

*Annual Report 2003*



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### ***Annual General Meeting***

The Annual General Meeting of Pohjolan Voima Oy is held on Monday, 22 March 2004 at 11 a.m. at Töölönkatu 4, 00100 Helsinki.

## Pohjolan Voima

*Pohjolan Voima is a privately owned group of companies in the energy sector, which produces electricity and heat for its shareholders in Finland. The Group also develops and maintains technology and services in its sector.*

### Basic values

### Responsibility • Reliability • Competence

These values are materialized in the Group's operating principles, ethical principles and operating policies. Over the decades, Pohjolan Voima's basic values have shaped the Group's operations and developed a corporate culture in which it is safe to work towards common objectives.

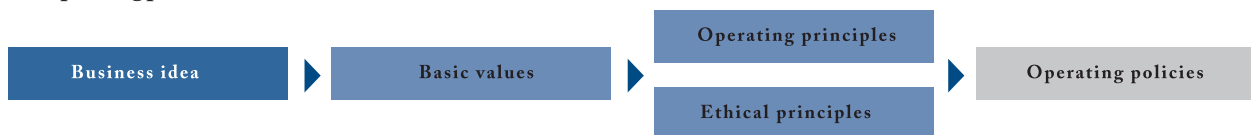
#### Pohjolan Voima's operating principles

- ▶ We supply our shareholders with competitively priced electricity and heat, utilizing a wide range of energy sources and taking account of the shareholders equitably. We see to the good availability of the production machinery.
- ▶ In upgrading the supply capacity, we seek new and innovative systems that support long-term operations.
- ▶ We systematically promote co-operation with our partners, stakeholders and personnel.
- ▶ We value and support competent and efficient personnel, who hone their skills and are ready to accept new challenges with an open mind.
- ▶ We are a safe and steady employer. We continue to improve the working environment so as to be as encouraging as possible.
- ▶ We take account of the ecological and social effects of our entire supply chain in a responsible and anticipatory manner.
- ▶ We value equitable, long-term and reliable relations with our stakeholder groups.
- ▶ We act ethically and comply with laws and regulations.

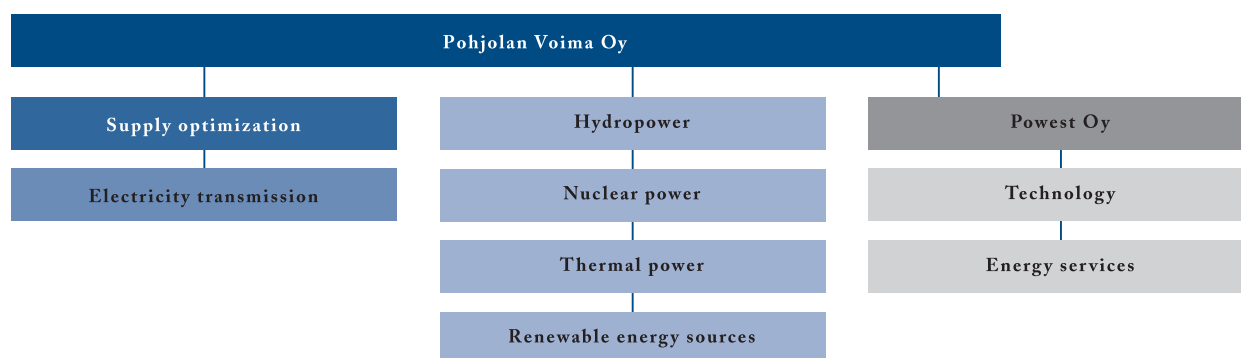
#### Pohjolan Voima's ethical principles

- ▶ Act honestly and justly.
- ▶ Respect another person as an individual.
- ▶ Act openly, maintain confidentiality.
- ▶ Distinguish between your own and the Group's interests.
- ▶ Keep distinctions and gifts moderate.
- ▶ Look after the Group's property.

#### Our operating procedure



## *Pohjolan Voima's business sectors*



### *The versatile electricity supply structure secures the availability and competitive price of electricity*

Pohjolan Voima aims to safeguard a steady and competitive price of electricity and heat for its shareholders. The Group does not seek to yield a profit but to contribute to guaranteeing its shareholders a reliable and cost-effective means of energy supply in a way that takes environmental aspects into account.

Pohjolan Voima generates over one-fifth of the electricity produced in Finland. The production capacity consists of power plants of different types, which have a different cost structure and a specific function. Pohjolan Voima aims to optimize the operation of its power plants in accordance with each load and market situation.

The wide range of power plants offers reliable electricity production in various consumption situations. The reliability of production means that the shareholders are able to more reliably anticipate the amount and price of available energy, unlike the situation in the open market for electricity.

Nuclear power and hydropower are complemented by fossil energy sources and biofuels. Nuclear power satisfies the need for base-load power, whereas hydropower, which can be regulated easily, helps meet fluctuations in electricity demand. Furthermore, Pohjolan Voima imports electricity and acquires market electricity to complement and optimize the supply as a whole.

To safeguard the reliability, competitiveness and sufficiency of its supply, Pohjolan Voima continues to invest in new power plant capacity and modernize its existing capacity. In this way, the Group aims at growth in the supply of electricity.

### *Nuclear power project increases the number of co-operation partners*

Pohjolan Voima's subsidiary, Teollisuuden Voima Oy, will build the third nuclear power plant unit at Olkiluoto in Eurajoki. This also means that the number of Pohjolan Voima's co-operation partners will increase. In the design phase of the plant unit, industrial and energy companies other than the present shareholders were approached about their interest in being involved in the project.

The interest shown in the project exceeded the design output of the plant unit, about 1 600 MW. Pohjolan Voima's shareholders, other industrial companies and energy companies made a binding reservation for a total output of some 2 500 MW. When the decision to invest was taken, it was agreed that all the parties committed to the project would acquire electricity from the new power plant unit. Upon completion, electricity will be supplied from the plant to more than 60 corporations. The new shareholders will be involved through the shareholdings of Etelä-Pohjanmaan Voima Oy, Kymmipivoima Tuotanto Oy and Päijät-Hämeen Voima Oy.

### Supply sources, 1 January 2004



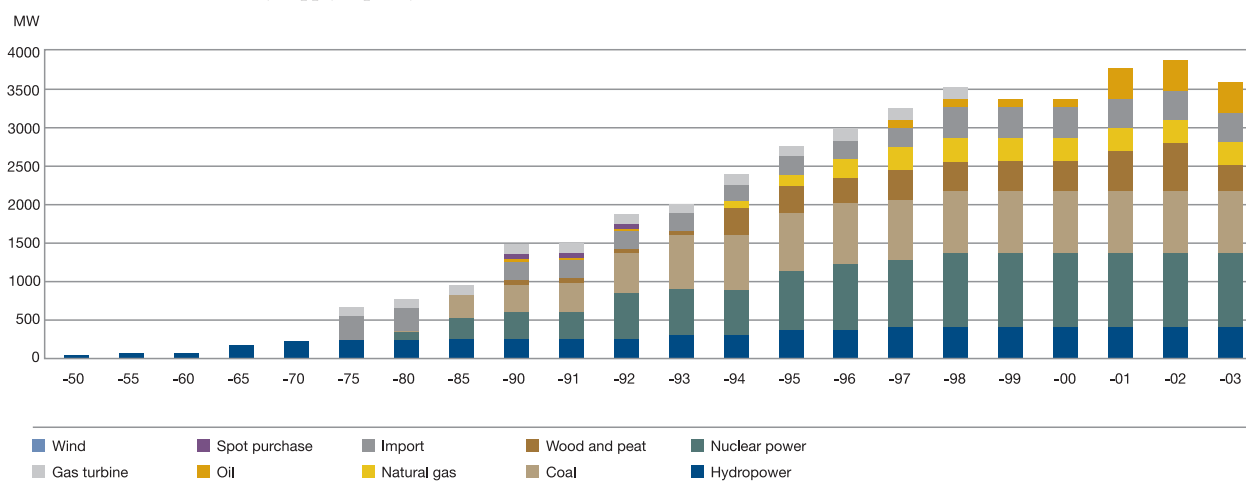
### Pohjolan Voima's key figures

		2003	2002	2001	2000	1999
Turnover	€ million	659	670	570	508	519
Operating profit	€ million	-21	+38	+33	+26	+66
Net interest-bearing liabilities	€ million	801	774	780	705	758
As percentage of turnover	%	122	115	137	139	146
Equity-to-assets ratio	%	47	48	49	51	49
Total assets	€ million	2 386	2 357	2 310	2 160	2 220
Investments	€ million	90	197	182	55	37
Personnel		864	803	784	1 855	1 454

Shares and holdings as of 12 January 2004

	%
Etelä-Pohjanmaan Voima Oy	7.6
City of Helsinki	0.8
Ilmarinen Mutual Pension Insurance Company	4.6
Kemira Oyj and Pension foundation Neliapila	2.8
Kemira GrowHow Oy and Kemira Agro Oy's Pension foundation	1.8
City of Kokkola	2.5
Kymmivoima Tuotanto Oy	9.0
Kyro Corporation	0.2
Oy Metsä-Botnia Ab	1.6
M-real Corporation	2.6
Myllykoski Corporation	0.8
City of Oulu	1.8
Perhonjoki Oy	2.8
City of Pori	1.2
Päijät-Hämeen Voima Oy	1.9
Stora Enso Oyj	15.7
UPM-Kymmene Corporation	42.0
Vantaa Energy Ltd	0.3
<b>Total</b>	<b>100.0</b>

Pohjolan Voima's electricity supply capacity in 1950 – 2003



## Highlights in 2003

### ***Pohjolan Voima celebrated its 60th anniversary***

In 2003, 60 years had passed since Pohjolan Voima was established. A jubilee publication was issued and a celebration was held for the personnel to mark the anniversary. The main occasion of the anniversary was the festive seminar arranged on 10 June 2003 at Finlandia Hall. Nearly 500 invited guests attended the seminar.

### ***The value process was furthered***

Pohjolan Voima's values of responsibility, reliability and competence were confirmed in the beginning of 2003. Besides the personnel, other stakeholder groups were also considered in determining the values. The introduction of the values was promoted by linking them to the Group's common operating procedures and ground rules. The ground rules were crystallized in a brochure entitled "Our operating procedure", which was completed in autumn.

### ***Landscaping programme of the Iijoki River completed***

Landscaping work on the riverbeds previously drained during construction of the Iijoki hydropower plants was completed in 2003. The programme comprised the construction of 26 landscaping weirs and landscaping work in the catchment area. The project was carried out jointly with the North Ostrobothnia Regional Environment Centre and the Municipality of Yli-Ii. The project, which was completely voluntary, was partly financed by EU subsidies.

### ***Enprima Oy launched its operations***

Enprima Oy, which specializes in design and consulting in the energy field, launched its operations on 2 January 2003. Pohjolan Voima's subsidiary, Powest Oy, and Fortum Power and Heat Oy both own 40% of the company, the American design and building company BE & K International Inc. 10%, and Enprima's active management 10%.

### ***District heat accumulator completed at the Ylivieska power plant***

The district heat accumulator contributes to boosting production of Vieskan Voima Oy's power plant. Heat can be supplied directly from the district heat accumulator during peak consumption; previously it was necessary to start separate heating boilers for peak hours. Furthermore, it is possible to supply the necessary district heat from the accumulator in the event of any malfunctions of the power plant. Vieskan Voima Oy is a subsidiary of Pohjolan Voima, which supplies the generated heat and electricity to Perhonjoki Oy.

### ***Topping-off ceremony held at Wisapower Oy's power plant***

Pohjolan Voima's subsidiary, Wisapower Oy, is building an evaporating plant, a recovery boiler and a turbine plant as part of UPM-Kymmene's Pietarsaari mill. The power plant's topping-off ceremony was held in 2003. The power plant's electrical output will be 140 MW. The plant will be completed in 2004 and it will generate electricity and heat. The plant will burn lignin dissolved during the pulping process.

### ***Reed canary grass was burnt***

Pohjolan Voima launched the cultivation project of reed canary grass, an energy plant grown in the field, in Ostrobothnia in 2002. The reed canary grass crop from the cultivated area was burnt in the spring of 2003 at Vaskiluodon Voima's Seinäjoki power plant.

### ***The first wind power plants started up***

In 2003, Pohjolan Voima commissioned its first two wind power plants in the area of Kokkola harbour and three plants at Riutunkari in Oulunsalo. The output of each wind power plant is 1 MW. In addition to these, the construction of three 1 MW wind power plants was underway in Kristiinankaupunki.

## ***Pohjolan Voima 60 years***

Pohjolan Voima was established in 1943 during a time when Finland was at war. The founders wanted to own power plants in order to affect the price of electricity and to secure its availability.

