to the actual emission pathways, significant gas migration paths within the nuclear power plant, such as exhaust air ducts in active rooms and tanks and gas purification and delay systems, will be monitored by continuous radiation measurements.

The activity of wastewater released from the plant into the water system will also be monitored with continuous, fixed radiation monitoring systems. The emission pathways can also be monitored when the system has an individual fault (*STUK, 2006b*).

11.2.2 Radiation monitoring in the surroundings of the nuclear power plant

Radiation monitoring in the surroundings of the nuclear power plant refers to monitoring the amount of radioactive substances and the radiation status in the vicinity of the plant. The radiation measurements in the power plant area and its vicinity will ensure that the radiation dose limits defined in regulations issued by the authorities will not be exceeded. The purpose of the radiation monitoring program is to identify the radiation load to the environment and the people caused by radioactive emissions, and to ensure that the radiation exposure of the population caused by the nuclear power plant will remain as low as practically possible. The licensee will draft a radiation monitoring program and submit it to the Radiation and Nuclear Safety Authority when applying for an operation permit according to the Nuclear Energy Act. The Radiation and Nuclear Safety Authority will approve the program, monitor the results and perform inspections at the plant. The radiation monitoring program of the nuclear power plant will be reviewed at least once every five years. When the nuclear power plant is decommissioned, radiation monitoring in the surroundings of the nuclear power plant will be conducted in a manner approved by the Radiation and Nuclear Safety Authority.

When planning the radiation monitoring program, a baseline condition survey on the nuclear power plant project will be conducted. The survey will assess the pre-operation situation and environmental conditions, and anticipate the impacts of operation, such as the level of emissions and their release to the environment during the normal use of the plant and in case of failures and accidents. The radiation monitoring program will define the persons responsible for the implementation of the program; identify sampling and measuring and their frequency; and describe the methods, equipment, sample and nuclide-specific observation limits, calibration of equipment and methods, and the processing and storing of measurement results. The radiation monitoring program will include external radiation measurements and analyses of outdoor air, samples representing the differ-

ent stages of food chains leading to humans and analyses of radioactivity within the human body.

Dose-rate instruments, which will be read at regular intervals, and continuous, protected measurement stations will be placed in the terrestrial environment of the plant to measure external radiation. Their measurement data will be transferred to the plant and to the national radiation monitoring network, and the data can be read in real-time at the Ministry of the Interior and at the Radiation and Nuclear Safety Authority. In addition, gammaspectrometric measurements will be conducted in the vicinity of the plant at regular intervals, and continuous air samplers will be placed in the vicinity of the plant to monitor radioactive particles found in the air.

The radioactivity of the environment will also be measured by sampling at regular intervals. Samples will be collected from indicator organisms, which accumulate or enrich the radioactive substances contained in the emissions. In the terrestrial environment, measurements associated with food chains will primarily be targeted at specifying the radioactive substances in the fallout, soil, tap water, grain and garden produce, natural products, wild plants, meat, grass and milk. These sampling objects constitute a comprehensive representation of the pathways through which radioactive substances may enter the human body. The objects will be located at distances varying in the range of 1–40 kilometers from the plant. In the aquatic environment, the measurements will be targeted at specifying the radioactive substances in seawater, sedimental material and bottom sediment, hydrophytes, benthic animals and fish. Interbody measurements of activity will be conducted on the residents of the surrounding areas to ensure that there are no significant unidentified exposure pathways through which radioactive substance could enter these residents.

In addition to the radiation monitoring program, radiation dose calculations based on emission data and spreading conditions (measurement data on weather conditions) will be conducted to estimate the radiation exposure of the residents of the surrounding ar-eas. These estimates will be useful for, for example, rescue operations in possible emergencies. The calculation programs used in the assessment are approved by the Radiation and Nuclear Safety Authority (*STUK, 2006c*).

11.3 Monitoring regular emissions

11.3.1 Monitoring cooling water and wastewater

Cooling water will be used in the nuclear power plant to cool the turbine condenser and separate cooling circuits. Cooling water volume and temperature will be monitored by continuous measurements. The temperature outside the discharge site will also be regularly monitored. The annual thermal load caused by the nuclear power plant in the water system will be calculated based on the power plant unit's electricity and thermal power, and these values will be monitored by means of regular computer records.

The nuclear power plant will generate wastewater both as a result of using tap water and through plant operations. Social wastewater includes water from sanitary facilities and shower rooms, for example. Wastewater generated during power plant operation includes water used for washing various surfaces, as well as the wastewater resulting from the production and use of process water. Wastewater volume and quality will be monitored by continuous measurements and sampling. The contents and amounts of nutrients, solid matter and agents biologically consuming oxygen in the wastewater to be discharged into the environment will be monitored, for example.

Wastewater from sanitary facilities and washing and flushing water from non-active industrial facilities will be treated either at the location municipality's water treatment plant or alternatively by constructing a private water treatment plant for the nuclear power plant. The quality of wastewater coming into the treatment plant and leaving the treatment plant will normally be monitored by means of 24-hour collection samples and periodic samples. A report to be regularly drawn up, such as once a month, will describe the results of the emission monitoring activity. In addition to emission monitoring, the wastewater monitoring system will include daily (such as treated water volume, chemicals dosage) and monthly (such as electricity consumption) consumption monitoring systems. Records for the operation and use of the wastewater purification plant will be kept.

The plant process waters and the wastewater from a laundry to be included in the control area will be treated at the power plant's own liquid waste treatment plant from where they will be discharged via a radiation control point through the cooling water discharge channel into the sea. The nitrogen, phosphorus and boron loads caused by the process water and the laundry wastewater to the environment will be monitored.

Wastewater monitoring will also take place during the construction of the nuclear power plant. The wastewater load during construction will be higher than the load during operation because more people will work in the area. Storm water and rainwater from the construction site will include solid particles and possibly also traces of oil and nitrogen. This water will be collected in a sedimentation basin during construction, if necessary. If the monitored contents exceed the permissible limits, the water will be drained to the wastewater treatment plant for processing.

11.3.2 Monitoring water systems

The purpose of water system monitoring is to monitor the impacts caused by the drainage of cooling water and wastewater in the state of the sea area. Seawater tem-

peratures and ice situation will be monitored, and physical, chemical and biological observation studies will be performed. Fennovoima will begin monitoring the water systems immediately after a decision on the location of the new power plant has been made.

The seawater temperature will be monitored at a couple of points by continuous meters and at broader areas at regular intervals by means of survey-type studies. The ice cover will be observed during the winter months at the intervals specified in the plant's environmental permit. Ice observation maps of the area will be drawn up and bulletins on the ice cover area deteriorated by the cooling water will be published in local newspapers, on the Internet and on the field by placing warning signs at points which people usually use to access the ice, for example.

Water samples at the locations defined in the environmental permit will be regularly taken in order to conduct physical and chemical water quality studies. The pH (acidity), oxygen content, electrical conductivity, opacity, oxygen consumption, nutrient contents and solid particle contents of the samples will be analyzed, for example. The biological observation studies will study the changes occurring in the flora and fauna of the project's impact area. The monitoring system may include, for example, monitoring the degree of eutrophication of the sea area, basic plant plankton production and species distribution, aquatic plant species and abundance, bottom-dwelling species and abundance and bottom sediment quality.

11.3.3 Fishing industry monitoring

The impacts of the cooling water and wastewater discharge on the fish stock and fishing in the area will be monitored in a manner approved by the local Employment and Economic Development Centre's Fishing Industry Unit. The monitoring program may include, for example, test net fishing, fish age and growth determinations, monitoring of the health and condition of fish, studying the soiling degree of traps and fishing questionnaires sent to professional and leisure fishers. Fennovoima will begin monitoring immediately after a decision on the location of the new power plant has been made.

11.3.4 Boiler plant monitoring

A boiler plant is the backup heating plant of a nuclear power plant that is normally only used for testing and possibly during annual outages of the power plant done in the wintertime. Emissions generated by the backup power machines and the production of the backup power plant (sulfur dioxide, nitrogen oxides, particles, carbon dioxide) will be annually calculated based on the properties and volumes of the fuel used, and a report as specified in the environmental permit will be issued. A report of the observed carbon dioxide emissions will also be submitted to the Energy Market Authority, the body managing greenhouse gas emission rights.

