POHJOLAN VOIMA

ENVIRONMENTAL INFORMATION 2006

Contents

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To the reader

The Environmental Information 2006 supplements the environmental information provided in Pohjolan Voima's Annual Report.

The supplement deals with Pohjolan Voima's own energy production. In addition to the Group's own power plants, the parameters, e.g. fuels and emissions, include all power plant shares in so far as Pohjolan Voima obtains electricity and heat from them on the basis of its shareholding. Purchased and imported electricity is not included in the examination. The heat production volumes are shown as a whole, without taking account of the shareholdings.

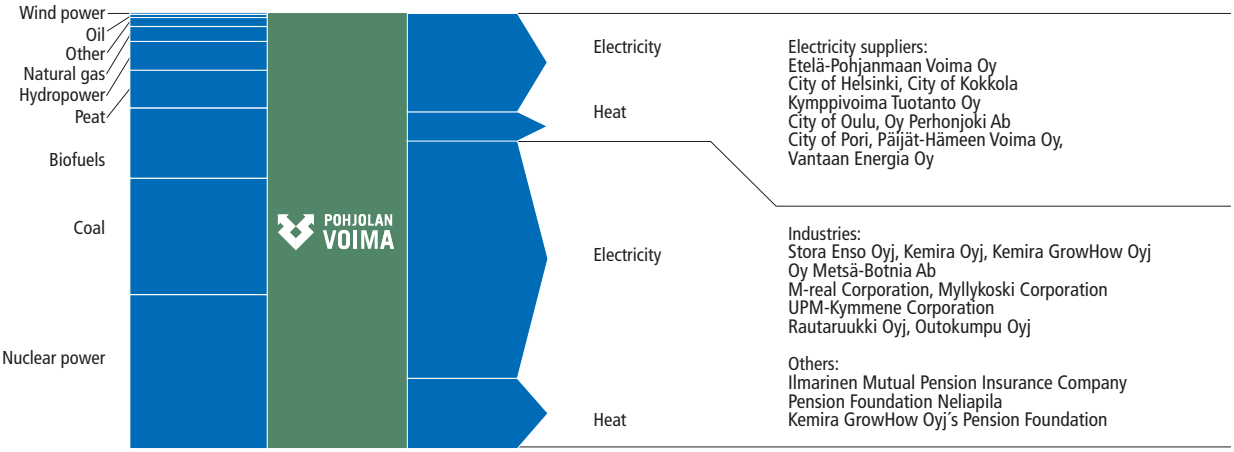
The calculation limits used in this report differ from the scope of the consolidated financial statements. However, these calculation limits describe the environmental burden placed by the whole of Pohjolan Voima's own energy production in the best possible manner.

Additional environmental information is available on Pohjolan Voima's and Teollisuuden Voima's Web sites at www.pohjolanvoima.fi and www.tvo.fi.

Electricity and heat production

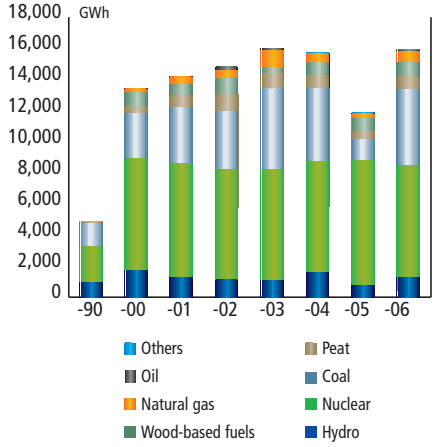
In 2006, Pohjolan Voima's total electricity supply was 17.9 TWh, 34% up from the previous year. The output of thermal power plants was 8.4 TWh, which was 142% higher than in 2005. The increase in condensing power production was particularly marked because it was used to compensate for the shortage in Nordic hydropower. Due to the low precipitation which persisted until the autumn, the power production of Pohjolan Voima's hydropower plants was also lower than in the previous year. The production of thermal power was also boosted by the increased power plant capacity. Heat supplies to the shareholders increased to 4.8 TWh.

Energy sources and shareholders in 2006

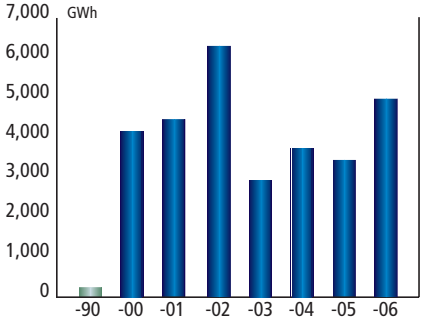


Pohjolan Voima utilizes a wide range of energy sources.

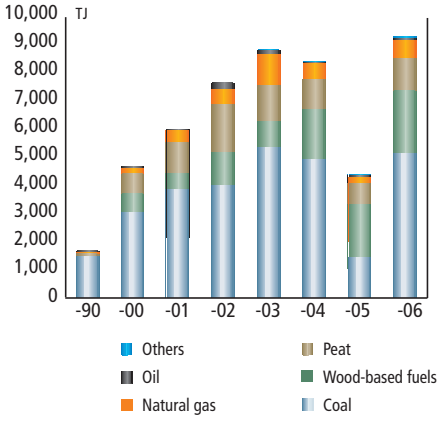
Pohjolan Voima´s electricity generation



Pohjolan Voima´s heat production



Pohjolan Voima´s fuel consumption



Hydropower plants and regulation

	Location	Electrical output MW*)
Kaaranneskoski	Ylitornio	1.3
Jolmankoski	Pello, Ylitornio	0.3
Portimokoski	Ylitornio	5.3
Isohaara	Keminmaa, Kemi	106.0
Jumisko	Kemijärvi	30.0
	Posio, Salla	
Raasakka	Ii	58.0
Maalismaa	Yli-Ii	33.0
Kierikki	Yli-Ii	34.0
Pahkakoski	Yli-Ii	34.0
Haapakoski	Yli-Ii, Pudasjärvi	28.0
Melo	Nokia	67.0
Harjavalta	Harjavalta	14.5
Kosto (reg.)	Taivalkoski, Posio	
Irni (reg.)	Kuusamo,Taivalkoski	
	Total	411 MW

Wind power plants

	Location	Electrical output MW*)
Kokkola	Kokkola	1
Oulunsalo	Oulunsalo	3
Kristiina	Kristiinankaupunki	2
Oulu	Oulu	3
	Total	10 MW