Pohjolan Voima was established as a mutual production company. The shareholders were entitled to acquire electricity generated by the company in accordance with their shareholdings. In the

beginning, Pohjolan Voima was a hydropower company, but since the 1960s the production structure has developed to become more versatile, as the energy demand was increasing and the opportunities for further construction of hydropower were dwindling.

Pohjolan Voima's founder shareholders were Finnish forest industry companies, but later on, municipal energy utilities became

### ***Savonlinna power plant completed***

The biofuel-fired power plant built in Savonlinna was commissioned in September 2003. The power plant's electricity generation capacity is 17 MW and heat generation capacity 53 MW. The fuels used include by-products from UPM-Kymmene Wood Oy's Savonlinna plywood mill: all of the bark, crushed veneer and sanding dust, and some of the sawdust. In addition, by-products from other regional wood-processing industry and logging residue are used as fuels. Pohjolan Voima jointly owns the plant with Suur-Savon Sähkö Oy.

### ***Ash road in Kristiinankaupunki completed***

The new access road to Kristiinankaupunki, Karhusaarentie, was put into use on 27 October 2003. Nearly 80 000 tonnes of fly ash and bottom ash from the Kristiina power plant were used for the road structures. The road is about 9 kilometres long.

### ***TVO took a decision to invest in Olkiluoto 3***

On 18 December 2003, Pohjolan Voima's subsidiary, Teollisuuden Voima Oy, took a decision to invest in the Olkiluoto 3 nuclear power plant unit, and signed a contract for the construction of a pressurized-water reactor plant unit of about 1 600 MW with a consortium formed by Framatome ANP and Siemens. The investment will involve more than 60 Finnish corporations, which will get their share of the electricity generated at the plant unit after its commissioning in 2009.

### ***Pohjolan Voima sold its stake in Empower***

Towards the end of 2003, Powest Oy sold its shares in Empower Oy, which provides energy sector services, to Empower's management, Nordea Capital and 3i.

### ***Proma-Palvelut Oy launched its operations***

The new service company, Proma-Palvelut Oy, renders operation and maintenance services for Pohjolan Voima's power plants. Powest Oy owns 66% of Proma-Palvelut and Etelä-Pohjanmaan Voima Oy owns 34%.

### ***Reorganization of Nordic Energy's ownership***

Powest Oy purchased the entire share capital of Nordic Energy Oy in early January 2004. Nordic Energy Oy sold its shares in Pohjolan Voima to Pohjolan Voima's shareholders.

### ***Administrative court took a decision on the gasification project***

Powest Oy and Vapo Oy jointly applied for a permit to build a gasification plant of refuse-derived fuel as part of the Martinlaakso power plant of Vantaa Energy Ltd. At the gasification plant, municipal waste that is unfit for raw material would be refined into clean gas, which can be burnt in power plant boilers. In December 2003, the Vaasa Administrative Court reversed the favourable decision taken by the Western Finland Environmental Permit Authority concerning the application for an environmental permit for the gasification plant. Powest, Vapo and Vantaa Energy Ltd have appealed against the court's judgement to the Supreme Administrative Court.

### ***Pohjolan Voima's biofuel programme won an EU award***

The EU's Transport and Energy Commissioner, Loyola de Palacio, and the Minister of the Environment of Germany, Jürgen Trittin, presented Pohjolan Voima with a commendation for the promotion of renewable energy sources in Berlin in January 2004. The award was presented at the European Conference for Renewable Energy. The European Union's Renewable Energy Partnership programme has been launched to support the target set by the EU to raise the proportion of renewable energy from 6% to 12% by 2010.

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owners as well. The present shareholders include, for instance, the towns of Helsinki, Kokkola, Oulu, Pori and Vantaa or energy companies owned by them.

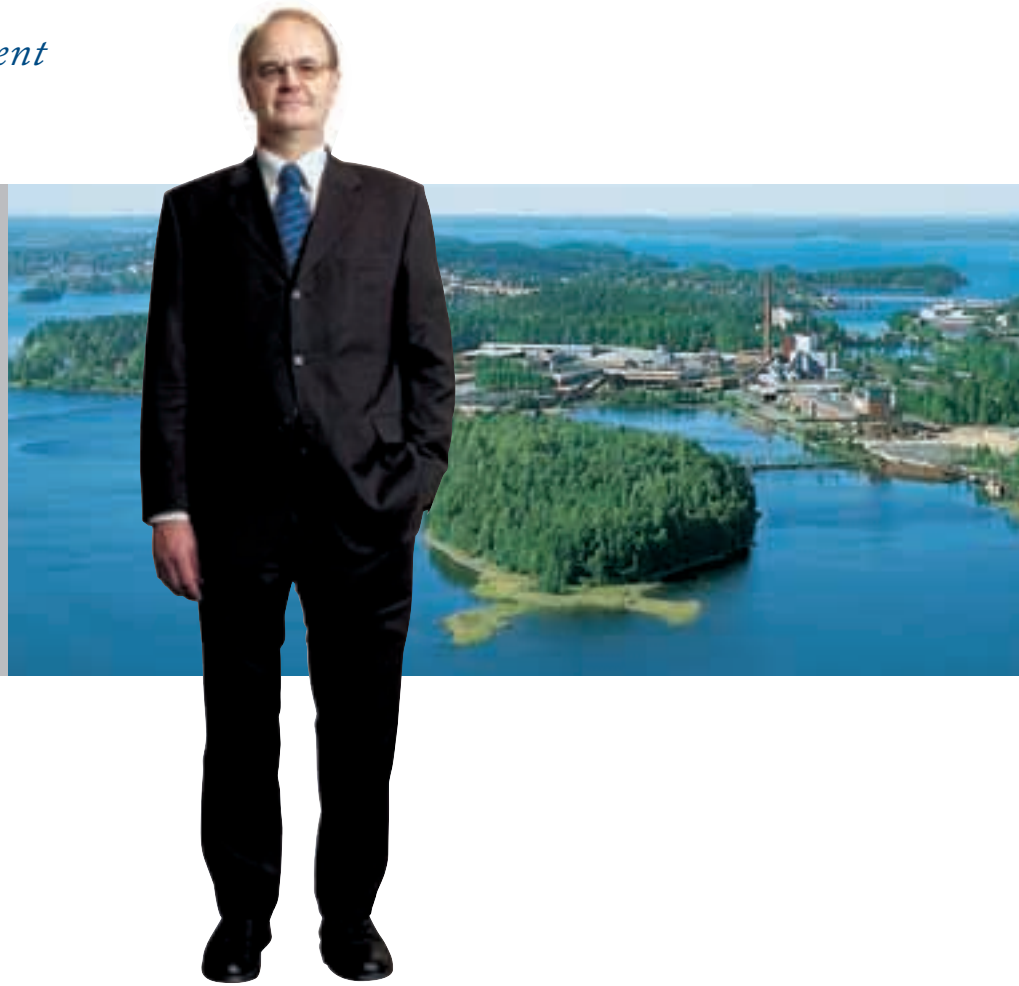
Jointly with industry and municipal energy companies, Pohjolan Voima has set up joint ventures that have built biofuel-fired power plants in Pietarsaari, Kuusankoski, Ristiina and Savonlinna in re-

cent years. Pohjolan Voima's power plants supply district heat to the towns of Jämsänkoski, Kokkola, Kotka, Kouvola, Kuusankoski, Nokia, Pietarsaari, Savonlinna, Seinäjoki, Vaasa and Ylivieska.



## *Review by the President*

*Local fuels are used at the new Savonlinna power plant to generate steam, district heat and electricity at high efficiency.*



### *Sixty years of energy for the shareholders*

Pohjolan Voima has reliably produced competitively priced energy for its shareholders throughout its operations. The strategic and operational targets set for the company at the time of establishment continue to be topical.

Our electricity and heat production is based on the versatile power plant and fuel concepts and systems. We have implemented new power plant projects, both on our own and jointly with our shareholders and other operators.

In taking decisions on the construction of new power plants, we have taken account of the requirements set by climate change and other demands made by environmental policy. The decision taken by Teollisuuden Voima to implement the Olkiluoto 3 unit is the most significant one from the viewpoint of our Group. Investment programmes based on additional use of biofuels and wind power have been continued. We act, for our part, in accordance with the statements linked with Parliament's nuclear power decision.

### *Sufficiency of electricity*

The drought in the previous year and the hard frost at the turn of the year put our plants to a severe test. Our entire production machinery was operated at full capacity and we coped with the exceptional situation thanks to the uninterrupted operation of the plants. In the course of the year under review, we generated the largest amount of electricity ever, and many of our condensing power plants exceeded their previous production volumes and operating hours. The high production volumes are also seen in the increased amounts of carbon dioxide.

The Nordic countries and Finland managed to overcome the unusual situation. Sufficiency of the capacity required partly even special measures, however, since industrial production had to be restricted. Owing to the trade depression, this did no damage this time. The situation would have been more critical, however, if the capacity utilization rate of industry had been higher and if failures had occurred at the plants during peak load.

The open electricity markets functioned well. The market price reacted rapidly to the high load level, which all those who bought electricity from the market did not accept. In the deregulated electricity markets, risk management is vitally important. Risks can be managed, for instance, by owning production shares and by signing longer-term contracts.

The consumption of electricity is on the increase and the power plants are getting older. Furthermore, climate conventions will reduce the profitability of power plants that use fossil fuels in the long term. In Finland, the annual growth in peak output has averaged over 300 MW for more than thirty years. At the current pace of construction of power plants, problems with the sufficiency of electricity and price peaks are expected to occur more frequently in the next few years. The imports of electricity cannot offer a reliable solution to the problem.

Economical electricity forms part of Finnish competitiveness. The reduced availability, price increases and emissions trading arrangements will pose a real challenge to Finnish industry and to the preservation of jobs.

### *Work for the benefit of the environment*

The concrete measures we have implemented prove that we have taken account of environmental issues in both planning our operations and carrying out our projects. Our operating procedure has also produced a good result.

The flood of EU directives and the unpredictability of national applications increasingly hamper the planning and practical measures. The Group's best resources will be increasingly involved in various extensive studies that seem unnecessary, and it is very difficult to perform profitability calculations that are required to take decisions on

concrete measures and investments. In the future, particular attention should be more focused on applying locally those decisions taken at a national level.

Emissions trading is becoming a great burden to Finnish competitiveness. The situation has been known for a long time, and all possible means should now be tried to safeguard our competitiveness. Political decision-makers now hold key positions.

It is sometimes difficult to understand the licensing processes and rounds of appeals linked with environmental issues. A round of appeals often leads to the temporal foundering of sensible and profitable projects, and as a result decisions are finally taken on inferior systems that are technically easier to implement. They do not foster technology exports, nor do they promote environmental protection. A good case in point is the gasification plant of refuse-derived fuel, developed jointly with the Technical Research Centre of Finland VTT, Vapo Oy and Pohjolan Voima. The first implementation project of this kind is planned to be the Martinlaakso power plant in Vantaa.

We have continued our environmental measures in accordance with our plans. Pohjolan Voima's extensive biofuel programme was granted an award in the European Conference for Renewable Energy held in Berlin on 19 January 2004 for the best programme in the whole of Europe in 2003.

### *Restructuring of ownership*

Kymppivoima Tuotanto Oy bought Kotkan Energia Oy's shares in Pohjolan Voima. Powest Oy bought Nordic Energy Oy's shares (80.1% of the ownership) and Nordic Energy sold the shares entitled to Pohjolan Voima's thermal power production to our Group's present shareholders. Our Group no longer has a foreign party as a shareholder, and Kymppivoima Tuotanto became our third largest shareholder.

### *Finances*

Our Group's economic operations were conducted in accordance with forecasts, and decisions on major investments were taken, and investments and company reorganizations were implemented even better than anticipated.

The year was successful. The competent, skilled and committed personnel safeguard the success of our operations. I would like to thank you all for your contribution. I also gladly extend my gratitude to our shareholders and other stakeholder groups for their excellent co-operation and perfect confidence.

Timo Rajala  
President and CEO

## Operating environment



The Nordic electricity markets are open and the market price of electricity is quoted on the electricity exchange on an hourly basis. The dry autumn and the cold winter weather in Finland essentially affected the electricity market situation during the winter season 2002/2003.