Monitoring of the boiler plant's operation will be done by means of periodic test runs or in connection with any production use and burner maintenance actions. The operation monitoring system will include, for example, the monitoring of fuel consumption, boiler temperature and pressure, combustion gas temperature and carbon dioxide levels. An annual report on the use of the boiler plant will be drawn up. The report will include details of operational periods, burners' operating hours, fuel consumption, maximum monthly consumption and maximum output as well as details of the fuels used and thermal energy generated.

11.3.5 Waste records

Ordinary waste and hazardous waste will be generated in the nuclear power plant like in any other power plant or industrial plant. Unlike other power plants, nuclear power plants produce radioactive waste. The waste quantities vary, depending on, for example, the extent of maintenance carried out on any given year.

The quality, quantity and treatment of ordinary waste generated at the nuclear power plant will be annually recorded in accordance with the Waste Act. The supervisory or permit authorities may issue regulations and guidelines on how to comply with the obligation to keep records. With regard to ordinary waste, recording and reporting will be carried out in accordance with the environmental permit decision granted for the nuclear power plant and the company responsible for its waste management. With regard to radioactive waste, record keeping will be based on the regulations issued by the Radiation and Nuclear Safety Authority.

11.3.6 Noise monitoring

After construction of the nuclear power plant, noise measurements will be performed in the surroundings of the plant to ensure that the noise caused by the plant remains within the guideline values issued by the authorities and the design guideline values. The noise level caused by the operation of the power plant will be investigated by taking measurements at the closest sites susceptible to noise. The sound levels of the most major fixed sound sources that influence the environmental noise level will be measured during normal plant operation. Noise modeling results included in the EIA procedure and possibly the environmental permit stage will be further specified based on the measurement results, if necessary.

11.4 Social impact monitoring

The impacts of the project on the living conditions, comfort and wellbeing of people have been assessed during the project period. Issues brought up in public

The law requires that the environmental impacts of nuclear power plants are monitored and reported. Boat shed in Simo, 2008.

events, statements and opinions received, and interviews of stakeholders and residents have been used in this work. Local knowledge has been utilized wherever possible also in connection with the composition of other surveys carried out as part of the assessment. The information obtained will be used to support design work and decision-making, and for alleviating and preventing potential disadvantages.

Cooperation with stakeholders is an important part of the business of a modern socially responsible company. The working methods and contacts created during the EIA procedure can also be utilized in the future both when monitoring the social impacts of the project and when communicating with the stakeholders.

12 Glossary

Activity (Bq)
Activity states the number of nuclear disintegrations in a radioactive substance per one unit of time. The unit of activity is Becquerel (Bq) = one disintegration in one second.

Area definitions for the location of the power plant
Location area: a geographically indicated area where the location of power plant activities is being preliminarily planned.
Plant area: an area extending to a radius of about one kilometer from the power plant buildings.
Power plant site: the area where the actual power plant buildings are to be located.

Base load station
A large power plant generally used at full power to satisfy the continuous minimum demand for electrical energy.

Bar
The unit of pressure (1 bar = 100 kPa). The atmospheric pressure is approximately 1 bar.

Biotope
Biotope is a living area for organisms where the key environmental conditions are similar and therefore the assemblage of flora and fauna is of a specific type. Organisms typical of the biotope in question are found in every biotope. Division of the environment into different biotopes relates to the assumption that a certain kind of environment is a precondition for the success of a specific species.

Boiling water reactor
A type of light water reactor where the water used as a cooler and moderator boils when passing through the reactor core. The steam generated in the core is led directly to rotate the turbine.

Bq (Becquerel)
The unit of radioactivity meaning one radioactive disintegration in one second. The radioactive content of food products is expressed in Becquerel per mass or volumetric unit (Bq/kg or Bq/l).

Burnup of fuel
The burnup of fuel indicates its usability. If fuel that has been in the reactor has a low burnup, it can be reused. Exhausted fuel, on the other hand, has a high burnup.

Cesium-137 (Cs-137)
Cesium-137 is a radioisotope of cesium, which is mainly formed by the splitting of the nucleus, i.e. fission. Cesium-137 has a half-life of 30 years.

Commensurable carbon dioxide amount (carbon dioxide equivalent CO_2e)
Carbon dioxide equivalent stands for the commensurable unit of greenhouse gases. Different greenhouse gases have a different global warming potential. However, when all greenhouse gases are converted into carbon dioxide equivalents using the GWP factor (Global Warming Potential), their greenhouse gas emission can be summed up.

Contamination
Contamination means pollution. For instance, exposure of tools to radioactive radiation contaminates them, and without isolation, contamination may spread further from them.

Control area
At least those premises of the plant where external radiation dose rate could exceed 3 µSv/h or where 40 weeks of weekly exposure could result in an internal radiation dose of more than 1 mSv per year must be specified as the control area. (YVL 7.9)

Cooling water
Cold sea water is called cooling water, with which the steam coming from the turbines is cooled back into water in the condenser (condensate). The condensate is pumped back to the reactor (a boiling water reactor) or the steam generators (a pressurized-water reactor) and is evaporated. Cooling water is not in contact or mixed with the process waters of nuclear power plants.

dB (Decibel)
Unit of the volume of sound. An increase of ten decibels in the noise level means that the sound energy increases tenfold. Ambient noise measurements typically employ A-weighting dB(A), which emphasizes the frequencies where the human ear is most sensitive.

Decision-in-principle
The use of nuclear energy in the production of electricity requires a decision-in-principle made by the Finnish Government and confirmed by the Finnish Parliament. The total benefit of the society constitutes a requirement of the decision-in-principle, as well as a positive attitude from the plant's future location municipality towards the project and a positive preliminary safety assessment by the Radiation and Nuclear Safety Authority.

Decommissioning waste
Waste-containing activity that is generated when decommissioning the nuclear power plant or other nuclear facility after utilization.

Defense in depth
According to defense in depth, the planning and use of nuclear power plants require several independent protection levels and methods in order to prevent accidents, to manage operating failures and accident situations, and reduce the consequences of accidents.

Disposal
The permanent disposal of radioactive waste so that the disposal site does not need to be controlled and the radioactivity does not cause any danger to the nature.

Efficiency (η)
The ratio between electrical energy produced by a power plant and the reactor's thermal energy.

EIA
EIA stands for Environmental Impact Assessment. In addition to assessing the environmental impact, the objective of the statutory EIA procedure is to improve the availability of data for citizens and their possibilities for participating in project planning and expressing their opinions on the project.

Electric power (W)
The power with which the plant produces electrical energy that is supplied to the power grid.

EMAS (the Eco-Management and Audit Scheme)
A voluntary environmental system for companies and other organizations, based on an EU regulation.

Fission
Nuclear fission is the splitting of the heavy atom nucleus into two or more new nuclei, resulting in a release of a large quantity of energy, neutrons and neutrinos.

Flada
A bay beginning to separate from the sea due to land-uplift, a habitat to be protected pursuant to the Water Act.

Gloe lake
A water area separated from the sea due to land-uplift, a habitat to be protected pursuant to the Water Act.

Gray (Gy)
The gray is the SI unit of absorbed radiation dose. One gray is the absorption of one joule of radiation energy by one kilogram of matter.

GWh
Gigawatt hour is the unit of energy (1 GWh = 1,000 MWh).

Half-life
Half-life is the time after which half of the atom nuclei of a radioactive substance have disintegrated into other atom nuclei.

High-enriched uranium
Enriched uranium has been processed so that the percentage composition of its readily fissionable isotopes 233 or 235 of the entire uranium mass increases beyond 0.7%. Uranium isotope 238, which is non-fissionable under normal conditions, constitutes nearly 99.3% of natural uranium. For nuclear reactors, uranium is enriched to a concentration of approximately 2%–5%. Uranium enriched to a concentration of more than 20% is called Highly Enriched Uranium (HEU).