Nuclear power plants

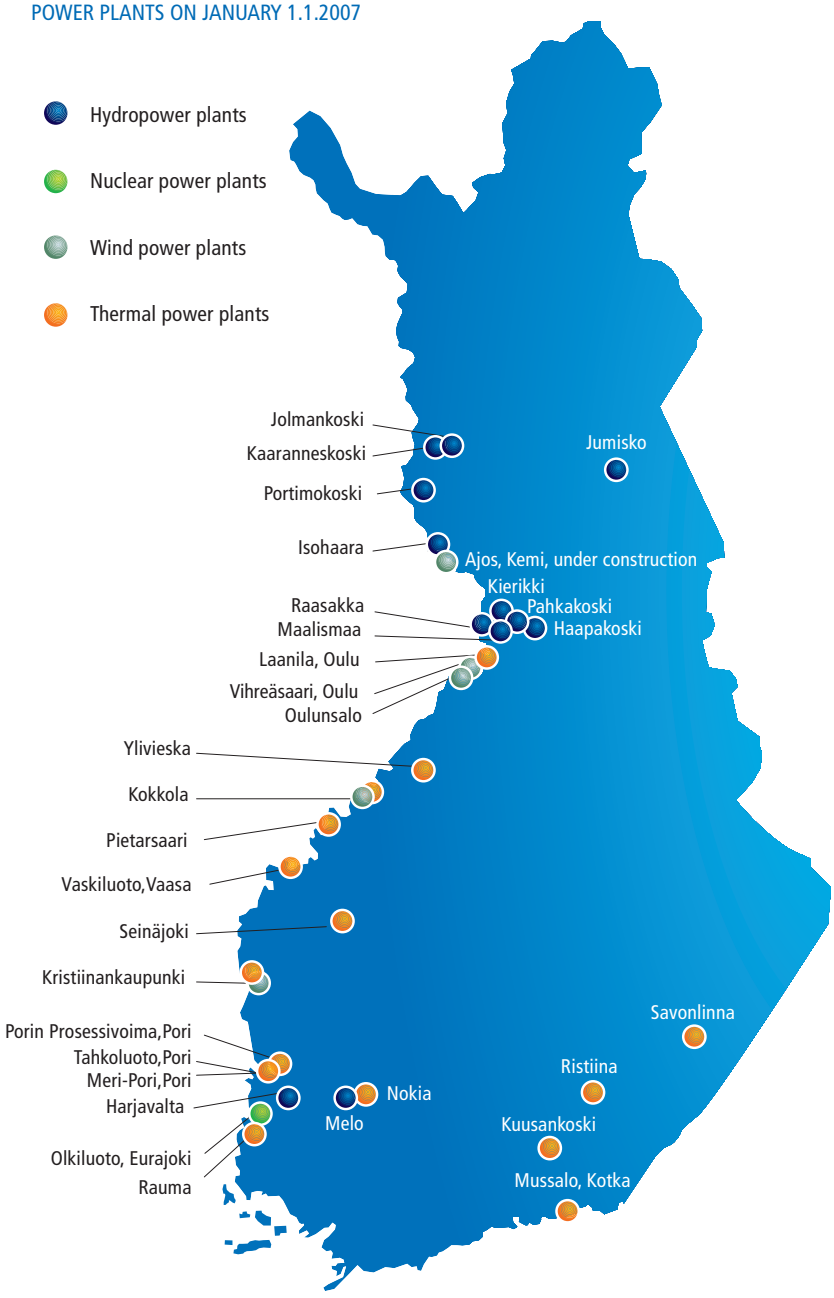
	Location	Electrical output MW*)
Olkiluoto 1	Eurajoki	488
Olkiluoto 2	Eurajoki	488
	Total	977 MW

Thermal power plants

	Location	Electrical output MW*)
Vieskan Voima	Ylivieska	6
Kokkolan Voima	Kokkola	20
Vaskiluoto 2	Vaasa	115
Vaskiluoto 3	Vaasa	160
Seinäjoki	Seinäjoki	63
Alholma 1	Pietarsaari	12
Alholma 2	Pietarsaari	120
Kristiina 1	Kristiinankaupunki	210
Kristiina 2	Kristiinankaupunki	242
Tahkoluoto	Pori	235
Meri-Pori	Pori	146
Nokia	Nokia	70
Savonlinna	Savonlinna	0
Ristiina	Ristiina	8
Mussalo 1	Kotka	75
Mussalo 2	Kotka	238
Kymin Voima	Kuusankoski	58
Wisapower	Pietarsaari	140
Laanila	Oulu	19
Porin Prosessivoima	Pori	13
Rauman Voima	Rauma	47
	Total	1 996 MW

*) Pohjolan Voima´s share

POWER PLANTS ON JANUARY 1.1.2007



Environmental management at Pohjolan Voima

Pohjolan Voima's energy generation takes place in a number of separate subsidiaries and associated companies. The Board of Directors of each subsidiary, mainly consisting of the representatives of the Group's management, takes decisions on the issues of each subsidiary and on implementation of the decisions taken by the Group's top management. This ensures that the entire Group operates in compliance with the adopted strategies.

Pohjolan Voima's production companies have adopted the certified environmental management systems according to the ISO 14001 standard. Furthermore, Teollisuuden Voima has been accepted into the EMAS register. The environmental programmes included in the systems ensure continuous improvement of the operations.

All power plants in Pohjolan Voima have valid environmental and Water Court permits. In 2006 no significant environmental deviations took place at the Pohjolan Voima power plants. As a result of an incident caused by thunder, the maximum permissible water level was exceeded at two hydropower plants in the Iijoki river. No harm or risk was caused by the exceptionally high water. Otherwise, all operations were in line with the terms of the power plant permits.

Identified in late 2005, the damage in the Melo power plant dam in the River Kokemäenjoki was repaired. The damage at the dam at no time presented any danger to people or the environment.

Pohjolan Voima has published an Environmental Report since 1994. From 2001, the most significant environmental information has been published as part of the Annual Report and at the company Internet site, which also includes data on the origin of and emissions from electricity production required by law.

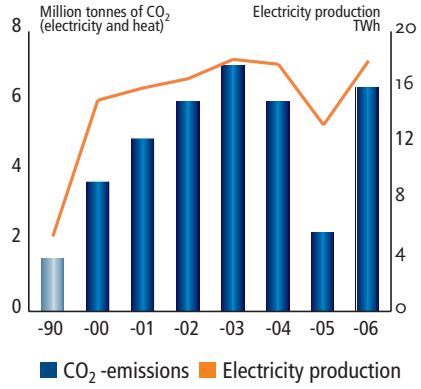
Environmental issues at Pohjolan Voima

The versatile range of energy production forms means that the environmental effects are distributed accordingly. The environmental effects of thermal power production primarily concern the atmosphere. The greatest effect of nuclear power results from the heat released into the sea. Hydro power plants alter the watercourses and their fish stocks, while wind power plants affect the landscape.

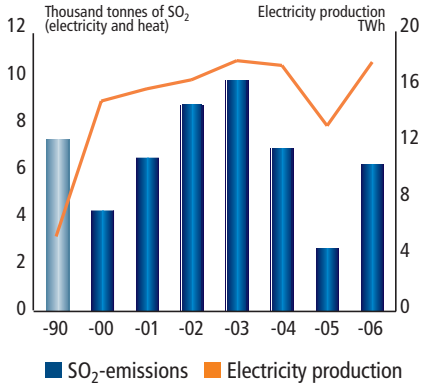
Pohjolan Voima controls its environmental effects as a whole. In accordance with the life-cycle approach adopted, the starting point is to identify and reduce the environmental effects and risks of our operation, and to ensure the overall efficiency of operations.

The emissions from thermal power production are subject to international agreements, which provide a basis for national legislation. Emissions from power plants are restricted and their effects are reduced by plant-specific permits, and they are monitored in accordance with the plans validated by the authorities. The emissions from outside Finnish borders place the greatest burden

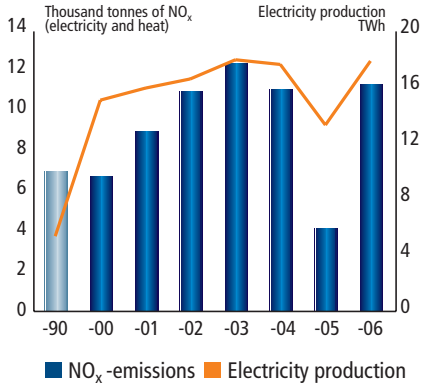
Pohjolan Voima´s carbon dioxide emissions



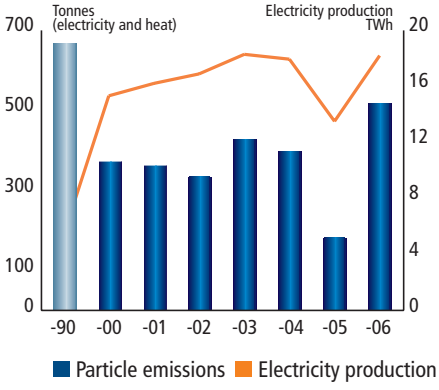
Pohjolan Voima´s sulphur dioxide emissions