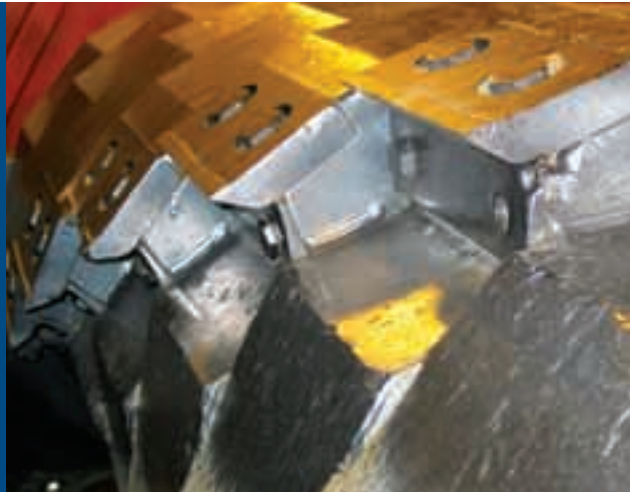
In Scandinavia, the rainfall levels were low in autumn 2002. Consequently, water levels in the reservoirs were exceptionally low. Owing to natural conditions, condensing power had to be mainly substituted for hydropower. Although winter 2003 was quite cold in Finland, it was mild in southern Sweden and in Denmark. Consequently, the demand for electricity in the Nordic countries did not reach record figures.

In 2003, 9.4 TWh of electricity was generated with hydropower in Finland (10.7 TWh in 2002). In an average year, the hydropower production in Finland amounts to 12.8 TWh. In one year out of ten, the production of hydropower is a good 10% below the average.

Fuel procurement of the power plants was affected by the increase in coal consumption and, in particular, the difficulties in transports and coal handling, owing to the ice conditions early in the year. Although the coal stocks in the beginning of winter were low considering the time of year, the supplies and agreed deliveries were sufficient to meet the fuel needs of the power plants that use coal as fuel.

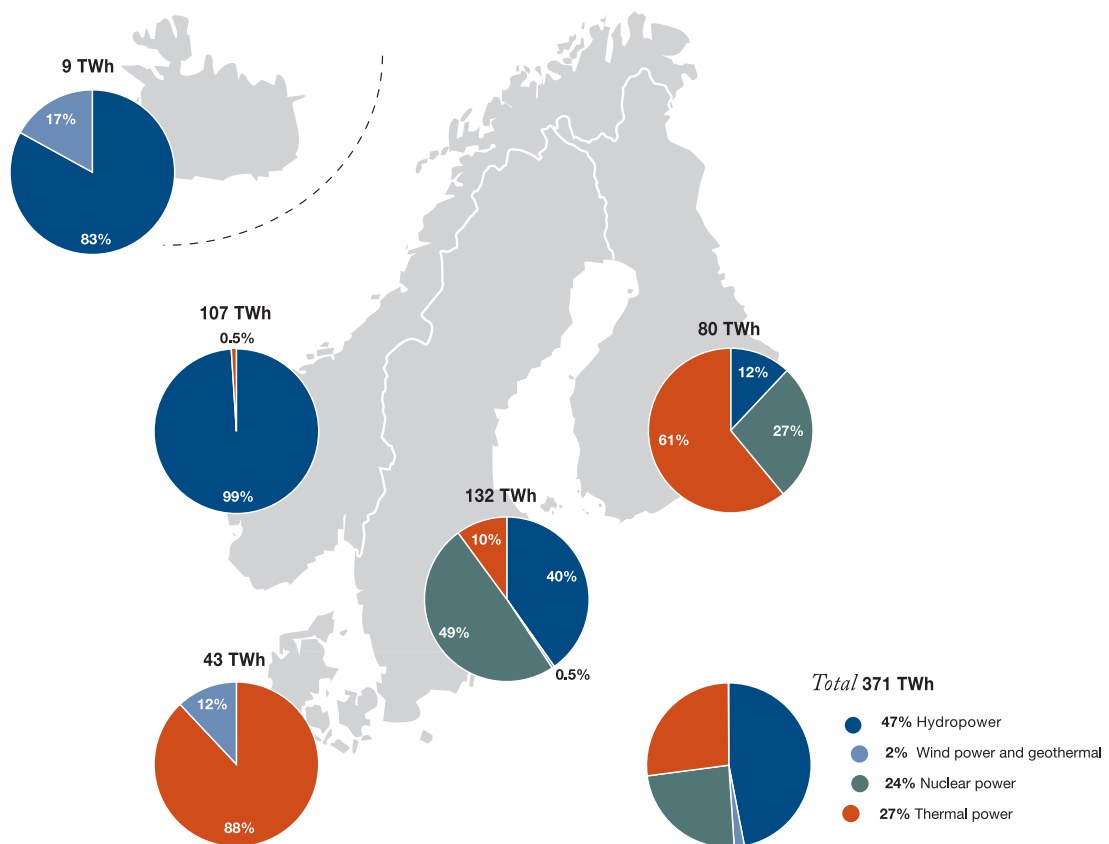
In 2003, electricity consumption in Finland totalled 84.7 (83.5) TWh. Net imports of electricity to Finland totalled 4.9 (11.9) TWh.

*As part of final felling, crowns and branches are baled into residue bales, which are used at biofuel-fired power plants to generate electricity and heat.*



### Electricity generation in the nordic countries in 2003

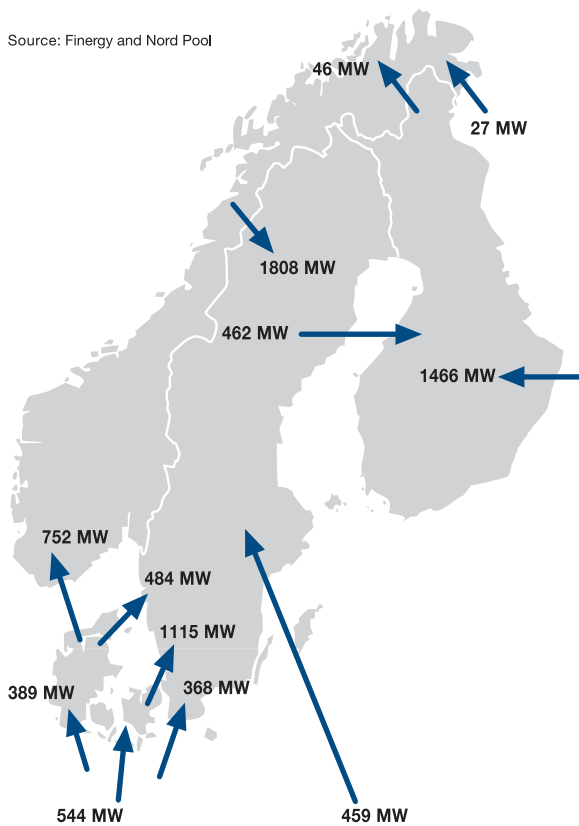
Source: Finergy and Nordel, advance information





*Electricity exchange in the Nordic countries during the peak hour in Finland on 3.1.2003 at 5-6 p.m.*

Source: Finergy and Nord Pool



*Electricity deficit covered by imports*

The organization of the Nordic grid companies, Nordel, assesses that when the peak consumption of electricity coincides in Finland, Sweden, Norway and Denmark, the deficit in output totals some 2 500 MW. The deficit is covered by imports from Russia, Germany and Poland or by limiting consumption.

In 2003, the peak load in the Nordic countries occurred on 3 January, when the maximum power demand rose to 65 000 MW. The power peak of all time, 69 300 MW, occurred on 5 February 2001.

In the summer and autumn, rainfall levels were lower than normal and water levels in the storage reservoirs were low. A shortage in hydropower persisted, and not until late autumn did the rain raise water levels in the reservoirs. As a result of the small amount of hydropower, thermal power plants were operated more than usual in the summer and autumn. The weather in the autumn stayed mild for a long time, which reduced electricity consumption.

*The price and consumption of electricity reached an all-time high*

The study conducted by the Finnish Energy Industries Federation FINERGY, *Electricity markets in winter 2002–2003*, shows that electricity was imported to Finland from Russia, Germany and Poland. Electricity exchange also occurred between the Nordic countries. Since only a small amount of hydropower was available in Scandinavia, exports were mainly to Norway and Sweden.



In Finland, the price of electricity reached a record high immediately in the beginning of 2003. The economic situation of the forest industry and, for instance, the production shutdowns in the Norwegian aluminium factories restrained electricity consumption.

The one-hour peak consumption of electricity measured in Finland to date, 13 930 MW, occurred on Friday, 3 January 2003 between 5 and 6 p.m. The temperature in Helsinki then was  $-22^{\circ}\text{C}$  and in Jyväskylä  $-26^{\circ}\text{C}$ . At that time, domestic electricity generation amounted to some 12 130 MW and net imports to some 1 800 MW.

### *Records set for the use of coal, natural gas and peat*

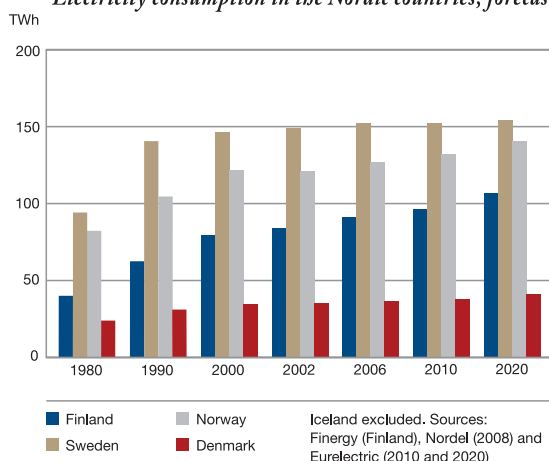
The procurement of power plant fuel was affected by the increase in coal demand in the world market and the difficulties in transports and coal handling owing to the ice conditions. The price of coal even doubled in the course of 2003. In Finland, 60% more coal was needed in electricity production than in the previous year, i.e. about 6.2 million tonnes, about 43 TWh in terms of energy.

Natural gas imports to Finland amounted to about 4.8 billion cubic metres, which is equivalent to 48 TWh in terms of energy. Imports increased about 11% over the previous year. The low capacity utilization rate of the forest industry reduced the availability of wood fuel, mainly bark. At the same time, the new power plants that use wood increased the demand for wood fuel. The insufficiency in wood fuel supply and the high price of market electricity resulted in the record-breaking use of peat. The use of peat amounted to some 30 TWh.

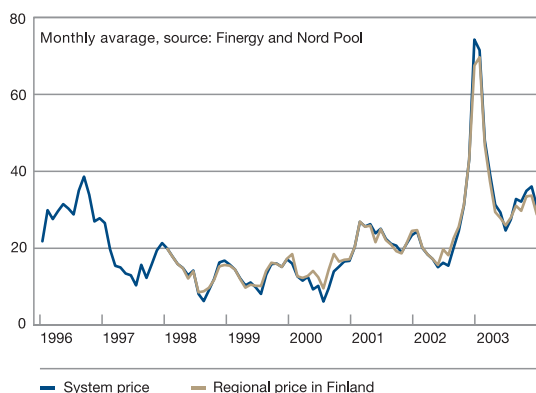
*Stumps constitute a new bio-energy source. The removal of stumps promotes the health of the forest and the growth of new tree stands.*



*Electricity consumption in the Nordic countries, forecast*



*Exchange prices of electricity, EUR/MWh*



Only some 22 TWh of peat was extracted in the summer of 2003, which means that a shortage of wood and peat is anticipated in spring 2004. On the other hand, the use of logging residue has increased rapidly in Finland. The estimated use of logging residue for 2003 is about 4.2 TWh. At this growth rate, the national growth target of 10 TWh will be achieved in 2010.

### *New power plants needed*

Nordel forecasts that the consumption of electricity will increase in the Nordic countries in 2001–2005 by a total of 19 TWh, of which Finland would account for about 5.5 TWh. The increase will considerably exceed the known increases in capacity.

As consumption grows, Nordel forecasts a rise in the market price of electricity in the Nordic countries. At the same time, the need to import electricity into the Nordic market from Germany, Russia and Poland will increase. The need will increase further, when Sweden continues the shutdown of its nuclear power plants in accordance with the referendum held in 1982. In Norway, no important decisions have been taken on the construction of new production capacity. Denmark continues to be more than self-sufficient in the production of coal condensing power and, in accordance with the market situation, exports electricity to Sweden, Norway and Germany.

### *New nuclear power plant to be built at Olkiluoto*

Since the 1990s, Pohjolan Voima has been the largest investor in new production capacity among the Nordic players. Besides the increase in production, the Group has also invested in environmental projects.

In January 2002, Pohjolan Voima's subsidiary Teollisuuden Voima Oy obtained a favourable decision in principle from the Council of State concerning the construction of a new nuclear power plant unit. Parliament ratified the decision in May 2002. In 2003, a decision was taken to locate the plant at Olkiluoto in Eurajoki. Its electricity production output will be about 1 600 MW. The combined output of the two existing plant units at Olkiluoto is 1 680 MW. Construction work on the new plant unit will be launched at Olkiluoto after the authorities have granted the necessary permits. The construction phase is expected to begin in 2005. The plant is scheduled to begin electricity production in 2009.