IAEA
The IAEA (International Atomic Energy Agency) is an organization under the UN that seeks to promote the peaceful use of nuclear energy. The IAEA also promotes radiation safety, nuclear safety and nuclear disarmament.

INES
INES stands for International Nuclear Event Scale, which categorizes events and accidents related to nuclear safety into eight categories (INES 0 – INES 7).

Impact area
An area where the environmental impact is assessed to appear as a result of studies. The impact areas are presented in the EIA report.

Iodine-131 (I-131)
Iodine-131 is a radioisotope of iodine that forms in small volumes in the fission reaction of uranium-235. Iodine-131 has a half-life of only approximately eight days.

Ion
An ion is an electrically charged atom or molecule. Radiation that creates ions when hitting a medium is called ionizing radiation.

Ion exchange mass
A substance used to remove ion-shaped impurities in water.

Ionizing radiation
Electromagnetic radiation or particle radiation that produces free electrons and ions when hitting a medium. Ionizing radiation can break chemical links within molecules, such as cut a DNA molecule that carries cell genotypes. As a result, ionizing radiation is hazardous to health.

ISO 14001
A voluntary environmental system for companies and other organizations, based on the international ISO standard.

Isotope
Isotopes are different forms of the same element that differ from each other in relation to the number of neutrons in the nucleus and the properties of the nucleus. Nearly all elements exist as several isotopes in nature. For example, hydrogen has three isotopes: hydrogen, deuterium and tritium, of which tritium is radioactive.

Light water reactor
A reactor type where regular water is used as a cooling agent and moderator in the reactor core. The majority of the world's nuclear power plant reactors are light water reactors.

Man-year
The regular annual working hours of one person.

Mean sound level, equivalent sound level
A calculated sound level in which sound of varying intensity has been mathematically converted into steady sound.

Mixed oxide fuel
See MOX fuel

MOX fuel
MOX fuel is a mixed oxide fuel for a nuclear power plant. MOX differs from ordinary uranium fuel in that a part of its fissionable matter is plutonium-239 instead of uranium-235. Plutonium does not occur in significant amounts in nature, so it is obtained for MOX fuel by recycling spent nuclear fuel or from nuclear disarmament.

MW
Megawatt, the unit of power (1 MW = 1,000 kW).

Natura area
A Natura area conserves the living environments of habitat types and species specified in the EU Habitats Directive.

Nuclear fuel
A uranium- or plutonium-content compound to be used in nuclear power plant reactors that is packed so that it can be formed into a reactor core that causes a chain reaction based on the splitting of nuclei.

Nuclear Power Plant
Nuclear power plant consists of at least one nuclear power plant unit with a reactor, one or two turbines and generators in each unit.

Observed area
An area defined for each environmental impact type where the environmental impact in question is studied and assessed. The extent of the review area depends on the environmental impact under review.

ONKALO
ONKALO is Posiva's underground rock characterization facility for the spent nuclear fuel disposal plant located in Olkiluoto.

Pressurized water reactor
A type of light water reactor where the pressure of the water used as a cooler and moderator is kept so high that it will not boil, even at high temperatures. The water passed through the reactor core transfers its heat in separate steam generators to the secondary circuit water, which evaporates and is led to rotate the turbine.

Radiation
Radiation is either electromagnetic wave motion or particle radiation.

Radioactivity
Radioactive substances disintegrate spontaneously into lighter elements or transmutations of the same element with smaller energy. The process releases ionizing radiation, which is either electromagnetic radiation or particle radiation.

Radionuclide
Radionuclide is an atom nucleus that emits radiation.

Richter scale
The Richter scale is a mathematical method used for measuring the magnitude of earthquakes.

Sievert (Sv)
The unit of radiation dosage. The greater the radiation dosage, the more probable it is that it is hazardous to health. Often, millisievert (mSv) or microsievert (µSv) units are used (1 µSv = 0.001 mSv = 0.000,001 Sv).

Solidification plant
A cementation or bituminization plant where liquid waste is solidified by mixing it with concrete and allowing the concrete to harden or by mixing it with hot bitumen which is then allowed to cool down.

Sound level
Frequency-weighted sound pressure level. See A-weighted sound level and C-weighted sound level.

Sound pressure level
Twenty times the common logarithm of the ratio of the root-mean-square sound pressure amplitude to the reference sound pressure. The unit of sound pressure level is decibel (dB).

Spent nuclear fuel
Nuclear fuel is said to be used when it has been used in energy production in the reactor and taken out of the reactor. Spent nuclear fuel contains uranium splitting products, such as cesium, and is highly radiating.

Steam generator
A heat exchanger used in a pressurized water plant. The steam led to the turbines is generated at the steam generator's secondary side.

Strontium-90 (Sr-90)
Strontium generates heat as it splits, and it is used in space ships and remote weather observation stations, for instance. Strontium is formed as a by-product of fission reaction. Strontium has a half-life of approximately 29 years.

STUK
The Radiation and Nuclear Safety Authority

Succession
The gradual natural changing of the population of a specific location. For example, gradual change in the species of the land-uplift coast.

TEM
Ministry of Employment and the Economy (former Ministry of Trade and Industry, KTM).

Thermal power (W)
The power with which the plant produces thermal energy (thermal power).

Transuranium element
Transuranium element refers to radioactive elements heavier than uranium.

TWh
Terawatt hour is a unit of energy (1 TWh = 1,000,000 MWh).

Uranium (U)
An element whose chemical symbol is U. The volume of uranium in the earth's crust is 0.0004% of all elements (four grams in a ton). All isotopes of uranium are radioactive. The majority of natural uranium is isotope U-238, the half life of which is 4.5 billion years. About 0.71% of natural uranium is U-235, which is suitable as a fuel in nuclear power plants.

WNA
World Nuclear Association

13 Literature

Alabaster, J.S. & Lloyd, R. 1982. "Water quality criteria for freshwater fish". Butterworths, London. 361 s.

Auvinen, A. 2004. Ympäristöperäisen ionisoivan säteilyn terveysvaikutukset. Duodecim 2004; 120.

Auvinen, A. 1997. Cancer risk from low doses of ionizing radiation. Radiation and Nuclear Safety Authority. STUK-A142.

BirdLife Finland 2008. FINIBA-tiedot. [http://www.birdlife.fi] (heinäkuu 2008)

Cameco 2008. [http://www.cameco.com/investor_relations/aif/1997/environmental_matters.php] (June 2008)

City of Lohja 2008. Loviisan kaupungin ja Ruotsinpyhtään kunnan osayleiskaava LOTES. [http://www.loviisa.fi/index.php?mid=1172] (July2008)

Confederation of Finnish Industries EK and Finnish Energy Industries 2007. Arvio Suomen sähkön kysynnästä vuosille 2020 ja 2030. November 2007.

Council of Oulu region 2005. Pohjois-Pohjanmaan maakuntakaava.

E.ON 2008. Konsilidierte Umwelterklärung 2007. Standort Kernkraftwerk Isar.

E.ON 2004. Decommisioning and dismantlement of the Stade nuclear power plant- from nuclear power plant to green fields. Stade. E.ON Kernkraft, Hannover, Deutchland.

E.ON 2003. Stilllegung und Rückbau des Kernkraftwerks Stade Umweltverträglichkeitsuntersuchung (UVU). Bericht, Rev. 01. April 2003. E.ON Kernkraft, Hannover, Deutchland.

Elminen 2008. Kirjallinen tiedonanto 14.8.2008.

Elminen, T., Vaarma, M., Kuivamäki, A. & Härmä, P. 2007. Preliminary geological study in Pyhäjoki area. Geological Survey of Finland. Espoo 2007.

Environment Agency 2007a. Environment Agency 2007. Generic design assessment of new nuclear power plant designs. Statement of findings following preliminary assessment of the submission by: AREVA NP SAS and Electricité de France SA for their UK EPR desing.

Environment Agency 2007b. Generic design assessment of new nuclear power plant designs. Statements of findings following preminanry assessment of the submission by: GE-Hitachi Nuclear Energy International LLC for their ESBWR design.

