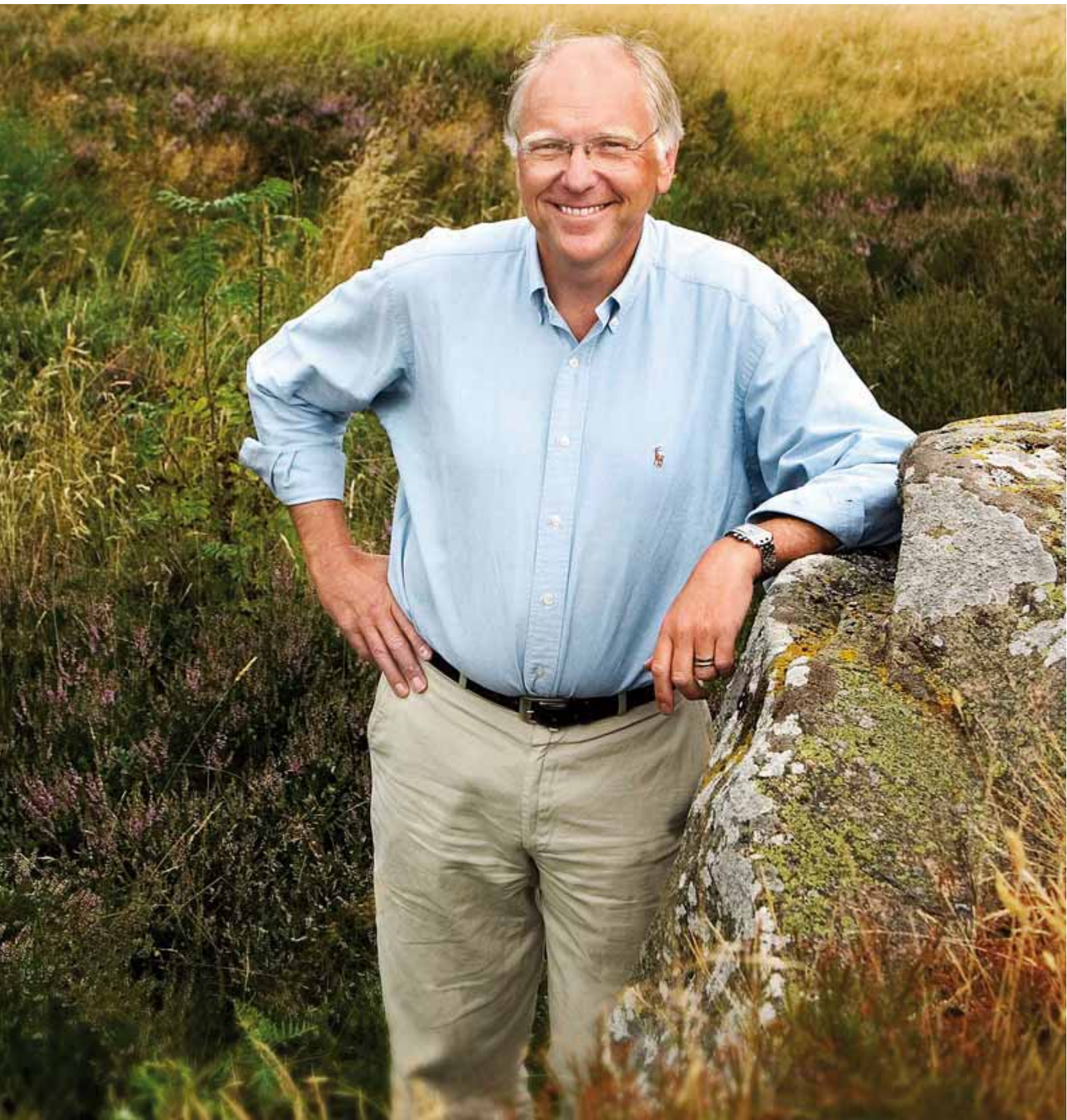




The Environment
– Number One for
Vattenfall



Throughout history, humanity has struggled with the problem of exploiting natural resources. From prehistoric attempts to master fire to today's efforts to drill for oil in the deepest oceans - humans constantly strive to harness the energy that our planet offers.

This was also the goal when Vattenfall was formed: the first hydro power plants and power lines were built to supply people with electricity. The engineers of the time were society's pioneers.