### *Emissions trading will raise the price of electricity*

The beginning of the EU-wide emissions trading is being prepared in accordance with the Emissions Trading Directive. The directive requires that emissions trading should begin between companies with carbon dioxide emissions from the beginning of 2005. The obligations imposed by the worldwide Kyoto Protocol on industrial countries with a view to cutting greenhouse gas emissions will not come into effect until 2008. Ratification of the Kyoto Protocol continues to be uncertain, since the condition for the entry into force (55% of the emissions of the industrial countries) will only be fulfilled if Russia ratifies the Protocol. The United States has decided to withdraw from the Protocol.

In Finland, emissions trading in accordance with the directive will be controlled by the future Emissions Trading Act. Emissions trading will be preceded by formulation of the national allocation plan for emission allowances in 2004. The European Commission will approve the plans. The principal criteria of the national allocation plan and allocation criteria of the emission allowances will be determined in the Emissions Trading Act. The Council of State will ratify the national allocation plan, in which each plant will obtain free emission allowances on the basis of the plant's previous operations and other criteria. If emissions from the plant exceed the amount fixed by the emission allowances, the company must buy additional emission allowances from the market. Correspondingly, if emissions from the plant remain below the amount fixed by the emission allowances, the company may sell surplus allowances on the market or retain them for future years. All of Pohjolan Voima's thermal power plants are within the scope of the Emissions Trading Directive.

Emissions trading is anticipated to substantially raise the price of electricity in the Nordic countries. Production based on coal, oil, peat and natural gas will have to bear a heavy additional cost. Emissions trading will alter competitive positions in the energy sector by affecting the cost structures of the different production forms and energy companies. Besides its own emission reductions, energy-intensive industry will be burdened by an increase in the energy price owing to the emissions trading.

### *Changes being monitored closely*

In the EU, a great number of directive projects are underway that have effects on the groundwork for operations in the energy sector. In addition to the large number of directives, problems will be posed by questions of interpretation of the directives, the lack of overall vision, and the strict national implementation and application.

Besides climate policy, the water and waste policies are significant from the viewpoint of energy companies. The general objective of the EU Water Framework Directive is to safeguard the good ecological condition of watercourses, in which human activity must not very much affect aquatic ecology. The required measures may, at worst, lead to a reduction in hydropower production.

In Finland, the national waste plan requires that in 2005 the degree of utilization of the by-products from energy production should be no less than 70%. It is possible to substantially increase the use of by-products from the thermal power plants for earth works, thus substituting by-products for natural materials. A uniform licensing practice would contribute to discovering new uses. On the other hand, the Waste Incineration Decree is open to much interpretation, which could hamper the introduction of new technology into utilization of the energy contained in municipal waste.

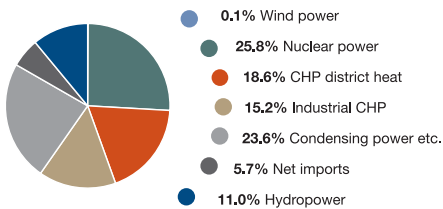
EURELECTRIC, the co-operative organization of European energy producers, actively monitors progress of the preparation of directives in the EU. The Finnish Energy Industries Federation FINERGY is a member organization of EURELECTRIC. Pohjolan Voima is involved in handling matters in the various organs and working groups of FINERGY and EURELECTRIC. Pohjolan Voima also monitors the preparation of Finnish regulations and participates in the work of different committees and working groups, and maintains dialogue with the stakeholder groups on the issues raised.



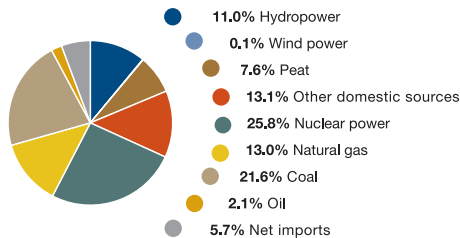


*Reed canary grass is the most promising energy crop suitable for growing in fields in Finland.*

Net supply of electricity in Finland 2003 84.7 TWh



Electricity supply by energy source in 2003 84.7 TWh



\* The figures shown in this context differ from those given in the financial statements, since the subsidiaries are included in the financial statements as a whole, but in the annual report in accordance with Pohjolan Voima's shareholding only.

In 2003, electricity consumption in Finland amounted to 84.7 TWh (83.5 TWh in 2002). The consumption of electricity in Finland was 1.4% higher than in the previous year. Pohjolan Voima accounted for 23% (23% in 2002) of the Finnish electricity production.

The electricity demand of the shareholders determines the volume of Pohjolan Voima's electricity supply. Pohjolan Voima optimizes its electricity supply as a whole on the basis of the volume of electricity to be supplied and the price forecasts for market electricity. Electricity is generated at the Group's own plants or, if it is economical, it can be purchased from the market. In addition to the Group's own production, electricity is imported from Russia.

In 2003, Pohjolan Voima's electricity supply totalled 23.0 (21.4) TWh. The Group's own production amounted to 18.0 (16.6) TWh. Electricity imports from Russia totalled 3.3 (3.0) TWh and purchases from the Nordic electricity markets were 1.7 (1.8) TWh.

#### ***Nuclear power provides efficient base-load power***

Nuclear power accounts for 34.9% (37.5%) of Pohjolan Voima's electricity supply. Nuclear power is generated by Pohjolan Voima's subsidiary Teollisuuden Voima at the Olkiluoto nuclear power plant in Eurajoki. The net output of both Olkiluoto units is 840 MW.

In 2003, Teollisuuden Voima's Olkiluoto Power Plant generated 14.2 (14.1) TWh of electricity, of which Pohjolan Voima obtained 8.0 (8.0) TWh in accordance with its shareholding. In 2003, the load factor of the Olkiluoto plants continued to be among the top figures in the world, 96.3% (96.0%).

Nuclear power satisfies the continuous and consistent need for electricity. The construction costs of a nuclear power plant are high, whereas the operating costs are extremely low. The objective is a high degree of utilization of the plants, which means that electricity is generated as much as possible at low unit costs.



### *Hydropower production continued to decrease*

Rainfall levels were low in all the Nordic countries in 2003. The drought that had already begun in the previous year reduced the production of hydropower on the Kemijoki, Iijoki and Kokemäenjoki Rivers. Pohjolan Voima generated a total of 1.2 (1.2) TWh of hydropower. During the year under review, hydropower accounted for 5.1% (5.8%) of the electricity supply. The combined capacity of Pohjolan Voima's hydropower plants is some 400 MW. In years of average precipitation, the production of hydropower is 1.7 TWh.

Hydropower helps meet rapid changes in the electricity demand, since hydropower plants can be started, regulated and stopped more easily than other power plants. Opportunities to exploit hydropower depend on the discharges of rivers and the water volumes of reservoirs. The licensing conditions specify the maximum and minimum water levels of the reservoirs.

The investment costs of hydropower plants are high, whereas the operating costs are low. The permits require that the fish stocks and other aquatic environment should be managed.

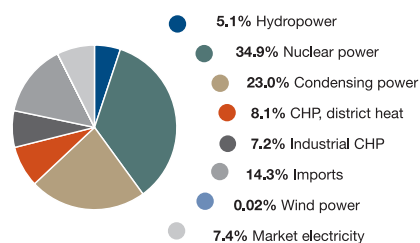
### *High number of operating hours with thermal power*

Coal, peat, wood-based fuels, natural gas and oil are used for thermal power generation.

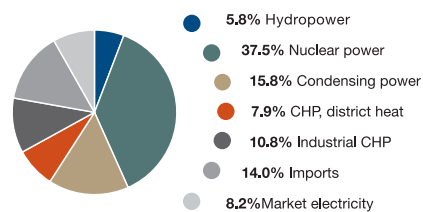
At CHP (Combined Heat and Power) plants, the energy contained in fuels is converted into electricity and heat. The heat produced by the process is used in industry as process steam and regionally as district heat. Utilization of the heat raises the overall efficiency of the plants to well over 90% at its best. The fuels used at CHP plants include coal, peat, wood fuels and natural gas.

In terms of production costs, CHP plants are usually more economical than condensing power plants. In accordance with its share-

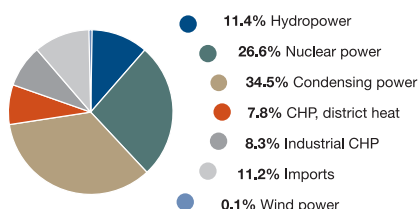
*Pohjolan Voima's electricity supply in 2003 23.0 TWh*



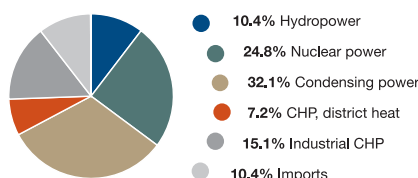
*Pohjolan Voima's electricity supply 2002 21.4 TWh*



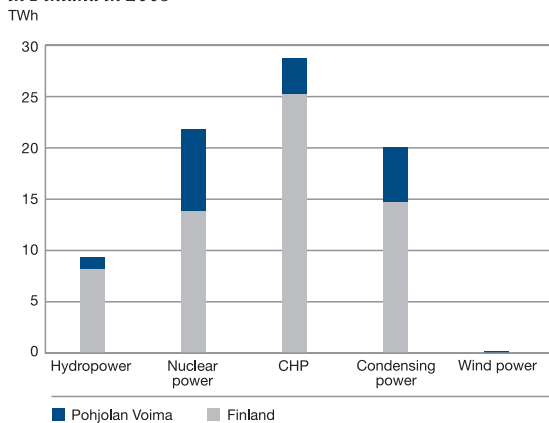
**Pohjolan Voima's electricity supply capacity in 2003 3582 MW**



**Pohjolan Voima's electricity supply capacity in 2002 3852 MW**



**Pohjolan Voima's share of the electricity production in Finland in 2003**



holding, Pohjolan Voima supplied 3.5 (4.0) TWh of electricity from the CHP plants. Electricity supplied from the CHP plants accounted for 15.2% (18.7%) of Pohjolan Voima's electricity supply.

At condensing power plants, as high a proportion of the fuel as possible is converted into electricity. There is no demand for the excess heat, however, which raises the price of condensing power. For this reason, condensing power plants complement other production capacity and ensure the availability of electricity when the demand is heavy. The primary fuel of condensing power plants is coal.

In 2003, Pohjolan Voima generated 5.3 (3.4) TWh of condensing power. This made up 23.0% (15.8%) of Pohjolan Voima's electricity supply.

The CHP and condensing power plants consumed a total of some 2.1 (1.5) million tonnes of coal, or 14.8 (10.7) TWh. In the latter half of 2003, the price of coal rose sharply on the world market. The coal used by Pohjolan Voima was mainly imported from Poland and Russia. Other import countries included China, South Africa, Indonesia and Columbia.

Pohjolan Voima's power plants used 6.2 (8.1) TWh of biofuels in all. The use of peat totalled 3.7 (4.9) TWh and the use of wood 2.5 (3.2) TWh. In terms of fuel, the most important part of wood is the bark. The use of logging residue totalled 0.7 (0.4) TWh.

Reserve and peak-load power plants, which are usually fired by oil, are used only little owing to their high fuel costs. In 2003, even the reserve and peak-load power plants were important for power production, since hydropower was scarce and the cold winter increased the demand for electricity. Pohjolan Voima generated 0.1 (0.2) TWh of electricity with oil. The oil was acquired from the market. The amount of oil consumed totalled 0.4 (0.7) TWh.

Natural gas was imported from Russia and its consumption amounted to 3.0 (1.4) TWh. 1.3 (0.6) TWh of electricity and 0.3 (0.2) TWh of heat were generated by natural gas.

