



2008

**Corporate Social Responsibility Report
Teollisuuden Voima Oyj**

TVO's social responsibility

Our objectives

The aim of Teollisuuden Voima Oyj's (TVO) Corporate Social Responsibility Report is to give those people who are interested in our company a variety of information about TVO as a company, and how we generate electricity responsibly for Finnish consumers and Finnish industry.

In our report we explain about issues related to finance, the environment, our personnel and social activities, but also about our safety culture, official regulations and the systems that guide our operations. The report also describes TVO's operating environment.

The aim of our report is to explain how corporate social responsibility covers all of our operations.

The coverage of our report

Based on the results of the assessment work of our Corporate Social Responsibility Group in 2008, we identified that the most important reader of our report is the Finnish electricity user.

In our report we describe our main activity i.e. the generation of electricity at the nuclear power plant at Olkiluoto. In the report we describe the events, objectives and results for our company in 2008. Our report covers the activities of the parent company Teollisuuden Voima Oyj, but as regards occupational accidents and training we also report on our contractors. We also report about generation at the Meri-Pori coal-fired plant and about the final disposal of spent fuel, managed by our joint venture company Posiva Oy. The scope, boundaries and measuring methods are the same as in last years report. No changes have been made in the data reported in previous years.

Our 2008 Annual Report complements the information in our report particularly with regard to financial responsibility and management systems.

We provide information about our permanent operations on our company's web pages at www.tvo.fi where there is also information regarding responsibility that complements the report.

Comparability

Our report has been drawn up in accordance with the Global Reporting Initiative (GRI) G3 guidelines. The GRI table is on page 62 of our report.

We have published a Corporate Social Responsibility Report annually since 2001 and before that, from 1996, we have produced an environmental report. The Corporate Social Responsibility Report 2007 was published in May 2008. Our next report will be published in May 2010.

The 2007 comparative figures are given in brackets in the report. The key figures and graphs cover the years 2004 to 2008.

The information in the financial statements has been approved by an external auditor.

The information on our environmental responsibility is based on reporting required by EMAS regulations. The EMAS requirements (Eco-Management and Audit Scheme) and our report's response to them are presented on page 38.

The social performance data are based on data collected and calculated within our company.

Certification

DNV Certification OY/AB, an accredited, independent, and impartial environmental verifier, verified that our Corporate Social Responsibility Report is compliant with EMAS regulations in March 2008. The verification statement is on page 39.

The economic and social responsibility data in our 2008 Corporate Social Responsibility Report have been assured by Price-waterhouseCoopers Oy. The assurance statement is on page 57.

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Olkiluoto – The centre of Finnish nuclear power generation expertise

Teollisuuden Voima Oyj generates nuclear power at Olkiluoto in the municipality of Eurajoki. Electricity is generated at our Olkiluoto 1 (OL1) and Olkiluoto 2 (OL2) units and the AREVA-Siemens consortium is building a third, Olkiluoto 3 (OL3) unit at Olkiluoto. According to the plans, it will start to generate electricity in 2012. In the spring of 2008, we submitted an application with the government for a decision in principle for a fourth unit, Olkiluoto 4 (OL4). TVO has a 45 per cent share of ownership of the Meri-Pori coal-fired power plant.

TVO is part of the PVO Group, whose parent company is Pohjolan Voima Oy.

The TVO Group includes TVO Nuclear Services Oy (TVONS), which markets services in nuclear power generation expertise, Olkiluodon Vesi Oy, Perusvoima Oy and the joint venture company Posiva Oy. Our company's head office is at Olkiluoto in the municipality of Eurajoki and we have offices in Helsinki and Brussels.

TVO's owners	
31 December, 2008	%
Etelä-Pohjanmaan Voima Oy	6.6
Fortum Power and Heat Oy	26.0
Karhu Voima Oy	0.1
Kemira Oyj	1.1
Oy Mankala Ab	8.1
Pohjolan Voima Oy	58.1
	100.0

During the year there were no significant changes in TVO's ownership or in its organisation.

Over the past 30 years, Olkiluoto has developed into a centre of excellence for Finnish nuclear power generation expertise. All the expertise needed for nuclear power generation, construction, operation, maintenance of a nuclear power plant and management of nuclear waste can be found in the area.

In 2008, we generated 14,380 GWh of electricity at Olkiluoto which is about 16.5% of the electricity used in Finland. In 2008, our company employed an average of 806 people. During the year we appointed 70 new people to permanent positions.

Our owners are responsible for the costs

We generate electricity for our owners at cost price in accordance with what has become known as the Mankala principle. Our owners are responsible for the costs of our operations and in return they receive electricity in proportion to their shareholding. They either use the electricity themselves or sell it to consumers through their own distribution agreements or through the NordPool power exchange. Our owners are Finnish electricity companies and industrial users of electricity throughout Finland. Half of the electricity we generate goes for industrial use and half for domestic households, the service sector and agriculture.

Values as the foundation of safety culture

Our operations are guided by our values of responsibility, pro-activity,

transparency and continuous improvement. Everyone who works at TVO is committed to a high level of safety culture where safety is always the first priority. This produces a high level of reliability and security of generation. We continually look for ways to reduce the environmental impact of our power generation and to ensure it remains uninterrupted.

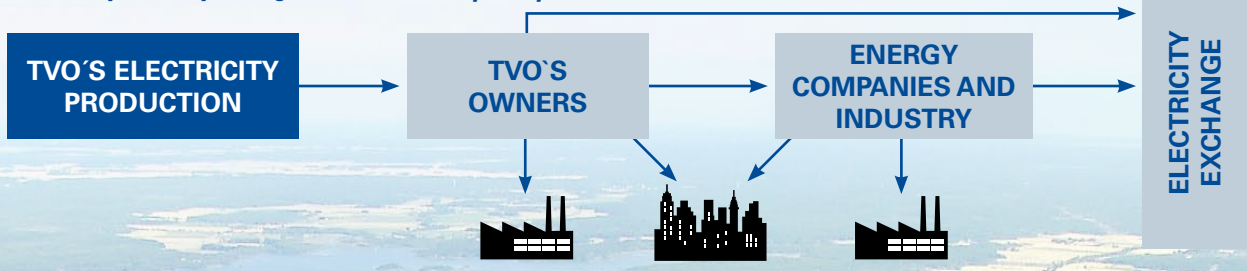
Nuclear power generation is an activity that is carried out under licence and is tightly monitored by the authorities. We work openly and in close cooperation with various official bodies and other stakeholder groups.

Three decades with no CO₂ emissions

Responsibly produced nuclear power is an environmentally friendly and safe mode of generating electricity throughout its lifecycle. The generation of nuclear power does not release greenhouse gases that cause climate change. Building more nuclear power plants will help to achieve the reduction targets set for greenhouse gases together with renewable energy sources. The advantage of nuclear power is also the stability and predictability of its pricing.

Our radioactive discharges are continually below the strict limit values set by the authorities. We know the effects of our operations on the nature and the environment of Olkiluoto since a period of over thirty years. The most significant of our environmental impacts is the thermal load on the sea from cooling water. We look for opportunities to reduce the thermal load and benefit from it sensibly.

Electricity delivery through the "Mankala" principle



The energy companies and industrial companies who own TVO are responsible for the costs of our operations and in return they receive electricity in proportion to their shareholding. The owners use the electricity in their own plants or sell it further to the power exchange, to other energy companies, or to industry and households.



- 1 OL1
- 2 OL2
- 3 OL3 (under construction)
- 4 OL4 (the application for a decision in principle has been filed)
- 5 Interim storage facility for spent nuclear fuel
- 6 Final repository for low and intermediate level waste, the VLJ cave
- 7 Underground characterisation facility for spent fuel
- 8 Training centre
- 9 Gas turbine power plant 100 MW
- 10 Power line
- 11 Shipping channel
- 12 Road network
- 13 Accommodation village
- 14 Visitor's Centre

At the Olkiluoto island all the infrastructure and services needed for safe and reliable nuclear power production is ready for the fourth power plant unit.

Review by the President and CEO



TVO's vision is to be a world class company, highly valued by Finnish society. This means continuous discussions with different stakeholder groups and also maintaining our production facilities, the Olkiluoto power production units, in good condition so that their operations do not result in harm to the surrounding communities. Our responsibility is to produce power for Finnish society safely, without damaging the natural environment, and at a competitive price.

In January 2009, TVO was 40 years old. During those decades our company has developed a strong corporate culture which is based on a culture of high levels of safety. The important things in our corporate culture are the values ingrained in our personnel: responsibility, transparency, pro-

activity and continuous improvement. Our personnel's skills have developed in line with developments in nuclear technology and the company. We have continually transferred our corporate culture and skills to new employees: the know-how and experience we have accumulated constitute important capital for the company.

Production target achieved

2008 will be remembered as the start of the global recession. The recession affected many companies in Finland and electricity consumption fell 3.8 per cent compared to the previous year. The need for electricity in industry in particular was reduced.

The recession did not affect the amount of electricity produced by TVO and the production targets that

had been set were achieved. Our annual production was the second largest in our history. We produced a total of 14.4 TWh of electricity at Olkiluoto for Finnish requirements cleanly and without putting any strain on the natural environment. This is about 17 per cent of the electricity used in Finland. Over the three decades, the two production units at Olkiluoto have produced a total of 351 billion kilowatt hours of electricity for Finns reliably and with good capacity utilisation.

Environmental issues managed well

We have carried out environmental surveys on the island of Olkiluoto and its surrounding waters throughout the operation of the company starting in the 1970s. We monitor and measure



the environmental effects of the power plant in accordance with programmes approved by the authorities.

Our objective with regard to the emissions of radioactive substances is always to keep emissions clearly below the level set by the authorities and below the levels we set ourselves, which are stricter than the official levels. As in previous years, the radioactive emissions into the air and discharges into water from the Olkiluoto nuclear power plant were extremely low, just a fraction of the limits set by the authorities. Operations were in accordance with our environmental policy, our environmental permits as well as our environmental management system.

In February 2008, TVO joined the business sector's energy efficiency contract system. The energy efficiency system was integrated as part of our environmental system in compliance with the ISO 14001 standard and we have commissioned measures related to energy efficiency. We have renovated and expanded the Olkiluoto district heating network and consequently avoided electrical heating in the new areas.

We are already building the future

Electricity generation is a long-term operation, building a power plant takes a decade. TVO looks far into the future and is building Finland's future right at this moment. Even though the construction of the Olkiluoto 3 unit has not proceeded according to the planned timetable, once the unit

is ready it will produce electricity for Finns with no carbon dioxide emissions for at least sixty years. According to the information from the supplier of the unit, Olkiluoto 3 will be completed in June 2012.

Design, construction, sub-contracting, manufacture of equipment and installation are all underway at the Olkiluoto 3 project. The work at the reactor plant at Olkiluoto is still focused on construction, whereas the emphasis in the work at the turbine plant has now switched to installation. At the end of the year there were about 4,000 people working on site of whom about 900 were Finns.

Growth needs electricity

The recession will be followed by another period of growth. In the middle of difficult economic times, one must look far ahead and build up the future. We must create employment and activity without forgetting the environment. TVO is prepared to create nourishment for growth - new nuclear power production capacity. Time is needed to construct the Olkiluoto 4 nuclear power production unit and there is no need for financial support from the government.

We know the Olkiluoto island and the effects of our operations and we described them broadly and thoroughly in the Olkiluoto 4 unit's environmental impact assessment statement which was delivered to our coordinating authority, the Ministry of Employment and the Economy, in February 2008.

In April 2008, we submitted an application to the government for a decision in principle on the construction of a fourth nuclear power production unit at Olkiluoto. Olkiluoto has all the facilities for implementation of the OL4 unit. The comprehensive infrastructure built up over four decades; nuclear waste management, support services and a skilled organisation, are in place for a fourth unit. The existing infrastructure will provide significant synergy benefits for the new unit. The municipality of Eurajoki has already given a positive statement in support of the project.

If a positive decision on the project is received from the government and parliament, it will be possible to commission OL4 before 2020. This has also been set as the new capacity completion target in the government's climate and energy strategy.

This is the seventh TVO Corporate Social Responsibility Report and I hope that this report, together with the information available on our web pages, will give the reader a comprehensive picture of the company's operations and responsibility. I hope that all our stakeholder groups will enjoy reading this and we welcome feedback on our report.



Jarmo Tanhua
President and CEO

A strong safety culture is the foundation for success

The foundation stone of our operation is an uncompromising safety culture which is seen in our operating methods and attitudes. We do not compromise on safety and we have prepared for emergency situations by having multi-level redundancy in our technical systems.

The role of our personnel is to ensure the safe use of the power plant units in all conditions. This demands a high level of skill and the maintenance and continual development of a safety culture.

Issues are always handled with the importance of safety in mind

In our operations we aim for unconditional confidence and reliability of production. For every issue that needs to be dealt with, we give it the attention and treatment its significance as regards safety demands. We instruct and train our personnel to take account of and identify the safety significance of issues they work with. Instruction, vigilance and accuracy with regard to details are part of a safety culture.

Our operations management system includes TVO's mission and vision, values, company level policies, the organisation and areas of responsibility. In addition it includes the general features of our operations, quality assurance principles and processes, and the descriptions of how they are managed. The system also includes the important operational handbooks and instructions. The operations management system also functions as the licence holder's quality assurance system as required by the Finnish Radiation and Nuclear Authority.

Energy efficiency included at company level policies

We revised the company level policies by including in them an objective to improve the energy efficiency of the

power plant process. Our new policies were approved in January 2009.

Our organisation handbook defines the structure of our organisation, its tasks, the general outlines of development and the principles of cooperation. Directors and unit managers are continually looking for opportunities to improve operations in their own areas.

We monitor and manage our operations using our strategy chart and the scorecard based on it. Our strategy chart contains the most important success factors for our operations. We have defined objectives for these success factors and their achievement is monitored by the units and the company's management.

We work on safety everyday

We assess and analyse the safety and utilisation of the Olkiluoto plant continuously. We also examine our operational approaches and investigate any disturbances to identify areas for improvement and development. Our personnel participate in developing the operating and environmental management system and the operational approaches used.

An important part of our safety culture is the reporting of faults identified, nonconformities and shortcomings as well as near miss incidents. We analyse the reports and take the necessary corrective actions. We deal with our findings openly so that we can learn as much as possible from them and prevent the repetition of non-conformities.

In our planning of preventive actions we utilise probability-based safety and utilisation models, operating experience as well as near miss incidents. We actively exchange experiences with other nuclear power plants and we take part in international development work in the sector through participation in the activities of the World Association of Nuclear Operators (WANO), the European electrical engineering interest group Eurelectric, the nuclear interest group FORATOM and several other associations

Management system

Our management system guides the work of everyone employed by TVO. It provides the means to ensure safe, competitive, high-quality, and environmentally-friendly electricity production.

The following guidelines were considered in formulating the management system:

- Nuclear plant management systems
- Nuclear power plants' operational quality assurance
- Nuclear fuel quality management
- Standard ISO 9001:2000, Quality management systems, requirements
- Standard ISO 9000:2000, Quality management systems, bases and glossary
- Standard ISO 14001, Environmental management system
- EMAS registration.

Operational areas of focus

TVO has two primary areas of focus

- To keep the existing nuclear power plant units safe, up-to date, in good condition, reliable, and competitive in terms of their production costs
- To build new capacity according to quality standards, safely and by fulfilling the technical requirements.

TVO's mission

To produce electricity for its shareholders safely and economically without carbon dioxide emissions.



TVO's vision

To be a world-class nuclear power company that is highly valued by Finnish society.

Management of operations

- Company level policies
- Values
- Ethical principles
- Management system
- Safety culture

Company level policies

The company level policies are built from our values and our mission. Our four policies: nuclear safety and quality policy, corporate social responsibility policy, production policy as well as corporate safety policy provide our personnel and cooperation partners with operational guidelines.

Values

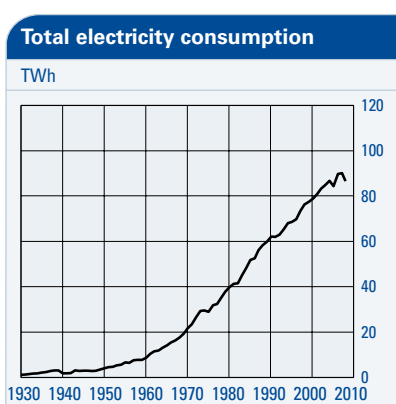
Our values are: responsibility, pro-activity, transparency and continuous improvement.

Our values emphasise our striving for safe and reliable operation. Our values guide all of our operations and decision making and communicate the central issues for our operation.

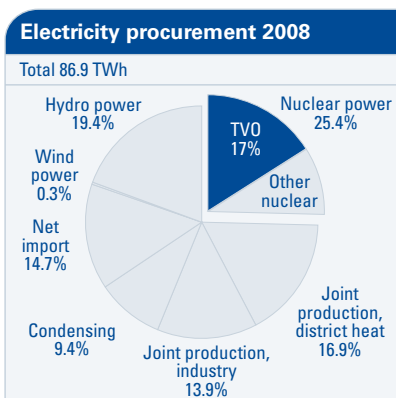
Management system

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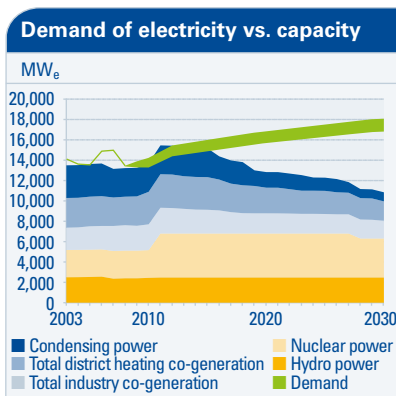
Operating environment



Source: Finnish Energy Industries



Source: Finnish Energy Industries



Source: Finnish Energy Industries

2008 was an exceptional year for electricity in Finland. The need for electricity fell by 3.8 per cent compared with 2007. The reduction was the largest since the war years. The use of electricity during peacetime has only fallen by over 3 per cent in 1947 and during the year of the general strike in 1956.

The economic recession reduced companies' need for electricity. The reduction was particularly clear in industry whose use of electricity fell by 7.1 per cent. The use of electricity in services and construction remained at almost the previous year's level: the reduction was 0.2 per cent. On the other hand, the need for electricity for domestic and agricultural use increased by 0.3 per cent.

In diversification of electricity procurement, Finland is world class. The combined generation of electricity and heat accounts for over 30 per cent of the total need for electricity. Nuclear power's share was over 25 per cent. The share of condensate power, other than that produced in nuclear power plants, was almost 10 per cent and hydroelectricity was a good 19 per cent. The utilisation ratios for Finnish nuclear power plants continued to be at an excellent level in worldwide comparisons.

Electricity mainly imported from Russia

The net imports of electricity were 12.8 TWh which was an increase compared to the previous year of just under 2 per cent. Imports from Sweden and Norway decreased whereas imports of electricity from Russia and Estonia in-

creased considerably. Electricity trading between Nordic countries changed to make Finland an exporter.

In 2008, 66 per cent of the electricity generated in Finland produced no greenhouse gas emissions, because 30 per cent was generated using nuclear power and 36 per cent using renewable energy sources. 34 per cent of generation was covered by condensate power production and imports. Carbon dioxide emissions from electricity generated from coal, natural gas and peat was 12.4 million tonnes i.e. 5.3 million tonnes less than in 2007. The reduction was the result of the contraction in coal condensate power generation.

The market prices of electricity in the Nord Pool Spot electricity exchange rose strongly initially, but started to fall in the autumn. The monthly mean price was an average of 51 Euros/MWh, whereas in 2007 it was 30 Euros/MWh. The price of market electricity in Finland was 70 per cent high an average than the previous year.

Objective is to reduce greenhouse gases

The EU is committed to reducing greenhouse gas emissions by 20 per cent by 2020 compared to the level in 1990. The reduction means ever lower emissions quotas for emissions trading.

The companies in Finland that are outside the emissions trading system should be able to cut greenhouse gas emissions by 16 per cent from the 2005 level by 2020. In accordance with EU targets, the share of renewable energy sources in the end use of energy

should be 20 per cent by 2020 i.e. almost three times the current percentage share. For Finland the target would be 38 per cent i.e. close to 10 percentage points more than at present. The EU target is to improve energy efficiency by 20 per cent by 2020.

Solutions for climate and energy strategy

Environmental sustainability, reliability of supply and competitiveness are Finland's main targets in energy management in the government's report on long term energy strategy which was presented to parliament in November 2008. The strategy will also help in fulfilling the energy and climate targets set by the EC for Finland.

The targets of reducing emissions, increasing renewable energy sources and improving energy efficiency demand new climate and energy policy measures. The government's target is to arrest the growth in final energy use and start a downturn so that final consumption in 2020 would be about 310 TWh, a good 10 per cent less than without any new policy measures. The long-term vision is to further reduce the final consumption of energy by at least a third of the 2020 amount by the year 2050.

According to the strategy, the need for electricity in Finland will grow on average at about one per cent annually until 2020 by when the need would be about 103 TWh. The target is to have sufficient domestic capacity available to cover consumption peaks as well. Having sufficient domestic electricity production aims to ensure the avail-

ability of electricity, but also the functioning of electricity markets.

According to the strategy calculations, Finland will need at least 4,000 MW of new electricity production capacity by the year 2020 to cover the growth in consumption and replace diminishing imports. In addition, aging production capacity that is being decommissioned will also have to be replaced.

Primacy is being given to plants that have no or very low greenhouse gas emissions in constructing capacity in Finland. In practice this means combined heat and power plants using renewable fuels as well as economically practical and environmentally acceptable hydro power and wind powered plants. The strategy also envisages the construction of a new nuclear power plant.

Importance of availability and quality of energy is growing internationally

The International Energy Agency (IEA) in its 2008 energy outlook that world energy consumption would grow by a factor of 2.5 by the year 2050. The IEA also estimated that energy, and particularly electricity, is an extremely important factor in society's economic development and in improving the social quality of life. However, current electricity production is seen as contrary to sustainable development because most of the growth in energy consumption is still accounted for by fossil fuel burning energy sources that produce carbon dioxide. Security of energy supply has become

a significant cause of concern. Nuclear power has a significant role in reducing carbon dioxide emissions and increasing the security of energy supply.

EU emphasises energy security and reduction in climate change

In 2007, the EU decided on common climate and energy targets for 2020. The opening of energy markets has been found to be significant in increasing energy security. The most important subjects for negotiation were the Commission's proposals for new energy market directives i.e. a third energy market package which will be further discussed during the first half of 2009. The functionality of energy markets will be improved mainly by completely separating energy generation and distribution and through closer cooperation between the regulatory authorities and the distribution companies.

In January 2008, the European Commission published its regulatory package on the management of climate change and the national allocations of the targets set for renewable energy sources. The package contains proposals for measures to reduce carbon dioxide emissions. The package contains proposals for an emissions trading directive, capture and storage of carbon dioxide, promoting renewable sources of energy and promoting energy efficiency.

Measures to increase security of supply

At the end of 2008, the European Commission published its Second

Strategic Energy Review in which there is also a programme regarding nuclear power. The main areas of emphasis are the approval and implementation of the climate and energy package, reducing dependency on imported energy, energy solidarity, oil reserves and countermeasures taken to against interruptions of gas supplies, energy efficiency and international relations. The review concentrates on security of energy supplies, energy efficiency and solidarity between member states.