EUR 2001. European Utility Requirements for LWR Nuclear Power Plants. Revision C. 2001.

Evropeitseva, N.V. 1947. Lichinochnyi period nalima. Trudy Leningrad Obshchestva Estestvoispyt. 69, 4.

Fennovoima Oy 2008. Yhteenveto Fennovoiman osakkaiden energiatehokkuustoiminnasta. E. Pyhäranta. Heinäkuu 2008.

Fingrid Oyj 2008. Voimajohdot ja maankäyttö. [http://www.fingrid.fi/portal/suomeksi/voimajohdot_ja_maankaytto/] (July 2008).

Fingrid Oyj 2007. Ympäristövaikutusten arviointiselostus. 400 kV Voimajohto Seinäjoki–Tuovila (Mustasaari). [http://www.ymparisto.fi/yva > YVA-hankelista > Päättyneet YVA-hankkeet] (July 2008)

Finland's Environmental Administration 2008a. Valtion ympäristöhallinnon verkkopalvelu. [http://www.ymparisto.fi/ > Ympäristön tila > Pohjavesi] (July 2008).

Finland's Environmental Administration 2008a. Vesien laatu. [http://www.ymparisto.fi/vesienlaatu] (July 2008)

Finland's Environmental Administration 2008b. Valtion ympäristöhallinnon verkkopalvelu. [http://www.ymparisto.fi/ > Ympäristön tila > Pohjavesi] (8.7.2008).

Finland's National Energy Efficiency Action Plan (NEAAP 2008-2010) 2007. Kauppa- ja teollisuusministeriö, Liikenne- ja viestintäministeriö, Maa- ja metsätalousministeriö, Valtiovarainministeriö, Ympäristöministeriö. http://ec.europa.eu/energy/demand/legislation/doc/neeap/finland_fi.pdf (July 2008)

Finnish Chiropterological Society 2008. Suomen lepakkotieteellisen yhdistyksen havaintotietokanta. [http://www.lepakkohavainnot.info/] (July 2008).

Finnish Energy Industries 2008a. Energiavuosi 2007 Sähkö. Lehdistötiedote 22.1.2008.

Finnish Energy Industries 2008b. Sähköntuontantoskenaariot vuoteen 2030. Pöyry Energy Oy. [http://www.energia.fi] (May 2008.)

Finnish Energy Industries 2007a. Kaukolämpötilasto 2006.

Finnish Energy Industries 2007b. Hyvä tietää ydinjätteestä. [http://www.energia.fi/fi/julkaisut/hyvatietaa-sarja]. (February 2008)

Finnish Energy Industries 2006. Hyvä tietää uraanista. Hyvä tietää -esitesarja. [http://www.energia.fi/fi/julkaisut/hyvatietaa-sarja]. (June 2008)

Finnish Energy Industries 2002. Hyvä tietää ydinvoimasta. [http://www.energia.fi/fi/julkaisut/hyvatietaa-sarja]. (February 2008)

Finnish Institute of Marine Research 2008a. Johansson, M., Kahma, K., & Boman, H.Ydinvoimalaitoksen paikkavaihtoehtoja koskevat meren pinnan ääriilmiöt.

Finnish Institute of Marine Research 2008b. [http://www.fimr.fi/fi/tietoa/sanakirja/fi_FI/marenzelleria/] (toukokuu 2008)

Finnish Institute of Marine Research 2008c. Jääpalvelu. [http://www.fimr.fi/fi/tietoa/jaa/jaatalvi/fi_FI/2003/] (heinäkuu 2008)

Finnish Meteorological Institute 2008a. Saku S, Venäläinen A, Arvio sääparametrien 1000 vuoden toistuvuustasoista mahdollisilla ydinvoimalaitosten sijoituspaikkakunnilla. June 2008.

Finnish Meteorological Institute 2008b. [http://www.fmi.fi/ilmastonmuutos/suomessa_18.html] (July 2008)

Finnish Meteorological Institute 2002. Tilastoja Suomen ilmastosta 1971–2000. Ilmastotilastoja Suomesta, No. 2002:1. Ilmatieteen laitos, Helsinki 2002.

Finnish Road Administration 2007. Tieliikenne-ennuste 2006-2040.

Fortum Power and Heat Oy 2008a. Loviisan voimalaitos. Jäähdytysvesien tarkkailuraportti vuodelta 2007. ÅF-Enprima Oy 2008.

Fortum Power and Heat Oy 2008b. Loviisan voimalaitoksen laajentaminen kolmannella voimalaitosyksiköllä. Ympäristövaikutusten arviointiselostus. Pöyry Energy Oy 2008.

Game and Fisheries Research Institute 2007. Ammattikalastus merellä 2006. Tilastoja 2-2007. ISBN: 978-951-776-573-2.

Haahti, H. & Kangas, P. (toim.) 2006 "State of the Gulf of Finland in 2004". Meri - Report Series of the Finnish Institute of Marine Research 55: 25

Hauru, J., Kärenaho, P. & Ohtonen, A. 1996: Hanhikivi - Teoksessa Pohjois-Pohjanmaan linturetkiopas. Pohjois-Pohjanmaan Lintutieteellinen yhdistys PPLY ry 1996. Oulu.

Hawkes, H. 1969. "Ecological changes of applied significance from waste heat". Lainattu teoksessa Langford, T.E.L. 1990. Ecological effects of thermal discharges. Elsevier Applied Science Publishers Ltd. London 1990.

Helsingin Energia 2008. Vuosikertomus 2007.

Henriksson, M. & Myllyvirta, T. 2006. Suomen rannikkoalueen luokittelu rehevöitymisriskin perusteella. Itä-Uudenmaan ja Porvoonjoen vesien- ja ilmansuojeluyhdistys r.y.

Hinton, T.G., Alexakhin, R., Balonov, M., Gentner, N., Hendry, J., Prister, B., Strand, P. & Woodhead, D. 2007. Radiation-induced effects on plants and animals; findings of the United Nations Chernobyl Forum. Health Physics 93(5): 427-440.

Husa, Teeriaho ja Kontula, 2001. Luonnon ja maisemansuojelun kannalta arvokkaat kallioalueet Pohjois-Pohjanmaalla. Suomen Ympäristökeskus, alueelliset ympäristöjulkaisut.

Härmä, P., Paulamäki, S., Käpyaho, A., Korhonen, K., Vaarma, M. & kuivamäki, A. 2007. Simon kohdealueen geologinen esiselvitys. Espoo 2007.

Höglund, J. & Thulin, J. 1988. "Parasitangrepp i ögon hos fisk, som lever i kylvatten från kärnkraftsreaktorer". Naturvårdsverket, rapport 3539.

IAEA 2000. Generic procedures for assessment and response during a radiological emergancy TECDOC 1162, Vienna.

IAEA 1997. Bulletin 39/2. Nuclear power stations: Supplying heat for homes and industries.

IAEA 2008. Published safety standards. International Atomic Energy Agency. [http://www-ns.iaea.org/standards/documents/default.asp?sub=210] (May 2008)

IAEA 2007. International Atomic Energy Agency. Considerations for Waste Minimization at the Design Stage of Nuclear Facilities. Technical Reports Series No. 460, Vienna, 2007.

IAEA 2005. Management systems fir the safety of the treatment, handling and storage of radioactive waste. [http://www-ns.iaea.org/downloads/standards/drafts/ds336.pdf] (June 2008)

IAEA 2001. The International Nuclear Event Scale (INES); User's Manual. 2001 Edition. Jointly prepared by IAEA and OECD/NEA. International Atomic Energy Agency, Vienna, 2001.

IAEA 2000. Safety of Nuclear Power Plants: Design. Safety Requirements. Safety Standard Series No. NS-R-1. Date of Issue: Tuesday, 31 October, International Atomic Energy Agency, Vienna, 2000.

ICRP 2007. The 2007 Recommendations of the International Commission on Radiological Protection. Annals of the ICRP, Vol 37, Nos 2-4 2007. ICRP Publication 103. Elsevier. Ed. J. Valentin.