*Pohjolan Voima's Production capacity, 1 January 2004*

Plant	Location	Energy source	Completed in	Electrical output (MW)	Pohjolan Voima's share (MW)
<b>Hydropower</b>					
Isohaara	Kemijoki	water	1949	106.0	106.0
Jumisko	Kemijoki	water	1954	30.0	30.0
Raasakka	Iijoki	water	1971	58.0	58.0
Maalismaa	Iijoki	water	1967	33.0	33.0
Kierikki	Iijoki	water	1965	32.0	32.0
Pahkakoski	Iijoki	water	1961	34.0	34.0
Haapakoski	Iijoki	water	1963	28.0	28.0
Melo	Kokemäenjoki	water	1971	67.0	67.0
Harjavalta	Kokemäenjoki	water	1939	73.0	14.5
Kaaranneskoski	Tengeliönjoki	water	1954	2.5	1.3
Jolmankoski	Tengeliönjoki	water	1955	0.5	0.3
Portimokoski	Tengeliönjoki	water	1987	10.5	5.3
<b>Total</b>				<b>475</b>	<b>409</b>
<b>Nuclear power</b>					
Olkiluoto 1	Eurajoki	uranium	1978	840	477
Olkiluoto 2	Eurajoki	uranium	1980	840	477
<b>Total</b>				<b>1680</b>	<b>954</b>
<b>Wind power</b>					
Kokkola	Kokkola	wind	2003	2	1
Oulunsalo	Oulunsalo	wind	2003	3	2
Kristiinankaupunki	Kristiinankaupunki	wind	2003	3	2
<b>Total</b>				<b>8</b>	<b>5</b>
<b>Thermal power</b>					
Kristiina 2	Kristiinankaupunki	coal	1989	242	242
Tahkoluoto	Pori	coal	1976	225	225
Vaskiluoto 2	Vaasa	coal	1998	230	115
Meri-Pori	Pori	coal	1994	565	146
Mussalo 1	Kotka	coal, natural gas	1966	75	75
Mussalo 2	Kotka	natural gas	1973	238	238
Nokia	Nokia	natural gas	1997	70	70
Kristiina 1	Kristiinankaupunki	oil	1974	210	210
Vaskiluoto 3	Vaasa	oil	1972	160	160
Seinäjoki	Seinäjoki	peat, wood	1990	125	63
AK 1	Pietarsaari	wood, peat	1991	25	12
AK 2	Pietarsaari	wood, peat, coal	2001	240	120
Kokkola	Kokkola	wood, peat	2001	20	20
Ylivieska	Ylivieska	wood, peat	1994	6	6
Ristiina	Ristiina	wood	2002	10	8
Savonlinna	Savonlinna	wood	2003	17	0
Jämsänkoski	Jämsänkoski	wood, peat	2002	46	46
Kuusankoski	Kuusankoski	wood, peat	2002	76	58
<b>Total</b>				<b>2578</b>	<b>1814</b>
<b>Capacity, total</b>				<b>4741</b>	<b>3182</b>



### *The first wind power plants put into operation in Kokkola*

Pohjolan Voima's first two wind power plants were put into operation in the area of Kokkola harbour in May 2003. In autumn, three wind power plants were completed in Oulunsalo. Three wind power plants were being built in Kristiinankaupunki.

On completion of the wind power plants whose construction was underway, the total output of Pohjolan Voima's wind power plants will be 8 MW, thus accounting for 15% of the wind power production capacity in Finland. Wind power will then represent about 0.1% of Pohjolan Voima's electricity production capacity.

### *Electricity from Russia*

Pohjolan Voima imported a total of 3.3 (3.0) TWh of electricity from Russia. Electricity imported from Russia made up 14.3% (14.0%) of the Group's electricity supply.

The import contracts will be valid until the end of 2004.

### *Market electricity contributes to peak-shaving*

Pohjolan Voima operates on the open electricity markets as both a seller and a buyer, depending on the electricity demand and on the production costs of its own power plants. Pohjolan Voima purchases market electricity when the price of market electricity is lower than the production cost of electricity at its own power plants.

Electricity generated by Pohjolan Voima is sold to the market when the sale increases operation of the Group's own production capacity and the production of electricity for the markets is profitable.

In 2003, Pohjolan Voima acquired 1.7 TWh of electricity from the market.



### *Technology and services being developed*

Pohjolan Voima develops energy technology in order to ensure its competitiveness. Investments in R&D are particularly used to promote biofuels and to increase the energy efficiency of power plants. Other subjects of development include wind power and the utilization of refuse-derived fuel for energy generation.

Pohjolan Voima Oy's subsidiary Powest Oy is a partner in several joint service and technology companies in the energy sector. Joint ownership helps ensure the flow of information within the sector, and the networking that is vital for development projects. In 2003, Powest employed 32 (28) people on average. The company's turnover was EUR 2.0 (EUR 2.2) million.

Powest concentrates on technologically innovative development operations that create the scope for financial success. A case in point is development of the gasification and gas-cleaning technology of refuse-derived fuel, in which Pohjolan Voima and Powest are involved jointly with Vapo Oy and the Technical Research Centre of Finland VTT. Municipal waste that is unfit for raw material is refined into clean gas, which can be burnt in power plant boilers. The investment in gasification and gas-cleaning technology totalled EUR 1.5 million, which includes subsidies of EUR 0.2 million.

Powest is a shareholder in Winwind Oy, which manufactures Finnish WWD wind power plants. The benefits provided by the WWD wind power plants include a longer life than that of the rivals, good efficiency even in light winds and reasonable maintenance costs.

Powest was a minority shareholder in Nordic Energy Oy (former TXU Nordic Energy Oy). After the company's principal owner had long been under company restructuring, Powest purchased the entire share capital of Nordic Energy Oy in December 2003. The shares owned by Nordic Energy Oy corresponded to about a 15% share ownership of Pohjolan Voima. In January 2004, Nordic Energy sold these shares to some of Pohjolan Voima's shareholders.

Pohjolan Voima purchases operation and maintenance services of the thermal power plants, some of the design work, and forecast services of the electricity markets. Powest's associated company, Empower Oy, has provided the operation and maintenance services for the power plants in 2003.

In December 2003, Powest sold its shares in Empower Oy to two capital investors, 3i and Nordea Capital, and to the company management. A new company, Proma-Palvelut Oy, was launched at the same time; it renders operation and maintenance services to the Group's thermal power plants. Powest owns 66% of Proma-Palvelut and Etelä-Pohjanmaan Voima Oy 34%. In 2004-2007, the operation and maintenance services of Pohjolan Voima's thermal power plants will be acquired from Proma-Palvelut and Empower.

Of Empower's operating and maintenance personnel, about 400 people transferred to Proma-Palvelut as part of the business deal on 1 January 2004. Empower will hire 122 people from Proma-Palvelut to pursue its operations and will be in charge of the maintenance of, for example, the Tahkoluoto, Kristiinankaupunki and Mussalo (in Kotka) power plants.



*The bark produced from the processing of merchantable wood is one of the most important biofuels.*



## *Pohjolan Voima in society*



### *Responsibility for energy production*

Responsibility is one of Pohjolan Voima's three basic values. In accordance with this basic value, Pohjolan Voima develops its operations in an economical, social and ecologically sustainable manner.

The importance of basic industry for the Finnish economy is considerable. Reliable energy supply at a competitive price provides the scope for long-term investments of industry. Since municipal energy companies became Pohjolan Voima's shareholders, the Group sees to it that households get electricity and heat.

The targets set by the shareholders for Pohjolan Voima are clear: the Group must generate energy reliably and at a competitive price. In the open markets, electricity has a clear market price that is quoted on an hourly basis. The pricing of electricity generated by Pohjolan Voima is based on the electricity production costs, not on the market price. Pohjolan Voima's production structure is versatile, which safeguards the reliability of supply and the availability of electricity under different conditions.

### *Responsibility for the sufficiency and price of electricity*

Pohjolan Voima supplies electricity and heat for its shareholders at cost price. The Group also bears its responsibility for the reliability of electricity supply: the production machinery is maintained in such a way that the capacity for electricity generation is sufficient even under varying conditions. Good availability and systematic investments contribute to increasing the supply of electricity and curbing the increase in electricity price throughout the Nordic countries. All electricity users benefit from this.

Of the Nordic players in the energy sector, Pohjolan Voima has been by far the largest investor in new production capacity and in the maintenance and repair of power plants in the past few decades.



*Finland boasts a long tradition in promoting the growth of forests and exploiting this renewable resource in a sustainable manner.*



While the combined output of Pohjolan Voima's power plants in 1990 amounted to 1 500 MW, it now totals 3 182 MW.

#### ***Investments in production and the environment***

The operating life of power plants is several decades, often 40 to 60 years. Decisions on the establishment of plants are taken from the viewpoint of the entire plant life, not on the basis of the market prices at the time when the decision is taken. The establishment process – planning, arrangement of the financing, official permits and construction – takes years.

Pohjolan Voima is involved in the project of its subsidiary, Teollisuuden Voima Oy, to build the third nuclear power plant unit at Olkiluoto in Eurajoki. The net output of the new plant unit will be some 1 600 MW. Pohjolan Voima is responsible for the investment in accordance with its shareholding. The new plant unit is scheduled for completion in 2009.

The biofuel programme launched by Pohjolan Voima in 1999 includes an investment programme of biofuel-fired power plants and research and development operations linked with fuel procurement for the power plants. The total costs of the seven power plant investments to be completed by the end of 2004 will amount to EUR 620 million. The combined electrical output of the power plants will be 549 MW and the thermal output 1 038 MW.

The Pietarsaari and Savonlinna biofuel-fired power plants were under construction in 2003.

Under the biofuel programme, a target has been set to increase the supply of logging residue to 500 000 cubic metres, which is expected to be exceeded even during 2004. Pohjolan Voima accounts for 85% of the new biofuel-fired power plants in Finland in terms of their electricity output.

#### *Pohjolan Voima's biofuel programme*

	<b>Electricity, MW</b>	<b>Heat, MW</b>	<b>Completed</b>
<b>Alholmens Kraft, Pietarsaari</b>	240 *	160 *	2001
<b>Kokkolan Voima</b>	20	50	2001
<b>Kymin Voima, Kuusankoski</b>	76 *	180 *	2002
<b>Jämsänkosken Voima</b>	46	130	2002
<b>Järvi-Suomen Voima, Ristiina</b>	10 *	65 *	2002
<b>Järvi-Suomen Voima, Savonlinna</b>	17 *	53 *	2003
<b>Wisapower, Pietarsaari</b>	140	400	2004
<b>Total</b>	<b>549</b>	<b>1038</b>	

investments of EUR 620 million in power plants, 85% of the new bioelectricity capacity in Finland

\* The figures also include other shareholdings than Pohjolan Voima's

Pohjolan Voima is building an evaporating plant, a recovery boiler and a turbine plant with an electrical output of 140 MW as part of UPM-Kymmene's Pietarsaari mill. The plant will be completed in 2004 and it will generate electricity and heat. The plant will burn lignin dissolved during the pulping process.

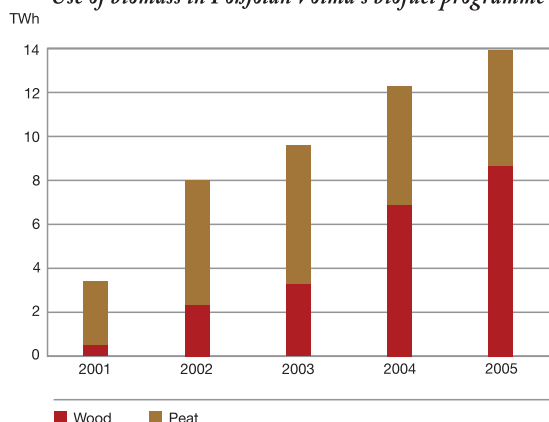
The biofuel-fired power plant built in Savonlinna was commissioned in September. The plant's electricity generation capacity is 17 MW and heat generation capacity 53 MW. The plant uses by-products from UPM-Kymmene Wood Oy's wood-processing plant as fuel. The power plant project was implemented jointly with Suur-Savon Sähkö Oy.





*The by-product produced from the processing of wood is used as a biofuel.*

*Use of biomass in Pohjolan Voima's biofuel programme*



In 2003, Pohjolan Voima commissioned its first two wind power plants in the area of Kokkola harbour and three plants at Riutunkari in Oulunsalo. The output of each wind power plant is 1 MW. In addition to these, the construction of three 1 MW wind power plants was underway in Kristiinankaupunki.

***Technology projects aimed at controlling carbon dioxide emissions***

One of the main objectives of Pohjolan Voima's research and development projects is to devise technical systems with a view to controlling carbon dioxide emissions from energy generation. The aim is to maintain the cost level of present production in a way that enables production to be even increased in the future. Moreover, R&D projects are aimed at increasing the scope for operations and promoting environmental protection.

In 2003, Pohjolan Voima spent EUR 12.4 (EUR 12.8) million on R&D operations. The bulk of this, EUR 11.2 million, was spent on studies conducted by Teollisuuden Voima's subsidiary Posiva concerning the final disposal of nuclear fuel. Construction work on the final disposal facility will probably begin in the next few years and completion of the facility is anticipated in 2020.

To increase the availability of forestry woodfuel and energy crops, the biofuel programme concentrates on four sectors. These concern studies into what is called the 'residue bale technique', utilization of stumps, harvesting of fuel wood from young forests using a multi-function harvester, and cultivation of reed canary grass. The residue bale technique is currently the principal method for harvesting logging residue. Stumps constitute a new bio-energy resource with great potential, being a key area in our R&D operations. The cultivation project of reed canary grass was launched in Ostrobothnia towards the



end of 2002. The project involves 40 farmers and a cultivated area of some 400 hectares.