The Commission's proposal is a wide-ranging energy package to improve the security of energy supply in Europe and to support the 20-20-20 targets on climate change. The targets are aimed at reducing carbon dioxide emission by 20 per cent and at the same time increasing both renewable energy sources and energy efficiency by 20 per cent.

The Commission presented a new strategy to the energy sector to increase solidarity between member states. The objective of the Commission's action plan is to secure environmentally friendly, reliable and competitive energy supplies. The Commission's review also examines the new challenges for Europe from 2020 to 2050.

Special consideration for nuclear power

The Commission has concentrated on the security of energy supply, the need for investment and the prerequisites for investment. In assessing the need for investment, the Commission has

prepared various scenarios and forecast a significant growth in electricity consumption even if overall energy consumption does not increase in the manner it has in previous years.

In the Commission's investigation, available nuclear power capacity will decrease considerably by 2020 as old plants are decommissioned. New investments in nuclear power are needed to compensate for this reduction. Prolonging the active life of plants could ease the situation somewhat. The Commission has given wide ranging consideration to the constraints related to the future investments required. These are public approval, licensing, funding and nuclear liability. Of these, funding has been given special status.

New nuclear security regulation emphasises the role of the authorities

In November 2008, the Commission published its proposal for a new nuclear safety directive. It would place final responsibility for nuclear safety on the holder of the operating license under the control of the nuclear safety authority. The proposal is based on the IAEA's safety principles, but additionally describes role of the EU countries' nuclear safety authorities and that of ENSREG, their joint body.

ENSREG should become a community that would propose regulation for the whole lifecycle of a nuclear power plant. It would harmonise licensing and increase cooperation between the nuclear safety authorities so that best operating practices would be disseminated. ENSREG would also have the

powers to conduct investigations and make recommendations on the basis of national safety assessments.

145 nuclear reactors operate in the EU

There are nuclear power plants in 15 of the EU's member states, a total of 145 reactors. Their electricity generation capacity totals about 130 GW. Nuclear power accounts for about 30 per cent of total electricity generation in the EU. There are almost 200 reactors in the whole of Europe and they generate about 25 per cent of the electricity used in Europe. Fossil fuels on the other hand account for over 50 per cent of the electricity needed in Europe.

Nuclear power also generates significant amounts of electricity in the United States, Japan, South Korea, Canada, India and China. In the next few years, many new nuclear power generation projects are expected to start particularly in Asia (China, India, Japan, South Korea).

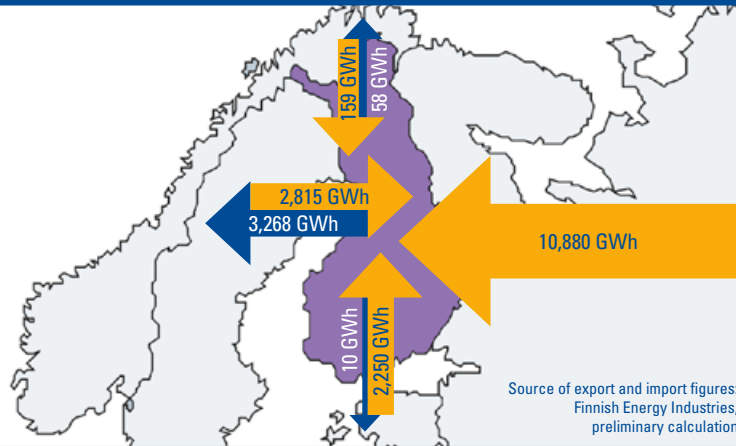
In addition to Europe, new projects are also being prepared in Russia and the United States. Many countries that have not taken advantage of nuclear power up to now are now interested in using nuclear power.

There are a total of 438 nuclear power plants operating in the whole world and their total capacity is 372 GW. There are 44 reactors under construction with a total capacity of 38 GW. According to several forecasts, global nuclear power plant capacity will increase to about the 500 GW level by 2030.

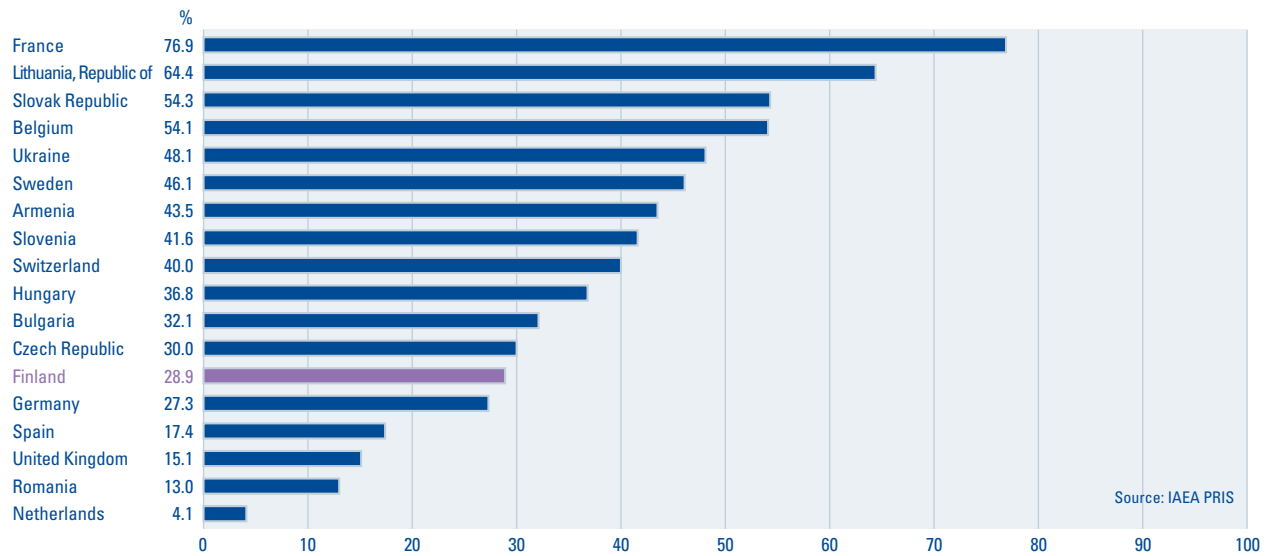
Import and export of Finnish electricity in 2008

Import and export of Finnish electricity in 2008

Import	16,105 GWh
Export	3,336 GWh
Electricity production in 2008	
Total	74,137 GWh

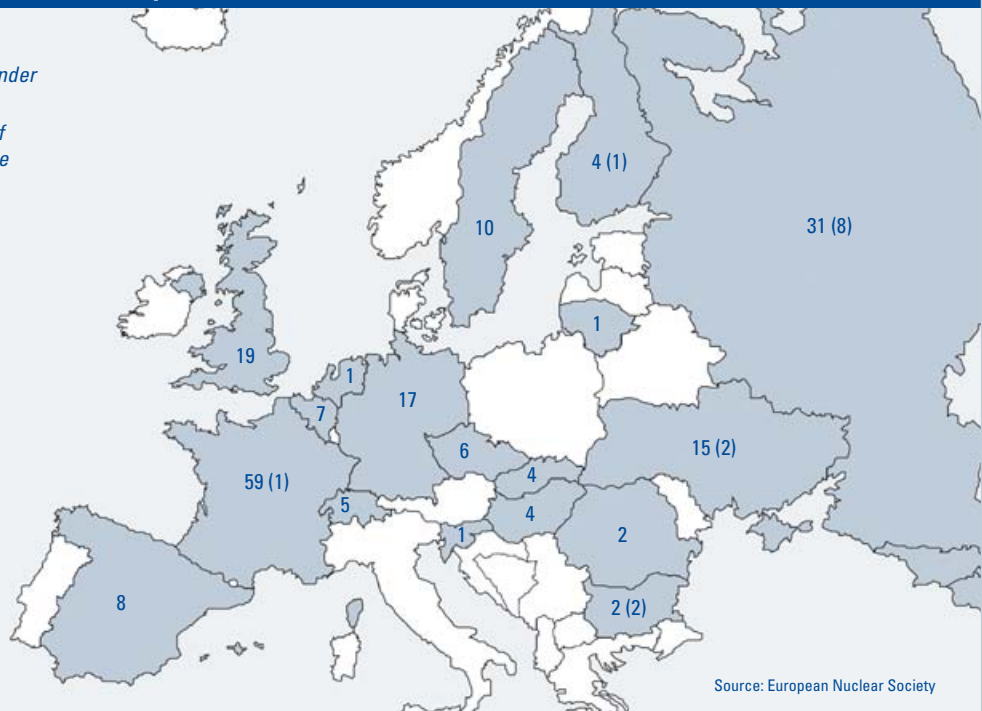


The share of nuclear energy in the electricity production of European countries in 2007



Number of nuclear power plants in European countries in 2008

- 196 reactors in use and 14 under construction (in brackets)
- Produce some 25 per cent of the electricity used in Europe



Good competence for implementation of a fourth unit

In April 2008, TVO submitted an application for a decision in principle regarding the construction of a fourth unit at Olkiluoto. The application for the decision in principle was preceded by a wide ranging and comprehensive environmental impact assessment in which inhabitants of the local area, other Finns and the Baltic states participated. The fourth unit will enable development of Finnish society by offering stable, climate friendly and at the same time cost effective electricity production and strengthening self-sufficiency in electricity production.

The nuclear plant project we are commissioning is regionally and nationally significant both economically and because of its effect on employment. When complete, the OL4 will increase the production of stably priced basic power in Finland and thus reduce its dependence on imported electricity.

Our OL4 project will play its part in implementing Finland's climate and energy policy as climate friendly nuclear power will support the attainment of the reduction targets for greenhouse gas emissions. OL4 will replace aging and decommissioned condensate power production based mainly on burning coal and thus reduce the carbon dioxide emissions from electrical energy production. For 30 years the nuclear power we have produced at Olkiluoto has reduced the amount of carbon dioxide emissions by about 280 million tonnes compared to the production of the same amount

A wide EIA process was carried out before submitting an application for a decision in principle. The reports were published in eight languages.



of electricity using coal. The amount corresponds to about 3.5 years of greenhouse gas emissions in Finland.

Experience and unique project skills

All of TVO's current owners are involved in our application for the decision in principle. The electricity production capacity of the planned unit would be 1,000–1,800 MW and it would be either a boiling water reactor or a pressurized water reactor.

Having the timing of the investment decision for the new unit close to the completion of the OL3 project means that the existing skills, experience and resources could be smoothly transferred to the project. Our skilled and experienced project organisation has the sector's latest know-how in managing a major power plant unit project. With the strength of almost 800 nuclear power plant professionals and with the security of four decades of operations and skill we could take a confident approach to the new construction project.

We have estimated the size of the investment to be 3–4 billion euros. The ready-made infrastructure in the Olkiluoto area will reduce the investment needed. During the 30 years of use of the Olkiluoto area by the present units, it has proved to be well suited for nuclear power production and meets the requirements for expansion of the nuclear power plant site. We could utilise, and if necessary expand, the infrastructure and support services currently serving electricity production for the needs of the new unit. The infrastructure and organisation for the

construction phase are also in-place at Olkiluoto. We could commission the new power production project quickly. Our readiness on many fronts will result in overall benefit to society in the form of safety, security of supply and a reasonable price of electricity.

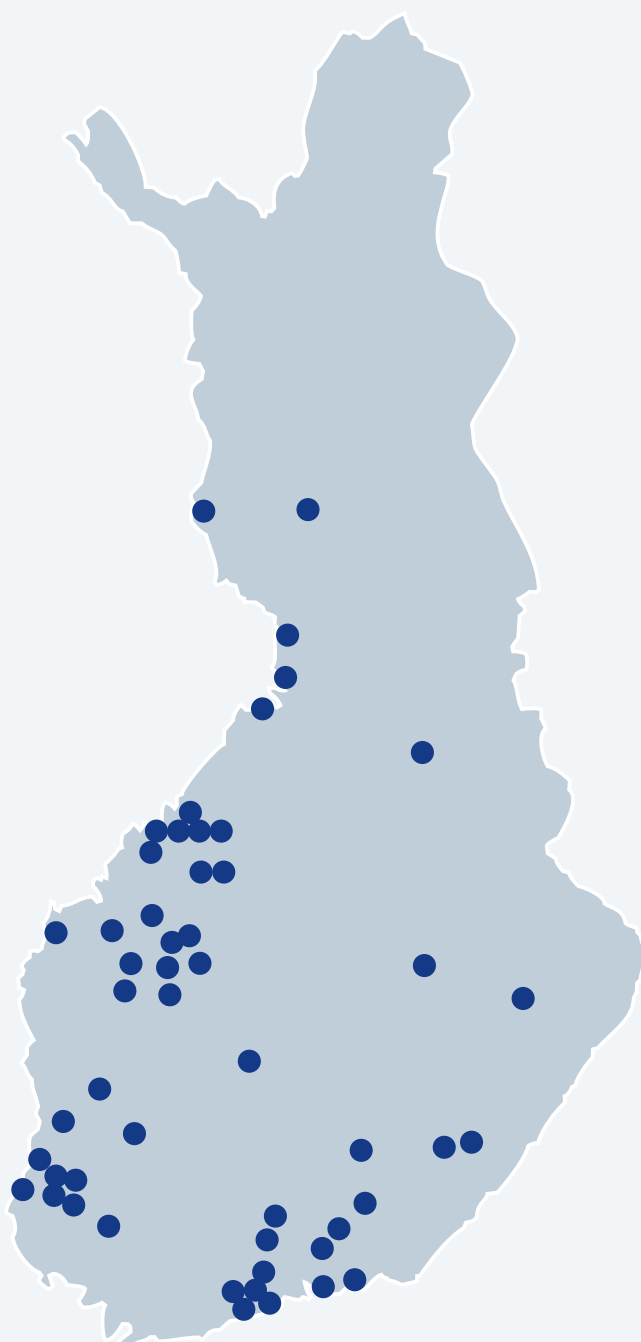
Thermal load of cooling water is the most significant environmental impact

We started an environmental impact assessment in March 2007. We examined the environmental effects of the project at different stages of its lifecycle and assessed the overall impact of the project and the other activities that take place on the island of Olkiluoto. As well as the impacts on the natural environment we examined the impact of the project on people and the community.

We assessed the facts that would affect the lives of people in local area such as road safety and restrictions on movement as well as the effects on the wider Eurajoki community and the Rauma economic area such as the effects on employment and taxation revenue. We carried out a survey of inhabitants which confirmed our view of the local population's positive attitude towards our new nuclear power plant project.

According to the environmental impact assessment, the most significant environmental impact of the OL4 unit is the thermal load on the seawater around Olkiluoto from the cooling water from the unit and the existing units. We will continue the environmental impact assessment with an assessment in accordance with the Nature Conservation Act on the pos-

The Olkiluoto nuclear power plant produces, via its owners and electricity sellers, benefit for the whole of Finland



Community sector:

Alajärven Sähkö Oy
Esse Elektro-Kraft Ab
Etelä-Pohjanmaan Voima Oy
Etelä-Savon Energia Oy
Etelä-Suomen Voima Oy
Fortum Power and Heat Oy
Haminan Energia Oy
Helsingin Energia
Oy Herrfors Ab
Hiirikosken Energia Oy
Iin Energia Oy
Imatran Seudun Sähkö Oy
Jyväskylän Sähköosuuskunta
Järviseudun Sähkövoiman Kuntayhtymä
Kaakon Energia Oy
Karhu Voima Oy
Keravan Energia Oy
Keskusosuuskunta Oulun Seudun Sähkö
Kokemäen Sähkö Oy
Kokkolan kaupunki / Kokkolan Energia
Korpelan Voima kuntayhtymä
Kruunupyyn kunta / energialaitos
KSS Energia Oy
Kumera Oy
Kymenlaakson Sähkö Oy
Kymppivoima Oy
Köyliön-Säkylän Sähkö Oy
Lahti Energia Oy
Lammaisten Energia Oy
Lankosken Sähkö Oy
Lehtimäen Sähkö Oy
Leppäkosken Sähkö Oy
Oy Mankala Ab
Mäntsälän Sähkö Oy
Nurmijärven Sähkö Oy
Nykarleby Kraftverk
Oulun Energia
Paneliankosken Voima Oy
Oy Perhonjoki Ab
Pietarsaaren kaupunki
Pohjois-Karjalan Sähkö Oy
Pohjolan Voima Oy
Pori Energia Oy
Porvoon Energia Oy
Rauman Energia Oy
Rovakaira Oy
Sallila Energia Oy
Savon Voima Oy
Seinäjoen Energia Oy
Suur-Savon Sähkö Oy
Tornionlaakson Sähkö Oy
Vaasan Sähkö Oy
Vantaan Energia Oy
Vatajankosken Sähkö Oy
Vetelin Sähkölaitos Oy
Vimpelin Voima Oy
Ääneseudun Energia Oy

Industrial sector:

Kemira Oyj (incl. pension foundation)
Oy Metsä-Botnia Ab
M-real Oyj
Myllykoski Oyj
Outokumpu Oyj
Rautaruukki Oyj
Stora Enso Oyj
UPM-Kymmene Oyj
Yara Suomi Oy (incl. pension foundation)

sible impact on the Rauma archipelago Natura area.

Environmental impact assessment report in February

We submitted the environmental impact assessment programme to the Ministry of Employment and the Economy, who acts as the coordinating authority, in May 2007 and the environmental impact assessment report in February 2008. In June 2008, the Ministry confirmed in a statement that our assessment report covered the contents and approach stipulated in the Nature Conservation Act. However, the Ministry required further investigations and asked TVO to supplement the environmental impact assessment report and to answer questions put during an international hear-

ing. We submitted the complementary report to the Ministry in August 2008.

Posiva Oy carried out an environmental impact assessment on the final disposal of spent nuclear fuel in 1998-1999. In April 2008, Posiva submitted a separate application for a decision in principle regarding the final disposal of spent nuclear fuel from the OL4 project. At the same time the company updated the information in the environmental impact assessment report it prepared in 1999.

Our application for a decision in principle included the main facilities associated with the operation of the new nuclear power plant unit which needs a nuclear fuel store, intermediate storage for spent fuel and handling, storage and final disposal facility for low and medium level radioactive

waste from the nuclear power plant.

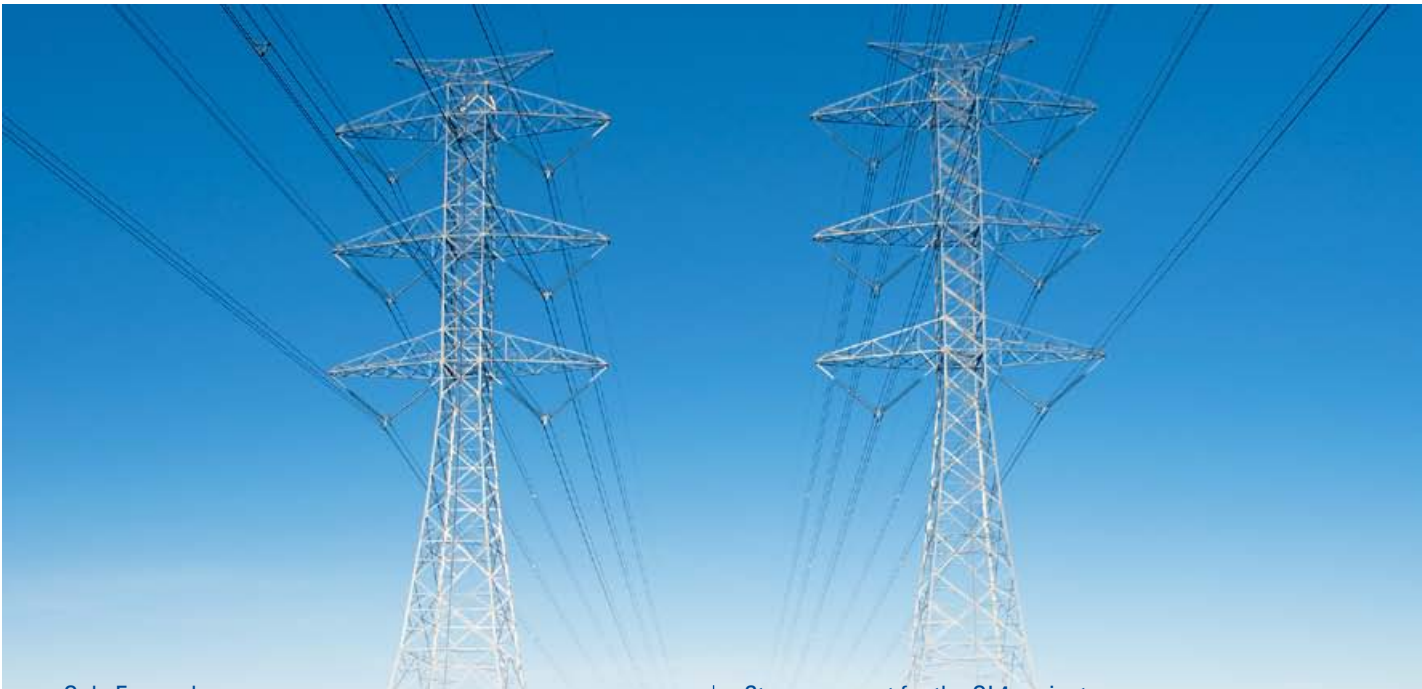
Eurajoki municipality supports the project

The consideration of our application for a decision in principle by the Ministry of Employment and the Economy is ongoing. The Ministry has requested and received statements from various parties. A general report on the project has been drawn up and the public hearing required for the application was held in Eurajoki in October 2008. The Eurajoki municipal council voted 21-6 in favour of our project on 15 December, 2008.

The Ministry is preparing a presentation on the decision in principle on the project for the government. In order to be implemented, the OL4 project still needs confirmation by parliament.

Thermal load of cooling water is the most significant environmental impact of the Olkiluoto nuclear power plant.





Oulu Energy has

THREE GOOD REASONS FOR THE OL4 PROJECT

– We are very interested in the OL4 project, says the Managing Director of Oulu Energy, **Tapani Kurkela**. Mr Kurkela names three key reasons for the interest: diversification of Oulu Energy's electricity generation structure, TVO's solid skill and experience and Oulu Energy's shareholding in Pohjolan Voima.

Mr Kurkela thinks that the decision regarding nuclear power should be based on the overall benefit to society. He would like to exclude other related factors from the decision making. – Regional policy cannot be a deciding factor when deciding about nuclear power. It would be sensible to grant permits to all construction projects that meet the criteria and leave the implementation of the investments to the companies' own decision making. That would enable sufficient competitive energy for Finns needs.

OL4 project to replace coal condensing energy

– Oulu Energy produces power for the north mainly using wood, peat and coal. We are involved in Pohjolan Voima's major wind turbine projects. The OL4 project would diversify and complement our production marvellously. We have a small share in the OL3 project, but we, like all the other electricity companies, want more nuclear power as a base for our generation structure. A lot of old coal fired condensing generation capacity is being decommissioned in Finland which Oulu Energy also owns indirectly. Nuclear power is a good alternative for the capacity to be replaced, explains Mr Kurkela.