Today, we look at such achievements with different eyes. The challenge that now faces humanity is no longer to exploit nature but to find a sustainable balance between the use and conservation of natural resources.

We will always have to weigh up environmental factors against the need for a secure and dependable energy supply. Vattenfall combines these aspects in its strategic ambitions to be Number One for the Customer and Number One for the Environment.

Committed people and common solutions will form the future. The ongoing change in the global climate, the overriding environmental problem of our time, illustrates this clearly.

Vattenfall has developed and launched a model that outlines how all the nations of the world can help to limit emissions of carbon dioxide. We propose a long-term global model with a time scale of 100 years. As President and CEO, I promote this issue in all of the international forums in which I can exert influence. Ultimately, however, it is the politicians who must decide on the measures required and industry that must implement them.

This is just one of the environmental issues that concerns us. This pamphlet provides a brief insight into our environmental work. If you would like to know more, you can examine the more detailed reports that we have compiled, for example our sustainability reports.

Lars G Josefsson
President and CEO, Vattenfall

»Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.«

Report of the Brundtland Commission - Our Common Future,
World Commission on Environment and Development (WCED) 1987.



Energy and sustainable development

Access to energy is necessary for sustainable development. Vattenfall's mission is to satisfy its customers' needs for electricity and heat.

Sustainable development comprises economic, environmental and social development. These are three aspects of one and the same reality. Vattenfall views them as a whole. We must create value in all three dimensions. Financial strength is a prerequisite for the creation of environmental and social values.

This is expressed in the form of five strategic ambitions:

- **Profitable Growth.**
- **Benchmark for the Industry.**
- **Number One for the Customer.**
- **Number One for the Environment.**
- **Employer of Choice.**

Vattenfall's operations are based on a long-term environmental approach. As far as possible, we try to meet the energy needs of the present without compromising the ability of future generations to meet their own needs. We work in a goal-oriented way to introduce energy solutions that contribute to the development of a sustainable society.

Most of the energy used in the world today comes from finite resources such as oil, coal, natural gas or uranium. Although some of these resources will last

for hundreds of years if we continue to use them at present consumption levels, this will mean that future generations will have less of these resources and more residual and waste products to deal with. The risks associated with climate change will also increase. This is why there are demands to reduce carbon dioxide emissions and increase the use of renewable forms of energy.

Renewable energy currently accounts for more than 20 per cent of Vattenfall's total electricity generation and heat production. We use three main forms of renewable energy: hydro power, biofuels and wind power. We also play an active role in areas such as wave power, the gasification of black liquor, fuel cells that can use biofuels, geothermal power and solar energy. We invest in research and development and the acquisition of knowledge in order to develop the energy solutions of the future.

Electricity is a perishable commodity. It is consumed at the same instant it is generated. The transmission and distribution of electricity from power stations to consumers is an important service that has an impact on the environment. It creates the conditions required for a functioning society and for many resourceefficient technologies. In many areas of the country, power line corridors are an important factor in maintaining biological diversity. We clear the corridors manually and by machine, but never with chemicals that affect the environment.



Electricity, heat and our environment

Without electricity and heat it would be difficult to live a comfortable and secure life in today's society.

Electricity is an important motor in the social machinery and a precondition for sustainable development. Electricity is a highly-efficient energy carrier in many applications and contributes to industrial and social development and flexibility, to control and quality in industrial production and to environmental improvements.

District heat is efficient and environmentally-friendly. As the heat is produced in large plants equipped with modern cleaning technology, the emissions of envi-

ronmentally-damaging substances to the air, ground or water are much lower than they would be if every individual property had its own boiler.

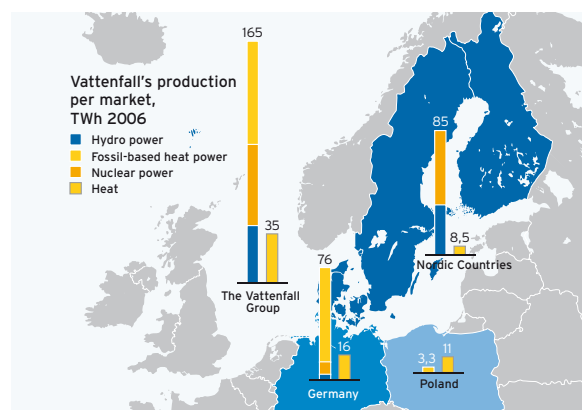
Vattenfall is now the fourth largest electricity generator in Europe and the largest heat producer - an international energy Group with ambitions to lead the industry in Europe.