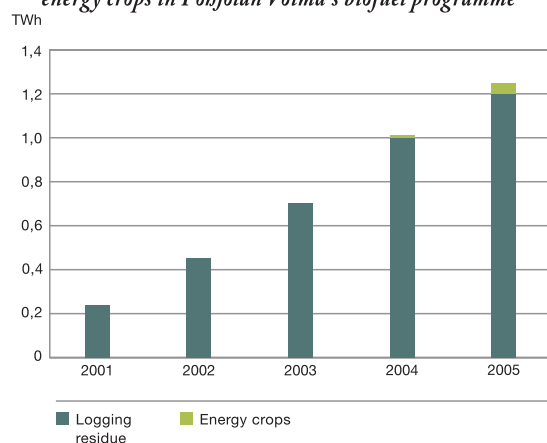
Pohjolan Voima has performed studies into the opportunities for building a large-scale offshore wind farm in the sea area off the town of Kokkola. The West Finland Regional Environment Centre gave an opinion on the environmental impact assessment report on the wind farm.

Pohjolan Voima's subsidiary, Powest Oy, conducts studies into innovative energy systems that may be later launched on the market. Powest is involved, for instance, in projects that promote wind power technology and the gasification of refuse-derived fuel.

Pohjolan Voima, Helsinki Energy, the Estonian Eesti Energia AS and the Latvian JSC Latvenergo have jointly studied the opportunity to build a direct-current cable connection between Estonia and Finland. The companies arranged competitive bidding for the delivery of a 300–350 MW connection. This showed that there would not be sufficient scope for commercial implementation of the project on the basis of long-term import contracts.

Pohjolan Voima is a member of the environmental research pool formed by the largest companies and organizations in the energy sector in Finland. The pool provides information on environmental issues related to the energy sector and promotes the exchange of information between stakeholder groups. During the first agreement period of 1999–2003, the pool financed more than 40 research projects. In 2003, the subjects of research were linked with, for instance, climate policy, water policy, radiation effects of wood energy, and the implementation of new regulations. An extensive survey was carried out concerning the values and attitudes of stakeholder groups. The new pool agreement is valid until the end of 2008.

*Consumption forecast for the use of logging residue and energy crops in Pohjolan Voima's biofuel programme*



### *Responsibility as an employer*

On 31 December 2003, the personnel in Pohjolan Voima, including Powest numbered 871. The average number of employees working for the Group during 2003 was 896. Of these, 65 people were employed by the parent company.

Empower withdrew from the Group through the stock purchase made in December, and the company personnel transferred from the Group at the same time. On the first day of 2004, 401 people transferred from Empower back to the Group, thus becoming employees of Proma-Palvelut Oy and Powest Oy.

The average age of permanent staff was 46.8 years. Males accounted for 78% and females for 22% of the permanent staff. The duration of the employment relationships of permanent staff averaged 17 years. Of the entire personnel, 26% had a technical university education, 4% had a commercial university education and 4% had other university education. 39% of the staff, had other technical education, 12% had other commercial education and 15% had other education.

### *Preventive health care forms an important part of the personnel policy*

Pohjolan Voima's health care policy bears responsibility for the personnel's physical, mental and social welfare.

Activities aimed at fitness for work, which used to concentrate on conventional labour protection and occupational health care, were expanded so as to include the promotion of working capacity. The correct understanding of expertise, good working climate and ageing was included in studies. The challenge presented in the future will be the maintenance of good working capacity and level of expertise.





The average age of Pohjolan Voima's personnel is rather high, as usual in the energy sector and in industry. More than a quarter of the personnel will reach the age of retirement by 2015. This is why means are being sought to transfer the expertise and what is called the 'silent knowledge' from senior to junior employees.

During the year under review, Pohjolan Voima spent some EUR 300 000 on occupational health care, which is some EUR 350 per person.

With regard to occupational safety, Pohjolan Voima's objective is zero accidents. A total of 20 accidents occurred in the Group. Every occupational accident is reported and analyzed.

#### ***Responsibility as the employer creates reliability of operation***

Responsibility in electricity production also means responsibility as the employer. At Pohjolan Voima, the reliability of electricity supply requires good relationships with the Group's own personnel. Good relationships between the Group management and professional organizations and Pohjolan Voima's employees' representatives, who have acted in a responsible manner, have contributed to ensuring labour peace at Pohjolan Voima for a quarter of a century now.

Co-operation with the personnel is the cornerstone of personnel policy. As part of the co-operation, Pohjolan Voima regularly arranges Group meetings to enable communication; the participants include the Group's top management and the representatives of all the different personnel groups. The participants in the Group meeting number 20. Three Group meetings were held in 2003 (three in 2002).

The Group meetings address issues raised by the parties. This practice promotes active dialogue between the Group management and personnel. The personnel and the management value the fact

that it has been possible to even deal with extremely confidential issues at the meetings.

Co-operation committees function in the power plant locations. These committees provide information on Group issues and discuss topics in which the personnel are interested and which the personnel bring up. Furthermore, the personnel have representatives in the management groups of the subsidiaries. With regard to Group-internal communications, important media include Pohjolan Voima's Intranet and the Group's personnel bulletin and bulletin for stakeholders.

#### ***The value process was furthered***

Pohjolan Voima's values of responsibility, reliability and competence were confirmed in the beginning of 2003. Besides the personnel, other stakeholder groups were also considered in determining the values. The introduction of the values was promoted by linking them to the Group's common operating procedures and ground rules.

The ground rules were crystallized in a brochure entitled "Our operating procedure", which was completed in autumn and which describes the Group's business idea, the values that guide the company's operations and the operating principles. The brochure also describes the ethical principles and the operating policies concerning personnel issues, occupational health and safety, environmental and stakeholder operations and social responsibility issues of the procurement operations.

"Our operating procedure" model will be first introduced into the operations of PVO-Vesivoima Oy. Experience gained with the model will be taken into account in developing Pohjolan Voima's senior and middle management training.

*Peat is a slowly renewable biomass. Only a fraction of the peatlands in Finland is used for peat production.*





#### *Personnel value Pohjolan Voima as an employer*

Pohjolan Voima carried out a personnel study in 2002. The results show that the personnel have committed themselves to working for the company and want to contribute to the Group's success. The personnel consider Pohjolan Voima a good employer.

The personnel expressed development wishes and partly critical comments concerning the organization of jobs, communications, experiences with equality issues, and information practices. The personnel were satisfied with the challenges posed by their work and the variety it offered. They considered the training and learning opportunities offered by the company to be important. They proposed that communications and co-operation between the Group's companies should be improved. In their opinion, the personnel had little knowledge about the business targets and objectives and their achievement.

The personnel study is repeated every two years. The next study will be performed in 2004.

#### *Attention focused on development discussions*

In 2002, Pohjolan Voima implemented training in development discussions intended for the entire personnel, which continued in 2003. The purpose is to provide the managers and the subordinates with good readiness for development discussions. The purpose is that development discussions have been introduced throughout the Group in 2004.

In addition to professional training, the skills of Pohjolan Voima's personnel were developed in management skills, occupational safety, environmental issues, communications and foreign languages. Training of the directors and managers aimed at enhancing their ability to appear in public continued.

A booklet entitled the "Recruitment policy" was completed in 2003. It crystallizes the common ground rules and operating procedures with regard to the employment of personnel and the planning of human resources.

In 2004, the priorities of personnel policy will include ensuring the implementation of development discussions at the Group level and enhancement of management and managerial skills.

#### *Result-based pay system in use*

Pohjolan Voima's pay system has been developed systematically in such a way that the requirement level of the job and the employee's performance and competence levels are taken into account better than before in the pay. The result-based pay systems and the incentive schemes complement the pay systems.

The result-based pay systems are most frequently used in the subsidiaries, in which it is easier to find the profitability meters. In the future, the use of a result-based pay system will be extended to cover administrative work as well.

*Recycled wood is a suitable biofuel for energy generation.*



### *Responsibility for the environment*

Pohjolan Voima's operating principles emphasize the responsibility for our operations. Attention is focused on the ecological and social effects of the operations and on the anticipation of the effects throughout the supply chain.

Energy generation is basic production that is necessary for industry and households. The reasonably priced electricity produced by Pohjolan Voima for its shareholders benefits the Finnish economy.

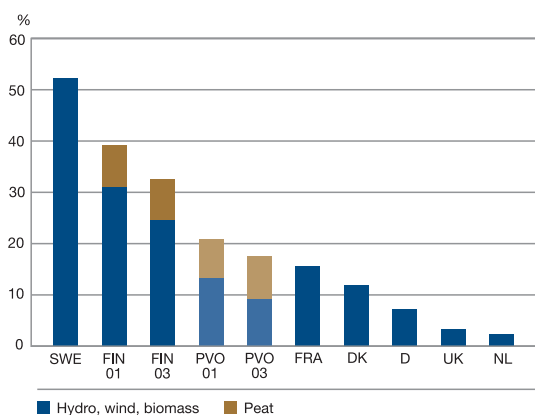
#### ***Handling of biofuels creates jobs***

Pohjolan Voima has power plants in 20 locations in Finland. The importance of hydropower and thermal power plants as a regional employer is considerable, both directly and indirectly.

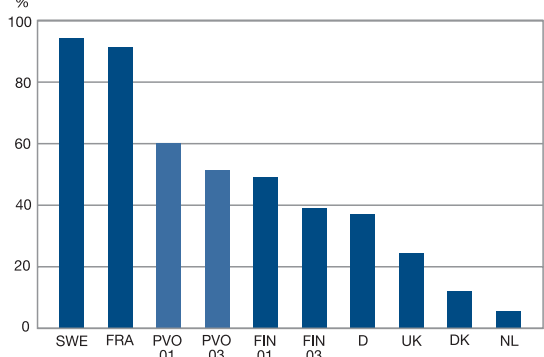
The increased use of biofuels creates jobs and generates income in the power plant locations. The biofuel programme increases the procurement of forestry woodfuel and energy crops and, when implemented, will create new opportunities particularly in the vicinity of the power plants. Bio-energy is exploited regionally, and therefore the harmful effects of transports can be minimized.

The Ministry of Trade and Industry has granted Pohjolan Voima subsidies for the investments in biofuel-fired power plants and for upgrading biofuel procurement and constructing wind power plants.

*Electricity generation structure in 2001 (renewables and peat)*



*Electricity generation structure in 2001 emission-free (hydro, nuclear, wind)*



***Gasification of refuse-derived fuel would reduce emissions and landfill waste***

Jointly with Vapo and VTT, Pohjolan Voima’s subsidiary Powest Oy has been developing gasification technology with a view to utilizing sorted waste. Clean gas is processed from the sorted waste and the gas is used at power plants as an additional fuel mixed with coal, oil or natural gas. The gas is a cleaner fuel than coal, peat or heavy fuel oil and it is mainly renewable in origin. As the sorted waste is utilized, it does not cause methane emissions from dumps. The replacement of fossil fuels by gas cuts the carbon dioxide emissions from power plants.

Powest and Vapo jointly applied for a permit to build a gasification plant as part of the Martinlaakso power plant of Vantaa Energy Ltd. The environmental impact assessment procedure of the gasification plant began in spring 2001 and an environmental permit was granted for the plant towards the end of 2002. In December 2003, the Vaasa Administrative Court reversed the permit decision and deemed the power plant, in addition to the gasification plant, as also being a waste incineration plant. Powest, Vapo and Vantaa Energy have appealed against the court’s judgement to the Supreme Administrative Court.

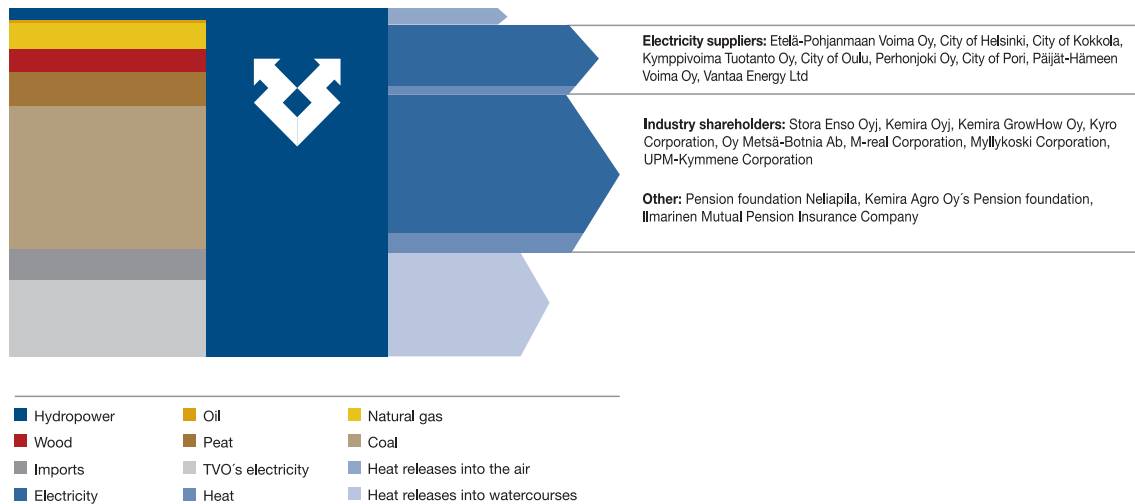
***Active co-operation with stakeholders***

Pohjolan Voima maintains contact nationwide with the players in the energy sector and their stakeholder groups, such as civic organizations, authorities and political decision-makers. Relations with the stakeholders are based on openness and honesty. The stakeholder policy was confirmed in 2003 as being one of the Group’s principal operating policies. The objective is to be well-informed about expectations of the stakeholders and to inform them of the Group’s viewpoint about different issues.