– We want to be involved in TVO's project. The skills and experience the company has accumulated during four decades is seen in practice in the plant units' consistently high capacity factors. The consistently reliable electricity production at Olkiluoto from one year to the next is convincing evidence of real skills and investment in the production of nuclear power.

Experience of the OL3 project provides unique skills

– Even though everything in the OL3 project has not proceeded quite on schedule or as expected, I believe that valuable lessons have been learned from the project that will be of benefit in the next one. No-one else has this knowledge, on a European scale it is unrivalled.

Pohjolan Voima's shareholding is a third important reason to be involved in the project. – Through Pohjolan Voima we are able to participate in projects for which we would otherwise not have sufficient capabilities. The shareholding brings us new opportunities and gives us access to new kinds of skill.

– For a municipally owned electricity company such as ours, a company that produces electricity for its owners at cost is a good productive partner. We are very satisfied with our shareholding and the opportunities it has provided for us. In this way we increase northern power – we affect the well-being of northern Finns and the competitiveness of companies, smiles Mr Kurkela.

Strong support for the OL4 project

EVERYTHING READY IN SATAKUNTA

– The government will make a decision on the construction of an additional nuclear power plant taking the overall benefit to society into consideration. Regional policy should not have a role in the decision making. The decision regarding the permit should emphasise the safe implementation of the project, its value for money and its rapid implementation. This approach to the inquiry will clarify where the best location is with regard to the overall benefit to society. The advantages of Olkiluoto are indisputable, states the Managing Director of the Rauma Chamber of Commerce, **Jaakko Hirvonsalo**.

– Here in South-West Finland we have everything in place that the unit needs for operation. The OL3 project has brought new skill and put everything in place for the next unit as well.

No regional policy involved in the decision making

– This is not a question of locating the unit where new jobs and opportunities are most needed. When all is said and done, a nuclear power plant demands a lot from the environment: cooperation with the authorities, skills and service structures which have been formed here in Satakunta over decades.

– The unit will employ about 300 people at Olkiluoto. The indirect employment creation effect is about 1,000 jobs. Even though the number is large, no single company will resolve any area's problems.

– For years Satakunta has been an area that the population has moved away from. Levels of employment in the region are lower than the national average. New jobs are an important part of securing the economic future for the industrially dominated west of Finland. But the decision should not be made on regional policy, rather the basis of the decision should be the overall benefit to society. If and when it is made in favour of Satakunta, that would be wonderful emphasises Mr Hirvonsalo.

Service structures in place give the project support

According to Mr Hirvonsalo, the Satakunta region has the business infrastructure ready to support the operation of a nuclear power plant as well as the training infrastructure for the workforce, and experience and skills in implementing major investments. There are lots of different kinds of service businesses in the region who have accumulated skills in providing services to businesses and in industrial maintenance. About 200 businesses from Satakunta have been involved in the OL3 project. The forest and marine industries in the region consume significant amounts of electricity.

– The existence of a prepared construction area also increases the competitive position of Olkiluoto. The area has the legal planning consents in place. Various authorities already have systems operating in the area. The construction of the fourth unit with the previous three would not require significant additional investments in operations by the authorities.

– The region's unswerving support for the OL4 project can also be regarded as a powerful advantage. The Eurajoki Council has already made a decision in favour of the project. The other neighbouring municipalities and Rauma have issued positive statements on TVO's application for a decision in principle. The population of the local area and the business community are also behind the project, emphasises Mr Hirvonsalo.

STABLE GENERATION BROUGHT A GOOD RESULT

Detailed economic figures can be found on page 25.

Our objective is to maintain the Olkiluoto nuclear power plant units like new and to ensure safe, predictable and uninterrupted production during future production periods. We will achieve our objectives and a good generation result when we operate in accordance with our values, responsibly, proactively, taking a continuous improvement approach and implement transparent communication and interaction with our stakeholder groups.

The production of nuclear power at Olkiluoto started on 2 September, 1978. Over three decades the Olkiluoto power plant has produced 351 billion kilowatt hours of electricity. In 2008, we, together with the Meri-Pori coal-fired power plant, produced about 17.4 per cent of the electricity used in Finland and we delivered a total of 15,144 GWh of electricity for our owners.

TVO's turnover was EUR 245.1 (225.0) million. The turnover and cost of electricity production at Olkiluoto were according to target.

Our operation is based on the principle of ownership costs (referred to as the Mankala principle), which means that the costs arising are charged annually in the price of electricity which means the result for the financial year is effectively zero. This means that presenting targets and ratios based on profitability is not appropriate to understand the business operation or its results. Our financial situation is stable and the owners appreciate us as an inexpensive supplier of electricity at cost price.

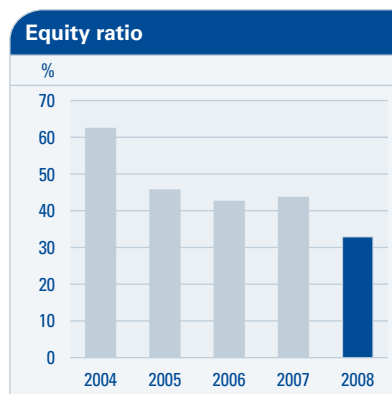
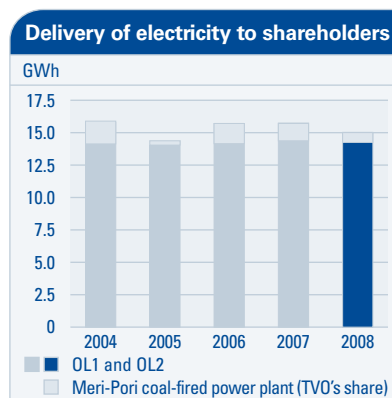
The Group's liquidity and financial positions are stable. Loans were taken out according to plan. TVO's interest-bearing loans (long-term and short-term) totalled EUR 1,959.5 (1,362.3) million at the end of the year, excluding loans from the Finnish State Nuclear Waste Management Fund lent on to shareholders. The Annual General Meeting in 2007 decided on a share issue (EUR 95.6 million) and the increase in the share capital of the B se-

ries of shares was paid in November 2008.

High capacity factors once again compared to international levels

The units produced electricity for the owners consistently throughout the year except for during the planned annual outages. The OL1 unit produced 7,039 (7,317) GWh and the OL2 unit 7,288 (7,023) GWh. As in previous years, the capacity factors were high compared to international levels, the overall capacity factor for the units was 95.3 (95.6) per cent. Capacity factor for OL1 was 93.7 (97.5) per cent and for OL2 it was 96.9 (93.7) per cent.

We have a 45 per cent shareholding in Fortum Power and Heat Oy's Meri-Pori coal-fired power plant. We are responsible for our share of the plant's capacity. Fortum Power and Heat Oy is responsible for the operation of the power plant. We procure the coal needed for fuel. Our share of the plant's electricity production was 817 (1,374) GWh. The output of the wind turbine plant on Olkiluoto was 1.6 (1.8) GWh. The gas turbine plant built on Olkiluoto as a joint venture between Fingrid Oy and TVO can generate electricity rapidly for the grid if needed and also ensures the availability of external power for the Olkiluoto units in the event of a major disturbance to the operation of the grid. TVO's share of the electricity generated by the Olkiluoto gas turbine was 0.5 (0.2) GWh.



Our investments are building the future of nuclear power generation

We are building the future of nuclear power production at Olkiluoto. Our investments totalled EUR 588.9 (227.2) million. Of this, EUR 50.8 (48.2) million was spent on the OL1 and OL2 units and EUR 537.0 (178.3) million on the OL3 project.

The topping out for the Olkiluoto storage and maintenance facility expansion project was in February 2008 and most of the facilities were commissioned during 2008. The OL1 and OL2 annual maintenance building project started in April and it will be ready in 2009 in time for the annual outages.

We continued with the preparations for the renewal projects of the low pressure turbines and generators for OL1 and OL2 which are scheduled for 2010 and 2011. As part of the project we decided to invest in renewing the inner isolation valves of the main steam lines and the seawater pumps.

The emphasis in the work on the turbine plant for the OL3 construction project shifted from construction to installation work, the work for the reactor is still focused on construction. There is more about the OL3 project on pages 22–24.

We are prepared for the costs of nuclear waste management

In accordance with the Nuclear Energy Act, we make payments to the Finnish State Nuclear Waste Management Fund to cover the cost of nuclear waste

management. The Ministry of Employment and the Economy confirmed the amount of the company's liability for nuclear waste management at the end of 2008 at EUR 1,137.6 (1,079.8) million and the company's funding target for the Finnish State Nuclear Waste Management Fund in 2009 at EUR 1,001.2 (927.7) million. The difference is covered by guarantees.

Our research and development operations cost were EUR 20.6 (17.3) million of which we used most on nuclear waste management.

We explain more about nuclear waste management on pages 26–27.

Nuclear fuel is stored for several years

We spent EUR 48.5 (57.6) million on procurement of nuclear fuel. We used nuclear fuel to the value of EUR 38.2 (38.3) million. The balance sheet value of nuclear fuel and uranium stocks at

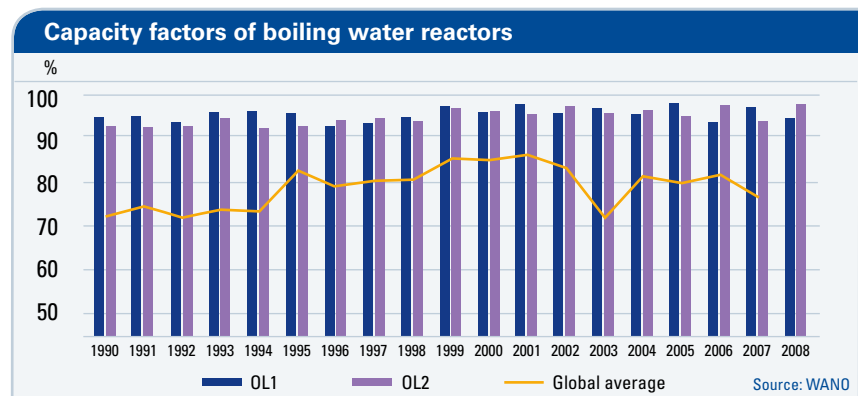
year end was EUR 157.0 (146.6) million of which the value of the fuel in the reactor was EUR 60.8 (61.3) million.

286,800 (458,400) tonnes of coal were used by the Meri-Pori coal-fired power plant to generate our share of its electrical output.

Emission rights

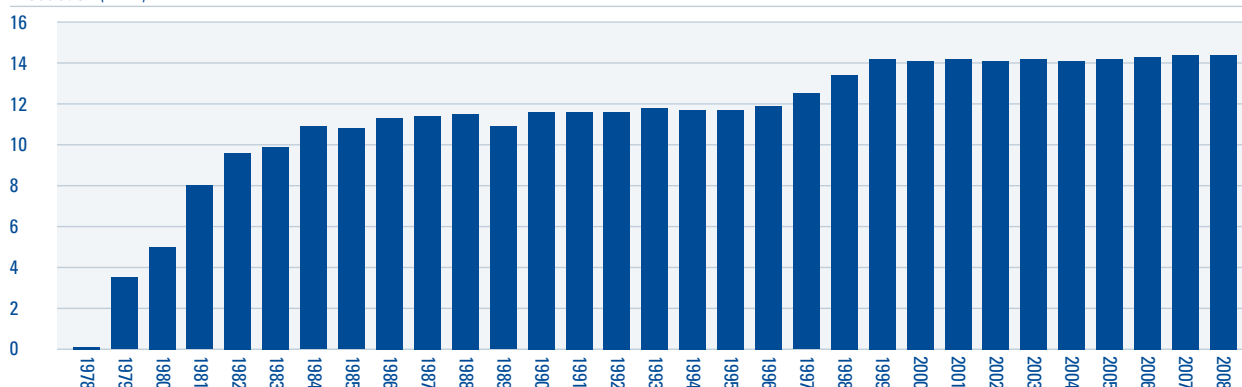
We received 1,700 tonnes of carbon dioxide emissions rights for the reserve boilers and reserve power diesel engines at the Olkiluoto nuclear power plant for the period 2008–2012. We used 0.4 (0.5) tonnes of this.

We received 1,479,700 tonnes of carbon dioxide emissions rights for our share of the output at the Meri-Pori coal-fired power plant for the period 2008–2012. Of this, 295,900 (904,700) tonnes were allocated for 2008. We used a total of 661,000 (1,129,500) tonnes in emissions rights at Meri-Pori.

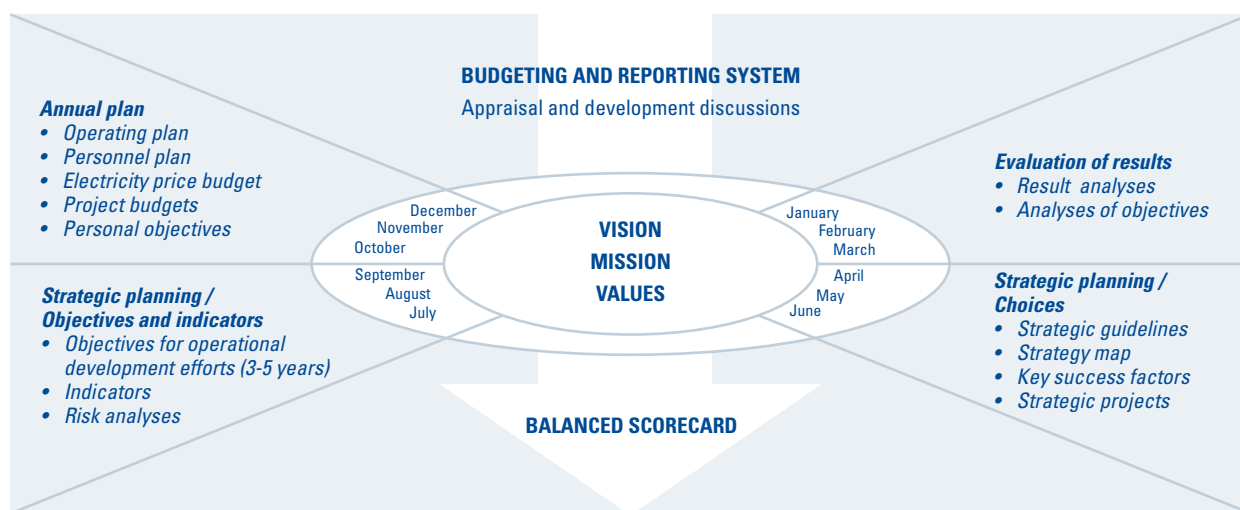


OL1 and OL2 production 1978–2008

Production (TWh)



TVO's management model



Cash flows 2008 (EUR million)

SOURCES OF FUNDS		APPLICATION OF FUNDS	
		Personnel	44 Salaries
		State, municipal, tax authorities	34 Nuclear waste management fee
			2 Social security contributions
			5 Property tax
		Owners	10 Interest
Supply of electricity	245	Financiers	81 Interest
Equity	96		
Loans and receivables	645	Suppliers (sub-contractors)	41 Nuclear waste management services
Interest and dividends	29		90 Raw material suppliers
Other income from operations	28		77 Service providers
			529 Investments
			9 Other personnel ancillary costs
		Company	121 Cash/working capital
	1 043	Total EUR million	1 043

Annual outages ensure production capability

The Olkiluoto units undergo a maintenance outage and a refuelling outage in alternate years. Our objective is to ensure that the overall useful lifespan of the units is at least 60 years. The planning for annual outages starts years before they are carried out as they require co-operation between experts from different fields. We also often order equipment that will be renewed during annual outages years in advance to ensure delivery.

The annual outages on the OL1 and OL2 power plant units were carried out according to plan. The maintenance outage for OL1 was from 13 May to 3 June 2008 and the refuelling outage for OL2 was from 4 to 12 May 2008. During the annual outages we carried out refuelling, scheduled maintenance, annual testing and inspections as well as alterations.

The most extensive tasks during the OL1 maintenance outage was the replacement of the shutdown reactor's cooling system valve, changing the unit circuit breaker for the 400 kV circuit, inspection of the rotor blade stages in the MP1 and MP2 low pressure turbines and maintenance on the main circulation pumps.

The work during the annual outages at the Olkiluoto nuclear power plant in 2008 lasted a total of a good 28 (25) days. In addition to our own personnel, there were about 800 (900) external people from about 90 different companies working on the nuclear power plant units' annual outages. The annual outages required a total of

about 75 (90) person-work years. The total cost of the annual outages was EUR 12.9 (12.0) million.

The theme for the 2008 annual maintenance was "Identify the risks – spot the nonconformities". According to the theme everyone participating in the annual maintenance work is responsible for the quality of their work. Supervisors are responsible for the smooth running of work involving monitoring and management responsibility in accordance with the requirements of the authorities and the nuclear power plant's own instructions.

In the 2008 annual outages we focused particularly on the reporting of risks and nonconformities.

We emphasized the theme of the annual outages in training for our own personnel and for subcontractors. In line with the principles of continuous improvement we will continue to implement the theme in future annual outages as well.

Further information about the annual outages can be found in the Annual Outages 2008 publication on our web pages.

At the OL1 unit we put 110 fresh fuel assemblies in the reactor, inspected the control rods, did a containment tightness test, modernized the exciter and carried out a lot of other maintenance. 775 people were employed in this work.



Annual outage 2008 basic data		
	OL1	OL2
Timing of annual outage	13 May 2008, 18.04 – 3 June 2008, 3.36	4 May 2008, 18.03 – 12 May 2008, 12.23
Duration of annual outage	20 days 9 hrs 32 min (planned 15 days 8 hrs)	7 days 18 hrs 20 min (planned 7 days 13 hrs)
Maximum workforce	775 people	427 people
Man work hours	102,185	23,400
Number of work tasks	1,464	692
Number of operations	3,596	1,284

OL1's annual outage
<i>The length of OL1's maintenance outage was 20 days 9 hours. 110 new fuel assemblies were changed in the reactor core. At its highest, 775 people were involved in the work.</i>
<i>Significant operations at the OL1 unit were:</i>
• <i>Transfer of control rods and inspection of them, total 47</i>
• <i>Basic maintenance on one internal main steam valve</i>
• <i>Change of one isolating valve in the shutdown reactor's cooling system</i>
• <i>Pressure test of the containment</i>
• <i>Inspection of the rotor blades of the low pressure turbines (MP1 and MP2)</i>
• <i>Modernisation of the generator exciter</i>
• <i>Replacement of the generator's automatic voltage regulator</i>
• <i>Replacement of lines for low pressure turbines.</i>
OL2's annual outage
<i>The length of OL2's fuel change outage was 7 days 18 hours. 124 new fuel assemblies were changed in the reactor core. At its highest, 427 people were involved in the work.</i>
<i>Significant operations at the OL2 unit were:</i>
• <i>Transfer of control rods and inspection of them, total 16</i>
• <i>Maintenance of the main circulation pump</i>
• <i>Replacement of valves in the emergency shutdown system</i>
• <i>Repair of a high pressure preheater</i>
• <i>Washing of the turbine plant.</i>

The Olkiluoto 3 project moved on to installation work at the turbine plant

The construction of the new OL3 unit is to the overall advantage of Finnish society as it will increase self-sufficiency in electricity production as well as increase electricity production capacity and thus in part will cover growing electricity consumption. This was stated by the government and parliament in their decision on TVO's application for a decision in principle in 2002.

We started the preparatory work for Finland's fifth nuclear power plant, OL3 at the end of the 1990s. After numerous stages, wide ranging investigations and permit processes, the government gave a positive decision in principle on TVO's application in January 2002 which was confirmed by the parliament four months later.

The OL3 unit now under construction will be a European Pressurized water Reactor (EPR). The unit's electrical output is about 1,600 MW, OL3 will be one of the most powerful in the world when it is built. OL3 is supplied by a consortium AREVA NP and Siemens on a turn-key basis.

The selection of the OL3 generator type was influenced by its safety properties, advanced technology and the overall economy of its electricity

production. By preparing in advance for renewal of the construction and equipment, the unit will be able to achieve at least 60 years of economically useful life.

Construction work still ongoing at the reactor plant

The work progressed in 2008 at Olkiluoto. The emphasis was still on construction work at the reactor plant: concrete casting and iron mounting at the reactor containment building, fuel and safeguard building as well as the nuclear waste and auxiliary buildings continued. The last of the rings for the steel liner of the inner wall of the containment building were lifted into place except for the topmost one, and the steel liner cupola section was completed in Poland. The straight section

of the outer wall of the containment building reached the ridge height.

The manufacture of the main components of the reactor plant progressed in different parts of the world. Manufacture of the steam generators and pressuriser in France continued as did the manufacture and testing of the recast forgings of the main coolant lines of the primary circuits. The main component of the reactor plant i.e. the reactor pressure vessel was completed at the beginning of the autumn and it arrived at Olkiluoto at the beginning of 2009.

Size of the workforce has doubled

The main emphasis on work at the turbine plant switched to installation. All of the main components for the

The OL3 site is one of the biggest in Europe. According to the Supplier the plant unit will be ready in 2012.





The turbines, the generator and the exciter have been installed at the OL3 turbine plant.



Work ongoing at the reactor containment; emergency cooling basin being constructed.



Accurate measurement of installation work.

Internal parts of the secondary side of the steam generator being installed at the factor in France.



Lifting a Finnish-made pressure accumulator at the reactor plant. There are a total of four accumulators.

turbine generator combination were brought into the building for installation. The main buildings that are part of the turbine plant such as the turbine building, the switchgear building and the seawater pumping station progressed throughout the year. For commissioning of the turbine plant and the future electricity feeds we started to construct the cable routes on our responsibility for example from the Olkiluoto gas turbine plant and the 110kV sub-station.

Design of the unit and processing of the documentation by the authorities progressed in 2008. However, because of the delay in the design, there are still a lot of documents which the

plant supplier has not yet delivered to TVO.

The arbitration process regarding the delays to Olkiluoto 3 and its costs began at the end of the year.

During 2008, the total amount of concrete cast was the same as in the earlier years put together. The number of workers on site also doubled during the year and was over 4,000 at its height. The five largest national groups at the end of the year were Poles (c. 33 per cent), Finns (c. 25 per cent), Germans (c. 15 per cent), Slovaks (c. 7 per cent) and French (c. 5 per cent). The highest level of manpower for the construction work was achieved.

The emphasis on maintaining a good level of occupational safety was continued. The frequency of accidents, about 13.8 accidents per million working hours, is significantly lower than usual on Finnish construction sites, where the corresponding figure is, on average, over 80. We continued with measures to achieve our zero accident target.

Training of the Olkiluoto 3 shift supervisors and operators continued.

Plant supplier: completion moves to summer 2012

The plant supplier has overall responsibility for the delivery. TVO is responsible for the licence holder's obligations and certain other owner's obligations such as the provision of water and electricity as well as receiving sewage waste, the simulator and office building as well as preparation of the worksite and excavations.

After a competitive tender, we began work on preparing the site in 2004, and we handed the site over to the plant supplier a year later. According to the original timetable, the construction and installation of the unit was to be complete in 2008 for testing of the unit's systems. However, the plant supplier has not been able to keep construction of the reactor plant to the planned timetable. At the beginning of 2009, the plant supplier confirmed the estimate we had previously presented concerning further delays to the project and informed that the completion of Olkiluoto 3 would now be at the end of June 2012.