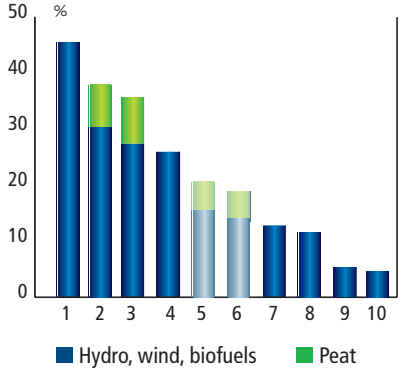
Pohjolan Voima´s nitrogen oxides emissions



Pohjolan Voima´s particle emissions

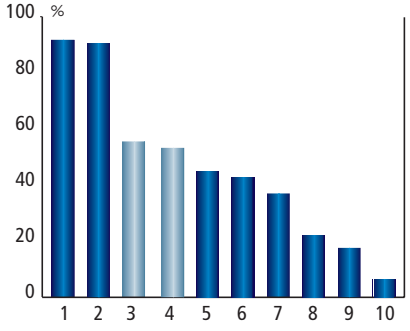


Electricity generation structure 2004 renewables and peat



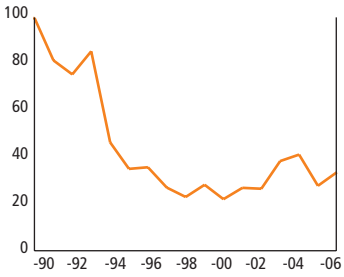
1 Sweden
2 Finland -04
3 Finland -06
4 Denmark
5 Pohjolan Voima -04
6 Pohjolan Voima -06
7 France
8 Germany
9 Netherlands
10 UK

Electricity generation structure 2004 emission-free (hydro, nuclear, wind)



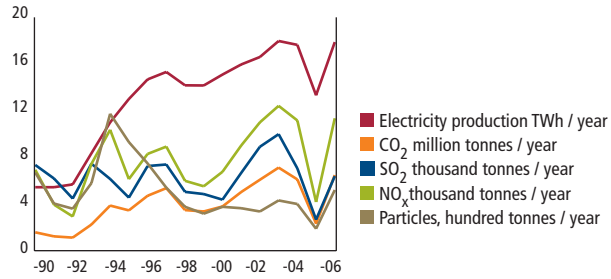
1 Sweden
2 France
3 Pohjolan Voima -04
4 Pohjolan Voima -06
5 Finland -04
6 Finland -06
7 Germany
8 UK
9 Denmark
10 Netherlands

Environmental index of thermal power, 1990 – 2006



The environmental index of thermal power includes the specific emissions of carbon dioxide, sulphur dioxide, nitrogen oxides and particles, and the volume of by-products stored in disposal areas. All factors carry the same weight.

Pohjolan Voima's production and emissions, 1990 – 2006



on Finnish soil. Power plants account for a small portion of the particles and other impurities present in urban air, of the order of a few per cent at most.

The year 2006 was the second year of trading in carbon dioxide emission allowances between the companies within the EU, on the basis of a Directive. Pohjolan Voima's thermal power plants have been granted their emission permits and emission allowances. The prerequisite for greenhouse gas emission permits is the observation and reporting of CO_2 emissions. In addition, the number of emission allowances corresponding to the previous year's CO_2 emissions is returned to the authorities annually. Carbon dioxide emissions are curbed e.g. by increasing emission-free production forms and by increasing energy efficiency. Sulphur emissions are controlled by the choice of fuel and desulphurization technology. The emissions of nitrogen oxides are mainly reduced by combustion technology. Particle emissions are cut by means of electrostatic precipitators.

Thermal power production with consequent emissions increased from 2005. In 2006, the carbon dioxide emissions amounted to 6.4 million tonnes and particle emissions to 517 tonnes. The sulphur dioxide emissions were 6.4 thousand tonnes and nitrogen oxides emissions 11.3 thousand tonnes. 397 thousand tonnes of fly ash, bottom ash and desulphurization gypsum were produced as by-products from the flue gas cleaning. 73% of these were reutilised in earthworks or by the construction industry.

Hydropower production has regional and local effects on the watercourses and fish stocks. Pohjolan Voima has been carrying out systematic management and restoration measures of the aquatic environments since the 1980's, mostly voluntarily and jointly with its stakeholders. The environmental costs of hydro power production amounted to EUR 2.4 million in 2006. Of these, EUR 1.7 million was used for the management of the fish stocks. Environmental management work was carried out in 89 locations at the total cost of EUR 0.4 million. Pohjolan Voima participated in the environmental management programme and the planning of the next programme period of the River Iijoki. Most of the land-based pools of the Raasakka fish farm were converted into small units in order to enhance production reliability and minimise environmental impacts.

Appeals were made to change the discharge permits of two power plants in the River Iijoki in order to ulitise the entire chain of power plants more efficiently. An application was also made for a higher permissible water level at one power plant. The permits were granted as applied for in early 2007.

The waterways used for hydropower production are utilised in many other ways as well, and reconciling these varied uses calls for flexible interaction with the immediate stakeholder groups. Communications regarding hydropower were enhanced considerably. The fulfilment of the company's fishing industry obligations was organised in such a way as to increase and simplify the interaction with stakeholders.

Environmental management work on watercourses carried out up the end of 2006

Clearing and landscaping of shores *	989 km
Protection against erosion of shores	2 121 estates, 302 km
Survey of shore landslips	171 km
Deepening and shaping of shores	29 locations
Boat ramps	135 pcs
Boat harbours *	410 estates (some of them public)
Drainage ditches *	117 km
Tapwater *	450 households
Roads*	794 estates, 90 private roads
Landscaping weirs *	42 pcs
Beaches	38 pcs
Dismantling of floating dams	3 pcs
Clearing of fishing grounds	470 pcs
Landscaping of dumping areas	82 hectares
Fish migration barriers *	6 pcs
Fish stocking (required by the authorities)	3,8 million individuals/year
Fishways	3 pcs

* some of them joint projects
(PVO-Vesivoima Oy/municipalities/authorities/local fishery associations)

Teollisuuden Voima Oy, which produces nuclear power, has operated in accordance with the environmental permits and the environmental management system. No significant deviations from regulatory compliance were identified in the company in 2006. All operations related to the construction phase of the OL3 plant unit are covered by a certified environmental management system.

The heat load carried with cooling waters into the sea totalled 27.4 TWh. The cooling water changes the ice conditions because the place of discharge remains open. The size of the open area varies between 3 to 20 square kilometres, depending on the winter. Monitoring has shown that operation of the power plant has no major harmful effects on the fish stock and fishing in the surrounding sea area.

Releases from the Olkiluoto nuclear power plant into the air were extremely small. Radioactive releases into the sea are caused by fission and activation products. Their releases into the sea amounted to 0.6 GBq, 0.21% of the release limits set by the authorities. Tritium releases into the sea were 2.46 TBq, 13.5% of the official limit.

The radiation situation in the environment has been normal. During the reported year, the individual radiation dose caused to the population within reach of the plant was 0.0003 mSv, while the average annual dose received by the Finns is 3.7 mSv.

The average occupational radiation doses received by the personnel working at the Olkiluoto power plant were 1.47 mSv. The highest single personal dose was 12.2 mSv, less than quarter of the maximum value of 50 mSv in a single year set by the authorities. The combined radiation dose received by staff working at Olkiluoto was 2.201 manSv.

The company paid EUR 12.9 million to the State Nuclear Waste Management Fund.

Pohjolan Voima's shareholding in Teollisuuden Voima is 57.7%.