Itä-Uudenmaan liitto 2007. Itä-Uudenmaan maakuntakaava (2007)

Itä-Uudenmaan rakennetun kulttuuriympäristön selvitys (RAKU), Itä-Uudenmaan liitto, Itä-Uudenmaan maakuntamuseo, Museovirasto, rak.hist.osasto, Itä-Uudenmaan liitto 2007, julkaisu 90

Juntunen, K., Vatanen, S., Niemitalo, V. & Paasimaa, M. 2004. "Kiiminkijoen, Kuivajoen ja Pyhäjoen kalastus vuonna 2003". Riista- ja kalatalouden tutki-

muslaitos. Kala- ja riistaraportteja nro 327.

Jylhä, K., Tuomenvirta, H. & Ruosteenoja K. Climate change projections for Finland during the 21st century, Boreal Environmental Research, 9, s.127-152.

Jäger, T., Nellen, W., Schöfer, W. & Shodjai, F. 1981. Influence of salinity and temperature on early life stages of Coregonus albula, C. lavaretus, Rutilus rutilus and Lota lota. Rapp. P.-v. Reun. Cons. int Explor. Mer. 178:345-348.

Kaakkois-Suomi Road Region 2008. Vt7 parantaminen välillä Koskenkylä-Loviisa-Kotka . [www.tiehallinto.fi/vt7koskenkyla-loviisa-kotka] (July 2008).

Kaatsch, P., Spix, C., Schmiedel, S., Schulze-Rath, R., Mergenthaler, A. ja Blettner, M. 2007. Umweltforschungsplan des Bundesumweltministeriums (UFOPLAN). Reaktorsicherheit and Strahlenschutz. Vorhaben StSch 4334: Epidemiologische Studie zu Kinderkrebs in der Umgebung von Kernkraftwerken (KiKK-Studie).

Kahma, K., Johansson, M. & Boman, H., 2001. Meriveden pinnankorkeuden jakauma Loviisan ja Olkiluodon rannikoilla seuraavien 30 vuoden aikana. Merentutkimuslaitos, 2001.

Kalliosaari 2003. Merentutkimuslaitoksen jääpalvelu [http://www.fimr.fi/fi/tietoa/jaa/jaatalvi/fi_FI/jaatalvi] (July 2008)

Kara 2005. Päästökaupan vaikutus pohjoismaiseen sähkökauppaan – Ehdotus Suomen strategiaksi. VTT tiedotteita 2280. 120 s. + liit. 17 s. 1455.0865. (URL: http://www.vtt.fi/inf/pdf/). Espoo 2005. (June 2008)

Kauppila, P & Bäck, S 2001. (toim) The state of Finnish coastal waters in the 1990s. The Finnish Environment 472. http://www.vyh.fi/palvelut/julkaisu/elektro/fe472/fe472.htm (June 2008)

Kilgour, B., Mackie, G., Baker, M., & Keppe, R. 1994 "Effects of Salinity on the Condition and Survival of Zebra Mussels (Dreissena polymorpha)" Estuaries, 17:2 s. 385-393

Kirkkala, T & Turkki, H. 2005. "Rauman ja eurajoen edustan merialue" Teoksessa: Sarvala, M & Sarvala, J. (toim.) Miten voit, selkämeri? Ympäristön tila Lounais-Suomessa. Lounais-Suomen ympäristökeskus. Turku s. 48-65

Koivurinta, M. & Vähänäkki, P. 2004. "Itäisen Suomenlahden vaellussiikatutkimukset vuosina 1993 – 2003." Alueelliset ympäristöjulkaisut 355, 113 s.

Koponen J., Kummu M., Lauri H., Virtanen M., Inkala A., Sarkkula J., Suojanen I. & Veijalainen N. 2008. EIA 3D Model Manual, [http://www.eia.fi/wup-fin/training/manuals.html]

Korhonen, J. (toim.) 2007. "Hydrologinen vuosikirja 2000-2005". Suomen ympäristö 44/2007.

Kousa, A., Aarnio, P., Koskentalo, T., Niemi, J. & Haaparanta, S. 2007. Ilmanlaatu Uudenmaan ympäristökeskuksen seuranta-alueella vuonna 2006. Uudenmaan ympäristökeskuksen raportteja 8/2007.

Kronholm, M., Albertsson, J. & Laine, A. 2005. (toim.) "Perämeri Life. Perämeren toimintasuunnitelma." Länsstyrelsen i Norrbottens län, rapportserie 1/2005

Kulttuurihistoriallisten kohteiden inventointi 1999. Gäddbergsö-Vahterpään osayleiskaava-alue, Ruotsinpyhtään kunta, Insinööritoimisto Paavo Ristola Oy, 1999.

Kwasny R., Aul F., Lohrey K. 2007. Recent Activities and Trends in the Uranium Market. Alzenau. Heft 11/2007. (May 2008)

Laine. A, Mattila, J. and Lehikoinen, A. 2006. "First record of the brackish water dreissenid bivalve Mytilopsis leucophaeata in the northern Baltic Sea." Aquatic Invasions 1, 1: 38-41.

Langford, T.E.L. 1990. Ecological effects of thermal discharges. Elsevier Applied Science Publishers Ltd. London 1990.

Lapland Water Research Ltd. 2007. Laivakankaan kaivoshankkeen ympäristövaikutusten arviointiselostus. Nordic Mines AB 2008.

Lappi Road Region2008. [www. tiehallinto.fi/vt4keminkohta] (July 2008).

Larsson, Hajdu, Walve & Elmgren. 2001. "Baltic Sea nitrogen fixation estimated from the summer increase in upper mixed layer total nitrogen". Limnol. Oceanogr. 46: 811–820.

Lehtiniemi, M., Pääkkönen, J-P., Flinkman, J., Katajisto, T., Gorokhova, E., Karjalainen, M., Viitasalo, S., & Björk, H. 2007. "Distribution and abundance of the American comb jelly (Mnemiopsis leidyi) – A rapid invasion to the northern Baltic Sea during 2007" Aquatic Invasions 2, 4: 445-449

Lehtonen, H. 1989. Made. Teoksessa: Toivonen, R. Kalamiehen tietokirja 2:248-256. WSOY.

Leinikki & Oulasvirta 1995. "Perämeren kansallispuiston vedenalainen luonto". Metsähallituksen luonnonsuojelujulkaisuja Sarja A no. 49

Lignell, Seppälä, Kuuppo, Tamminen, Andersen & Gismervik. 2003. "Beyond bulk properties: Responses of coastal summer plankton communities to nutrient enrichment in the northern Baltic Sea". Limnol. Oceanogr. 48: 189–209.

Local and Regional Government Finland 2008a. Verotuloihin perustuva valtionosuuksien tasaus. [http://www.kunnat.net/k_peruslistasivu.asp?path=1;29;347;93748;385;123054;123063] (June 2008)

Local and Regional Government Finland 2008b. Verotuloihin perustuva valtionosuuksien tasaus vuonna 2006. [http://www.kunnat.net] (June 2008)

Local and Regional Government Finland 2008c. [www.