At the OL3 site work at the turbine plant was focused on installation and at the reactor plant on construction. As to construction, the workforce peak was in 2008, says Mr. Jouni Silvennoinen, Senior Vice President, OL3 Project.



Key economic figures

Me	2008	2007	2006	2005	2004
Teollisuuden Voima Oyj's financial statement has been made in accordance with the Finnish Accounting Standards (FAS).					
Turnover	245	225	227	199	217
Fuel costs	56	66	65	44	69
Nuclear waste management costs	56	49	29	27	23
Personnel expenses	55	51	47	44	41
Other income and expenses related to electricity production	54	50	59	50	49
Capital expenditure (depreciation and financial income and expenses)	61	57	56	59	58
Profit/loss before appropriations	-37	-48	-29	-24	-23
Investments (net, excluding CO ₂ emission rights)	589	227	272	647	382
Equity	613	604	408	408	229
Appropriations	175	221	269	298	322
Long-term and short-term interest-bearing liabilities (excluding loan from VYR)	1,960	1,362	1,242	1,146	554
Shareholders' loans (included in the former)	179	179	179	179	179
Loan from VYR	696	648	620	595	573
Balance sheet total	3,617	2,951	2,639	2,519	1,745
Equity ratio % ¹⁾	33.1	43.6	42.5	46.0	62.3
Average number of personnel	806	780	748	693	641
¹⁾ Equity ratio % = 100 x	$\frac{\text{equity} + \text{appropriations} + \text{shareholders' loans}}{\text{balance sheet total} - \text{loan from VYR}}$				
Assets in the Finnish State Nuclear Waste Management Fund (VYR) (EUR million)	1,001.2	927.7	864.1	826.6	792.7
Electricity delivered to shareholders (GWh)					
Olkiluoto 1	7,039	7,317	6,956	7,208	7,001
Olkiluoto 2	7,288	7,032	7,278	6,984	7,072
Total Olkiluoto ¹⁾	14,327	14,349	14,234	14,192	14,073
Meri-Pori	817	1,374	1,509	250	1,797
Total	15,144	15,723	15,743	14,442	15,870
¹⁾ Includes wind power 1.6 GWh (1.8) and gas turbine power 0.5 GWh (0.2).					
TVO's delivery share of the electricity used in Finland (%)	17.4	17.4	17.5	17.0	18.3
Capacity factors (%)					
Olkiluoto 1	93.7	97.5	93.8	98.3	95.1
Olkiluoto 2	96.9	93.7	96.9	94.0	96.1
Total production units	95.3	95.6	95.4	96.1	95.6

Responsibility throughout the lifecycle of uranium

We procure uranium fuel for the Olkiluoto power plant through long-term contracts mainly from Australia and Canada. We buy uranium as raw uranium and select partners for different stages of the uranium treatment process. Through long-term contract and uranium stores we reduce the dependence on producers and reduce the risk of uranium price increases. At the same time we gain flexibility for procurement in changing market conditions. We have sufficient uranium in storage at different stages of the treatment process throughout the world for the next few years.

The table of key figures on page 37 gives information about the nuclear fuel removed from the reactors and placed in the reactors in 2008 as well as the amounts of spent and fresh nuclear fuel in the units' storage basins.

The companies that work with uranium are certified in accordance with the environmental management system standard ISO 14001. We assess issues related to the technical and financial capabilities of our uranium suppliers as well as factors related to the environment and corporate social responsibility.

Posiva manages the final disposal of its shareholder's spent nuclear fuel

About 120 fuel assemblies are changed in each reactor at Olkiluoto every year. Over the space of 40 years, about 11,000 spent fuel assemblies are accumulated containing 2,000 tonnes of uranium.

We transfer the spent fuel taken from the reactor to fuel basins in the reactor hall to cool for a few years. At the same time the radioactivity of the spent fuel reduces to below a hundredth. After a few years of cooling we pack the fuel assemblies in a strongly constructed, water-filled transfer tank. The tank is transported to our spent fuel intermediate storage facility within the plant area. Before final disposal, we store the spent fuel in intermediate storage in water-filled storage basins for about forty years. We have been using the intermediate storage for spent fuel since 1987.

The nuclear power companies TVO and Fortum Heat and Power Oy are each responsible for the final disposal of their share of the spent fuel in Finland. On behalf of its owners, the planning of final disposal and construction of the final repository as well as the practical implementation of final disposal is carried out by Posiva Oy, owned by TVO and Fortum Heat and Power Oy. We own 60 per cent of Posiva.

We began investigations into the final disposal of highly radioactive spent fuel as early as the end of the 1970s.

Nuclear power companies established a fund to pay for final disposal

In accordance with the principles of the Nuclear Energy Act, we include the costs forecast for implementing nuclear waste management in the price of nuclear power and we place the money in the Finnish State Nu-

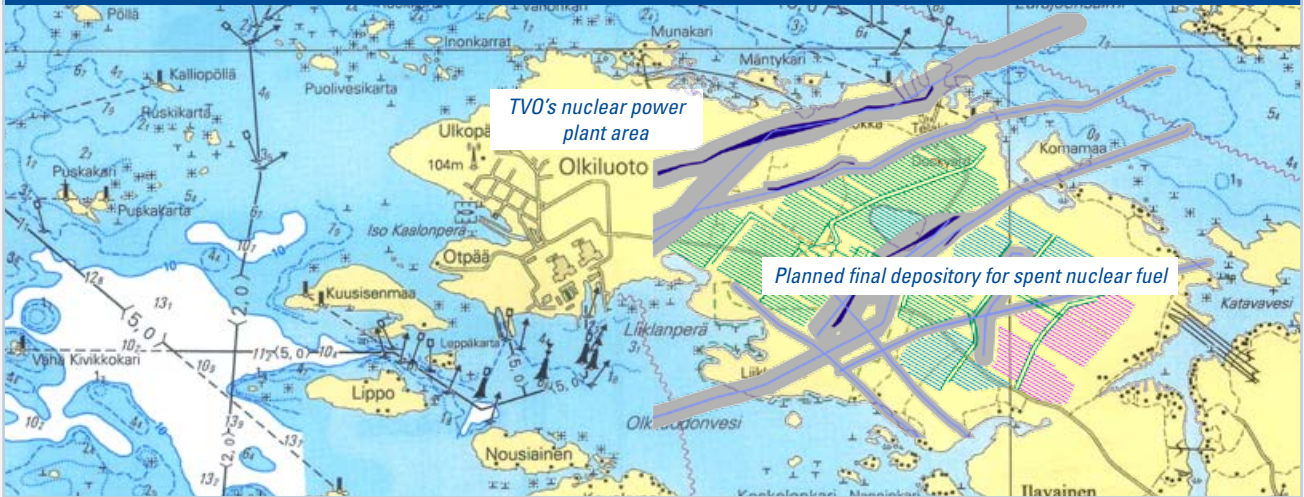
clear Waste Management Fund. At the end of March 2009, the value of the fund was about EUR 1,774.0 (1,631.3) million which will also cover the decommissioning costs of the units. Our share of the Nuclear Waste Management Fund was EUR 1,001.2 (927.7) million.

Posiva has progressed in its planning of the final disposal of spent fuel to the construction of the final disposal characterisation facility at Olkiluoto. The research and construction of the final disposal repository has progressed so that final disposal at Olkiluoto is scheduled to begin in 2020. The nuclear waste final repository will be implemented so that the long term safety of the repository will not require continual monitoring. The final repository will be able to contain 6,500 tonnes of spent fuel.

The spent fuel from OL1, OL2, Loviisa 1 and Loviisa 2 as well as OL3 will be placed in the Olkiluoto final repository. Posiva has carried out an environmental impact assessment to expand the final repository for spent nuclear fuel up to a maximum of 12,000 tonnes of spent nuclear fuel. After the expansion, the final repository will be able to contain the spent nuclear fuel from the nuclear power plants currently operated by TVO and Fortum as well as the one now under construction and the ones they now plan.

Posiva publishes reports and web pages on its operations which give more information on the environmental impacts of the final depository and other issues.

TVO's nuclear power plant area situated on the island of Olkiluoto and the planned final repository for spent nuclear fuel



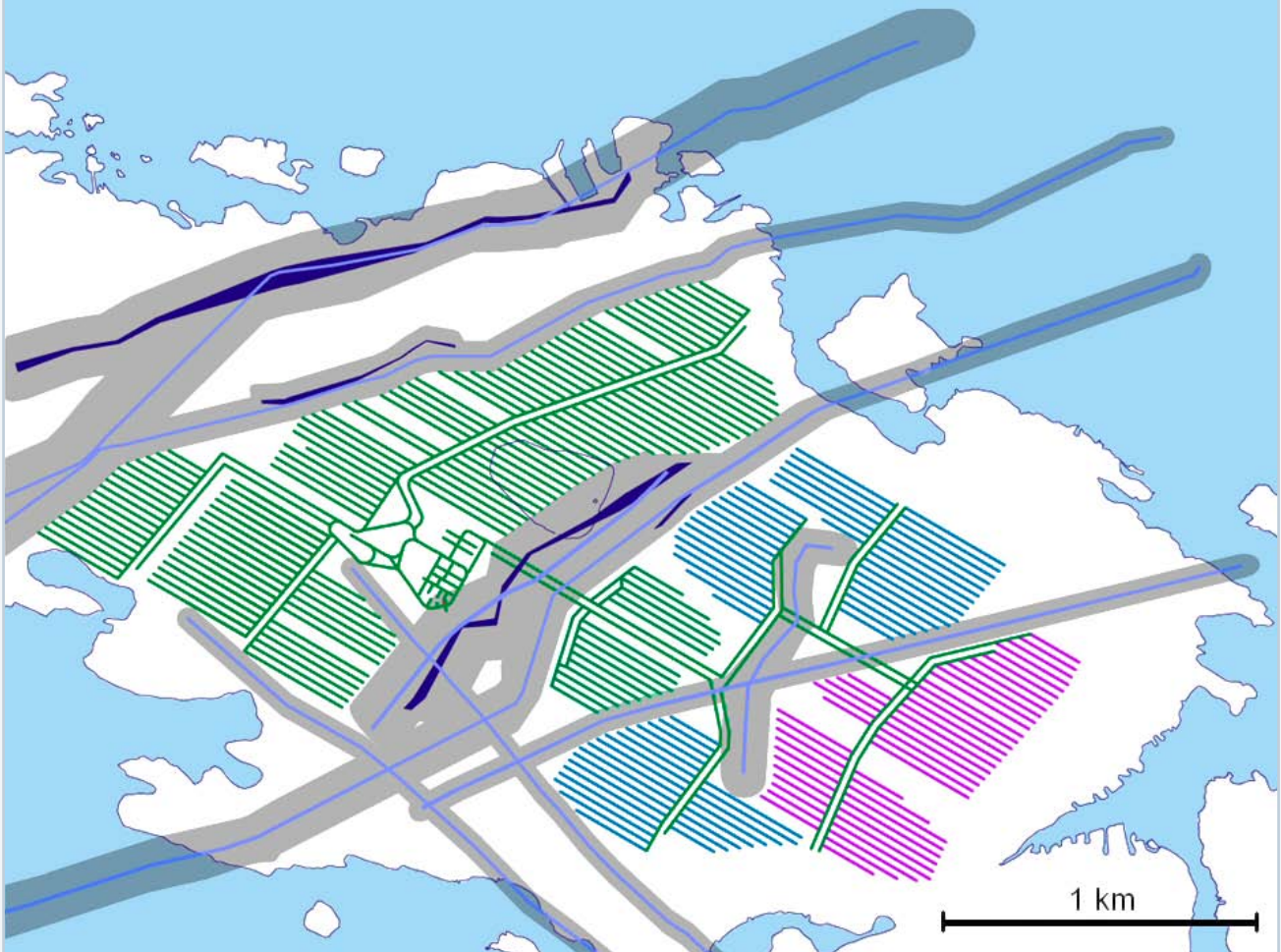
Principle of location of the final repository is in the bedrock of the island of Olkiluoto

Posiva Oy will design and construct the final repository for spent nuclear fuel on Olkiluoto.

In the illustration, the final repository areas for the current units and the OL3 unit are shown in green (6,500 tonnes of uranium). The blue area will expand the final repository to 9,000 tonnes of uranium and the violet to 12,000 tonnes, which would cover storage of all the spent nuclear fuel for the units planned by Posiva Oy's owners. At the same time the final repository area would be expanded from 150 hectares to a total of 390 hectares.

The picture presents the current state of knowledge regarding bedrock fracture structures and their protective zones that will determine the location.

- Olkiluoto 1, 2 and 3
Loviisa 1 and 2
- Olkiluoto 4
- Loviisa 3
- Protective zones



CONTINUALLY WORKING FOR THE GOOD OF THE ENVIRONMENT



Detailed figures on environmental responsibility can be found on pages 36-37.

The corporate social responsibility policy approved by TVO requires our operations to consider and promote sustainable development. We support environmental responsibility by minimising the detrimental effect of our activities and taking care of the waste we generate. We want to be a pathfinder in the management of environmental matters.

We consider the management of environmental issues and the environmental impact of our power plants and the infrastructure that supports our operations. We require companies and partners operating in the area of the power plant to take a responsible attitude to environmental issues as well as to operate in accordance with the policies and operating principles confirmed by the company.

The operation at the Olkiluoto nuclear power plant in 2008 complied with our environmental policies, our environmental licences and our environmental management system. The objective of our environmental management system is to achieve continuous improvement in operations and to raise the standard in environmental protection. We have defined 16 significant environmental aspects (see page 30), for which the Management Group Review sets annual improvement and maintenance targets and monitors their implementation.

We have carried out environmental surveys on the island of Olkiluoto throughout the company's operation since the 1970s which was years before electricity generation began in 1978. In the early years we focused mainly on surveys of the surrounding waters. In 1972 we started radiation monitoring in the area and also taking ground state samples from the soil. In the 1990s we drew up wide ranging environmental impact assessment programmes for the OL3 power plant unit and for the final disposal of spent fuel. The wide ranging environmental impact assessment we drew up for the

OL4 power plant unit was completed in 2008. Over the decades the island of Olkiluoto and its nature have become well known to us.

Complaints from stakeholder groups included in environmental considerations

We evaluate the significance of environmental issues with regard to the quality, frequency and probability of occurrence, seriousness and duration, the breadth of the effect (local, regional, global) as well as with regard to the number of people it will affect. Our evaluations are also influenced by complaints from stakeholder groups, the possibility and costs of taking action as well as statutory and other requirements.

TVO received three (eight) external enquiries and complaints. They concerned the unauthorised use of Olkiluoto's private areas, the reduction in fish stocks in the waters around Olkiluoto and littering the environment next to the Olkiluoto road. We dealt with the enquiries and they did not result in the adoption of measures over and above those already in place.

No significant environmental deviations were observed at TVO in 2008. Two (two) minor environmental deviations were observed. They were locating waste oil in the wrong container and the location of operating waste contrary to the filling plan for land fill. The deviations had no detrimental environmental effects.

Environmental work is target-based

Nine improvement targets were set for 2008, of which seven were achieved. The implementation of five is continuing and two were updated in 2009. The improvement targets and the results are shown on page 31.

There were eight maintenance targets and seven were achieved. The target for the reduction of the use of demineralised water was not achieved because not all of the measures required to reduce the consumption of demineralised water were carried out in accordance with the original plan. Our targets and their implementation are shown in the adjacent table.

Maintenance targets for 2008	
1.	Sanitation waste water treatment plant to operate at ≥ 90 % efficiency (for total phosphorus and BOD_{7ATU})
2.	Reducing the amount of filtering mass used
3.	Reducing the consumption of demineralised water
4.	Selection of coal suppliers
5.	Remaining within the limits set by the water permit regarding the temperature of cooling water
6.	Keeping radioactive emissions into the air at a level significantly lower than the maximum permitted by the authorities
7.	Keeping radioactive discharges into the sea at a level significantly lower than the maximum permitted by the authorities
8.	Managing radioactivity risks

TVO's significant environmental issues in 2008 were:

- Cooling water thermal load into the sea (maintenance target)
- Radioactive emissions into the air in normal operations (maintenance target)
- Radioactive discharges into water in normal operations (maintenance target)
- Significant radioactive emission from the reactor in an accident (maintenance target)
- Environmental responsibility of coal suppliers selected (maintenance target)
- Sanitation wastewater load (maintenance target)
- Waste generated in operations (improvement target)
- Landfill load (improvement target)
- Environmental responsibility of the service, materials and equipment suppliers selected (operating instruction)
- Operation of service suppliers (operating instruction)
- Environmental responsibility of uranium fuel suppliers selected (operating instruction)
- Impact of the quality of the coal purchased on the burning process (operating procedure)
- Chemical, fuel, and oil tank leaks (operating instruction)
- Condition monitoring of measuring-instruments (operating instruction)
- Amount of scrap cleared after monitoring (operating instruction)
- Spent nuclear fuel generated in operation (operating instruction)



Thermal load of cooling water is the most significant environmental issue

The most significant environmental issues relating to our operation are the environmental effects caused by the thermal load of cooling water. The effect of cooling water is evaluated as the total effect of all the operational power plant units.

The Olkiluoto power plant uses about 30 m³/s of sea water for cooling per unit. In 2008, 1,822 (1,816) million m³ of sea water were used for cooling and the resulting thermal load on the sea was 27.5 (27.5) TWh.

Cooling water does not come into direct contact with the power plant's process water. The cooling water heats up by about 13°C as it passes through a unit, after which it mixes with sea water. The cooling water forms a layer on the surface of the sea over a wide area from which some of the heat is transferred to the atmosphere. The temperature of the surface layer in the cooling water discharge area rises to 5–7°C and further out the sea temperature is 0.5–2°C. The rise in temperature can be observed at a distance of 3–5 kilometres from the shore.

Our existing water permit does not allow the sea water temperature to exceed 30°C on a weekly average basis measured 500 metres from the mouth of the cooling water discharge channel.

The cooling water causes changes to the ice situation in the winter months as the cooling water discharge area does not freeze throughout the winter. The size of the ice-free area varies from 3–20 km² depending on the win-

ter. We use newspaper advertisements among other methods to warn people.

In 2008, we launched the Natura evaluation in the Rauma archipelago Natura area. This will enable us to find out whether the cooling water load from the OL4 nuclear power plant, together with the cooling waters from the other units, cause detrimental effects to the Rauma archipelago Natura 2000 area and the areas within its scope. In the event that effects are identified, their scope and significance will be clarified.

Attention to energy efficiency

On 29th February, 2008 TVO joined the business sector's energy efficiency contract system. The energy efficiency system was integrated as part of our environmental system in compliance with the ISO 14001 standard and we have launched some activities related to energy efficiency.

We renewed and expanded the Olkiluoto district heating network into the extension to the storage facilities we are building as well as to the annual outage building. These measures avoid the need for electrical heating in these places. Further investigations into the expansion of the district heating network in Olkiluoto are underway.

During the 2010 and 2011 annual outages we will renew the OL1 and OL2 units' low pressure turbines as part of the continuing long term development of the units in the plant. The renewal will improve the units' utilisation ratio by about one percentage point as the electrical output of both units will increase by about 25 MW

using the same amount of fuel as now. The measure will improve the energy efficiency of the plant and reduce the amount of heat fed into the sea area.

We will also renew the seawater pumps for the units' condensers, which will increase their capacity. This will improve the units' utilisation ratio and will be equivalent to an increase of about 2 MW in electrical efficiency per unit.

Carbon dioxide capture planned for Meri-Pori

We participated in Fortum Power and Heat Oy's Meri-Pori coal-fired power station investment and used 45 per cent of our share of the coal condensing electricity production. During the year under review a feasibility study was commissioned for the Meri-Pori coal-fired power plant into equipping the plant with a carbon dioxide recovery plant.

The feasibility study showed no technical barriers to constructing a recovery plant. Together with Fortum Power and Heat Oy, we have decided to continue the design of the project and commission a preliminary study by the end of 2010. The preliminary study will include detailed measurement calculations and process design for the recovery plant.

Improvement targets for 2008	Results
1. Use surplus concrete generated at the OL3 site or at the concrete batching plants for the excavation work carried out at Olkiluoto.	We used all the surplus concrete produced throughout 2008 (15,000 m ³) for such things as closing the decommissioned landfill and foundations for storage areas. We reached the target.
2. To implement conventional waste sorting at the accommodation village, the contractor area and the ONKALO site according to TVO's regulations and to improve the level of waste sorting.	We assessed the success of waste sorting as part of an inspection round on a scale of 1-4. The average grade was 2.9 so we did not quite reach the target set which was a grade of 3.0.
3. To decrease the number of loose parts ending up in the process and thus avoid any possible fuel failures by 2010 according to the measures accepted in the plant meeting.	There were no loose parts found in the process during 2008 and no fuel failures were caused so the target was reached.
4. To integrate energy issues into the environmental management system in accordance with the energy efficiency system, and to include an energy efficiency review as part of the change routine by 28th February, 2009.	We implemented the planned measures for 2008 and reached the target.
5. To minimise the environmental impact caused by office work, for example, by reducing the use of materials and energy and by increasing the environmental consciousness of the personnel.	We organised various events during energy saving week. The target will continue until the end of 2009.
6. To develop the source separation of waste so that the amount of waste finally going to landfill would be a maximum of 15% of generated waste calculated as a three year moving average, including the waste generated at the OL3 construction site.	The amount of waste going to landfill in 2008 was 8% of total waste, which was the same as the three year moving average. The proportion of waste generated at the OL3 construction site going to landfill in 2008 and the three year moving average was 5% of generated waste, so that we achieved the target well.
7. To create a practical method of destroying all unnecessary data including procuring a new paper shredder for TVO which would shred all the office paper waste produced at Olkiluoto. The target was also to crush all the stored, obsolete IT equipment by the end of 2008.	The delivery of the new paper shredder was delayed by about six months which is why the adoption of the new collection system was also delayed. We crushed all the stored, obsolete IT equipment during 2008 so we still managed to achieve the target in part.
8. To decrease the environmental load caused by the transport of wood waste, by crushing wood waste generated on Olkiluoto.	We began crushing wood at the beginning of February and continued it throughout the year. 99% of wood waste generated was crushed before transport so we achieved the target.
9. To close down TVO's old landfill in accordance with the environmental permit decision by the end of 2009.	The decommissioning proceeded according to plan during 2008 and we have monitored the decommissioning regularly in monthly site meetings so the target for 2008 was achieved. The final work will be done during 2009.
In the improvement targets 1, 2, 6 and 8 set for 2008, we took account of the construction stage of the OL3 unit.	