In 2006, Pohjolan Voima's subsidiary PVO-Innopower generated 0.027 TWh of electricity with wind power. Pohjolan Voima's share was 0.019 TWh. The wind turbines are located in Kokkola, Kristiinankaupunki, Oulunsalo and Oulu. Moreover, Teollisuuden Voima has a 1-MW wind turbine in Olkiluoto. The combined production capacity of PVO-Innopower's wind turbines is 13.3 MW. Pohjolan Voima's share is 10 MW. PVO-Innopower started the construction of a large wind farm with a total capacity of 30 MW in Ajos, Kemi.

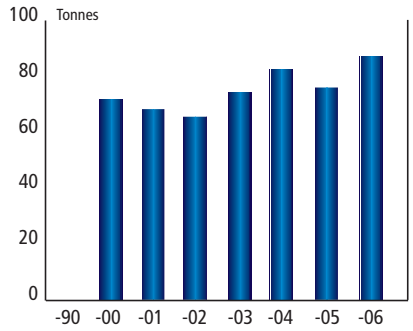
Power plant-specific information

The information on emissions and by-products given below includes the combined amounts of all units by power plant. On the basis of its participation, Pohjolan Voima also obtains electricity from the Meri-Pori power plant located at Tahkoluoto in Pori, owned by Fortum Power and Heat Oy. Emissions from the Meri-Pori plant, however, are not included in the emission figures of the Tahkoluoto plant. The new power plant of Rauman Voima was commissioned in November 2006 and the power plants of Laanilan Voima and Porin Prosessivoima were included in Pohjolan Voima's reporting for the first time in 2006. Consequently the data from previous years concerning those plants has not been presented.

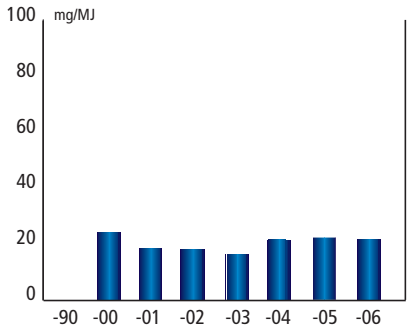
Information on specific emissions is given by power plant unit with regard to the principal emissions sources. In most cases, the emission regulations issued for the power plants concern specific emissions, which have been defined per volume of energy fed into the boiler (mg/MJ). Annual quotas have been issued for some plants. Emissions and their effects are monitored and the data is reported to the authorities in accordance with the regulations imposed by the permits.

The amounts of ash shown in the graphs concerning the use and final disposal of ash do not correspond to the accumulation of ash, since some of the ash may have been taken to interim stores.