In 2006, the Group's sales amounted to more than SEK 145 billion. The Group has operations in Sweden, Finland, Denmark, Germany and Poland. Most of our employees are to be found outside Sweden.

Conditions differ

The conditions governing the ability to meet the need for electricity and heat differ from country to country. The Scandinavian Peninsula (Sweden and Norway) has many rivers with considerable fall heights and therefore has a rich supply of hydro power. Germany, Poland and Denmark lack this natural resource. Electricity generation in these countries is more dependent on fossil fuels such as coal, oil and natural gas.

In Germany and Poland, coal is a domestic and relatively inexpensive fuel. Oil and natural gas have to be imported, however, and sometimes from politically unstable regions which affects the security of supply. These fuels are also much more expensive than coal.







The nuclear fuel cycle

Nuclear power accounts for a large part of the electricity generated in Sweden and Germany and plays an important role in the energy system. The environmental performance of nuclear power is high in that it is almost entirely free from carbon dioxide emissions.

Vattenfall buys uranium from mines in Australia and Namibia, and previously bought uranium from Uzbekistan too. The uranium is enriched in France, Germany, the Netherlands and England. A small amount of enriched uranium is also purchased from Russia. The enriched uranium is used to produce nuclear fuel in Sweden, Germany and Spain. Vattenfall follows the trade recommendations issued by the Swedish Ministry for Foreign Affairs, the EU and the UN. We also conduct environmental inspections of all the suppliers on site and ensure that they live up to our environmental requirements and our environmental policy, as well as complying with the legislation, regulations and demands of the authorities in

the country concerned. We make sure that we have complete access to the operations of potential suppliers long before we sign contracts with them.

Nuclear fuel is covered by rigorous safety demands throughout the cycle from mining to final storage. Spent nuclear fuel must be stored in a safe way for a very long time.

After use, nuclear fuel is highly radioactive and thus very dangerous if handled incorrectly. Funds are therefore continuously set aside for the construction of a safe repository for spent nuclear fuel and for the decommissioning of the nuclear power stations. In Sweden, Svensk Kärnbränslehantering AB (the Swedish Nuclear Fuel and Waste Management Co.) is responsible for managing radioactive waste from the power industry, other industrial operations and the medical sector. Sweden plays a leading role in the management of spent nuclear fuel.

Fossil fuels

In a global perspective, approximately 13 per cent of the world's energy supply comes from renewable sources and 7 per cent from nuclear power. The remaining 80 per cent comes from fossil fuels such as coal, oil and natural gas.

Fossil fuels are rich in energy and relatively easy to burn. They will remain a necessary element of the world's energy supply for the foreseeable future. However, the combustion of fossil fuels gives rise to emissions of carbon dioxide, nitrogen oxides,

sulphur dioxide and particles. Most of these emissions can be prevented by using efficient filters and cleaning systems. This does not apply, however, to carbon dioxide, a gas that occurs naturally in our environment. Carbon dioxide is not toxic, but increased amounts of the gas in the atmosphere have an impact on the global climate. One important way of restricting emissions of carbon dioxide is to increase the efficiency of the use of fossil fuels. By applying modern technology, the same amount of electricity can be generated using less fuel.

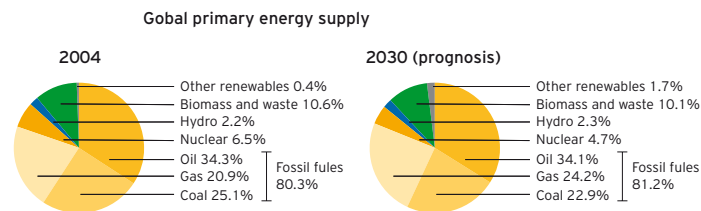


Vattenfall's coal-fired power plants in eastern Germany were built in the 1990s using modern technology and replaced older plants with much lower levels of efficiency and environmental performance.