Improvement targets for 2009	Results
In order to attain the targets, annual improvement targets that will be in force until the end of 2009 have been set. The Management Review evaluates the attainment of targets and sets new targets annually. The improvement targets set for 2009 are:	
Use of surplus concrete	Continue to use the surplus concrete generated at the OL3 site or at the concrete batching plants in the excavation work at Olkiluoto during 2009.
Implementation of the actions required to ensure the purification of the process in the controlled area	To decrease the number of loose parts ending up in the process and thus avoid any possible fuel failures by 2010 in accordance with the measures accepted in the plant meeting.
Reducing the environmental impact of office work	To minimise the environmental impact caused by office work, for example, by reducing the use of materials and energy and by increasing the environmental consciousness of the personnel. The improvement target will be in force until the end of 2009.
Waste sorting	To develop the separation of waste at source so that the amount of waste to be recycled will be more than 85% of total waste, calculated as a three year moving average. The target will be in place until the end of 2011 and also covers the OL3 construction site.
Closing down the decommissioned landfill	To close down the decommissioned landfill in accordance with the environmental permit decision by the end of 2009.
Improving waste sorting at the accommodation villages, the contractor area and the ONKALO site	To implement conventional waste sorting at the accommodation village, the contractor area and the ONKALO site according to TVO's regulations and to improve the level of waste sorting between 2009 - 2011.
Integration of an energy efficiency system into the environmental management system	To increase knowledge of energy issues among the personnel by holding information sessions during office and departmental meetings. The target is also to organise an energy review during 2009.

Negligible emissions and responsible waste management

Emissions from our operations are below the strict limits set by the authorities and by ourselves. Our operations generate ordinary municipal waste, hazardous waste and radioactive waste. The principle of waste management is to isolate radioactive waste from the living environment until its radioactivity has decayed to harmless levels.

Nuclear power plant operations also result in radioactive emissions to the air and discharges into water. Our objective with regard to the emissions of radioactive substances is always to keep emissions clearly below the level set by the authorities and below the levels we set ourselves, which are stricter than the official levels.

As in previous years, the radioactive emissions into the air and discharges into water from the Olkiluoto nuclear power plant were extremely low. There were no emissions of noble gases to the air at all and emissions of iodine were 0.001 (0.013) per cent of the permitted official limits. Radioactive fission and activation product

We measure all the material at the plant when it is taken away.



discharges into the water were 0.12 (0.19) per cent and tritium discharges were 13.1 (13.2) per cent of the official maximum permissible limits.

The key figures on environmental responsibility on pages 36–37 provide more detailed information on radioactive emissions and discharges.

Correct waste sorting is the basis of waste management

We are committed to minimising the amount of waste and we require the same commitment from our partners. We want to make waste sorting and handling efficient as well as to recycle sorted waste. We sort ordinary waste into nine different categories. As little as possible of the waste produced is taken to landfill. We collect hazardous waste in locked storage from where it is taken for processing to the appropriate processing plant.

The increased amount of packaging material from the components sent to the OL3 construction site as well as the construction of premises to support the operation of the power plant increased the total amount of waste by 2.5 times compared to the previous year. The total amount of waste was 9,777 (3,945) tonnes. The proportion of total waste recycled or used for energy generation was 91 (91) per cent, the proportion that went to landfill was 8 (6) per cent and the amount of hazardous waste was 1 (2) per cent. The amounts of waste are given in more detail in the key figures on environmental responsibility on pages 36–37.

The amount of surplus concrete

produced at Olkiluoto was 31,800 (24,800) tonnes during 2008. We used all of it in construction projects in the Olkiluoto area such as decommissioning the old landfill site and as foundations for roads.

Radioactivity of power plant waste dictates handling

We classify waste by radioactivity as clean, low-level and intermediate-level radioactive waste, highly radioactive spent fuel and decommissioning waste.

The procurement and storage of uranium as a raw material, the intermediate storage of spent fuel and final disposal of highly radioactive fuel is explained on pages 26–27 of the report.

The measurements of waste cleared after monitoring show the amount of radioactive material to be so little that the waste can be recycled or finally disposed of in landfill. Waste is produced in the operation and maintenance of the power plant. Maintenance waste cleared after monitoring amounted to 16 (22) tonnes. In addition we cleared about 8.8 (43) tonnes of metal for recycling after monitoring and we sent 5.4 (7.6) tonnes of hazardous waste for treatment.

Protective equipment, pipes, pumps and insulation material used during the operation and maintenance of the plant are low-level waste. We pack them tightly into concrete containers that are taken into the final repository about 100 metres underground in the plant area. Low-level waste amounted to 113 (76) m³.

The ion-exchange resins used in cleaning process water are intermediate level waste. We mix them with bitumen and take them to the final repository. Intermediate-level waste amounted to 115 (36) m³.

Decommissioning waste is waste generated during dismantling of the power plant once its useful life is over.

Recycling reduced the need for process water

We use both seawater and fresh water at the Olkiluoto power plant. We use seawater as cooling water for the process water. We talk about cooling water and its environmental effect on page 30 of the report. We need fresh water for household water and process water. Process water boils in the reactor, and there cannot be any salt, impurities or particulates which could damage the internal parts of the reactor. TVO has all the water treatment plants needed

on Olkiluoto: water treatment plant, laboratory and waste water treatment plant.

We took 485,158 (344,509) m³ of fresh water from the Eura river for the power plant. The increase in the amount of water was the result of the increased water consumption at the OL3 site.

We treat household and process water in our own water treatment plant. We clean the water used in the power plant process using ion-exchange and reverse osmosis techniques. The circulating water in the power plant process is cleaned continuously using ion-exchange resin. Cleaning the process water used 6,080 (5,300) kg of powdered ion exchange resin and 13,455 (8,683) kg of granular ion exchange resin.

We collect the water discharged during the power plant process and recycle it through treatment back into the process. During annual outages

the fuel basin water is stored in storage basins from where it is taken to be re-used. These measures reduce the annual need for clean process water and the amount of waste process water discharged by about 30,000 m³.

We treat sanitation water in the Olkiluoto waste water treatment plant after which it is discharged into the sea. The amount of treated sanitation water in 2008 was 150,069 (101,104) m³. The phosphorus loading in seawater was 40 (15) kg, the nitrogen loading 6,222 (4,380) and the BOD_{7ATU} loading was 1,061 (1,204) kg.

The increase in the amounts of water used as the construction work for the OL3 unit progresses requires an increase in water treatment efficiency. In spite of the increasing amount of water, we treated sanitary water within the loadings set for the surrounding waters and with the treatment efficiency given in the permit conditions.



The phosphorus and nitrogen discharges into the sea from TVO's sanitary water treatment plant were a fraction of the load carried by the river in 2008.



Operation monitored by the authorities

The operation of the nuclear power plant is monitored continuously and reports on operations are made to the authorities. The Finnish Radiation and Nuclear Authority (STUK) is the monitoring authority for matters concerning nuclear and radiation safety.

TVO works with a number of official partners on environmental matters. Our environmental permit authority is the Western Finland Environmental Permit Authority which handles environment permit applications in respect of the Olkiluoto power plant. The Southwest Finland Regional Environment Centre (LOS) is the regulatory authority for the Olkiluoto power plant. The Ministry of Employment and the Economy is the point of contact for matters related to the environmental impact of the nuclear plant.

The radiation monitoring samples taken from the Olkiluoto surroundings are delivered to the Finnish Radiation and Nuclear Safety Authority (STUK) for analysis. We report the amount of wastes and emissions to LOS and the Eurajoki municipality annually. Environmental investments and environmental protection operating costs are reported annually to Statistics Finland. The annual carbon dioxide emissions of TVO's standby power diesel engines and standby boilers are reported to the Energy Market Authority after verification.

No environmental effects from special situations

We provide separate reports on each case for special situations and operational disturbances. In 2008 there was not a single case of a special situation or operational disturbance that had environmental effects at the Olkiluoto power plant.

We prepared eight special reports for STUK. Five of the incidents were classed at level 1 on the INES seven-

point scale of incidents that can weaken plant safety. The other incidents were classed at level 0 (no effect on nuclear or radiation safety).

Environmental permit matters in progress

TVO submitted environmental permit applications for the OL1 and OL2 units in operation and for the OL3 unit under construction to the Western Finland Environmental Permit Authority for processing in 2003. The Authority granted the environmental permit in June 2006. TVO applied for an amendment to the permit regulations concerning the power plant units. The regulations involve the time limit for recovering screens, the noise

from power plant operations, the annual fishery fee, and the one-off compensation to be paid for reduced fishing yields. The Vaasa Administrative Court gave its decision in August 2008 on the amendments proposed and the issue is still being considered in the Supreme Administrative Court.

The Western Finland Environmental Permit Authority granted the environmental permit for the closing of a landfill used by us and for the commissioning of a new one in December 2006. We will close the landfill that is no longer in use in 2008–2009 in accordance with the environmental permit regulations. We began the closure work during 2008 and will carry out the final work during 2009.

Environmental samples have been taken from Olkiluoto for over 30 years. We send water samples to STUK for analysis.



Olkiluoto nuclear power plant's environmental balance sheet 2008



The first certification by DNV Certification OY/ AB to TVO environmental management system accordant with the ISO 14001 standard, was in 1999. The present certification is valid until 31 May, 2011. The TVO environmental management system includes the OL1 and OL2 power plant units as well as the OL3 construction stage.



The Olkiluoto power plant is an EMAS-registered (Eco-management and Audit Scheme) energy producer in Finland. The registration number is FI-000039. The annually renewed registration is currently valid until 30 June 2009.

Olkiluoto nuclear power plant's environmental balance sheet 2008 (2007)

Emissions into air

Noble gases	0 TBq (Kr-87 equiv.)	(0.113)
Iodine	0.000002 TBq (I-131 equiv.)	(0.000015)
Aerosols	0.00002 TBq	(0.00003)
Carbon-14	0.88 TBq	(1.08)
Tritium	0.43 TBq	(0.38)

URANIUM FUEL 40.8 t (41.6)

Agents:

• bitumen	25 t	(18)
• solvents (consumed)	3 m ³	(5)
• nitrogen (reactor containment)	107 t	(109)
• fuel oil	167 m ³	(181)
• ion-exchange resins	21 t	(17)
• water-treatment chemicals		
– H ₂ SO ₄ (100 %)	14 t	(15)
– NaOH (100 %)	14 t	(21)
– NaClO (100 %)	6,370 t	(6,000)
– chemical reagents	77 t	(62)
Household and process water	485,158 m ³	(344,509)
Cooling water	1,822 million m ³	(1,816)



ELECTRICITY 14.4 TWh (14.4)

Municipal waste

	OL1 and 2	OL3*	Total
• for recycling	1,664 t	7,189 t	8,852 t
	(870)	(2,729)	(3,600)
• to the landfill	396 t	387 t	783 t
	(130)	(122)	(252)
• hazardous waste	102 t	39 t	141 t
	(89)	(4.6)	(93)

* construction stage

Radioactive waste

• low-level waste	113 m ³	(76)
• intermediate-level waste	115 m ³	(36)
• spent nuclear fuel	38.6 t	(39.9)

Discharges into water

Cooling water	1,822 million m ³	(1,816)
Thermal load into the sea	27.5 TWh	(27.5)
Fission and activation products		
	0.0003 TBq	(0.0006)
Tritium	2.39 TBq	(2.41)
Phosphorus	40 kg	(15)
Nitrogen	6,222 kg	(4,380)
BOD _{7ATU}	1,061 kg	(1,204)

Permitted annual maximum

(0.296 TBq)
(18.3 TBq)

Key environmental figures

	2008	2007	2006	2005	2004
Production process					
OL1					
Net output (GWh)	7,066	7,335	6,973	7,221	7,009
Electricity for own use (GWh)	258	268	256	268	262
Capacity factor (%)	93.7	97.5	93.8	98.3	95.1
Cooling water (million m ³)	895	924	886	927	902
Thermal load to sea (GWh)	13,516	13,985	13,453	14,184	13,812
Efficiency (net) (%)	34.3	34.4	34.1	33.7	33.7
OL2					
Net output (GWh)	7,314	7,051	7,294	6,997	7,081
Electricity for own use (GWh)	262	251	250	260	254
Capacity factor (%)	96.9	93.7	96.9	94.0	96.1
Cooling water (million m ³)	927	892	924	891	918
Thermal load to sea (GWh)	13,965	13,475	13,982	13,535	13,975
Efficiency (net) (%)	34.4	34.4	34.3	34.1	33.6
Wind power plant					
Net output (GWh)	1.6	1.8	1.7	2.0	0.2
Capacity factor (%)	18	20	20	23	2
Efficiency of electricity production (MW)	1	1	1	1	1
Raw water treatment					
Water (m ³) ¹⁾	485,158	344,509	280,798	223,373	226,475
Sludge (m ³) ²⁾	55,630	37,701	31,030	24,120	17,925
H ₂ SO ₄ (100 %) (kg) ³⁾	14,455	14,839	16,964	15,574	17,255
NaClO (10 %) (kg) ³⁾	3,108	2,220	1,332	1,368	1,356
NaOH (100 %) (kg) ³⁾	13,985	21,101	13,405	14,390	16,046
Chemical reagents (kg) ⁴⁾	34,584	25,813	22,888	17,719	19,719
¹⁾ Surface water pumped from River Eurajoki to the Korvensuo reservoir.					
²⁾ Sludge from the chemical water treatment plant at the Korvensuo reservoir.					
³⁾ Chemicals used in water treatment (Water treatment and demineralising plant and DynaSand).					
⁴⁾ Iron and aluminium salts.					
Sewage treatment					
Water (m ³)	150,069	101,104	70,795	58,415 ²⁾	52,540
Content (mg/l) ¹⁾					
BOD _{7ATU}	7.1	12.0	4.5	8.0 ²⁾	6.9
Phosphorus	0.27	0.15	0.41	0.24 ²⁾	0.20
Efficiency of treatment ¹⁾ average (%)					
BOD _{7ATU}	98	96	98	96 ²⁾	96
Phosphorus	97	99	97	97 ²⁾	97
Load on sea areas (kg)					
Phosphorus	40	15	29	14 ²⁾	11
Nitrogen	6,222	4,380	2,555	2,738 ²⁾	1,750
BOD _{7ATU}	1,061	1,204	318	475 ²⁾	365
Compost sludge (t)	1,532	1,117	349	828	586
Chemical reagents (kg) ³⁾	42,632	36,062	19,950	17,417	13,437
¹⁾ Permit conditions for sewage: BOD _{7ATU} level of sewage discharged into the sea must be no more than 20 mg O ₂ /l and the phosphorus level no more than 1 mg P/l. Efficiency of treatment must be at least 85% with regard to BOD _{7ATU} level and at least 85% with regard to the phosphorus level. All values are given as annual average.					
²⁾ In 2005, bypass flow totalled 419 m ³ . Table shows actual emissions, including bypass.					
³⁾ Kemwater PAX 18, FIN 12.					
Conventional and hazardous waste					
	2008	2007	2006	2005	2004
OL1 and OL2 (OL3)					
Landfill (t) ¹⁾	396 (387)	130 (122)	133 (57)	202 (53)	143
Crushed bricks and concrete (t)	519 (40)				
Paper and board (t)	70 (78)	60 (60)	54 (29)	36 (21)	53
Wood (t) ²⁾	399 (4,412)	368 (1,521)	272 (447)	180 (433)	438
Metal (t)	228 (2,046)	155 (819)	141 (108)	125 (134)	205
Cables (t)	29 (2.5)	26 (1.2)	26 (0.7)	26 (0.3)	28
RDF (t)	336 (567)	189 (291)	181 (117)	112 (64)	88
Bio (t)	69 (44)	62 (37)	58 (24)	59 (8)	42
Glass (t)	13 (0)	2 (1)	0.4 (0.1)	0.9 (0.1)	0.8
Hazardous waste (t)	102 (39)	89 (5)	78 (13)	56 (5)	32
¹⁾ Calculated in 1997–2004 using coefficient 0.7 (1 m ³ = 0.7 t). Weighing started in 2005.					
²⁾ Values estimated in 1997–2005. Weighing started in 2006.					
Agents					
Solvents (l) ¹⁾	3,171	4,963	4,795	4,781	4,387
Fuel oil (l) ²⁾	167,406	181,367	166,960	152,216	194,571
Bitumen (kg) ³⁾	24,630	18,030	8,620	28,620	16,300
Nitrogen (kg) ⁴⁾	107,380	108,688	108,464	89,000	129,000
Fuels (l) ⁵⁾	86,848	122,217	106,381	88,297	58,060
NaClO (15 %) (l) ⁶⁾	40,380	30,800			
Powdered ion-exchange resins (kg)	6,080	5,300	5,550	4,700	4,450
Granular ion-exchange resins (kg)	13,455	8,683	10,235	11,558	5,233
Inert masses (kg)	1,910	2,520	2,100	2,100	1,560
¹⁾ Tehopesu-Super, Alfa-C, Formula no. 80330, P3 Upon, Pinline, Asetoni, Industol PE 2, (amounts consumed). Attention: In years 2007 and 2008 no 80330 & P3 Upon.					
²⁾ Backup diesels and heating boilers (amounts consumed).					
³⁾ For solidifying ion-exchange resins (amounts purchased).					
⁴⁾ Liquid nitrogen used for the nitrification of the atmosphere of the reactor containment building (amounts purchased).					
⁵⁾ Consumption by TVO vehicles supplied by TVO's own tanks (petrol+diesel).					
⁶⁾ Used for prevention of <i>Cordylophora caspia</i> .					
Radioactive waste					
Low-level (m ³)	113	76	549	691	334
Intermediate-level (m ³)	115	36	37	74	29
Operating waste cleared after monitoring (t)	16	22	30	25	18

	2008	2007	2006	2005	2004
Nuclear fuel					
Amount of fuel removed from the reactor during the year (OL1 ja OL2) ¹⁾					
Assemblies	238	244	228	234	266
Tonnes	38.6	39.9	37.8	38.9	44.3
Amount of fuel transferred to the reactor (OL1 and OL2)					
Assemblies	234	240	226	234	262
Tonnes	40.8	41.6	39.1	40.2	44.9
OL1, OL2 and interim storage pools (KPA)					
Assemblies	6,982	6,748	6,508	6,282	6,048
Tonnes	1,179.8	1,141.9	1,102.6	1,065.2	1,026.2
Amount of fresh fuel in storage pools (OL1 and OL2)					
Assemblies	144	142	150	134	138
Tonnes	25.1	24.6	26.0	23.3	23.6
¹⁾ Computational amount.					
Coal					
Coal used for the TVO share of the Meri-Pori coal-fired power plant (t)	286,839	458,408	524,532	92,414	622,077
Noise					
Measurement date	1.–7.12.2008	7.–12.2.2007	11.1.2007 ²⁾	27.10.2005 ¹⁾	31.12.2004
Point 1 (dB)	49	53	55	35	42
Point 2 (dB)				37	
Point 3 (dB)	57	65	62	42	
Point 4 (dB)	47	47		50	52
Point 5 (dB)				44	49
Point 6 (dB)			56	48	
Point 7 (dB)	37 ³⁾	44	48	40	
Point 8 (dB)	38 ³⁾	47	48	42	
Point 9 (dB)					52
Point 10 (dB)	62	55	56		
Point 11 (dB)	53	45	41		
Point 12 (dB)	55	49	54		
Point 13 (dB)	50	54	49		
Point 14 (dB)	41	43	47		
Weather	+1 °C 2 m/s N	+2,5 °C 3 m/s	-0,9 °C 3 m/s N	-0,8 °C 2 m/s NW	+2,8 °C 11 m/s W
¹⁾ The results are weighted average results as estimated by the person measuring over a period of three minutes.					
²⁾ Measurement time 10 min, measurement interval 1s. Measurement points have been changed according to the Olkiluoto Noise Study 2006 so that they are comparative.					
³⁾ Measurements made on Sunday.					
Point 1: Luonto/Raunela intersection, nearest regular habitation.					
Point 2: Munakari.					
Point 3: Main gate, plant end.					
Point 4: OL1 water intake screen.					
Point 5: Between the training centre and the 110 kV switchgear installation.					
Point 6: Olkiluodonvesi, about 1 km away.					
Point 7: Nousiainen, villa.					
Point 8: Leppäkarta, villa.					
Point 9: At the waterworks between OL1 and OL2.					
Point 10: OL3 harbour.					
Point 11: OL3 parking place.					
Point 12: OL3 near truck gate.					
Point 13: Harbour road, opposite ONKALO.					
Point 14: Visitor centre, terrace.					
Radioactive emissions					
Emission into air					
Noble gases ¹⁾					
TBq (Kr-87 equiv.)	0	0.113	0.649	0.152	0
% of permissible	0	0.0006	0.0037	0.0009	0
Iodine ¹⁾					
TBq (I-131 equiv.)	0.000002	0.000015	0.00016	0.000069	0
% of permissible	0.001	0.013	0.14	0.06	0
Aerosols					
TBq	0.00002	0.00003	0.00004	0.00004	0.00002
Tritium					
TBq	0.43	0.38	0.30	0.32	0.32
Carbon 14					
TBq	0.88	1.08	0.77	0.66	0.84
¹⁾ Permit conditions for radioactive emissions into air: Noble gases 17,700TBq Kr-87 equiv., Iodine 0.114TBq I-131 equiv.					
Discharges into water					
Fission and activation products ¹⁾					
TBq	0.0003	0.0006	0.0006	0.0007	0.0005
% of permissible	0.12	0.19	0.21	0.23	0.17
Tritium ¹⁾					
TBq	2.39	2.41	2.46	1.95	1.52
% of permissible	13.1	13.2	13.5	10.7	8.3
¹⁾ Permit conditions for radioactive emissions into water: Tritium 18.3TBq. Other beta active nuclides 0.296TBq.					
Verified CO₂ emissions					
Backup heating boilers (8 MW + 12 MW = 20 MW) (t)	5	1	1	1	
Backup diesels (8 x 1,5 MW = 12 MW) (t)	433	470	432	392	
Total (t)	438	471	433	393	

EMAS table



EMAS regulation provision	Title or requirement	Page of report
Annex III 3.2.a	A clear and unambiguous description of the organisation registered under EMAS and a summary of its activities, products and services and its relation to any parent organisations as appropriate.	2, 3, 6, 7
Annex III 3.2.b	The environmental policy and brief description of the environmental management system of the organisation.	35, 63, 64, www.tvo.fi
Annex III 3.2.c	A description of all the significant direct and indirect environmental that result in significant environmental impacts of the organisation, and an explanation of the nature of the impacts as related to these aspects.	30
Annex III 3.2.d	A description of the environmental objectives and targets in relation to the significant environmental aspects.	29, 31
Annex III 3.2.e	A summary of the data available on the performance of the organisation against its environmental objectives and targets with respect to its significant environmental impacts. The summary may include figures on pollutant emissions, waste generation, consumption of raw material, energy and water, noise as well as other aspects indicated in Annex VI. The data should allow for year-by-year comparison to assess the development of the environmental performance of the organisation.	29, 31–33, 35–37
Annex III 3.2.f	Other factors regarding environmental performance, including performance against legal provisions with respects to their significant environmental impacts.	29, 30, 34, 35–37
Annex III 3.2.g	The name and accreditation number of the environmental verifier and the date of validation.	39

Verification statement

DET NORSKE VERITAS



VERIFICATION OF CONFORMITY

DNV Certification OY/AB has reviewed Teollisuuden Voima Oyj Olkiluoto unit's internal procedures, collected data and documentation as accredited verifier (FIN-V-0002). Based on this review the environmental policy, internal audits and environmental programmes and Environmental Management System are fulfilling the requirements stated in (EY) nr. 761/2001.