Nitrogen oxides emissions

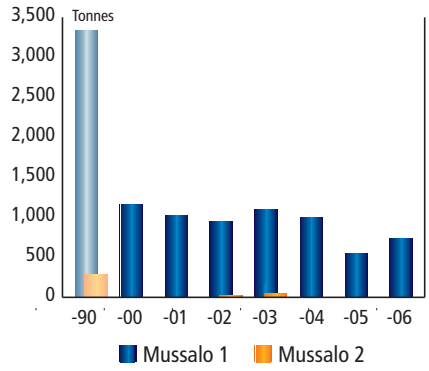


Specific emissions of nitrogen oxides

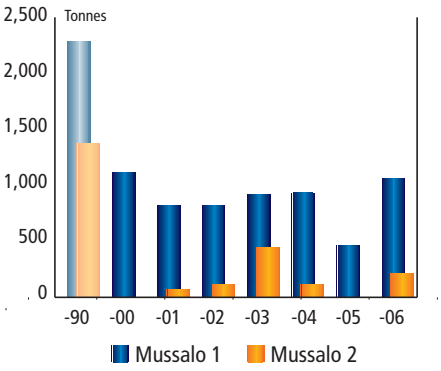


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • MUSSALO

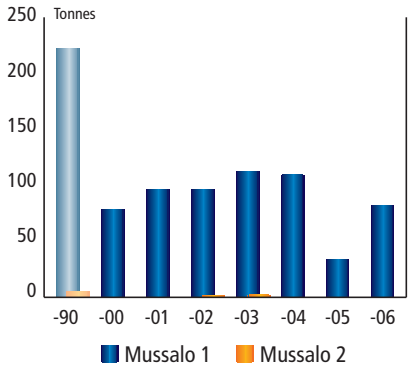
Sulphur dioxide emissions



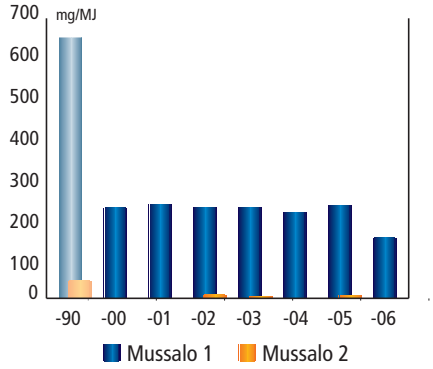
Nitrogen oxides emissions



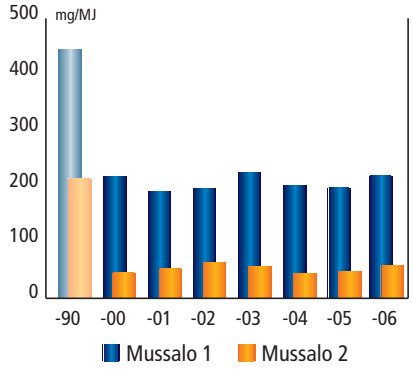
Particle emissions



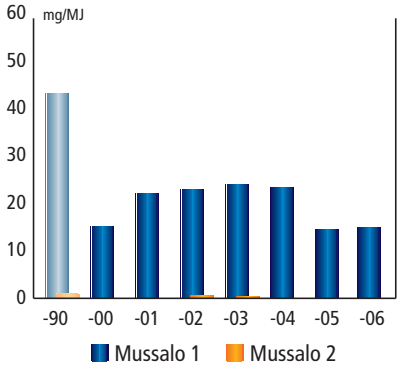
Specific emissions of sulphur dioxide



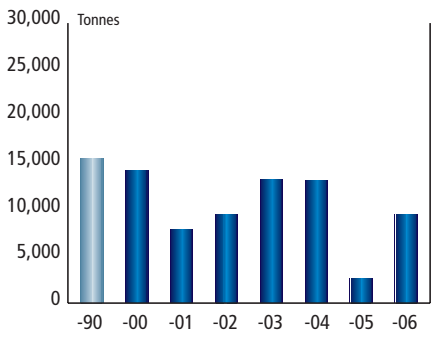
Specific emissions of nitrogen oxides



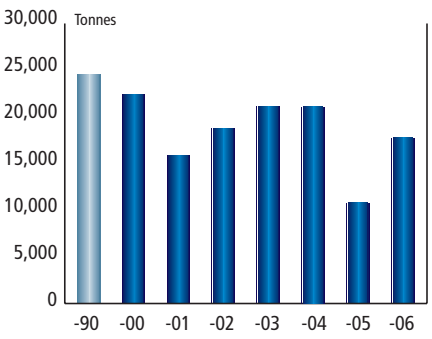
Specific emissions of particles



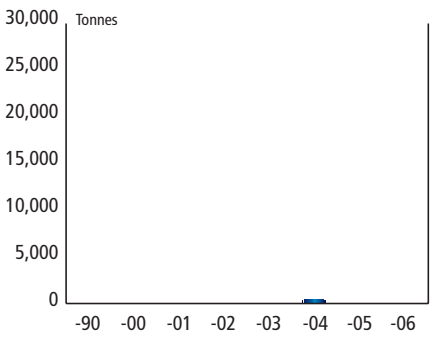
Accumulation of ash



Use of ash

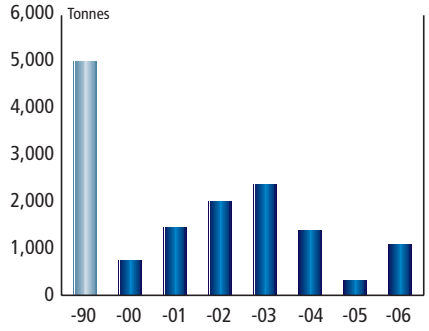


Disposal of ash

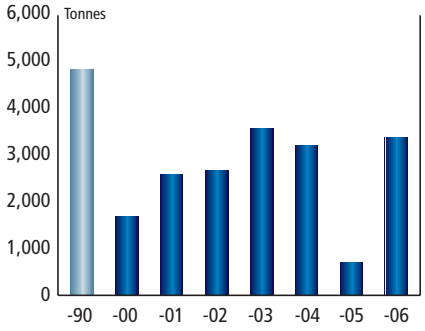


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • KRISTIINA

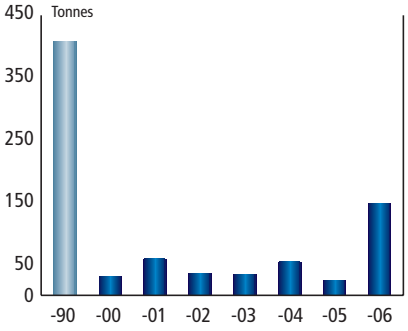
Sulphur dioxide emissions



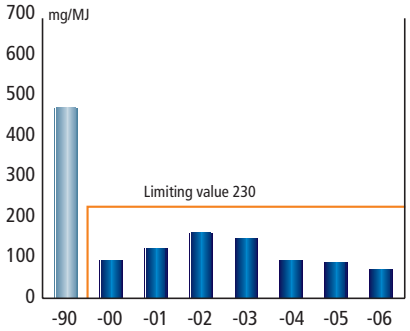
Nitrogen oxides emissions



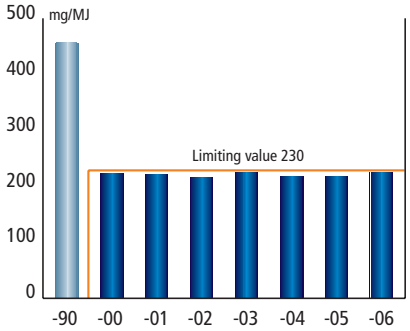
Particle emissions



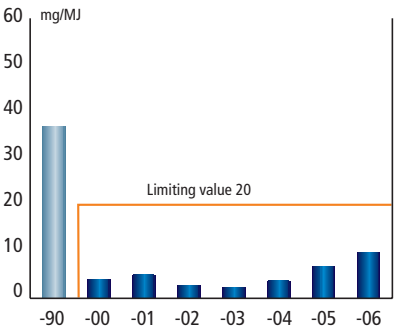
Specific emissions of sulphur dioxide



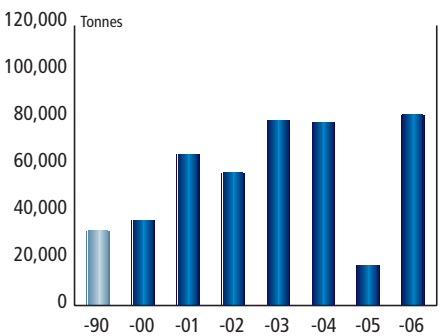
Specific emissions of nitrogen oxides



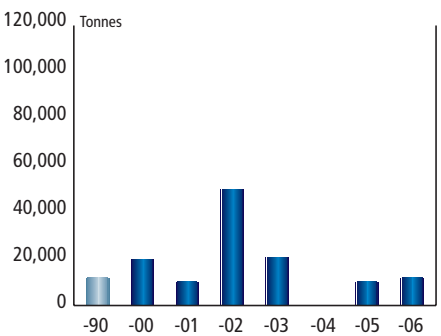
Specific emissions of particles



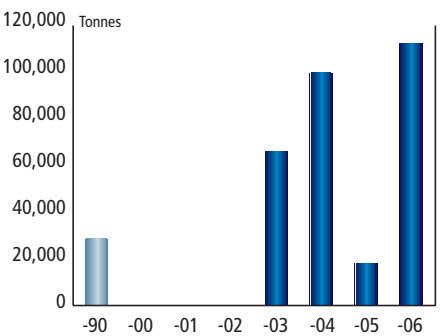
Accumulation of ash



Use of ash

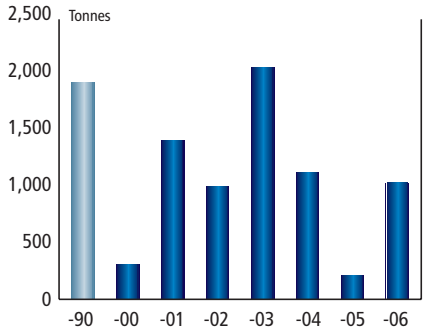


Disposal of ash

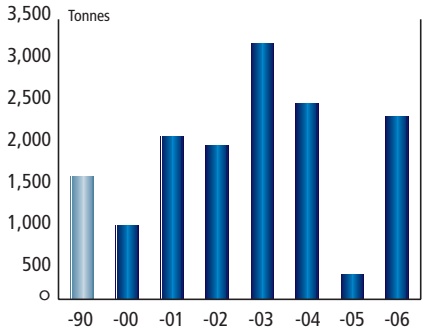


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • TAHKOLUOTO

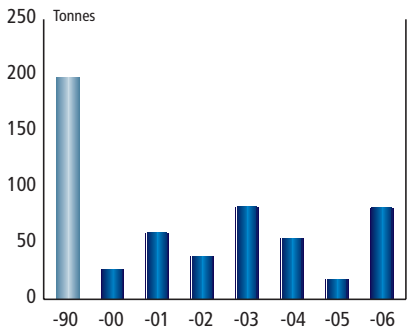
Sulphur dioxide emissions



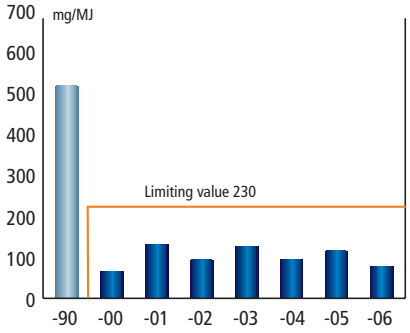
Nitrogen oxides emissions



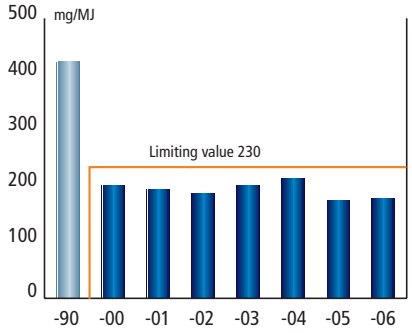
Particle emissions



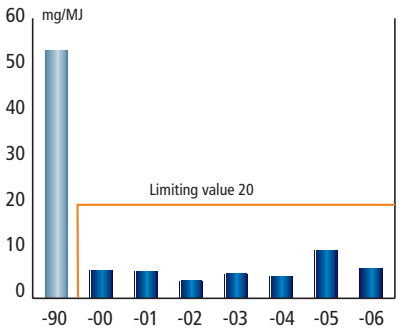