kunnat.net] (17.6.2008)
Lyytimäki, J. 2006. Unohdetut ympäristöongelmat. Gaudeamus, Helsinki, 2006.
Maisema-aluetyöryhmän mietintö I, Maisemanhoito, Mietintö 66/1992, Ympäristöministeriö, Ympäristönsuojeluosasto.
Maisema-aluetyöryhmän mietintö II, Arvokkaat maisema-alueet, Mietintö 66/1992, Ympäristöministeriö, Ympäristönsuojeluosasto.
Mattila, J. 2008. "Loviisan voimalaitoksen vesistötarkkailu vuonna 2007: meriveden laatu ja biologinen tila". Kymijoen vesi ja ympäristö ry:n julkaisu no 170/2008
Mattila, J. ja Ilus, H. 2006. Loviisan voimalaitoksen vesistötarkkailu vuonna 2005: meriveden laatu ja biologinen tila laaja yhteenvetoraportti. STUK YVLRAP122006
Metsähallitus 2007. "Itäisen Suomenlahden Natura-alueen hoito- ja käyttösuunnitelma"
Ministry of Employment and the Economy 2008. Taustatilaisuus ilmasto- ja energiastrategian valmistelusta. 27.2.2008. http://www.tem.fi/files/18671/min_Pekkarinen_Kapasiteettikuvat_270208.pdf. (May 2008)
Ministry of Social Affairs and Health 1999. Ympäristövaikutusten arviointi. Ihmisiin kohdistuvat terveydelliset ja sosiaaliset vaikutukset. Sosiaali- ja terveysministeriön oppaita 1999:1.
National Board of Antiquities 2001. Maiseman muisti, valtakunnallisesti merkittävät muinaisjäännökset, Museovirasto, Helsinki 2001.
National research and Development Centre to Welfare and Health 2008. Ihmisiin kohdistuvien vaikutusten arviointi-käsikirja. Sosiaali- ja terveysalan tutkimuskeskus. [http://info.stakes.fi/iva/FI/index.htm] (July 2008)
Neste Oil Oyj 2006. Ympäristölupapäätös (LSY nro 29/2006/2).
Neuman, E. & Andersson, J. 1990. "Biological investigations off the Oskarshamn nuclear power station during the 1980´s". National Swedish Environmental Protection Board. Report 3846.
Neutrinica Oy 2008. [Maanalaisen fysiikan tutkimuskeskuksen perustaminen Suomeen. http://www.neutrinica.com/tutkimuskeskus.pdf] (heinäkuu 2008)
NOK 2008. Kernkraftwerk Beznau. [http://www.axpo.ch/internet/nok/de/energieproduktion/ kernenergie/beznau.html] (12.8.2008)
North Ostrobothnia Regional Environment Centre 2008: Internet-sivut osoitteessa www.ymparisto.fi
OECD ja IAEA 2006. Uranium 2005 - Resources, production and demand.
Olsonen, R. (toim) 2008. "FIMR monitoring of the Baltic Sea environment. – Annual report 2007". MERI – Report Series of the Finnish Institute of Marine Research 62,
Orlova, M. 2002. "Dreissena polymorpha: evolutionary orgin and biological peculiarities as prerequisites of invasion success". Teoksessa: Invasive aquatic species of Europe: distribution, impacts and management. Toimittanut Leppäkoski, Gollasch & Olenin.
Oulu Road Region 2008. Oulun tiepiirin toiminta- ja taloussuunnitelma 2009–2012. Oulu 2008.
Oulu Road Region 2002. Oulun tiepiirin tienpidon toimintalinjat 2015. Oulu 2002.
Paile, W. 2002. Säteilyn terveysvaikutukset. Toim. Wendla Paile. Säteilyturvakeskus, Helsinki.
Perämeri Life 2007. Perämeri Life –projekti, Perämeren toimintasuunnitelma ja ympäristötietokanta. [http://www.ymparisto.fi/perameri/]
Platom Oy 2008. Fennovoima Oy. Voimalaitosjätteen loppusijoitustoimintaa ja loppusijoituslaitosta koskevat selvitykset säteilyturvakeskukselle. Lytsy T., Laine J. 25.8.2008.
Pohjatekniikka Oy 2007. Maastotarkastelun tulokset jatkotoimenpide-ehdotuksineen alustavaan rakennettavuusselvitykseen valitussa Ruotsinpyhtään kohteessa. Fennovoima Oy. Helsinki 2007.
Port of Raahe 2007. Yleistietoa. [http://www.portofraahe.fi/] (December 2007)
Posiva Oy 2008a. Periaatepäätöshakemus 25.4.2008. Periaatepäätöshakemus käytetyn ydinpolttoaineen loppusijoituksen laajentamiseksi Olkiluoto 4-yksikköä varten. Liite 12 Ympäristövaikutusten arviointia koskevan lain mukaan laadittu arviointiselostus ja sen ajan tasalle saattamiseksi laadittu selvitys
Posiva Oy 2008b. Käytetyn ydinpolttoaineen loppusijoituslaitoksen laajentaminen. Ympäristövaikutusten arviointiohjelma. Ympäristövaikutusten Arviointimenettely 2008.
Posiva Oy 2008c. Loppusijoitus. [http://www.posiva.fi/loppusijoitus.html] (July 2008).
Posiva Oy 2008d. Lyhennelmä ympäristövaikutusten arviointiselostuksesta. [http://www.posiva.fi/yv_ly.pdf]. (June 2008)
Posiva 2003. ONKALO – Käytetyn ydinpolttoaineen loppusijoitukseen liittyviä kallioperätutkimuksia varten rakennettava maanalainen tutkimustila Eurajoen Olkiluodossa. [http://www.posiva.fi/Onkaloesites.pdf]
PSV-Maa- ja Vesi Oy 2005. Rautaruukki Oyj Raahen terästehdas ja Raahen kaupunki.
Puitesopimus elinkeinoelämän energiankäytön tehostamisesta 2007. Kauppa- ja teollisuusministeriö, Elinkeinoelämän keskusliitto ry, Elintarviketeollisuusliitto ry, Energiateollisuus ry, Kemianteollisuus ry, Matkailu- ja Ravintolapalvelut MaRa ry, Metsäteollisuus ry, Muoviteollisuus ry, Suomen Kaupan Liitto ja Teknologiateollisuus ry. 18/804/2007. http://www.tem.fi/files/18305/PUSO.pdf (July 2008)

Pukkala. E., Sankila, R., Rautalahti, M. 2006. Syöpä Suomessa 2006. Suomen syöpäyhdistyksen julkaisuja nro 71. Suomen Syöpäyhdistys, Helsinki 2006.

Purcell, J., Shiganova, T., Decker, B and Houde, E. 2001. "The ctenophore Mnemiopsis in native and exotic habitats: U.S. estuaries versus the Black Sea basin." Hydrobiologia 451: 145–176

Pöllänen, R. 2003. Säteily ympäristössä. Toim. Roy Pöllänen. Säteilyturvakeskus, Helsinki.

Pöyry Energy Oy 2008a. Fennovoima Oy, Melumallinnuslaskelmat Ydinvoimalaitoshankkeen YVA selostukseen.

Pöyry Energy Oy 2008b. Alutaloudellisten vaikutusten arvioinnin taustaselvitys. Fennovoima Oy, Ydinvoimalaitoshanke. Ympäristövaikutusten arviointimenettely.

Pöyry Environment Oy 2008a. Fennovoima Oy, Ydinvoimalaitoksen YVA, Pyhäjoki. Luontoselvitys ja luontovaikutusten arviointi.

Pöyry Environment Oy 2008a. Fennovoima Oy, Ydinvoimalaitoksen YVA, Ruotsinpyhtää. Luontoselvitys ja luontovaikutusten arviointi.

Pöyry Environment Oy 2008c. Fennovoima Oy, dinvoimalaitoksen YVA, Simo. Luontoselvitys ja luontovaikutusten arviointi.

Pöyry Environment Oy 2008d. Fennovoima Oy. Ydinvoimalaitoksen ympäristövaikutusten arviointiselostus. Maisema ja kulttuurivaikutukset.

Pöyry Environment Oy 2008e. Fennnovoima. Ydinvoimalaitoshanke, sisiaalisten vaikutusten arviointi, asukaskysely Pyhäjoki. 06/08.

Pöyry Environment Oy 2008f. Fennnovoima. Ydinvoimalaitoshanke, sisiaalisten vaikutusten arviointi, asukaskysely Ruotsinpyhtää. 06/08.

Pöyry Environment Oy 2008g. Fennnovoima. Ydinvoimalaitoshanke, sosiaalisten vaikutusten arviointi, asukaskysely Simo. 06/08.

Pöyry Environment Oy 2007a. Rautaruukki Oyj, Raahen terästehdas, Raahen Vesi Oy. Raahen edustan velvoitetarkkailu v. 2006. Osa I Vesistötarkkailu. Osa II Kalataloustarkkailu. Moniste.

Pöyry Environment Oy 2007b. Kemin edustan merialueen ja Kemijokisuun kalataloustarkkailu v. 2006. Moniste.