Scope and methodology of verification

The verification of EMAS statement has been carried out in TVO Olkiluoto unit at 11.03.2009. The coverage and credibility of report and reported data has been verified based on written report. The key personnel have been interviewed during verification and reported information has been compared to original source data. Environmental verification has included, when applicable, audit results from ISO 14001 certification.

The Social Responsibility Report 2008 is presenting over all picture about Teollisuuden Voima Oyj's operations and environmental impacts. Environmental statement, included into Social Responsibility Report, is fulfilling requirements of EMAS regulation nr 761/2001.

Social Responsibility report 2008 is also reflecting commitment of Teollisuuden Voima Oyj into management and improvement of Safety, Quality, and Environmental aspects in its operations.

Espoo 20.4.2009
DNV Certification OY/AB
EMAS Accredited Verifier
FIN-V-0002

All is in order in the uranium mine and mill

At regular intervals we ensure that the matters related to the environment, personnel and local inhabitants in the areas where uranium fuel is mined and prepared are in good order.

A group of four TVO employees visited two production plants in northern Canada belonging to the uranium supplier Cameco in the autumn of 2008. The plants visited were the McArthur River uranium mine, hundreds of metres underground in the state of Saskatchewan, and the Key Lake uranium ore concentrator. The objective of our visit was to evaluate the quality management and particularly the management of environmental and social responsibility issues.

Certificated plants under strict monitoring by the authorities

Both the McArthur River uranium mine and the KeyLake plant are certified in accordance with the international ISO 14001 environmental standard. Nuclear energy in Canada is regulated under the Atomic Energy Control Act. All activities associated with the production and refining of uranium are regulated under federal and state legislation. The activities are monitored by the Canadian Nuclear Safety Commission (CNSC).

The mining company monitors legislation and changes to it closely. In Cameco's head office in Saskatoon, our group was shown 16 files full of regulations to be followed. They covered areas such as safety, health, mining operations and the environment. Information about changes in the law is sent by email from the head office to the various production plants to be observed and the measures taken are verified by audits.

The official requirements for nuclear plants in Canada are very much the same as those in Finland. The rights of the native inhabitants of the northern regions are protected by legislation. Among other things, Cameco has a legal obligation to employ local inhabitants.

The company works very closely with schools and supports education at all levels. The company was particularly interested in ensuring the rights of the native population and to take them on as employees. Of the nine company managers we interviewed, two were from the native population.

Social responsibility issues are well managed

Our group confirmed that the wellbeing of staff and safety at the production plants are important for the company. Staff work the shifts they themselves have chosen: a week working and a week off. Because the production plants are a several hundred kilometre journey with no roads and trips home are long, the company arranges aircraft transport for its employees to travel home and back. While working, the employees live in accommodation close to the plants. The company organises leisure time activities for employees, and there was information about them on the notice boards. Occupational health care is provided and there is a daily occupational health care nurse who has a wider range of authority than a Finnish equivalent would have. Employees have regular health checks. The canteen provides employees with varied main courses, salads and desserts at no charge to them.

Personal safety at work is one of the more important objectives for the company. This was clear both on site and in the management of operations. There are strict instructions regarding protective equipment and personal protective gear is really used. The production plants submit monthly reports on occupational safety matters to head office. The company uses a "near miss" incident monitoring system for evaluating and improving matters related to occupational safety. Radiation dose data for employees at the plants is recorded comprehensively and systematically into a database and the data are regularly monitored at head office.

Attention is paid to wellbeing at work. Cameco has guidelines on harassment in the workplace, which are implemented to prevent it. The company carries out analyses of workplace and personnel management and the company has ethical rules. Cameco has a "live better" programme which aims to improve employees' wellbeing.

At the mine, we interviewed a man, selected at random, who had worked at the mine for eight years and was very satisfied with his working conditions and employer.

Cameco carries out an annual survey to assess its reputation. For years the company has received a good grading from the general public. In 2007, 82 per cent of the respondents in the Saskatchewan region had a positive view of the company and 77 per cent of those living in the northern area.

The company's internet pages present the company's investments in social responsibility projects.

The environment is closely monitored

Canada's environmental legislation is very comprehensive and it is followed strictly at the production plants. In addition, our group was able to confirm on site Cameco's environmental monitoring and measurement programme which includes sampling, many different analyses and reporting.

The programme is required under the conditions of the operating permit granted by the Canadian Nuclear Safety Commission, and the programme is carried out in accordance with the requirements of the CNSC and the Saskatchewan Ministry of the Environment (SMOE). The programme is extremely broad and includes thousands of samples of the soil, air, water (surface and ground water), waste as well as

fish, and numerous analyses are carried out on them. There is a separate programme just for the sampling. Environmental samples are taken at the appropriate frequency either weekly, monthly or quarterly. SMOE makes annual inspections at each plant. In 2007, there were five such inspections at Key Lake.

Uranium producer's environmental and social responsibility factors are in order

On the basis of the audit visit to the mine and mill, our group can state that environmental and social responsibility affairs are in good order. The company has a clear target to invest in these areas in the future too, so as to guarantee the availability of a workforce in this northern uranium mining area and to ensure the continuity of operations.

TVO's group at the McArthur River uranium mine in Canada, evaluating the management of environmental and social responsibility matters in particular at the mine.

From left: TVO's quality and environment office manager Olli-Pekka Luhta as well as the deputy office manager Harri Salonen, nuclear fuel office manager Mikael Solala and head of corporate social responsibility, Maija Löytömäki.



The McArthur River uranium mine is located in the northern Canadian wilderness. Transport of employees from their homes to work is organised by light aircraft.

Uranium is mined at a depth of about half a kilometre and transported in liquid suspension by special vehicle on roads maintained by the mining company to the Key Lake plant, about one hundred kilometres away, for concentrating.



SKILL AND EXPERIENCE - THE FOUNDATION OF SAFE POWER GENERATION



Detailed social figures can be found on page 56.

Our corporate social responsibility policy is based on working in cooperation with our personnel. Our objective is a working community where personnel do their jobs responsibly and with motivation, where they are competent and committed to observing agreed methods of working.

At the end of 2008, there were 777 (750) TVO employees and the average during the year was 806 (780). The number of permanent personnel at the year end was 709 (676).

TVO personnel have amassed skills and experience from thirty years of operating a nuclear power plant. A significant proportion of our current personnel are pioneers in the field and have worked for the company for a long time. Personnel turnover at Olkiluoto is low, but in the next few years there will be more people retiring than in previous years.

We transfer our accumulated know how and knowledge of the plant to new, skilled personnel continuously. The OL3 project in particular has given us the opportunity to recruit a lot of new, skilled people. We have employed people who will grow in working with the construction and commissioning phases to take on jobs in the operational phase. In 2008, we employed 70 (57) new permanent employees, of whom 16 (13) were women i.e. 22.9 (22.8) per cent. The average age of new TVO personnel was 33 (34). The average age of all personnel was 44.4 (44.8).

Women make up 20 (20) per cent of our personnel. There are 15 women in management and supervisory positions in different units. There were no women on the Board of Directors, in the Management Group there was one (one) woman.

During the year, 37 (43) of our permanent personnel left the company, of whom 12 (13) retired. During the year the number of people starting work as

a proportion of the total number employed, i.e. incoming turnover was 9.9 (8.4) per cent and the leaving turnover was 5.2 (6.4) per cent.

TVO employees' lengths of service are long and personnel turnover is low. The average length of service was 15 years and there are a total of over 300 people who have from 20–35 years of service. 63 employees received recognition for 10, 20 and 30 years of service.

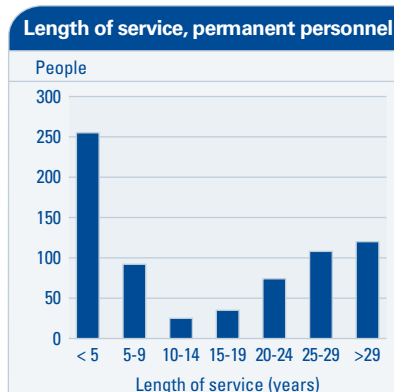
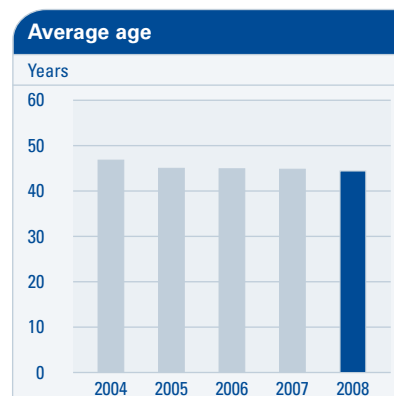
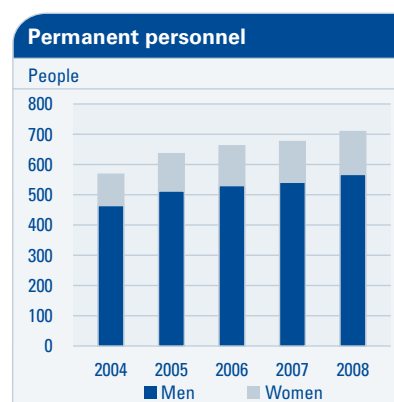
The pioneers in the sector and the new experts celebrated OL1's thirtieth anniversary of electricity production in September 2008 with a joint party for employees.

Interesting place to work

There was a lot of interest in TVO as an employer in 2008 as well. We published 22 (26) job advertisements during the year for which we received 806 (315) applications. We also received a lot of speculative applications and 638 (758) applications for placements during the summer.

We offered summer placements to 166 (172) young people. Of those, 72 were university students and a third were studying at polytechnics. In addition there were students from vocational colleges, sixth form colleges, comprehensive schools and other educational institutions. 78 of the summer employees were studying technical subjects. The duration of the placements was from 1–4 months.

We spent EUR 55.0 (50.9) million on personnel costs of which EUR 44.2 (40.5) million was on salaries, EUR 7.1 (6.7) million on pensions costs and





EUR 3.7 (3.7) million on other compulsory personnel costs.

We observe the collective agreement for the energy sector. The salary systems for technical and industrial personnel in the energy sectors, as well as for employees, are based on classes related to the level of demand of the job and support the implementation of equality in salary policy. Various additional benefits are provided for all employees except for those on very short contracts.

Flexible working hours make the working day easier for TVO employees

To promote working capacity and well-being at work we have created the conditions needed to balance work and free time. The personnel can take advantage of a system of flexible working hours. The features of the system are that working days are from Monday to Saturday, daily working time is between 6 a.m. and 8 p.m. and, in addition to the daily flexitime, it is possible to have a whole day off.

Our employees value this flexible working time system because it suits a variety of situations involving balancing work and daily life such as daily childcare arrangements and arrangements related to sickness, coordinating hobbies, arrangements for the care of aged parents or relatives and studying.

In our system it is also possible to take alternation leave or work part-time and that makes it easier to maintain working capacity or to reach a balance between work and free time. There are 11 people on part-time pen-

sion and five people took alternation leave.

At the beginning of the 1990s we started a sabbatical leave system which makes it possible to have longer leaves and to get away from work. During the year there were four people on sabbatical leave (3-6 months). About 180 people have accrued sabbatical leave, totalling about 8,000 days.

The activities of our personnel clubs are varied and provided the opportunity to participate particularly in sporting activities, but also in cultural and recreational activities. Our personnel also have access to holiday places where they can spend some free time.

Occupational health care and well-being

There is an occupational health care plan which governs the provision of the occupational health care service. Occupational health care services at Olkiluoto are provided by the Minerva occupational health care centre which is open on working days. There is an occupational health doctor, occupational health nurse and an occupational physiotherapist available at the health centre. The services for the Helsinki office are provided by the Mehiläinen Forum Health Centre.

In addition to the statutory services, the occupational health care services include access to general health care services, consultations with a specialist and occupational physiotherapist services if the occupational health care doctor certifies these as being necessary. The occupational physiotherapist

gives information and advice on such things as work-related ergonomics.

We have expanded the coverage of occupational health through accident and sickness expenses insurance. The costs of occupational health care were about EUR 0.6 million.

We look after the working capacity and well-being of our employees at work by maintaining and continually developing their professional skills. We offer opportunities for job rotation and new, challenging tasks. As part of the activities to maintain working capacity we organised various well-being at work events such as lectures on nourishment and weight management as well as on the importance of enough sleep for vitality and working capacity.

Transport to work as an employment benefit promotes sustainable development

There is a bonus system in the company that covers all employees. Bonuses are based on measurements and assessments of the quality and efficiency of the company's and the unit's operations. Since 2005, our personnel have been able to invest their bonus in the employee fund. Over half of our employees have invested their bonuses in the fund during the years it has been running.

In accordance with the Act on Cooperation within Undertakings, the Works Council, which is made up of representatives of employee groups, met four times during the year. At the Works Council meetings we dealt with various communications issues includ-

ing the development of services for employees and issues related to industrial safety. In addition to the Works Council, there is a canteen committee, a holiday committee and an initiatives committee. In addition, the employees are represented in the company's Management Group.

TVO provided its employees with transport to work from Rauma and Eurajoki. 57 per cent of our employees live in Rauma and 19 per cent in Eurajoki. There are 11 bus journeys each working day from Rauma to Olkiluoto

and 6 from Eurajoki. The routes provide comprehensive coverage of the various residential areas. In 2008, a total of some 56,800 return journeys were made between Rauma and Olkiluoto and about 16,200 between Eurajoki and Olkiluoto. By providing public transport connections, we reduce the greenhouse gas emissions caused by travelling to work. There are also several bus journeys a day from Pori and Eurajoki to the OL3 construction site.

Public transport as an employment benefit promotes sustainable development.



Experience and skill from practice and construction

Our company has the expertise required and a broad network of expertise for the safe operation of the units as well as the design, construction and commissioning of the new unit. The OL3 project has also brought us unique and valuable experience as well as skills in carrying out assessment studies for the new unit and in project work.

TVO employees have gained expertise from forty years of developing nuclear power plant infrastructure and from thirty years of successful operation, maintenance and modernisation projects at the plant.

Motivated, professional, and skilled personnel are the prerequisite for the safe operation of a nuclear power plant. We demand special skills from our personnel and competence requirements are set for them. To ensure high levels of skill, there are various different methods used in our company from skills mapping to training programmes and job rotation. We support the management and monitoring of the personnel's competence and training using an information system designed for the purpose.

We use a function-specific approach to manage skills whereby minimum skill requirements, including training programmes, are defined for groups of personnel carrying out the same job. Our method is an application of the IAEA SAT (Systematic Approach to Training) method.

Wide ranging induction training provides familiarisation with the safety culture

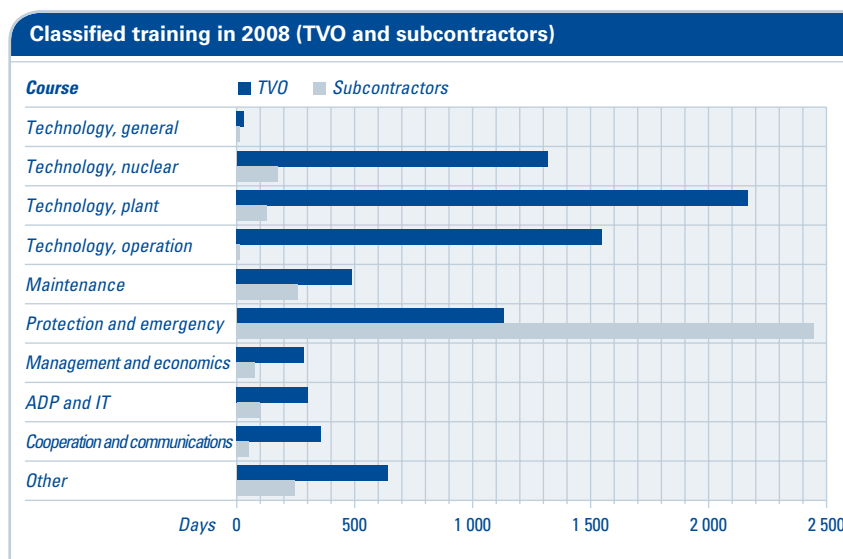
We organise and develop training programmes directed towards different professional groups. Their target, in conjunction with other training, job training and induction programmes is to ensure a high level of competence among our personnel. Supervisors, working with training experts, draw

up personal training and development plans for TVO personnel and these plans include the appropriate induction and training needed for each job.

We draw up an annual company training programme which takes the targets set by management into account at the company and individual level as well as other training needed at the time. The programme provides systematic support to the maintenance and development of the skills and competence of the personnel.

We trained our personnel for a total of 8,869 (10,166) days i.e. an average of 12.7 (15.2) days for every TVO employee. The main emphasis of the training was basic training for new personnel, technical skills and the development of supervisory skills. The objective of the supervisory skills development programme is to give supervisors both information-based and skills-based supervisory training.

In our induction training we explain about the operation at Olkiluoto to new TVO personnel, the working environment and procedures related to work. We introduce people responsible for different activities and to the internal sources of information in the company. In the initial stage, the basic training includes a further seven courses on different subjects including training on the Occupational Safety Card, fire safety course, plant familiarisation course, quality and profitable operation as well as operation of a nuclear power plant and its authorisation. The total training days of these is some 10 days.



Training requirements that apply to all TVO personnel

A total of about 10 days of training of which part is recapitulating previous training

Employees' common special training programme

A total of about 5 days of training of which part is recapitulating previous training

Common special training programme for senior and technical personnel

A total of about 19 days of training of which part is recapitulating previous training

Employees' special training programme

Each specialist group have their own training programme. The durations vary according to the target group. The specialist groups include:

Electrical and automation maintenance employees (for example, electrical fitters)

Machinery maintenance employees (for example, welders, machinists)

Operators

Firemen

Property maintenance employees

Special training programmes for senior and technical personnel

Each specialist group have their own training programme. The durations vary according to the target group (from days to as long as months). The specialist groups include:

Electrical and automation maintenance employees (for example, automation engineers)

Machinery maintenance employees (for example mechanical engineers)

OL1/OL2/OL3 operator and shift managers

Chemical section personnel (for example, chemists)

Fuel technology personnel (for example fuel engineers)

Reactor physics personnel (for example reactor physicists)

Construction technology personnel (for example construction engineers)

Supervisors

Etc.



Training of operators for the OL3 unit started in the autumn of 2005, when 34 people started training. The training programme for OL3 operating personnel continued with specialist courses on the equipment given by the Supplier. The training programme will continue with simulator training and participation in the commissioning of the OL3 unit.

Site entry training on safety for sub-contractors

We also pay attention to the maintenance and development of the competence and skills of our sub-contractors. We require everyone working at the Olkiluoto nuclear power plant to be familiar with safety and occupational safety matters and we arrange site entry training for them that covers these and other topics. In 2008, 4,839 (3,249) people underwent site entry training. The languages of instruction for site entry training were Finnish and English.

Those who operate at our plant have gone through a several-year long nuclear field training including theory, on-the-job-training and simulator training. Only successfully passing an examination gives an operator's licence.



Everyone working at the OL1 and OL2 units undergo induction training in which we give basic information about radiation, environmental, fire and occupational safety and the work procedures at the power plant. Induction training was provided for 1,530 (1,137) employees in Finnish, Swedish, English and German.

For the sixth time, we participated in organising a national nuclear safety course together with the Lappeenranta University of Technology, the Ministry of Employment and the Economy, the Finnish Radiation and Nuclear Safety Authority and other actors in the field of nuclear power. The nuclear safety course is a six-part training course, in total about 20 face-to-face teaching days for those people working in the nuclear power sector, in which participants go through the operation of a nuclear power plant and themes linked to nuclear safety. There were 60 participants on the course of whom 15 were from TVO.

Operator training continued as planned

We demand a high level of basic professional skill from people working as operators in a nuclear power plant and in addition we provide them with training in nuclear power and power plant technology.

To support the theoretical education, operators get practical experience in the plant simulator and instruction in procedures from more experienced operators. The total duration of the basic training varies from two

to three years depending on the plant type and the number training phases. The length of the actual on-the-job-training is at least six months and this starts once the written examination at the end of the basic training period has been taken. An oral examination is held at the end of the on-the-job-training and once this is passed the person can be a licensed operator.

To maintain competence as an operator, each one participates in theory and simulator training annually. To certify competence we organise oral examinations for operators at specified intervals as well as practical tests on the simulator.

The licensed plant operators at the OL1 and OL2 plants participated in operator training seminars and advanced simulator training where we evaluated the actions of the shifts in assumed emergency situations. We organised 10 days of advanced simulator training for fourteen shifts. Four people who began operator training at the end of 2007 participated in the nuclear power technology basic course in spring 2008 and in the plant type specific system training in the autumn. Their training will continue in 2009 with a nine week long basic course on the simulator. As well as operators, we also trained four new people to become field operators.

Six new people started the OL3 operator training in the autumn of 2008 and they participated in the basic course on nuclear power. Training in 2009 will concentrate on plant type specific system training.

Work and measures to promote occupational safety

We want to prevent accidents in accordance with the zero accidents philosophy and to arrange a good working atmosphere, good and safe working conditions and for work to be pleasant. Good occupational safety increases the operational reliability of the units.

Our occupational safety organisation consists of the occupational safety manager, two occupational safety engineers and the occupational safety expert. In addition, TVO's occupational safety manager and two occupational safety engineers work on the OL3 site.

We have joined the zero accidents forum. The zero accidents forum is a voluntary workplace programme in which the members can network to obtain support for the development of

occupational safety in their own workplace.

To reach the zero accidents target we organised several occupational safety information sessions for supervisors in 2008, gave occupational safety training to sub-contractors and the personnel of our various offices. Occupational safety issues are strongly to the fore in such events as radiation liaison officer training, equipment responsibility days as well as in induction training.

There were 5 (8) accidents at work that required more than a day's absence and accident frequency was 3.8 (6.2) accidents per million work hours. The degree of seriousness of accidents was 2.6 days per accident. There were five accidents on journeys to and from work.

Our OHSAS 18001:2007 compliant occupational health and safety system was audited and was awarded a quality certificate on 18 April 2008.

The year's occupational safety work prizes and citations

1. Prize:

Juha Riihimäki, TVO

Grounds

High quality and comprehensive safety plans for many different projects. The plans take account of various dangerous situations, protection from them as well as rescue measures in cases of possible illness and accident. The example has had a positive affect in attitudes to safety as well as increased the number of safety plans.

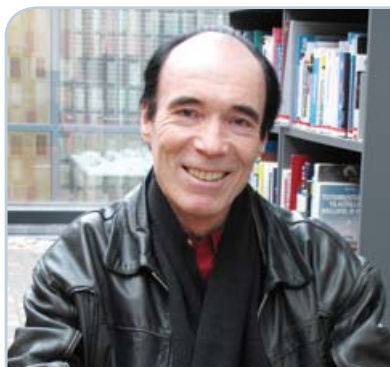


2. Prize:

Antti Kajavalta, RTK-Palvelu Oy

Grounds

Looked after cleaning and kept order in the reactor hall in exemplary manner, in a spirit of service and with a positive attitude to safety. He played his part in looking after the safety of loose objects, and gave guidance on dressing and appropriate behaviour in the reactor hall.