Specific emissions of sulphur dioxide



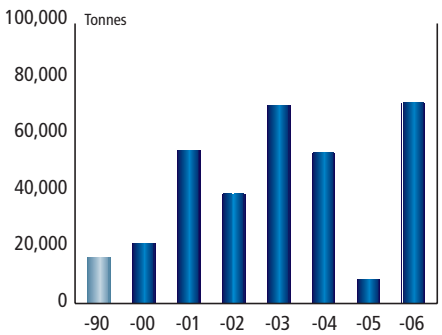
Specific emissions of nitrogen oxides



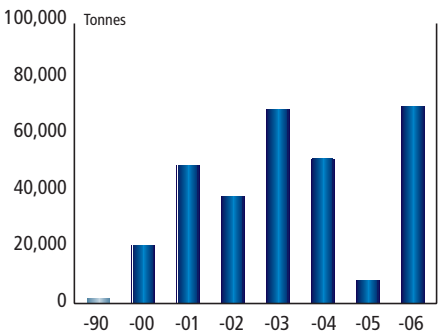
Specific emissions of particles



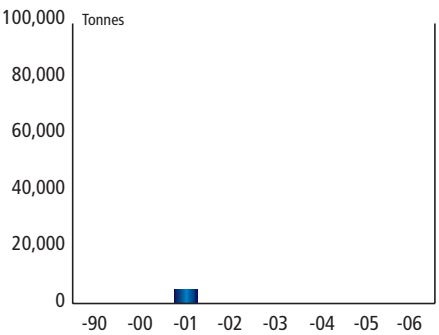
Accumulation of ash



Use of ash

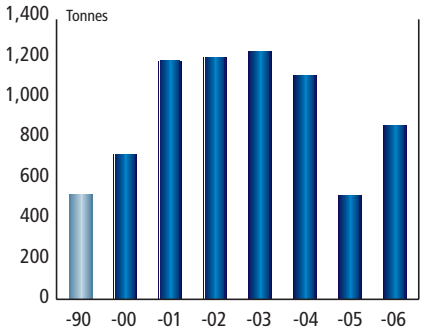


Disposal of ash

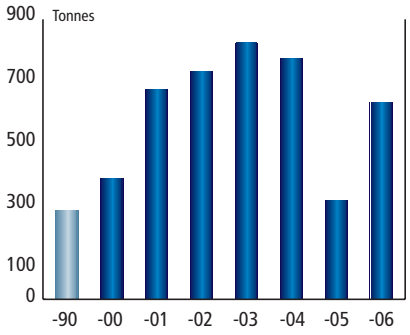


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • SEINÄJOKI

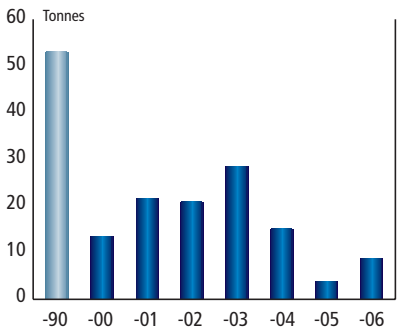
Sulphur dioxide emissions



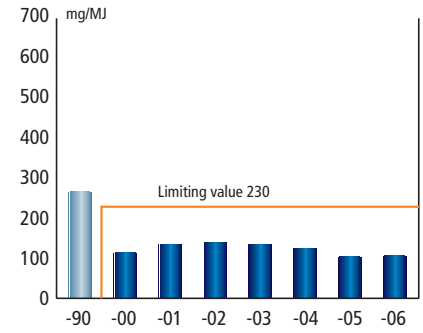
Nitrogen oxides emissions



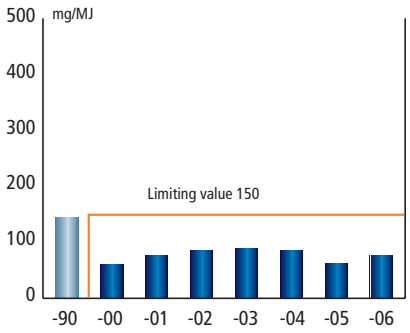
Particle emissions



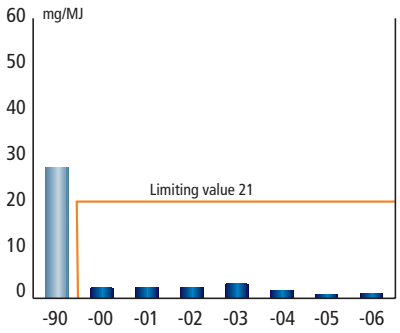
Specific emissions of sulphur dioxide



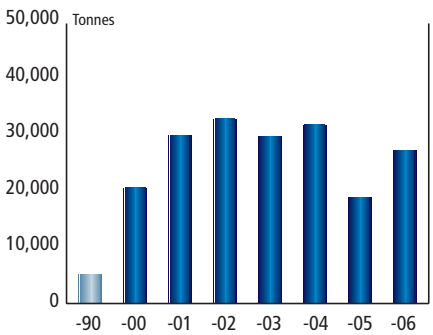
Specific emissions of nitrogen oxides



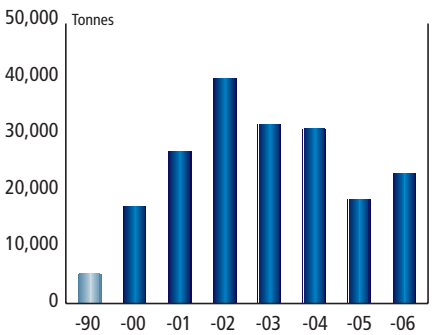
Specific emissions of particles



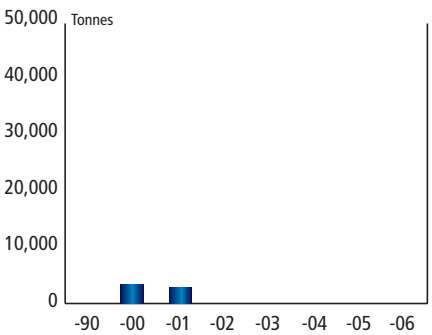
Accumulation of ash



Use of ash

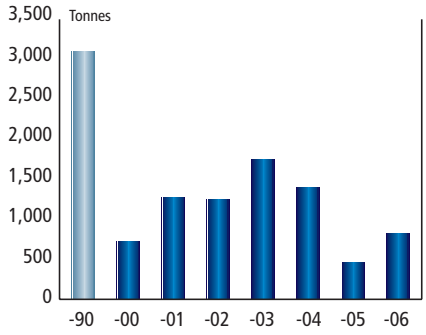


Disposal of ash

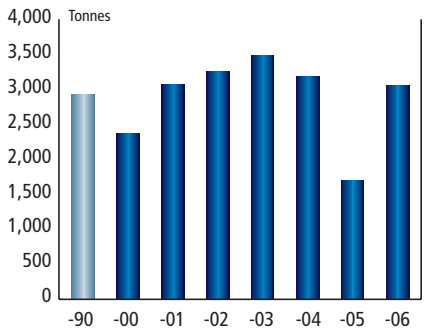


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • VASKILUOTO

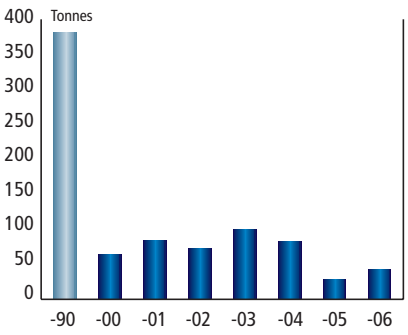
Sulphur dioxide emissions



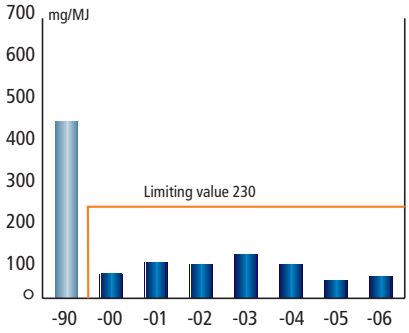
Nitrogen oxides emissions



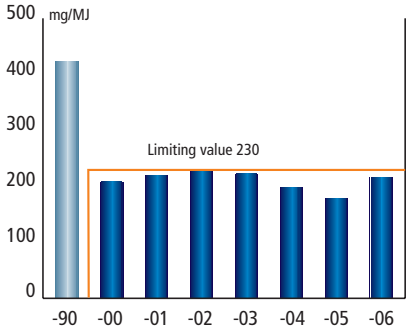
Particle emissions



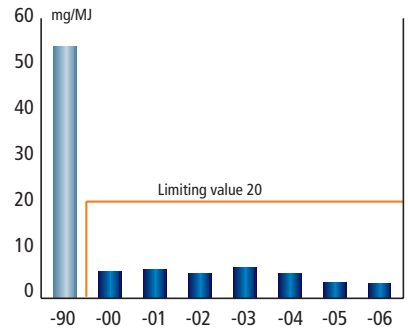
Specific emissions of sulphur dioxide



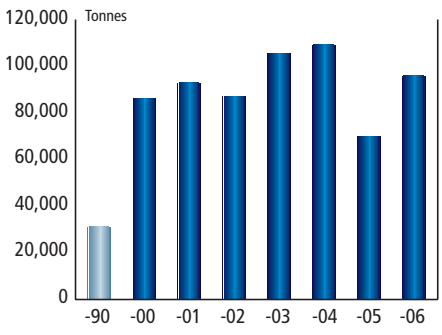
Specific emissions of nitrogen oxides



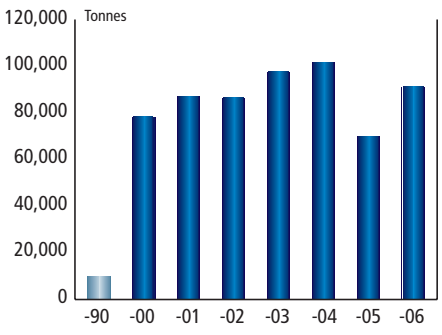
Specific emissions of particles



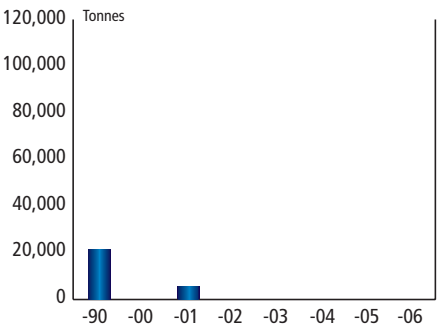
Accumulation of ash



Use of ash

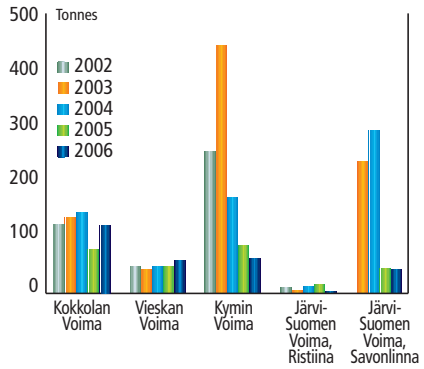


Disposal of ash

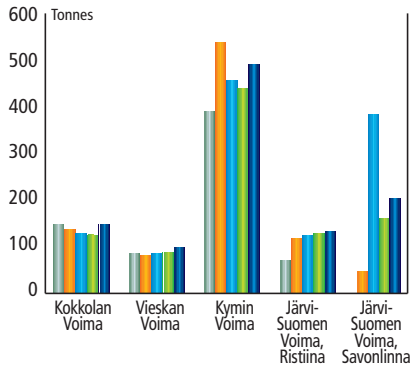


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • CHP-PLANTS

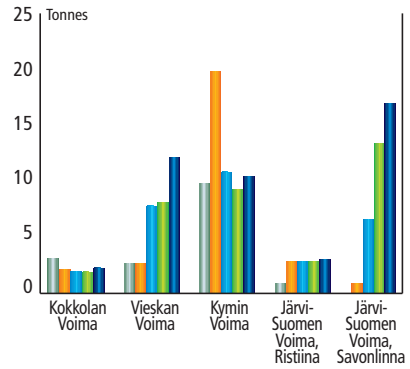