During the year under review, Pohjolan Voima celebrated its 60th anniversary. The anniversary was celebrated together with the stakeholders: the Group issued a jubilee publication and held a celebration for the personnel. Nearly 500 invited guests attended the festive seminar arranged on 10 June 2003 at Finlandia Hall.

During 2003, Pohjolan Voima defined the most important stakeholder groups according to power plant, and outlined various stake-

## Energy balance in 2003



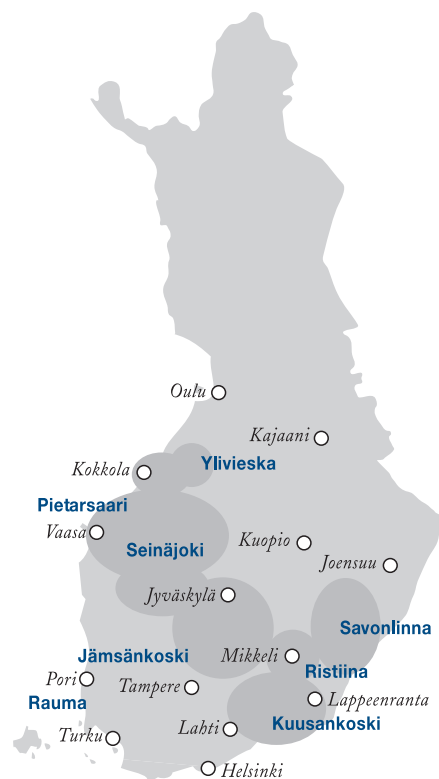
holder group activities. In hydropower production, for instance, environmental restoration measures are implemented jointly with the Regional Environment Centres and municipalities.

Voimalohi Oy, which is in charge of the fish stocking, co-operates with the local fishery associations, research institutes and authorities along both the Kemijoki and Iijoki Rivers and in the sea area. Power plants arrange open-house events for local residents and hold press conferences on the events.

A survey of the parent company's stakeholder groups will be carried out in the course of 2004. In the future, information on the stakeholders will be updated annually.

Pohjolan Voima has some other co-operation partners as well, such as the Lahti Symphony Orchestra, of whose Symphonically Together team Pohjolan Voima is a member. Jointly with the Pulmonary Association HELI Pohjolan Voima is organizing a campaign tour in 2003–2004 to promote clean indoor and outdoor air. Pohjolan Voima also has several co-operation partners in the field of sports.

## Pohjolan Voima's biomass procurement area







*Environmental index of thermal power*



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

***Environmental policy aims at the management of all aspects of operations***

The Pohjolan Voima Group's environmental policy was revised in 2003. The Group's companies set their own environmental objectives and targets on the basis of the principles of the Group's environmental policy. Pohjolan Voima has committed itself to good management and continuous improvement of environmental issues.

Pohjolan Voima's environmental policy is based on the awareness of the effects its operations may have on the environment and on the management of all aspects of operations. In accordance with the life-cycle approach, we focus on identifying and reducing the environmental effects and risks of our operations and on the overall efficiency of our operations. The social responsibility policy of the procurement operations, which was confirmed in 2003, is followed in all Group purchases. Pohjolan Voima's products, electricity and heat, are supplied to the shareholders, many of which have committed themselves to sustainable development programmes and a good operating procedure. All work tasks in the Group involve due consideration of the environment.

The management of environmental issues and its improvement are based on the certified environmental management systems according to the ISO 14001 standard. The environmental management systems of the new plants are being built. Furthermore, Teollisuuden Voima has been accepted into the EMAS register. The implementation of the measures proposed by the environmental programmes is monitored with the aid of audits at different levels. The validity and renewal of the certificates require continuous improvement. An environmental and safety guide for the office operations was drawn up in 2003.

*Cultivating forests provides renewable raw material for industry and biofuel for power plants.*



### ***No deviations from regulatory compliance***

In 2003, there were no deviations from regulatory compliance of the production plants. The power plants operated reliably in spite of the heavy load. There were some malfunctions in the flue gas cleaning equipment of the power plants, but the limits set for the emissions were not exceeded as a result of them.

Hydropower production suffered from the exceptional drought, owing to which the voluntary ecological regulation instructions drawn up on regulating the lakes of the Iijoki River could not be completely followed. In late winter, the water levels were considerably below the minimum target levels. Because of the exceptional natural conditions, not all the fish stocking could be implemented according to plan.

In January 2003, the Chancellor of Justice took a decision on the complaint about the undersized whitefish fry to be stocked in the sea area. The Chancellor of Justice ordered the Ministry of Agriculture and Forestry to monitor fulfilment of the stocking obligation and success of the stocking and, if the situation requires, to take such measures as considered necessary.

### ***Environmental investments in the final disposal of waste***

Nuclear waste management is an important element of nuclear power production. A decision has been taken to dispose of the spent fuel at Olkiluoto in accordance with the decision in principle ratified by Parliament. Detailed site characterization is being continued, and the final disposal is scheduled to begin by 2020.

The first phase of the disposal site for power plant ash was started in Kristiinankaupunki. The investment totalled EUR 2.7 mil-

lion. The final structural requirements for the ash disposal site are being considered by the Supreme Administrative Court. The cost of ash disposal will vary between EUR 5 and EUR 12 per tonne, depending on the permit conditions.

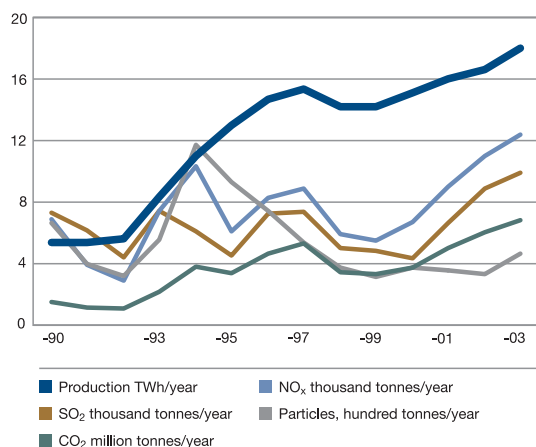
Pohjolan Voima's and Etelä-Pohjanmaan Voima's joint venture, Vaskiluodon Voima Oy, will build ash disposal sites in Vaasa and Seinäjoki in the near future. The environmental impact assessment procedure has already been completed in Vaasa.

### ***Voluntary environmental projects related to hydropower continued***

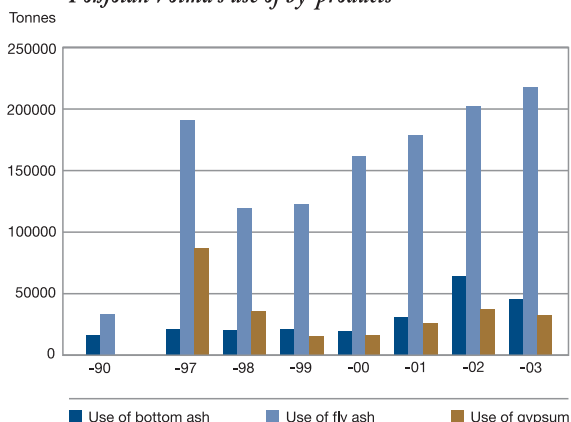
Hydropower production has regional and local effects on water-courses and their fish stocks. Voimalohi Oy, jointly owned by Pohjolan Voima and Kemijoki Oy stocked a total of 2.6 (2.7) million fry in the Kemijoki and Iijoki water systems and in the sea area. Pohjolan Voima covered the cost of the stocking. Trout, whitefish, grayling, pikeperch and rainbow trout were stocked in inland waters and salmon, trout and whitefish in the sea area. More than 42 600 (108 000) lamprey were transferred over power plant dams. Pohjolan Voima accounted for EUR 1.6 (EUR 1.5) of the fish stock management obligations fulfilled by Voimalohi Oy.

The stocking of fish succeeded almost according to plan. Voimalohi reared some 75% of the fish to be stocked in accordance with the obligations. Fish farming was hampered by the exceptionally warm summer. The Company did not succeed in making up the deficit in the transfer of lamprey over dams on the Iijoki River owing to poor catches. The stocking of grayling in the river areas showed a deficit. The stocking balances of other species showed a surplus.

### Pohjolan Voima's production and emissions



### Pohjolan Voima's use of by-products



In accordance with the monitoring reports completed on the regulated lakes of the Iijoki River, the management of lake trout has succeeded extremely well. The good results are based on the use of fry whose size is larger than required by the fish stock management obligations and on the development of fishing.

Landscaping work on the riverbeds previously drained during construction of the Iijoki hydropower plants was completed in 2003. The programme comprised the construction of 26 landscaping weirs and landscaping work in the catchment area. The project was carried out jointly with the North Ostrobothnia Regional Environment Centre and the Municipality of Yli-Ii. This project, which was completely voluntary, was partly financed by EU subsidies. Other measures relating to the clearing of shores and the restoration of aquatic environments were implemented in about 150 locations. In addition to the fish stock management obligations, the management costs of aquatic environments amounted to EUR 1.4 million.

### Environmental effects of thermal power are complex

The environmental effects of our operations are monitored systematically and continuously. The environmental effects of purchased electricity cannot be monitored, however, since it is not possible to define the exact origin and environmental quality parameters of this acquisition.

The smaller than usual hydropower production in the Nordic countries substantially increased the need to operate thermal power plants. At Pohjolan Voima, the total consumption of fuels remained at the previous year's level, although two large biofuel-fired power plants were sold to Stora Enso Oyj at the end of 2002. As a result of the deal, an essential proportion of the use of wood fuels was transferred to Stora Enso Oyj. At the same time, the use of peat decreased by a half. On the other hand, the use of coal increased owing to the near maximal operation of the coal condensing power plants.

Emissions from Pohjolan Voima's thermal power production increased on the previous year. The environmental index calculated per production unit, which includes the specific emissions of carbon dioxide, sulfur, nitrogen oxides and particles, and the volume of by-products taken to disposal sites, also showed a decrease on the previous year. This mainly resulted from the sale of biofuel-fired power plants.

Pohjolan Voima's greenhouse gas emissions totalled 7 (6) million tonnes, and they accounted for 8% (8%) of the greenhouse gas emissions in Finland. The increase over the previous year mainly resulted from the increased operation of the coal condensing power plants. Owing to the small amount of hydropower, oil-fired reserve and peak-load power plants were also operated in 2003.

Pohjolan Voima curbs its greenhouse gas emissions by increasing emission-free forms of production, by building new biofuel-fired power plants, by conducting studies into alternative fuels and by increasing the energy efficiency. The new nuclear power plant unit will enormously reduce the specific emission level from 2009 onwards.

Pohjolan Voima accounted for 11% (10%) of the sulfur dioxide emissions in Finland and 6% (5%) of the nitrogen oxide emissions in Finland. Besides the high degree of utilization of the power plants, the emissions increased as a result of the operation of the heavy fuel oil-fired peak-load and reserve power plants. However, the sulfur emissions represented 67% (65%) of the maximum amounts allowed by the environmental permits, and the nitrogen oxide emissions represented 85% (85%) of the corresponding amounts. Sulfur emissions are controlled by the choice of fuel and desulfurization technology. The emissions of nitrogen oxides are mainly reduced by combustion technology.

The emissions from outside Finnish borders place the greatest burden on Finnish soil. Only some 10% of the sulfur deposition and some 15% of the nitrogen deposition originate from Finland.

### *Health effects of the power plants are small*

Teollisuuden Voima continuously monitors radiation doses received by staff working at the Olkiluoto plant and doses detected in the neighbourhood of the plant. The emissions and radiation doses represented only a fraction of the permissible amounts. The annual limit set by the authority is 50 mSv. The average annual dose received by Finns, which is primarily caused by natural radiation sources, is about 3.7 mSv.

The particle emissions from the thermal power plants were 28% (15%) of the amount allowed by the environmental permits, although they rose as a result of the increased operation of the power plants. Power plants account for a small proportion of the particles and other impurities present in urban air, of the order of a few

per cent at most. The mechanism by which particles affect human health is unknown, and therefore the effects of the origin of particles on the harmfulness cannot be assessed yet.