3. Prize:

Chemicals department, TVO

Grounds

The whole team has done a lot of work to promote a safety culture including drawing up their own occupational safety instructions and storage instructions for dangerous substances. The team used risk assessment to improve the safety of the working environment. They also had a positive attitude to safety; safety is taken into account in all their actions.



In order to encourage people to act safely in accordance with the philosophy of safety culture and to improve safety procedures, we gave two people who had developed and maintained occupational safety, and one organisation, annual occupational safety achievement awards.

We encouraged people to report safety related occurrences as well as near-miss events. We also use safety related occurrence cards which everyone who sees a danger can use to easily report the safety deficiency they have spotted. In 2008, 111 near-misses were reported and 147 safety related occurrence cards were filed.

We are also targeting for zero accidents at the OL3 construction site.

We are trying to achieve our target through occupational safety training, instruction, monitoring, active following up and feedback.

There are over ten full-time occupational safety monitors on the OL3 site, of whom some are from TVO, some from the construction consortium and most working for subcontractors. There were 13.8 accidents per million working hours on the site.

The national Occupational Safety Card is compulsory for everyone working at Olkiluoto. We organised 11 Occupational Safety Card basic training event and 86 people took part in them. We organised 7 sessions of top-up Occupational Safety Card training and 102 people took part in them.

Radiation dose reduced by a fifth

Radiation protection at the nuclear power plant is taken care of both inside the plant and by radiation monitoring of the environment. Our objective is to keep exposure to radiation that is damaging to health as low as possible. We continuously monitor the radiation doses of those working in the power plant's controlled area through personal dosimeters. Environmental radiation monitoring is done in accordance with a wide ranging programme of measurements and sampling.

As in previous years, the radiation doses for employees remained well below the dosage limits set by the au-

Our target is to keep radiation levels as low as possible. Radiation levels are monitored daily.



thorities. The total annual radiation dose at Olkiluoto in 2008 was 936 (1,180) mmanSv, i.e. a fifth less than the previous year. The total annual radiation dose at OL1 was 725 (259) mmanSv and 211 (921) mmanSv at OL2.

The total annual dose received by our personnel was 217 (231) mmanSv. The total radiation dose for external workers, particularly external personnel involved in the annual outages, was 719 (949) mmanSv. The largest individual radiation dose at the Olkiluoto nuclear power plant was 8.10 (9.35) mSv, i.e. less than one sixth of the maximum permissible annual radiation dose limit set by the Radiation Act.

According to the national dose register maintained by the Finnish Radiation and Nuclear Authority, in 2003–2008 not a single radiation worker in Finland received an annual radiation dose exceeding the limit. The limits are 50 mSv/year and 100 mSv/5 years.

The calculated power plant related radiation dose for inhabitants in the neighbouring area was 0.26 (0.40) microsieverts. The average radiation dose for Finns from various sources is some 3,700 microsieverts.

In the internal contamination measurements carried out by the Finnish Radiation and Nuclear Authority on inhabitants of the neighbouring area there were no radioactive nuclides found originating from the plant.

Development work brought results

The annual outage at our units alternates each year between a refuelling outage and service outage. The collective dose during the annual outages was 83.0 (87.4)% of the total annual dose.

The radiation dose for the OL1 outage was 613 (172) mmanSv. The largest job specific doses were during pipe-work inspections, the change of the cooling system valve on the shutdown reactor, and work on the reheater system and the reactor hall. The renewed steam dryer has reduced steam humidity significantly and thus the earlier annual outage dose rates have fallen further in those turbine plant systems that were in contact with the main steam. During the OL1 service outage the general level of the average dose rate measured in the turbine plant fell by about 12 per cent compared to the previous year.

The total dose for the OL2 refuelling outage was at a record low, 163 (859) mmanSv. Only during the first annual outages of the units were such low total doses achieved. The largest job specific dose was caused by the reactor hall work. The new steam dryer at OL2 was in the reactor during the previous running period. The general levels of radiation measured in the turbine plant during annual outage were on average about 45 per cent lower compared to 2007 because of the drier main steam.

Work at the plant units is planned carefully, as are protection and protective clothing. When the work is done all material is monitored and taken care of.



Good neighbourliness over decades

We provide information about incidents and our operations openly and in various ways. Our most important stakeholder groups are our personnel, owners, the authorities, neighbours and local communities, decision makers, financiers, sub-contractors and suppliers as well as the press. There is continual dialogue with our stakeholder groups.

Our operations at Olkiluoto provide employment opportunities for various partners. Our long-term corporate partners are Securitas Oy who is responsible for security, Sodexo Oy who run our personnel canteen as well as RTK-Palvelu Oy who take care of cleaning services. These companies alone employ about 300 people at Olkiluoto. Oras Liikenne Oy has looked after the transport of our personnel from Eurajoki and Rauma to work since the 1970s.

We have a municipalities cooperation group through which we maintain contact with the local communities. It met three (three) times to discuss current topics: safe operation of the OL1 and OL2 units, progress with the OL3 construction work, the quarterly and annual reports to the Finnish Radiation and Nuclear Authority and TVO's future plans.

The Visitor Centre at Olkiluoto is open every day from 10.00 – 20.00 and anyone can drop in there without an appointment. The Visitor Centre exhibition explains how nuclear power is generated and covers the whole lifecycle of uranium fuel from mining to final disposal. Groups that make an appointment are given a guided tour of the facility. 15,209 people took part in guided tours and 6,546 came in to look at the exhibition, a total of 21,665 visitors.

We organised two scientific camps, which have become something of a tradition, and one technology camp for junior school children on the theme "Interest is stimulated by experience". The camps lasted a week and

22 (22) children participated in each camp. The children studied science and technology at a way that made it interesting and suitable for them. For older school children we organised a one-day "Energy!" session in July.

Application for a decision in principle and OL1's celebratory year showed in operations

We ran an active communications campaign about our operations and incidents throughout the year.

We organised a café in the market in Eurajoki in June and in Rauma in August, where anyone who wanted could talk with our experts on questions relating to the company and

to nuclear power. About 350 people joined us for coffee in Eurajoki and about 600 in Rauma. We held our traditional open doors day at Olkiluoto in September. About 900 people visited the OL3 site on that day. We organised a "From candle to switchyard" event with Posiva in February. 308 people participated. We celebrated 30 years of operation of the OL1 unit with our stakeholder groups in a celebratory seminar on September 4 and at a party for personnel on September 5, 2008.

As well as general communications about nuclear power, our main areas of emphasis were the progress of the OL3 project and the preparations for

We organised a celebratory seminar for our stakeholders on September 4 in Helsinki. The theme was TVO's 30 years and its history. Mr. Magnus von Bonsdorff, TVO's first President (on the right) was the guest of honour. In the discussion also TVO's present President and CEO, Mr. Jarmo Tanhua (on the left) and Mr. Timo Rajala, President and CEO, Pohjolan Voima Oy





We keep in touch with local residents by organising things such as coffee stalls in the market.



The public inquiry into the OL4 nuclear power plant project was held in the Eurajoki municipal offices in October.



TVO works actively with local schools. The aim is to acquaint school-children with nuclear power and energy issues as well as to give them information about different professions. They can see how what they learn at school gets put into practice.



We talk about topical matters and our operations to all our stakeholder groups through our "Ytimekäs", "What's On?" and "TVO Uutiset" magazines. On 2nd September 2008, we published a celebratory book with 30 stories from Olkiluoto – "Ytimen Ympäriä". The book talks about our electricity production's 30 year journey.

Olkiluoto is a favourite place to visit year after year. During the year we hosted over 20,000 visitors from near and far.



the OL4 project. The application for a decision in principle and the environmental impact assessment that preceded it can be seen in our operations. We organised various events ourselves and participated in others that presented the project and we published information material. In February we published the environmental impact assessment statement in four languages and a summary of the statement in eight languages. We published our application for a decision in principle in Finnish, Swedish and English and we produced a general explanatory note in the same languages.

During the year we sent our 17 (18) press releases, arranged 9 (9) press conferences and one seminar for stakeholder groups. We published

three editions of our "Ytimekäs" stakeholder group magazine and four editions of the TVO Uutiset (News) and three editions of the "What's On" magazine directed to the people working on the OL3 site. In total we produced 48 different publications including "Ytimen ympäriltä", a celebratory book in honour of 30 years of operation of the OL1 plant.

The emphasis in our communications is moving from printed to electronic communications. We revamped our website and opened new sections for the OL4 project among other things. Our new online magazine started on our website in the autumn of 2008. The online newsletter was published three times.

The most important tool for our

internal communications is the company's intranet, OlkiNet. About 30 TVO employees from different units in our organisation produce content for it everyday. We arranged four President's briefings which covered topical issues for the company.

We also participated in various seminars, events and exhibitions. About 1,700 people visited our stand at the Tampere Energy exhibition. We presented our operations to young people at events such as the NextStep exhibition and the Energy theme day for secondary school students.

We give particular support to sporting cultural and social events in the locality. Our main sponsorship target is the Suomen jääkiekkoliitto, the Finnish Ice hockey Association.

All of our personnel were invited to Rauma at the beginning of September to celebrate the 30th anniversary of the start of our electricity production. Everyone was there, from new TVO employees to those veterans who started up our operations in the 1970s.



Development of the Corporate Social Responsibility Report underway

In developing corporate social responsibility issues our President and CEO is assisted by a Corporate Social Responsibility Group. The group's role is to draw up, monitor and develop TVO's corporate social responsibility policy, report on issues related to corporate social responsibility to the President and CEO as well as to communicate corporate social responsibility to our own personnel and the company's stakeholder groups. Our working group functions as an expert, advisor and communicator on matters related to corporate social responsibility.

The group was chaired by Senior Vice President Anneli Nikula, and its other members are Kaija Kainurinne, Manager, Brussels Office; Päivi Lahti, Manager, Accounting; Olli-Pekka

Luhta, Manager, Quality and Environment; Jouni Punnonen, Manager, Social Relations and Communications; Soili Vaimala, Manager, Personnel Administration, and Maija Löytömäki, Head of Corporate Social Responsibility, who also acts as a secretary to the group.

Our group met six (four) times. At the beginning of the year we considered the feedback from the "Finland's Best Place to Work" personnel survey. On the basis of that we wrote down some improvement targets for the company's management, communications and the provision of feedback which were passed on to be addressed by the management. In addition we address social responsibility issues both generally and within our own

company. During the year we also participated in translating the GRI corporate social responsibility reporting guidelines into Finnish.

At the end of the year, high on the list were matters to do with drawing up the Corporate Social Responsibility Report and the development of social responsibility affairs. People who are involved in reporting within the various units of the company took part in the work. We dealt with the production of information, dissemination of information and we particularly focused on material issues in reporting from the stakeholders' perspective. The result of this work was the production of instructions for drawing up responsibility reports and they will be added to in 2009.

Our CSR Group functions as an CSR expert and advisor and communicates CSR issues to the personnel.



Key social figures

	2008	2007	2006	2005	2004
Personnel structure					
Number of permanent personnel, Dec 31	709	676	662	636	568
Men	567	541	530	512	464
Women	142	135	132	124	104
Personnel, fixed-term, Dec 31	68	74	68	55	45
Average age of personnel ¹⁾	44.4	44.8	44.9	45.0	46.8
Personnel living in (%) ¹⁾					
Eurajoki	19	20	19	20	21
Rauma	57	56	59	59	60
Pori	9	8	8	8	6
other	15	16	14	13	13
New TVO employees ¹⁾	70	57	44	92	59
Average age of new TVO employees ¹⁾	33	34	32	31	35
Incoming turnover (%) ¹⁾	9.9	8.4	6.6	14.5	10.4
Outgoing turnover (%) ¹⁾	5.2	6.4	2.7	3.8	2.6
Number of retirees ¹⁾	12	13	8	14	7
Average age of retirees ¹⁾	63	62	62	62	57
Summer workers	166	172	199	192	162
Competence					
Average length of service (years) ¹⁾	15	15	16	16	17
Training day per person	12.7	15.2	16.9	16.5	12
Total training days	8,869	10,166	11,065	10,037	7,255
Training days					
senior salaried employees	4,233	4,528	5,214	4,315	3,702
technical salaried employees	2,985	3,997	4,218	3,764	1,938
industrial salaried employees	233	297	227	259	309
workers	973	867	686	690	747
fixed-term employees + others	445	480	720	1,003	556
Site entry training courses					
participants	315	166	140	143	185
participants	1,653	855	618	1,796	1,388
Training sessions in English					
participants	159	123	102	95	
participants	3,187	2,394	577	399	
Occupation Safety Card training courses					
person given the Card	19	12	12	29	28
person given the Card	189	85	176	908	729
Well-being at work					
Absences due to illness (%)	3.9	not calculated	3.4	3.1	3.8
Absences due to illness, hours per person	79	not calculated	72	65	77
Employees who had no sick days during the year ¹⁾	200	215	216	234	214
Accidents of TVO personnel,					
- Absences, more than one day ³⁾	5	8	2	5	10
- Absences due to occupational accidents (days)	13	76	27	43	89
- Occupational accidents per one million working hours	3.8	6.2	1.7	4.8	9.9
- zero accidents, no absence	4	5	5	4	
- accidents on the way home or to work ³⁾	5	2	23 ⁽²⁾	2	5
Near misses ⁴⁾	111	128	116	56	124
Accidents of sub-contractors,					
- Absences, more than one day	11	17	15	12	16
Accidents at OL3,					
- Absences, more than one day	92	53	20	20	3
Personnel maximum radiation dose (mSv)	8.1	9.35	12.20	11.90	12.95
Collective radiation dose (mmanSv)	936	1,180	2,201	2,286	1,514
Annual outage radiation dose (mmanSv)	776	1,031	2,018	2,103	1,309

¹⁾ Data reported only on the permanent personnel.

²⁾ The bus fell on its way to Olkiluoto.

³⁾ Reporting procedure changed.

⁴⁾ Part of the occurrence card observations have been reported also as near misses.

No changes have been made in the data reported.

INDEPENDENT ASSURANCE REPORT

To the Management of Teollisuude Voima Oyj

At the request of Teollisuuden Voima Oyj's Management we have performed a limited assurance engagement on the Teollisuuden Voima Oyj's Corporate Responsibility Report's (the Report) economic and social information within reporting period 1.1.-31.12.2008 (Subject Matter).

Management's responsibility

Teollisuuden Voima Oyj's Management is responsible for preparing the Report and collecting and presenting the information within the Report in accordance with the reporting criteria as set out in Reporting Initiative (GRI) Reporting Guidelines G3-version together with the company's own reporting guidelines.

Practitioner's responsibility

Our responsibility is to express an independent conclusion on the Subject Matter based on our limited assurance engagement. This assurance report has been made in accordance with the terms of our engagement. We accept, or assume responsibility for our work, this report, or the conclusions that we have reached only to Teollisuuden Voima Oyj, not to any third party.

We have conducted the engagement in accordance with the assurance engagement standard (ISAE 3000) 'Assurance Engagements Other than Audits or Reviews of Historical Financial Information'. ISAE 3000 standard requires that we comply with professional ethical requirements and plan and perform the assurance engagement to obtain limited assurance whether any matters come to our attention that causes us to believe that the Subject Matter does not, in all material respects, give a balanced and appropriate view of Teollisuuden Voima Oyj's corporate responsibility performance based on the reporting criteria. We have planned and performed our evidence gathering procedures to obtain sufficient appropriate evidence on which to base our conclusion.

We have performed the following evidence gathering procedures:

- Interviewed five (5) representatives of top management in order to ascertain the current targets for Teollisuuden Voima Oyj's corporate responsibility as a part of the business strategy and operations;
- Interviewed persons responsible for corporate responsibility reporting;
- Evaluated the data management procedures used in compiling and reporting the quantitative data;
- Interviewed the persons responsible for the practices and procedures used for data recording and consolidation
- Tested the existency of reported information on a sample basis from original documents;
- Evaluated the content of the Report, materiality and quality of reported information as well as its boundary setting.

Our conclusion

Based on our work described in this report, nothing has come to our attention that causes us to believe that the Subject Matter, in all material respects, based on the aforementioned assurance criteria, is not giving a balanced and appropriate view of Teollisuuden Voima Oyj's corporate responsibility performance. Our assurance report should be read in conjunction with the inherent limitations of accuracy and completeness for corporate responsibility information.

This independent assurance report should not be used on its own as a basis for interpreting Teollisuuden Voima Oyj's performance in relation to its principles of corporate responsibility.

Helsinki, 15 May 2009
PricewaterhouseCoopers Oy



Marko Korhikoski
Partner, Advisory Leader



Sirpa Juutinen
Director, Sustainable Business Solutions

Electricity should not be made a pawn in the game

“Of course there are all sorts of scary things associated with nuclear power, such as radiation, the possibility of a serious accident and the radioactive waste left for future generations.” “Do we really need nuclear power or could we get along without it?”, Anne Mikkola and Kirsi Kuussaari summarised the questions about nuclear power that were going round in the heads of a visitor group from Kisko on their way to Olkiluoto.

The Kisko group got to know the Olkiluoto 1 unit and its operation. Leena Manner, who was with the group, wrote down the feelings of the people from Kisko during the journey.

“Nuclear power feels as if it is almost the perfect solution, if only there was not the fear of an awful accident.” Another doubtful consideration is radioactive waste. “It feels bad to leave that kind of burden for future generations to bear”, Kirsi Kuussaari pondered on the journey to Olkiluoto.

The mother of three’s mind is troubled by the fear of terrorism, an accident or natural catastrophe which could result in radiation leaks from Olkiluoto into the natural environment. “The aim is to leave as good and safe a world as possible for our children.” “Radiation is alien, frightening and its effects can be seen for years”, Anne Mikkola explains her concerns.

Difficult to make sense of energy policy

“Our family has a company that produces electricity in the urban area of Toija. Energy policy and energy economics, however, are very difficult and big issues to comprehend and developing a full understanding is not easy. It is difficult to develop your own view on the basis of short news pieces”, states Ms Mikkola and hopes the visit will clarify the complexity of Finland’s electricity production.

Climate and energy policy as well as the role of nuclear power in electricity production generated a lively conversation. The visit was hosted by Ms Anneli Nikula, Senior Vice President, Corporate Communications and CSR, and she explained to the visitors about electricity production in Finland, the share of nuclear power and TVO’s electricity production.

“The production of energy and electricity is full of strange and contradictory value choices. At the same time as we struggle hard to find ways of reducing climate change, we think about who can produce nuclear power and where. At the same time as we put domestic applicants into some sort of a list, we import nuclear power particularly from Russia and electricity produced by coal-fired plants even from Denmark. Is nuclear power produced in Russia in a more responsible or safer way than here, and is importing electricity produced with coal from far away somehow more acceptable?” wonders Hannu Leskinen.

“Nuclear power is cheap basic power. The more nuclear power we have the less dependent we are on imports. I don’t really understand why the government should decide who gets a construction licence – as far as I am concerned it is enough to see that applicants have what is required for safe production. Once safety issues are certain then let the markets look for and find the balance and solve the construction arrangements,” Tero Mikkola proposes.

“Why can’t more electricity be produced than at the moment and then simply export it to others. Why can others bring it here, while we have to fall back on the hope that it will always be available from neighbouring countries. What happens when the development of Russia means it needs its own electricity and Norway has a bad year with water levels? It is difficult to believe that people want to reduce their consumption and mess about with their comfort.

With electricity production it is difficult to fall back on the mercies of international trade,” continues Mr Mikkola.

Duplicity in energy policy

“It is two-faced to talk about environmental matters here in Finland and at the same time to import electricity produced by burning stones. That way we simultaneously get fine particles on the house. Fossil fuels are destroying the world,” thunders Mr Leskinen.

“The worst part of nuclear power is radioactive waste. It is not nice to leave waste for future generations for a long time to come. But do we have any choice, because we need to act quickly to hold back climate change. The problems caused by carbon dioxide are in our hands here and now. And it is not a small problem,” argues Kirsi Kuussaari.

“With climate change in mind, the only correct solution would be close down all the coal-fired power plant on the west coast as quickly as possible and replace them with nuclear power. Give all three applicants licences to build plants. The environment would be thankful for that solution. Wind power or bio-energy are not solutions in the same class,” argues Jaakko Parkki.

“The Archipelago National Park is such a unique national treasure, that it does not deserve to be spoilt with wind turbines. Besides, you would need wind turbines by the thousand to be equivalent to one OL3. An area like that wouldn’t be any kind of park afterwards. The archipelago should be protected against all such plans and energy should be produced somewhere else, sensibly,” continues Mr Leskinen.



The group from Kisko were interested in getting to know about electricity production and nuclear power. The group visited the OL1 unit, the interim storage facility for spent nuclear fuel and the repository for low and medium level radioactive waste. The cleanliness of the places and the good condition they are in amazed the visitors.



Everyone is measured for radiation dose every time they leave the plant. The group from Kisko was measured as they left the unit and when they left the operational waste cave in personal monitors to secure that no radioactive material could have stuck to their clothes or skin.



"There it is, the feared nuclear waste safe in its watery grave," the group of visitors marvelled at the interim storage facility for spent nuclear fuel where the radioactivity of the fuel falls to thousandths of its original level before it is disposed of in the final repository.



The test drilling holes in the repository for operational waste cave interested the visitors. The spent nuclear fuel will be packed in a copper capsules and will be disposed of in the repository which will be located in the rock at a depth of 400 metres.



"During the visit we talked about questions to do with energy. We got good clear answers from our hosts and hostesses at TVO. This visit should be compulsory for everyone, said the group on their return journey. The satisfied visitors took lots of material from the Visitor Centre to look at in more detail at home.

Nuclear power together with renewables

”In the countryside we understand the need for continuous investment. You have to build new and repair old so that the systems work. Why wouldn’t this hold true for electricity generation too. Investments are needed, especially if we want to do anything about the threat of climate change. New investments are needed quickly to replace the old coal-fired power plants,” argues Tero Mikkola.

Mr Mikkola, the energy entrepreneur, asks Ms Nikula about the opportunities for renewable energy.

”Our owners, Pohjolan Voima and Fortum have environmental impact assessments underway for several large wind turbine projects. The renewable energy package that was part of the OL3 project has already been implemented, as Pohjolan Voima’s investments alone in bio-energy already total over EUR 1.5 billion. The production of electricity using a varied generation structure in which both renewable energy sources and nuclear power are used has proved to be an effective and good solution. Alongside investments in more expensive methods of generating electricity such as wind power or bio-energy, investment is also needed in more profitable forms of productions such as nuclear power,” Ms Nikula explains to the visitors.

Soon we will be needing more electricity

The visitor group did not believe the assessments that the growth in electricity consumption would come to an end at all. After this little stumble there was

a belief that a new period of growth was clearly visible. Preparations should be made now when there is a need for work too.

”All of us have homes full of all sorts of devices that run on electricity and there will be more to come. One computer is no longer enough, we need several, it’s the same with televisions, digiboxes...where is electricity use going to be reduced. Whenever we come up with energy saving solutions, we end up increasing electricity consumption at the same time. A good example is switching from oil heating to air heat pumps. Soon we will have electric cars and we will need electricity for them too”, the visitors argue.