Radiation and Nuclear Safety Authority 2008a. Kansainväliset sopimukset. Säteilyturvakeskus. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/saannosto/fi_FI/sopimukset/] (toukokuu 2008).

Radiation and Nuclear Safety Authority 2008b. Ympäristön säteilyvalvonnan tulokset. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/sateilyturvallisuus/fi_FI/tulokset/] (July 2008)

Radiation and Nuclear Safety Authority 2008c. Radioaktiivisten aineiden kuljetukset. [http://www.stuk.fi/ydinturvallisuus/ydinsulkuvalvonta/kuljetukset/fi_FI/kuljetukset/] (kesäkuu 2008)

Radiation and Nuclear Safety Authority 2008d. Säteily ja syöpä. [http://www.stuk.fi/sateilytietoa/sateilyn_terveysvaikutukset/fi_FI/syopa/] (July 2008)

Radiation and Nuclear Safety Authority 2008e. Suomalaisen keskimääräinen säteilyannos. [http://www.stuk.fi/sateilytietoa/ihmisen_radioaktiivisuus/fi_FI/keskimaarainen_sateilyannos/] (helmikuu 2008)

Radiation and Nuclear Safety Authority 2008f. Radon. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/radon/fi_FI/radon/] (July 2008)

Radiation and Nuclear Safety Authority 2008g. Kosminen säteily on peräisin avaruudesta. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/taustasateily/fi_FI/kosminensateily/] (July 2008)

Radiation and Nuclear Safety Authority 2008h. Luonnon radioaktiivisuus kehossa. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/taustasateily/fi_FI/luonnonradioaktiivisuus/] (July 2008)

Radiation and Nuclear Safety Authority 2008i. Tshernobyl-laskeuma. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/tshernobyl/fi_FI/laskeuma/] (July 2008)

Radiation and Nuclear Safety Authority 2008j. Röntgentutkimuksella selviää vamma tai sairaus. [http://www.stuk.fi/sateilyn_kaytto/terveydenhuolto/rontgen/fi_FI/index/] (July 2008)

Radiation and Nuclear Safety Authority 2008k. Arviot väestölle aiheutuvasta annoksesta. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/sateilyturvallisuus/fi_FI/annos/] (heinäkuu 2008)

Radiation and Nuclear Safety Authority 2008l. Usein kysytyt kysymykset, Säteily ympäristössä. [http://www.stuk.fi/sateilytietoa/ukk/ymparisto/fi_FI/ymparisto17/] (July 2008)

Radiation and Nuclear Safety Authority 2008m. Ydinvoimalaitosten työntekijöiden säteilyaltistus. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/sateilyturvallisuus/fi_FI/sateilyaltistus/] (July 2008)

Radiation and Nuclear Safety Authority 2008n. Suomen ydinvoimalaitosten säteilyturvallisuus. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/sateilyturvallisuus/fi_FI/laitosten_sateilyturvallisuus/] (July 2008)

Radiation and Nuclear Safety Authority 2008o. Voimajohdot. [http://www.stuk.fi/sateilytietoa/sateilevat_laitteet/magneettikentat/fi_FI/voimalinjat/] (July 2008)

Radiation and Nuclear Safety Authority 2008p. Ydinlaitostapahtumien vakavuusasteikko INES. [http://www.stuk.fi/ydinturvallisuus/ydinvoimalaitokset/vakavuusasteikko/fi_FI/asteikko/] (July 2008)

Radiation and Nuclear Safety Authority 2008q. Tshernobyl-laskeuma. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/tshernobyl/fi_FI/laskeuma/]

(July 2008)
Radiation and Nuclear Safety Authority 2008r. Cesium-137 -laskeuma kunnittain Suomessa. [http://www.stuk.fi/sateilytietoa/sateily_ymparistossa/tshernobyl/cesiumlaskeuma/fi_FI/laskeuma/] (July 2008)
Radiation and Nuclear Safety Authority 2008 s. Ilus E., Klemola Ss, Vartti V-P., Mattila J., Ikäheimonen T. K. Monitoring of Radio-nuclides in the Vicinities of Finnish Nuclear Power Plants in 2002–2004. STUK-A227. Helsinki 2008, 74 pp + appendices 79 pp. ISBN 978-952-478-302-6 (print). ISBN 978-952-478-303-3 (pdf).
Radiation and Nuclear Safety Authority 2007a. Säteily ja ydinturvallisuus. Neljännesvuosiraportti 1/2007. Risto Isaksson (toim.). [http://www.stuk.fi/julkaisut/stuk-b/stuk-b78.pdf]
Radiation and Nuclear Safety Authority 2007b. Säteilyturvakeskuksen lausunto Itä-Uudenmaan maakuntakaavaehdotuksesta. 23.8.2007.
Radiation and Nuclear Safety Authority 2006a. Säteily ja ydinturvallisuus. Neljännesvuosiraportti 1/2006. Elina Kainulainen (toim.). [http://www.stuk.fi/ydinvoimalaitokset/nvr/nvr1-2006.html]ISBN 952-478-008-9 (pdf).
Radiation and Nuclear Safety Authority 2006b. Säteilyturvakeskuksen säädöskokoelma. YVL 7.6. Ydinvoimalaitosohjeet; Ydinvoimalaitoksen radioaktiivisten aineiden päästöjen mittaus. 22.3.2006. [http://www.edilex.fi/stuklex/fi/lainsaadanto/saannosto/YVL7-6] (July 2008).
Radiation and Nuclear Safety Authority 2006c. Säteilyturvakeskuksen säädöskokoelma. YVL 7.7. Ydinvoimalaitosohjeet; Ydinvoimalaitoksen ympäristön säteilytarkkailuohjelma. 22.3.2006. [http://www.edilex.fi/stuklex/fi/lainsaadanto/saannosto/YVL7-7] (June 2008).
Radiation and Nuclear Safety Authority 2005a. Ydinturvallisuus. Suomi ja lähialueet. Neljännesvuosiraportti 1/2005. Kirsti Tossavainen (toim.). ISBN 952-478-008-9 (pdf).
Radiation and Nuclear Safety Authority 2005b. Säteilyn terveysvaikutukset. Säteily- ja ydinturvallisuuskatsauksia. Säteilyturvakeskus, Helsinki.
Radiation and Nuclear Safety Authority 2005c. Ionisoimaton säteily ja ihminen. Säteily- ja ydinturvallisuuskatsauksia. Säteilyturvakeskus, Helsinki.
Radiation and Nuclear Safety Authority 2004a. Ydinturvallisuus. Toim. Jorma Sandberg. Säteilyturvakeskus, Helsinki.
Radiation and Nuclear Safety Authority 2004b. Radioaktiivinen laskeuma ja ravinto. Säteily- ja ydinturvallisuuskatsauksia. Säteilyturvakeskus, Helsinki.
Radiation and Nuclear Safety Authority 2003. Sisäilman radon. Säteily- ja ydinturvallisuuskatsauksia. Säteilyturvakeskus, Helsinki.
Radiation and Nuclear Safety Authority 2002. Säteilyvaara ja suojautuminen. Säteily- ja ydinturvallisuuskatsauksia. Säteilyturvakeskus, Helsinki.
Raivo, P. 1997. Kulttuurimaisema: alue, näkymä vai tapa nähdä. Teoksessa: Tila, paikka ja maisema. Osuuskunta Vastapaino, Tampere, 1997.
Rakennettu kulttuuriympäristö, valtakunnallisesti merkittävät kulttuurihistorialliset ympäristöt, Museoviraston rakennushistorian osaston julkaisuja 16, Museovirasto, Ympäristöministeriö.
Ramboll Finland Oy 2007. Olkiluodon edustan kalataloudellinen tarkkailu vuosina 2005-2006. Moniste.
Ramboll Finland Oy 2006. Loviisan voimalaitoksen kalataloustarkkailu vuonna 2005. Moniste.
Rantavaara, A. 2005. Elintarvikeketjun suojaustoimenpiteet laskeumatilanteiden varalle. Säteilyturvakeskus. STUK-A215.
Ruokanen, 2007. Merestä metsäksi –hankkeen raportti. Toiminta Pohjois-Pohjanmaalla 2004-2006.
Sandberg, J. 2004. Ydinturvallisuus. Toim. Jorma Sandberg. Säteilyturvakeskus, Helsinki.
Sandström, O. & Svensson, B. 1990. ”Kylvattnets biologiska effekter”. Forskningen i Biotestsjön, Forsmark, 1984–1988.
SCC Viatek 2002. ”Sedimentin ruoppausta ja läjitystä varten tehtävät sedimentin pilaantuneisuustutkimukset”. Loppuraportti. Kemin satama, Kemi.
Seitap Oy 2006. Karsikkoniemen luontoselvitys, Sami Mäkikyrö.
SKB 2008a. System and programme for management of the nuclear fuel back-end cycle and management of operational and decommission waste. SKB IC-131. April 2008.
SKB 2008b. Interim storage facility, encapsulation plant and final repository for spent nuclear fuel. Background material for consultations according to the Espoo (EIA) Convention. Updated January 2008. [http://www.skb.se/Templates/Standard____21668.aspx] (syyskuu 2008)
SKB 2003. Deep repository for spent nuclear fuel. [http://www.skb.se/upload/publications/pdf/Djupfor_eng.pdf]
Snoeijs, P 1988. “Ecological studies of epilithic algae and fauna in the Baltic hydrolittoral” – Doktorsavhandling, Uppsala Universitet. Lainattu teoksessa Sandström, O & Svensson, B. Kylvattnets biologiska effekter. Forskning i Biotestsjön, Forsmark 1984-1988.
Statistics Finland 2008a. Energiatilastot 2007.
Statistics Finland 2008b. Tilastokeskuksen tilastotietokannat. [http://pxweb2.stat.fi/Database/StatFin/databasetree_fi.asp] (June 2008)
Strahlenschutzkommission 2003. Störfallberechnungsgrundlagen (SBG) zu § 49 StrlSchV, Neufassung des Kapitels 4: Berechnung der Strahlenexposition. Emp-