### *New opportunities to use by-products from production*

The wastes generated from nuclear power production are sorted and stored in accordance with their radioactivity levels. As soon as they accumulate, the intermediate- and low-level operating wastes are disposed of in a repository built in the bedrock. The high-level spent fuel is first stored in an interim store, where the activity level is reduced to a fraction. Thereafter, the spent fuel is disposed of in the bedrock. Research and design work on the final disposal site is being continued at Olkiluoto. The final disposal at a depth of 500 metres is scheduled to begin in 2020.

In 2003, the thermal power plants produced a total of 496 000 (385 000) tonnes of fly ash, bottom ash and desulfurization gypsum as by-products from the flue gas cleaning. Of this amount, about 69% (75%) was utilized. The gypsum was used as a raw material in the manufacture of plasterboard and the ash was used for earth works. The most important earth-work site in 2003 was the nine-kilometre-long bypass for the town of Kristiinankaupunki.



## Corporate Governance

### **Group structure**

The Pohjolan Voima Group comprises the parent company Pohjolan Voima Oy and its subsidiaries.

However, Powest Oy and its subsidiaries are not included in Pohjolan Voima's consolidated financial statements.

### **Applicable regulations**

The obligations of the different governing bodies of the Pohjolan Voima Group are determined on the basis of Finnish legislation, mainly the Companies Act and Accounting Act, as well as Pohjolan Voima Oy's Articles of Association and shareholders' agreements that supplement them. Pohjolan Voima also observes the corporate governance recommendation issued by the Central Chamber of Commerce of Finland and the Confederation of Finnish Industry and Employers in 1997. A new recommendation was issued in December 2003, and its effects on the company's management and control systems are being prepared.

The shareholders of Pohjolan Voima Oy are entitled to the supply of electricity or heat in proportion to their holdings as prescribed by the Articles of Association. The shareholders are liable for the energy production costs associated with their right.

In addition to the General Meeting of Shareholders, the shareholders participate in the management and supervision of the company by appointing their representatives to the Group's other governing bodies.

### **General Meeting of Shareholders**

Supreme authority over Pohjolan Voima Oy is vested in the General Meeting of Shareholders. The General Meeting of Shareholders makes decisions on statutory matters, as well as appoints the members of the Board of Directors in accordance with the specific provisions of the shareholders' agreements and the Articles of Association and issues binding directives to the Board of Directors regarding the elections of Members of the Board in the subsidiaries and any significant investments.

### **Board of Directors**

The members of the Board of Directors are elected annually at the General Meeting of Shareholders. The procedure for electing the Board of Directors is specified in more detail in the shareholders' agreements. The members of the Board of Directors are elected for one year at a time.

The Board of Directors is responsible for managing the company and arranging its operations appropriately in accordance with legislation, the Articles of Association and any decisions made by the General Meeting of Shareholders. The Board of Directors supervises the operations and management of Pohjolan Voima, as well as decides on any significant investments and financing of the Group. The shareholders' agreements also include provisions on the tasks of the Board of Directors and the decision-making process.

The Board of Directors shall discuss and approve the crucial operating policies of Pohjolan Voima, such as the financing, insurance and risk management policies and the functional description of risk management. Furthermore, the Board of Directors shall approve the internal audit guidelines.

The members and deputy members of the Board of Directors are appointed by the shareholders. The Chairman is appointed by the largest shareholder and the Deputy Chairman is appointed by the second largest shareholder. One of the Group's executive officers acts as the secretary of the Board of Directors.

The following people have served as members of the Board of Directors in 2003: Juhani Paananen, Director, Kokkolan Energia; Petri Heinonen, CEO, Etelä-Pohjanmaan Voima Oy; Evan Edwards, Managing Director, TXU Nordic Energy Oy; Stefan Storholm, CEO, Perhonjoki Ltd; Pekka Laaksonen, Senior Executive Vice President, Stora Enso Oyj; Heikki Sara, Executive Vice President, UPM-Kymmene Corporation; Tapani Sointu, Vice President, UPM-Kymmene Corporation; Esa Tirkkonen, Executive Vice President, Kemira Oyj; and Erkki Varis, CEO, Oy Metsä-Botnia Ab. When Petri Heinonen transferred to a new employer and resigned from the Board of Directors, an Extraordinary General Meeting appointed Rami Vuola, the new CEO of Etelä-Pohjanmaan Voima, as his replacement. Heikki Sara served as the Chairman of the Board and Pekka Laaksonen was the Deputy Chairman.

The Board of Directors convened 13 times in 2003. Heikki Sara was present at all the meetings. Evan Edwards was present 10 times, Petri Heinonen 7 times, Pekka Laaksonen and Stefan Storholm 9 times, Juhani Paananen three times, Tapani Sointu 12 times, Esa Tirkkonen and Erkki Varis 11 times and Rami Vuola once.

The President and CEO presents the issues on the agenda to the Board of Directors of Pohjolan Voima Oy. The President and CEO is not a member of the Board. Total remuneration to the members of the Board of Directors in 2003 amounted to 207 800 euro.

## ***Committees of the Board***

### *Committee preparing the decisions of the Board*

The decisions of the Board of Directors are prepared by a preparation committee appointed annually by the Board. The main task of the committee is to prepare issues submitted to it, as well as issues that the committee considers necessary. The committee also acts as the first instance in issues related to the interpretation of the shareholders' agreements and the Articles of Association. The committee is chaired and convened by the President and CEO.

The preparation committee convened 11 times in 2003.

### *Operations committee*

The operations committee directs and supervises the company's production operations. It also supervises compliance with the most important operating principles of Pohjolan Voima. Each of Pohjolan Voima's shareholders is entitled to appoint one member to the committee. The committee is chaired by the President and CEO or a company representative appointed by him.

In addition to the permanent members, experts employed by the company participate in the operations committee's meetings.

The operations committee convened seven times in 2003.

### *Salary committee*

The salary committee of the Board develops the incentive and remuneration system of the corporate management. The Board authorises its Chairman to decide on the general salary benefits of the President and CEO, who decides on the basic salaries and benefits of the other executive officers. The committee convened twice.

### *Finance committee*

The finance committee assists the President and CEO on financial and economic issues and submits a proposal to the Board on the company's financing policy. The Board of Directors has the authority to decide on the financing policy. The committee convened eight times.

### *Environmental committee*

The environmental committee is a forum of communication on environmental management between the shareholders and the company. The members are appointed by the Board of Directors. The environmental committee convened once in 2003.

### *Lawyer team*

The task of the lawyer team is to maintain the corporate documents up to date and in line with legislation, as well as to provide the Board of Directors and the shareholders with advice on issues of principle and other financially significant legal issues. The lawyer team is appointed by the Board of Directors and comprises the representatives of the largest shareholders and a number of the company's experts. The team convened four times during 2003.

## ***President and CEO, executive officers***

Timo Rajala, M.Sc. (Engineering) serves as the company's President and CEO. His deputy is Matti Kaisjoki, M.Sc. (Engineering).

In operational management, the President and CEO is supported by a group of executive officers comprising Jukka Kiviluoto, Minna Korkeaoja, Mauno Paavola and Arto Piela in addition to the President and CEO and his deputy.

## ***Management of subsidiaries***

The Group's subsidiaries have their own governing bodies, as well as some of their own committees and corporate documents.

Pohjolan Voima Oy plays an active role in the management of its subsidiaries. The General Meeting of Shareholders of Pohjolan Voima Oy issues binding directives to the Board of Directors regarding the composition of the Boards of Directors in subsidiaries, as well as certain decisions of the subsidiaries as necessary.

The Pohjolan Voima Group participates in the management and supervision of its associated companies through its representatives appointed to the companies' governing bodies.

## ***Auditors***

The Group's auditing firm is PricewaterhouseCoopers Oy, Authorised Public Accountants, with Eero Suomela, Authorised Public Accountant, as the auditor in charge.

## Board of Directors



Board of Directors, from the left: Heikki Sara, Pekka Laaksonen, Rami Vuola, Esa Tirkkonen, Erkki Varis, Tapani Sointu, Stefan Storholm

### Members

**Heikki Sara**, born 1946, D.Tech.  
*Chairman*  
Executive Vice President, Strategic Development,  
UPM-Kymmene Corporation

**Pekka Laaksonen**, born 1956, M.Sc.(Econ.)  
*Deputy Chairman*  
Senior Executive Vice President, Stora Enso Oyj

**Rami Vuola**, Born 1968, M.Sc.(Eng.)  
CEO, Etelä-Pohjanmaan Voima Oy

**Esa Tirkkonen**, Born 1949, M.Sc.(Eng.)  
Deputy Chief Executive Officer, Kemira Oyj

**Erkki Varis**, Born 1948, M.Sc.(Eng.)  
CEO, Oyj Metsä-Botnia Ab

**Tapani Sointu**, Born 1955, M.Sc.(Econ.)  
Vice President, Corporate Structure,  
UPM-Kymmene Corporation

**Stefan Storholm**, Born 1951, M.Sc.(Eng.)  
CEO, Perhojoki Oy

### Personal deputy members

**Juha Niemelä**  
Executive Vice President,  
UPM-Kymmene Corporation

**Timo Koivuniemi**  
Senior Vice President,  
Stora Enso Oyj

**Hannu Linna**  
CEO, Vaasan Sähkö Oy

**Jukka Liimatainen**  
Vice President, Energy, Kemira Oyj

**Aarre Metsävirta**  
Executive Vice President, M-real Corporation

**Pertti Simola**  
Vice President, Energy, UPM-Kymmene Corporation

**Sakari Suontaka**  
CEO, Kymppivoima Tuotanto Oy

## Executive Officers



Executive Officers, from the left: Timo Rajala, Matti Kaisjoki, Jukka Kiviluoto, Minna Korkeaaja, Mauno Paavola, Arto Piela

### Members

**Timo Rajala**  
President and CEO,  
Pohjolan Voima Oy

**Matti Kaisjoki**  
Executive Vice President,  
Power Procurement,  
Thermal Power Production

**Jukka Kiviluoto**  
President,  
PVO-Vesivoima Oy

**Minna Korkeaaja**  
Executive Vice President,  
Group Controller

**Mauno Paavola**  
President and CEO,  
Teollisuuden Voima Oy

**Arto Piela**  
Executive Vice President,  
Corporate Strategy, Legal and  
Environmental Affairs, Communications,  
Corporate Relations and Procurement

### Deputy members

**Risto Mäkinen**  
Senior Vice President,  
Operations in Russia and the Baltic Countries

**Paavo Onkalo**  
Senior Vice President,  
Corporate Planning

**Risto Vesala**  
Senior Vice President,  
Transmission, IT Systems, Technology

**Timo Väisänen**  
Senior Vice President,  
Group Treasurer



## Contact persons and contact information

### **Pohjolan Voima Oy**

*President and CEO*

Timo Rajala

Liisa Sirola, Secretary

*Executive Vice President*

Matti Kaisjoki

Kirsi Holmberg, Secretary

*Group Controller*

Minna Korkeaaja

Ritva Keski-Nirva, Secretary

*Corporate Strategy, Legal and Environmental Affairs, Communications, Corporate Relations and Procurement*

Arto Piela

Seija Johansson, Secretary

*Thermal Power Business*

Martti Talsio

Heikki Tuominen

Jari Grönvall

Mauri Blomberg

*Procurement Planning and*

*Markets*

Arto Tuominen

*Project Development and Projects*

Jari Niemelä

Pentti Arhippainen

*Operations in Russia and the Baltic Countries*

Risto Mäkinen

*Controller*

Terttu Lapinleimu

*Financing*

Timo Väisänen

Jukka Kalliomäki

*Cash Management*

Kaija Silver

*Strategies*

Risto Vaarna

*Internal Auditing*

Taru Yrjänäinen-Paatero

*Legal Affairs*

Jussi Kivimäki

Seppo Ehanti

*Environmental Affairs*

Birger Ylisaukko-oja

Jouko Rämö

Petri Vesa

Jyrki Kallio-Koski

*Communications and Corporate Relations*

Antti Kuusela

Osmo Kaipainen

*Fuels*

Heikki Jatakari, coal ja oil

Juha Poikola, biomass

*Personnel*

Juhani Mäki

Vesa Saari

Heikki Varis

*Transmission, IT Systems, Technology*

Risto Vesala

Jorma Isotalo

*Corporate Planning*

Paavo Onkalo

### **PVO-Vesivoima Oy**

*President*

Jukka Kiviluoto

### **Teollisuuden Voima Oy**

*President and CEO*

Mauno Paavola

### **PVO-Lämpövoima Oy**

*President*

Martti Talsio

### **PVO-Innopower Oy**

*Managing Director*

Lauri Luopajarvi

### **PVO-Pool Oy**

*Managing Director*

Orvo Laurila

### **Powest Oy**

*President*

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MTT Agrifood Research Finland

Suomen Rakennusjäte

UPM-Kymmene Corporation

Vapo Oy