”In the Visitor Centre there is a good illustration of the growth in electricity consumption up to now. Anneli Nikula told us that in the 1920s, the project to harness the hydroelectric electricity generation capacity at Imatrankoski was regarded as futile since no-one believed that electricity consumption would ever grow to the power output produced from the falls. Now the losses from the grid are in the same league as the output of the Imatrankoski power plant. Now the political discussion circles round the same issue again, only the numbers are bigger. It is difficult to believe that growth will stop here, it will of course slow as the result of the recession and then it will continue to grow. We need to prepare for that now,” Ulla Huittinen points out.

”We all need electricity. Electricity production is necessary for the whole of society and no politics is needed there at all. Issues should be resolved on

another basis entirely. Electricity cannot be made a pawn in the game,” Aila Salokannel argues.

”We also need to ensure that there will always be enough electricity. In the countryside, whenever there is a power cut you soon see how dependent we are on electricity. Its value is really appreciated when it isn’t there,” Irma Holmroos agrees.

”Olkiluoto is quite a large and interesting complex. The energy sector seems to be growing and they need lots of different kinds of skilled people here,” Otto Huittinen, who dreams of becoming an engineer, concentrates on future opportunities.

Surprisingly small amount of spent fuel

”The interim storage facility for spent nuclear fuel was an interesting place. There was the spent nuclear fuel in a water basin in a big storage hall and suddenly the whole thing didn’t look at all special. I had expected something really different, more mysterious,” Olli Salomaa reflected.

”During our plant visit some pressure differences in the plant unit were being tested at the same time. The tests involved a test ringing of the alarm bells. I have to admit that it was a shock when the bells suddenly went on just as we were in the spent nuclear fuel store. I noticed that to make sure, many of us glanced furtively at the radiation monitors we had with us and were relieved when the hands hadn’t moved,” he smiled.

”Remarkably little radioactive waste is produced. There was all the

TVO Visitor Centre

- permanent science exhibition called *Electricity from Uranium*, designed jointly by TVO and the Finnish Science Centre Heureka
- opened to the public in February 2006
- open daily from 10.00 to 20.00
- 2008: 15,209 visitors on guided tours
- 6,546 visitors came independently to look at the exhibition
- a total of 21,665 exhibition visitors

spent nuclear fuel of over the 30 years of operation in the storage basins. It wasn't a large amount at all," said Tero Mikkola with surprise.

Visit to the VLJ cave was reassuring

Hannu Leskinen, whose hobby is astronomy, asked why the spent nuclear fuel's final repository could not be an abyss on the ocean floor.

"An abyss on the ocean floor would probably be a good final repository, but there would be more emotional fears than with there are with bedrock. It is more acceptable to put spent nuclear waste in the geosphere than in the biosphere," Ms Nikula replies.

Ulla Huittinen asked whether the spent nuclear fuel could dissolve slowly through the bedrock into groundwater. "Could dissolving uranium pollute wells in Eurajoki?"

"That would need at least the next ice age and massive movement of the rocks. According to calculations, the radiation doses in the environment even then would not rise above the background values. By then Eurajoki will certainly be part of Pori and we will have other things to worry about," Ms Nikula answers. The answer had the people from Kisko, who have just gone through a municipal merger, laughing.

"You can ask anything about these things and always get a sensible answer," Ms Salokannel states.

In the operational waste cave for low and medium radioactive waste there was a lot of talk about the final repository for spent nuclear fuel. The visitors also saw the trial drilling holes there for the final

repository. The visit to the cave was reassuring.

"You get the feeling that the final repository has been thought through and investigated thoroughly from many different perspectives. Even if there is a small doubt in the back of your mind about what if something did happen after all, the plans and operation here are really reassuring."

"When nuclear waste is put almost half a kilometre deep into the rock, even a meteor strike would not have any effect. I think the final repository has been handled well and there is no need to be afraid," Mr Leskinen answers Anne Mikkola.

At the same time as the visit there was a new batch of uranium fuel arriving at the OLI unit. The visitors were amazed that it was transported on a normal lorry into the plant area.

"Assemblies of uranium do not emit radiation before the reaction starts in the reactor and they can be transported just as normal freight. They come to Finland by lorry and freighter," explains Ms Nikula.

Continual safety training going on

"Everyone here must undergo safety training," ponder students Olli Salomaa and Otto Huittinen. "It gives the impression of being a really well managed affair, there are various back-up plans for every eventuality.

"In other workplaces people are encouraged to be active. Here on the other hand an awful lot of work is done so that the personnel would have as little of the nuclear plant's activity as possible," observes an amused Ulla Huittinen.

"It was interesting to hear about the radiation doses at Olkiluoto; or rather the lack of radiation doses. To think that pilots in the upper atmosphere could clearly be exposed to more radiation than people working here at Olkiluoto. It was also a relief to hear that radiation doses are measured and monitored so that radiation cannot damage people's health. "It doesn't seem to be very dangerous here," points out Anne Mikkola.

"Of course you have to be careful handling uranium, you really do not want it getting into everyone's hands. Here the process seems to be under control and the operations seem to be thoroughly thought through," says Susanna Heikkinen.

"It is good to visit here even if you don't understand a lot in the end. You get a feeling of safety. Everyone can see that the uranium is handled and processed with care. The plant is extremely clean, everything looks new even though it is 30 years old. That kind of maintenance is reassuring," says Aila Salokannel summarising the day's experiences.

"Visiting this place really ought to be obligatory. You learn so much here," says Anne Mikkola.

Tero Mikkola thought along the same lines. "Nuclear power is something you can't think about everyday. After this visit, you can see that people like us don't need to think about it; the people from TVO are looking after it for us. I don't have to worry about this any more, I can concentrate on thinking about getting a new tractor."

GRI indicator table

Comparison of the Report with the recommendations of the Global Reporting Initiative guidelines

TVO's self declaration, authenticated by a third party, of the contents of the Report in relation to GRI's G3-guidelines: C+

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		In TVO there is freedom of association, union membership is not monitored. TVO acts according to Finnish legislation.
		Not relevant for TVO. In TVO there is freedom of association. There is no child labour in TVO.
		Not relevant for TVO.
		No fines or other consequences.
		Not relevant for TVO.

Company level policies

Safety culture

TVO and its personnel are committed to a high level of safety culture.

Safety culture is the product of the organisation's operating approach and the attitudes of individual people and the result is that the factors which affect the safety of a nuclear power plant receive the importance each of them merit, and are of primary importance when decisions are being made.

Company level policies

TVO and its personnel act in accordance with the policies specified by the company.

Laws, regulations and official instructions as well as international agreements are followed uncompromisingly. TVO sets demands for its own operations that are stricter than the statutory regulations.

TVO requires its business partners and those people working at Olkiluoto to commit to a high level of safety culture and high quality operating procedures. This means that companies and people contracted to work directly or indirectly operate responsibly in accordance with TVO's principles governing environmental, nuclear safety and quality policy as well as data security.

Nuclear safety and quality policy

The nuclear safety and quality policy comprises nuclear safety, radiation protection, and the supervision of nuclear material and quality.

Nuclear safety

TVO is committed to maintaining operating conditions in which it is possible to implement effective procedures in terms of safety, quality, and cost. This safeguards the ability to produce competitive electricity safely and reliably over the long-term as well.

TVO's operations may not cause harm to people, the environment, or property.

Radiation protection

TVO and its personnel are committed to the ALARA (As Low As Reasonably Achievable) principle in all radiation protection operations. Accordingly, individual and collective radiation doses are kept as low as possible by all practical means.

Restricting doses and keeping radioactive emissions as low as possible are both taken into account when structures and operations are being planned. All employees must take into consideration matters affecting radiation protection in their own work.

In planning radiation protection, international recommendations are taken into account in addition to official guidelines.

Nuclear material supervision

TVO takes particular care with nuclear material and makes sure that it does not fall into the wrong hands.

Quality

TVO ensures that the company employs high-quality working methods. They are the basis for a safe and eco-

nomical operation. TVO employees are well aware of the importance of safety in their work.

Issues are dealt with openly. Competence and operations are developed on the principle of continuous improvement. Employees are encouraged to point out any possible areas for improvement and to report any shortcomings, nonconformities or faults that they observe.

We consider our internal clients to be just as important as our external ones. Our work is professional, of high quality and delivered on time.

TVO develops co-operation with its suppliers so that safety, utilisation, and environmental considerations at the plant units are maintained at a high international level.

Social responsibility policy

Social responsibility policy involves the environment, procurement, personnel, occupational safety and public relations.

Environment

TVO operates in accordance with the principles of sustainable development. TVO takes responsibility for its environment by minimising the detrimental effects of its activities and taking care of the waste it generates, by checking and examining the state of the natural surroundings and, if necessary, taking immediate corrective action. TVO nurtures the skills and expertise of its personnel in environmental matters. TVO endeavours to take the lead in the management of

environmental matters.

TVO's objective is to reduce the already low emissions from radioactive materials in accordance with the principle of prevention and continuous improvement. Any non-conformities in the plant process are anticipated, and action is taken to prevent any resulting detrimental effects to the environment.

TVO understands the importance of its overall responsibility for all the stages in the fuel cycle. The company monitors and checks the management of environmental matters by fuel suppliers. TVO requires its suppliers to be responsible for protecting and developing the living conditions around the mining areas, while taking the indigenous population into account. The fuel is monitored from the uranium mine to the final repository in accordance with the "from bedrock to bedrock" principle.

TVO's objective is to take energy efficiency requirements into account and to improve the energy efficiency of its power plant processes. The company monitors its own energy use and tries to make it efficient by considering energy perspectives in its equipment procurement, technical matters and in changing its operating procedures.

TVO minimises the amount of waste that is generated by improving the use of energy, equipment and raw materials and by developing waste recovery. The aim is to increase the percentage of municipal waste that can be recovered and to lower the amount of radioactive waste generated in the controlled area. TVO also endeavours

to reduce the amount of spent fuel by optimising its properties.

During the construction of the new nuclear power plant, efforts are being made to minimise the detrimental effects on, and interference with, the environment. Particular attention is being paid to the amount of waste generated and its recycling.

Procurement

Products and services procured must meet TVO's quality and environmental requirements.

The availability of products and services essential for the company's operations is guaranteed through long-term contracts based on mutual trust and partnership.

Supplier selection involves close attention to the continuity of operations, reliability of deliveries, management of quality and environmental matters and competitiveness, while at the same time respecting the nationality and location of the supplier.

Suppliers are rated, the quality of deliveries is monitored and any corrective measures necessary are taken immediately.

Personnel

TVO's objective is to ensure that its employees handle their duties responsibly and that they are motivated, competent and committed to observing the agreed operating methods.

TVO ensures that the company has adequate and appropriate personnel resources for achieving the targets set for the company.

The availability of skilled professional personnel is ensured by competitive pay that stimulates productive working, good daily activity and achievement of long-term goals.

The principles of the personnel policy are implemented in good cooperation with the personnel.

TVO aims to have a workplace community that is based on equality where all discrimination is rejected and equality is promoted, and that provides equal opportunities for all employees to develop their skills and apply for different jobs irrespective of their gender or age.

TVO creates the conditions for employees to maintain their working capacity.

Occupational safety

The objective of our occupational safety activities is to promote health and occupational safety in accordance with the "zero accidents" principle.

TVO maintains a good working atmosphere and working conditions.

TVO and its employees do not tolerate harassment or bullying in the workplace.

The occupational safety objective for everyone working in the plant area is to look after their own safety and that of their co-workers. Occupational safety is taken into consideration in all activities.

Public relations

TVO openly publicises events within the company and at the Olkiluoto nuclear power plant and promotes gen-

eral knowledge about nuclear power. TVO regards it as important that interest groups are informed of the necessity, characteristics, and the environmental effects of nuclear power.

The Visitor Centre at Olkiluoto provides information to those interested in the company's operations, and the exhibition is open to visitors.

The company functions as a good corporate citizen in the local area around Olkiluoto.

Internal communications ensure that the personnel are informed promptly about special situations relating to the operations of the plant and the company, and that they are always aware of the company's policies and decisions and of its position regarding both finance and power generation.

Power generation policy

The power generation policy includes the operation and maintenance of the plant and increasing its generation capacity.

Operation and maintenance

TVO's operation and maintenance activities are aimed at uninterrupted, predictable and competitive electricity generation. Nuclear safety and operational safety always take priority.

Plant safety and reliability are developed systematically. Any changes or renovations are carried out according to pre-approved plans with the aim of keeping the plant operational for as long as possible.

Systematic and comprehensive testing and inspection ensure that the plant operates safely and reliably.

The plant's maintenance operations are carried out systematically, and any faults or malfunctions are anticipated, and preparations are made to take the measures required.

Increasing generation capacity

TVO monitors the development of nuclear power technology and takes part in international co-operation with power plant suppliers and nuclear power companies.

The electricity output of the present Olkiluoto power plant units will be increased where possible using the latest technology available.

The planning and implementation of OL3 applies technology that is financially the best available and that minimises the detrimental effects to the environment, taking into account the entire life cycle of the power plant unit.

Corporate security policy

The corporate security policy includes the security of production and operations, the security of people and premises, rescue and emergency activities, and data security.

Security of production and operations, and security of people and premises

Security procedures are carried out systematically, pre-emptively and comprehensively. The procedures ensure that the plant's operations run securely

and that the company's personnel and other people working at the plant come to no harm.

Rescue and emergency

TVO maintains and develops its operational readiness for special situations. Rescue and emergency operations are practised systematically and regularly.

The company continuously updates its knowledge of the risks to itself, its personnel, and the operating environment.

Data security

Data security procedures are scaled according to the importance and risk of TVO's operations. The objective is to protect nuclear safety, financial interests and personnel privacy, to ensure that correct and reliable information is being used, and to avoid any damage caused by the processing of information.

TVO's data security procedures cover the usability, accuracy and confidentiality of data and information systems and user rights management procedures.

TVO employees are given the appropriate user rights to access company information systems to carry out their duties. Disclosure of information to outside parties is allowed only when it benefits TVO. In handling information provided to TVO by other parties, the minimum data security procedures observed are those used or required by the provider of the information.

Glossary

A

Activity

The number of spontaneous nuclear disintegrations in radioactive matter within a certain time. The unit of radioactivity, the Becquerel (Bq) equates to one disintegration per second.

B

Background radiation

Radiation emanating from natural sources, such as radon from the soil, radiation from space, and radioactive materials in one's own body.

Becquerel, Bq

The unit expressing the activity of a radioactive substance. 1 Bq is equal to one spontaneous nuclear disintegration in the substance per second.

BOD_{7ATU}

The biological oxygen demand in waste water.

BWR (Boiling Water Reactor)

A light water reactor in which water is used as the coolant which then boils as it passes through the reactor core. The steam generated rotates the turbines.

C

Capacity factor

A figure depicting the production at a power plant in, for example, one year. The capacity factor is the energy produced by a power plant in a year as a percentage of the energy that it would have produced had it been operating at full capacity for the entire year.

Carbon-14

Carbon-14 is a long-lived naturally-occurring, beta-emitting radioisotope created by cosmic rays in the earth's atmosphere. It is also formed in a nuclear reactor when the oxygen in the coolant is activated from where it moves into the atmosphere bound in carbon dioxide.

CO₂

Carbon dioxide

Consortium

A temporary grouping formed by several companies for a specific business project.

D

Decibel, dB

Noise is measured by a decibel scale expressing sound intensity.

DNV

An abbreviation of the words Det Norske Veritas. Det Norske Veritas acts as an independent third party in different inspections/auditing. The main issues are connected with services of classifying ships and issues connected to the certification of management systems.

Dose rate

A dose of radiation per time unit (for example, mSv/h) expressing the amount of radiation a person is exposed to within a certain period of time.

E

EMAS

Eco-Management and Audit Scheme, an EU environmental management scheme to which the TVO environmental management system conforms.

Emission rights

The EU introduced emission rights trading within the EU at the beginning of 2005. Annual carbon dioxide quotas were defined for plants producing carbon dioxide emissions throughout the entire EU area. The concept behind the scheme is to focus emission-reducing measures cost-effectively in areas where they are the most affordable to implement. In other words, the plants that manage to reduce their emissions in a cost-effective way so that they fall under the quotas can sell the "saved" emission rights in the emission rights trading system. Conversely, plants for which reducing emissions would be expensive can buy emission rights.

EPR, European Pressurized Water Reactor

A pressurised-water reactor based on the most recent French and German pressurised-water reactors, with four steam generators and four parallel, independent safety systems.

Euratom

A unit of the EU Commission that supervises nuclear material.

F

Fission

The disintegration of two heavy nuclei into two or more medium-heavy nuclei. The process also releases neutrons and a large amount of energy.

Fission products

The medium-heavy nuclei produced in nuclear fission. They are usually radioactive.

G

Gigawatt, GW

A unit of power. One gigawatt equals one million kilowatts.

Gigawatt hour, GWh

A unit of electrical energy. One gigawatt hour is a million kilowatt hours.

H

Half-life

The time it takes for the radioactivity of an isotope to reduce by half.

I

IAEA

International Atomic Energy Agency

INES (International Nuclear Event Scale)

A seven-level scale used internationally to depict the seriousness of accidents and incidents at nuclear power plants. The lower levels (1–3) depict incidents that have weakened plant safety and the upper levels (4–7) accidents that could cause emissions into the environment that require protective measures against radiation.

Iodine

From the point of view of radiation safety, the most important isotope of iodine among fission products is iodine-131, which has a half-life of 8 days.

Ion-exchange resins

Substances used to remove impurities from water.

ISO 9001 standard

International standard for quality management systems.

ISO 14001: 2004 standard

A standard for the management of environmental matters that is widely used in various parts of the world.

Isotope

Atoms of the same element differing from each other in the number of neutrons in their nucleus. Almost all natural elements occur as more than one isotope.

K

KAJ

Storage for intermediate-level waste. (KAJ is the Finnish acronym for "intermediate-level waste".)

KPA

Interim storage for spent fuel. (KPA is the Finnish acronym for "spent fuel".)

M

ManSievert, manSv

The unit used to indicate the collective radiation dose received by a certain number of people.

MEE

Ministry of Employment and the Economy

Megawatt, MW

A unit of power. One megawatt equals 1,000 kilowatts, or 1,000,000 watts.

N

Noble gas

The name for certain gases that are rarely found in the atmosphere. The noble gases are helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe) and radon (Rn).

Nuclide

A type of atom or nucleus with a specific number of protons and neutrons.

O

Occupational accident

An accident that occurs at work or on the way to or from work and which causes an absence of at least one day.

Occupational Safety Card

Occupational Safety Card training is meant particularly for employees working in a shared workplace. The course lasts one day and concludes with a written examination. Passing the examination entitles the candidate to receive an Occupational Safety Card, which is valid for five years. The course is delivered by a course leader who has an Occupational Safety Card trainer qualification.

P

PWR, Pressurized Water Reactor

A light-water reactor with such a high reactor pressure that water used as the coolant does not boil in the reactor. The hot water is conducted from the reactor to a steam generator, in which the water in the secondary circuit, at lower pressure, evaporates and the steam is forced to rotate the turbine.

R

Radiation

Electromagnetic waves or particle radiation consisting of the smallest particles of matter.

Radioactive operating waste

Waste such as plastic, paper and cloth that is generated during maintenance work at the power plant. The volume can be reduced by baling.

S

Screenings

Organic matter that accumulates on the fine screen and basket filters of the screening plant during the intake of cooling water. It comprises mostly of debris, algae, clams and fish that have been carried in with the cooling water.

Sievert, Sv

A unit of radiation dosage that illustrates the harm to health caused by ionising radiation. The dosage is usually expressed in multiples of thousandths mSv (millisievert) or millionths μ Sv.

STUK

Finnish Radiation and Nuclear Safety Authority. STUK is the authority that regulates the Finnish nuclear energy sector.

T

Terawatt, TW

A unit of power. One terawatt equals one billion kilowatts.

Terawatthour, TWh

A unit of energy. One terawatt hour equals one billion kilowatt hours.

Tritium

Tritium is an isotope of hydrogen with a nucleus consisting of one proton and two neutrons.

U

Uranium

An element with the chemical symbol U. Uranium comprises 0.0004% of the earth's crust (4 grams per tonne). All uranium isotopes are radioactive. Natural uranium is mostly in the form of isotope U-238, which has a half-life of 4.5 billion years. Only 0.72% of natural uranium is in the form of isotope U-235, which can be used as nuclear fuel.

V

VLJ repository

A repository for low and intermediate-level radioactive waste (VLJ is the Finnish acronym for "power plant waste".)

VTT

Technical Research Centre of Finland.

VYR

Finnish State Nuclear Waste Management Fund.

W

WANO (World Association of Nuclear Operators)

An international organisation that forms a framework for nuclear companies to exchange operation experiences and improve the safety of their plants.

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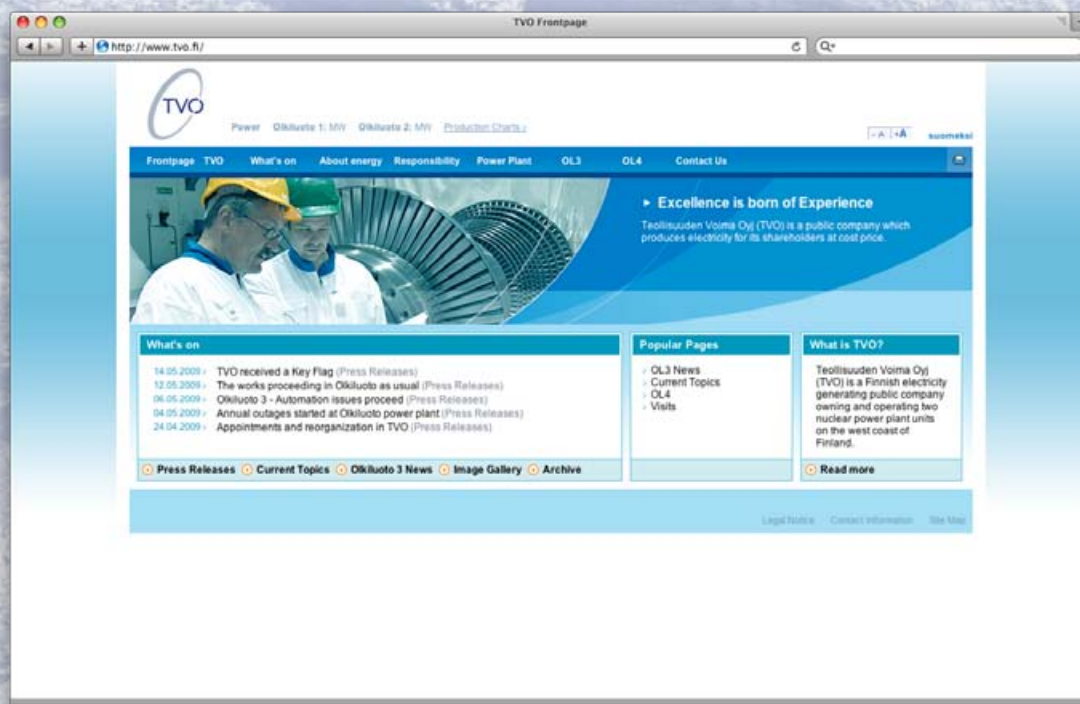
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TVO's website contains a considerable amount of additional information regarding TVO, corporate social responsibility, and nuclear power.





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