Sulphur dioxide emissions



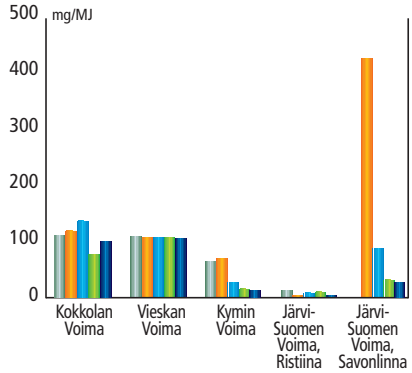
Nitrogen oxides emissions



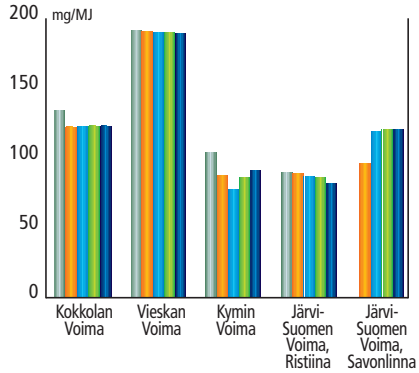
Particle emissions



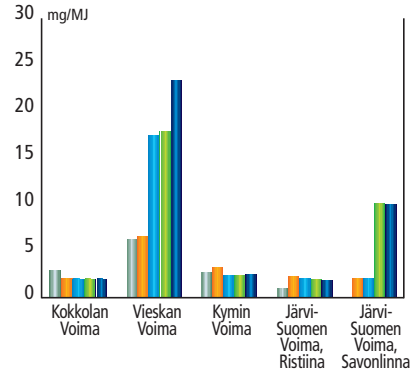
Specific emissions of sulphur dioxide



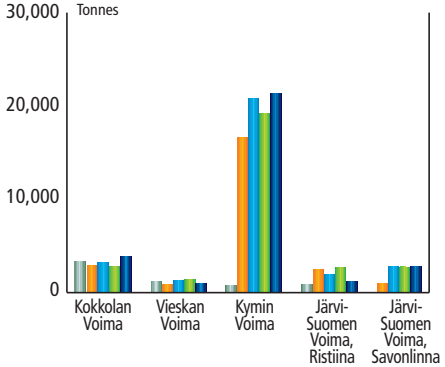
Specific emissions of nitrogen oxides



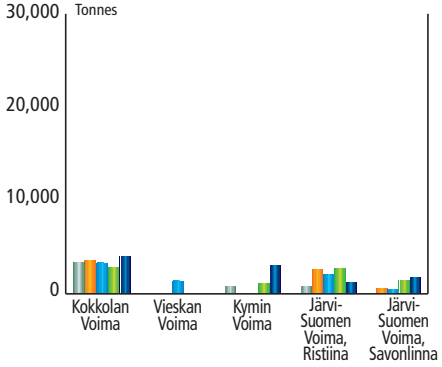
Specific emissions of particles



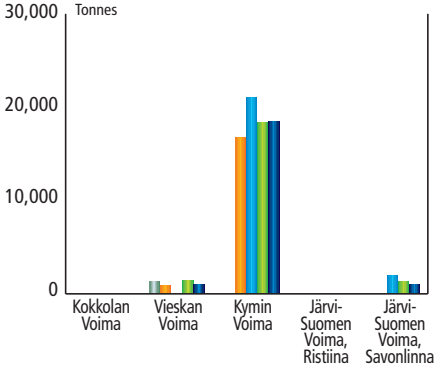
Accumulation of ash



Use of ash

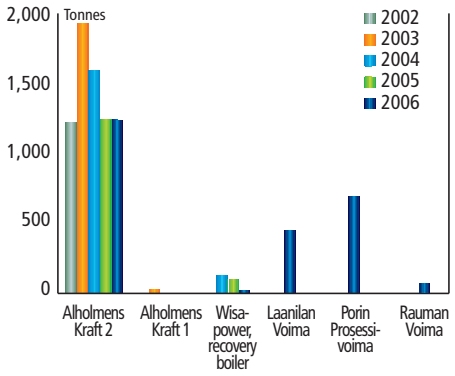


Disposal of ash

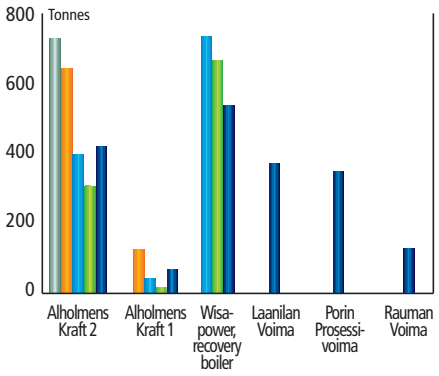


POHJOLAN VOIMA´S PLANT-SPECIFIC DATA • CHP-PLANTS

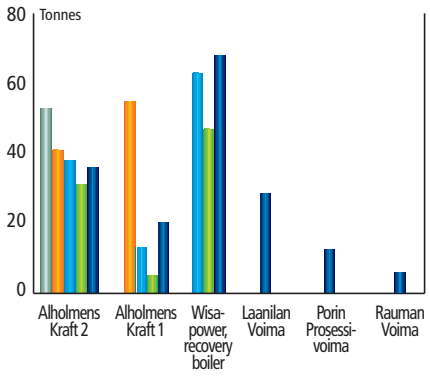
Sulphur dioxide emissions



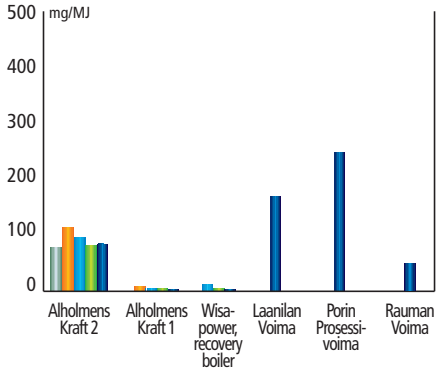
Nitrogen oxides emissions



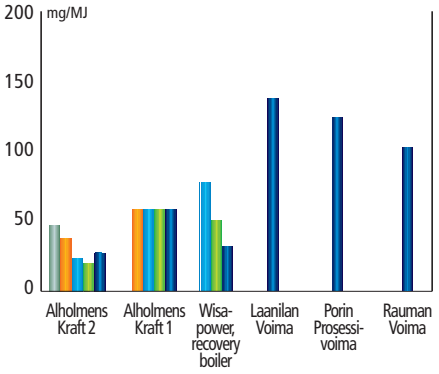
Particle emissions



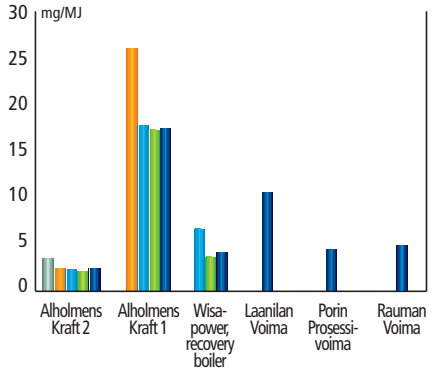
Specific emissions of sulphur dioxide



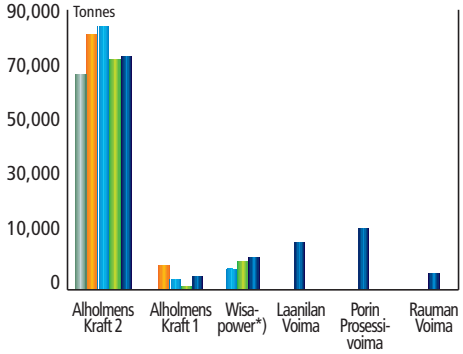
Specific emissions of nitrogen oxides



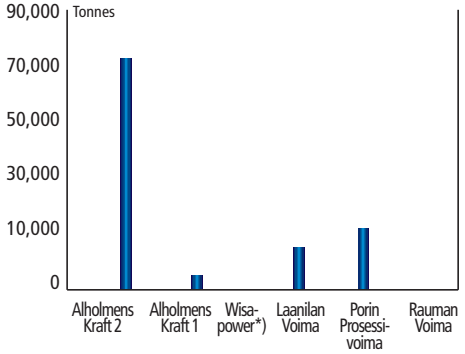
Specific emissions of particles



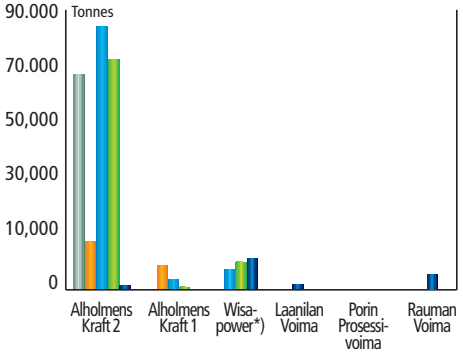
Accumulation of ash



Use of ash



Disposal of ash



*Green liquor dregs

GLOSSARY

Acidification
Acidification is caused by the emissions of sulphur dioxide, nitrogen oxides and ammonia, which, when released into the air, react with water vapour to form sulphuric and nitric acid.

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.

Bottom ash
By-product produced from the burning of coal. Bottom ash can be utilised for earthworks.

CO_2; carbon dioxide
Carbon dioxide is formed by combustion from coal contained in the fuel.

Deposition
Deposition is the mass of substances deposited at a certain time on the ground per unit area.

Electrostatic precipitator
Air pollution control equipment installed to remove particles, for example fly ash, from the flue gas. The removal of particles is based on electrostatic forces.