fehlung der SSK verabschiedet in der 186. Sitzung am 11.09.2003

Surnia ry 2008: Hanhikiven linnustollinen arvo. Pro Hanhikivi-lehti 1/2008.

Suunnittelukeskus Oy 2007: Merenrannikon rantayleiskaava. Kaavaselostus. Pyhäjoen kunta.

Svobodá, Z., Lloyd, R., Máchová, J. & Vykusová, B. 1993. Water quality and fish health. - EIFAC Technical Paper 54. 67 s.

Teollisuuden Voima Oy 2006. Ympäristölupapäätös (LSY nro 13/200672).

TVO 2008. Ympäristövaikutusten arviointiselostus. Olkiluodon ydinvoimalaitoksen laajentaminen neljännellä laitosyksiköllä.

Tyler-Walters, H. & Pizzolla, P., 2007. Cordylophora caspia. A hydroid. Marine Life Information Network: Biology and Sensitivity Key Information Subprogramme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. http://www.marlin.ac.uk/species/Cordylophoracaspia.htm (May 2008)

Työ- ja elinkeinoministeriö 2008. Työ- ja Elinkeinoministeriön työllisyystilastot. [http://www.tem.fi] (May 2008)

University of Helsinki 2008. Seismologian laitos. [http://www.seismo.helsinki.fi/fi/maanjtietoa/perustietoa/onkosuomessa.html] (July 2008).

UNSCEAR 2000. United Nations Scientific Committee on the Effects of Atomic Radiation. Sources and Effects of Ionizing Radiation. Report vol. II.

Urenco 2006. Urenco Health, Safety amd Environment Report 2006. [www.urenco.com/capenhurst_HSE_2006_eJKU5.pdf.file] (toukokuu 2008)

Urenco 2001. Uranhexafluorid - Transporte. [http://www.urenco.com/common/PDF/de/brochure_udde_05.pdf]. (May 2008)

Vahteri, P. 2000. Olkiluodon edustan merialueen silakan kutualueselvitys vuonna 1999. Moniste.

VGB 2004. VGB Power Tech e.V. Entsorgung von Kernkraftverken. Eine technisch gelöste Aufgabe. Stand: Oktober 2004. www.vgb.org/abfallmanagement.

Viinikainen, T. 2004. Miksi ne pelkää? Ydinjätteiden loppusijoituksen SVA. Teoksessa: Ihminen ja ympäristön muutos. Sosiaalisten vaikutusten arvioinnin teoriaa ja käytäntöjä. Yhdyskuntasuunnittelun tutkimus- ja koulutuskeskuksen julkaisuja B 87.

VTT Technical Research Centre of Finland 2002. Liikennevälineiden yksikköpäästöt. VTT Rakennus- ja yhdyskuntatekniikka 2002. [http://lipasto.vtt.fi/yksikkopaastot]

Weckman E. 2006. Tuulivoimalat ja maisema. Suomen ympäristö 5/2006, Ympäristöministeriö

Wikdahl Carl-Erik 2004. Uranium - a sustainable energy source. The Analysis Group. Fact Series. December 2004, Annual volume 8.

WISE 2003. WISE Uranium Project. [http://www.wise-uranium.org/nfcm.html]. (June 2008)

WNA 2008a. Information Papers. Processing of Used Nuclear Fuel for Recycle. [http://world-nuclear.org/info/inf69.html] April 2008.

WNA 2008b. Information Papers. Uranium Enrichment. March 2008. [http://www.world-nuclear.org/info/inf28.html] (May 2008)

WNA 2008c. Sustaining Global Best Practices in Uranium Mining and Processing. Priciples for Managing Radiation, Health and Safety, Waste and the Environment. WNA Policy Document.

WNA 2008d. Information papers, In Situ Leach (ISL) Mining of Uranium. March 2008.(http://www.world-nuclear.org/info/inf27.html?terms=ISR) (May 2008)

WNA 2008e. Information Papers. Transport of radioactive materials. February 2008. [http://www.world-nuclear.org/info/inf20.html] (May 2008)

WNA 2007. World Nuclear Assocication. Information Papers. Wolrd Uranium Mining. July 2007. [http://www.worldnuclear. org/info/inf23.html] (May 2008)

WNA 2006a. Information Papers. Environmental aspects of Uranium Mining. February 2006. [http://world-nuclear.org/info/inf25.html] (May 2008)

WNA 2006b. Information Papers. Energy balances and CO2 implications. March 2006. [http://www.world-nuclear.org/info/inf100.html] (June 2008)

World Energy Council 2004. Comparison of Energy Systems Using Life Cycle Assessment, A Special Report of the World Energy Council. [http://www.worldenergy.org/documents/lca2.pdf] (June 2008)

World Energy Council ja Energy Forum of Finland/ FinnWEC 2005. [http://www.energiafoorumi.fi/content/root%20content/energiafoorumi/fi/liitteet/sahkonjalammonelinkaaritarkastelutpaatoksenteossa-julkaisu.pdf?SectionUri=%2Ffi] (June 2008)

WPD Finland Oy 2008. Sähkönsiirron reittivaihtoehtoja koskeva ympäristövaikutusten arviointiohjelman täydennys. Maaliskuu 2008. [http://www.wpd.de/fi/projektejamme.html]. (June 2008)

Ympäristöhallinnon karttapalvelu 2008. [http://www.ymparisto.fi/default.asp?contentid=173552&lan=FI] Viitattu 2008.

YVA Oy 2008. Virtausmalli Pyhäjoen edustalle lämpöpäästöjen leviämisen arviointiin. Raportti 21.8.2008. Hannu Lauri, Jorma Koponen, YVA Oy.

YVA Oy 2008. Virtausmalli Ruotsinpyhtään edustalle lämpöpäästöjen leviämisen arviointiin. Raportti 29.8.2008. Lauri H., Koponen J., YVA Oy.

YVA Oy 2008. Virtausmalli Simon edustalle lämpöpäästöjen leviämisen arviointiin. Raportti 21.8.2008. Lauri H., Koponen J., YVA Oy.