EMAS
Eco-Management and Audit Scheme is a voluntary environmental management and auditing scheme based on an EC directive.

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

Fly ash
By-product produced from the use of solid fuels. Fly ash can be utilised for earthworks, in the manufacture of asphalt and cement, and as mine-filling material.

Green liquor dregs
Precipitation from the chemical ash of the recovery boiler.

ISO 14001 standard
An environmental standard of the International Organisation for Standardization for the management of corporate environmental systems.

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

NO_x; nitrogen oxides
Nitrogen oxides originate from nitrogen contained in fuels and in the combustion air.

Particles
Particles are generally divided in to TPS and PM10. TSP includes all particles contained in the air, while PM10 refers to particles with a diameter of less than PM10 micrometres. In urban areas, particles mainly originate from vehicle traffic.

Sievert, Sv
The unit of radiation dose which takes into account the biological effects of radiation depending on the nature of radiation.

SO_2; sulphur dioxide
Sulphur dioxide is produced when the sulphur contained in the fuel reacts with the oxygen contained in the combustion air. Sulphur dioxide is a water-soluble and colourless gas, which further oxidises in outdoor air to become, for example, sulphuric acid.

Specific emissions
The volume of emissions calculated per energy unit produced (mg/kWh) or consumed (mg/MJ).

TJ; terajoule
The unit of measurement of energy, usually applied to the energy content of fuels.
1 TJ = 1.000.000 MJ (megajoule).

Tritium
A hydrogen isotope with a nucleus consisting of one proton and two neutrons. The nucleus is called tritium.