Two additional ultramodern plants are now under construction in Germany and these will also replace plants based on older technology. We are also building a pilot plant for a coal-fired generation system that will be almost entirely free of carbon dioxide emissions. The basic idea is to separate the carbon

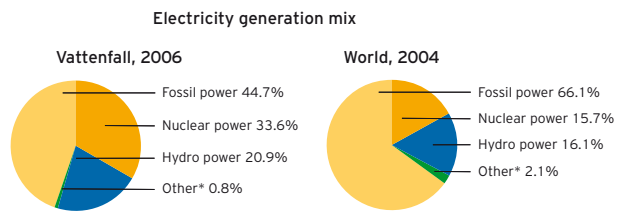
dioxide in the combustion process and convert it into liquid form so that it can be then stored deep in the bedrock in the same way that natural gas has been stored for millions of years. The development of this technology is a pioneering effort that in the long term may play a decisive role in solving the problem of climate change.

In Denmark, we are improving the efficiency of our combined heat and power plants, improving cleaning and increasing the use of biofuels.



Source: IEA World Energy Outlook 2006.

According to the International Energy Agency reference scenario, fossil fuels will continue to dominate energy supplies. Oil, natural gas and coal will meet 81 per cent of primary energy demand by 2030, one percentage point higher than in 2003. Other renewables - a group that includes geothermal, solar, wind, tidal and wave energy - will expand at the fastest rate.



Sources: Vattenfall and IEA's World Energy Outlook 2004 (later figures for electricity n.a.).

*) Wind, solar, combustible renewables, waste and geothermal.

Lignite mining

Like great harvesters, the mining machines rumble slowly through the landscape in the lignite fields in eastern Germany. The lignite, or brown coal, is mined in open-cast mines that are several kilometres wide and several hundred metres long.

First come the excavators that move the overlying earth and rock and expose the layers of lignite at a depth of 60 to 120 metres. The lignite is then mined and transported to nearby power stations where it is incinerated to provide electricity and heat.

The moved earth and rock is spread over the other end of the open-cast mine where the rolling landscape is restored by recreating forests, lakes and agricultural land. The restoration of a mined area is complete after 15 years.

Small villages in the mining area must be abandoned but are rebuilt not far from the original site. The rebuilding programme is conducted in close consultation with the inhabitants who are then able to move into new, modern houses. Older buildings of special interest are moved and re-erected in the new village.



Renewable energy

Approximately one-fifth of Vattenfall's energy production is based on renewable sources of energy, primarily hydro power.

Hydro power accounts for around half of the energy produced in the Nordic region.

Vattenfall has about 100 hydro power stations in Sweden and 10 in Finland. In a normal year, the hydro power stations in Sweden and Finland generate approximately 33 000 GWh of electricity. Following the current modernisation programme, which will be completed in 2013, we will be able to generate a further 300 GWh per year in Vattenfall's hydro power stations.

Vattenfall has worked with **wind power** since the 1970s and has been a major promoter of the development of the technology. Today, we work with both onshore and offshore wind power projects and the integration of wind power plants into the electricity system. Vattenfall's wind power investments represent an expansion in Sweden of 7-8 TWh by 2016.

A new wind farm comprising 48 wind turbines and a total output of 330 GWh that will provide household electricity to more than 60 000 homes is now being constructed at Lillgrund in The Sound off the south coast of Sweden. This investment alone will increase Sweden's total wind power capacity by more than 40 per cent.

Vattenfall is investigating the possibility of building an offshore wind farm with an output of 500 GWh of electricity in Kalmar Sound, the Trolleboda Wind Farm. This would provide household electricity to 100 000 homes.

In addition, Vattenfall is studying the potential for the largest wind farm in northern Europe at Kriegers flak in the Baltic Sea between Germany and Sweden. This would comprise 128 wind power turbines with a total output of 2 100 GWh.

Vattenfall is also considering a large wind farm in Hanö Bay, the Taggen Wind Farm. The output would be 1 000 GWh, which is equivalent to household electricity for around 200 000 homes.

Following an acquisition in Denmark, Vattenfall now owns a large number of onshore wind power plants on Jutland and Funen and a 60 per cent-holding in Horns Rev, the largest offshore wind power farm to date, which is located in the North Sea off the coast of Jutland outside Blåvandshuk. In total, Vattenfall owns 406 wind power plants in Denmark with a capacity of 309 MW and an output of 803 GWh.

Vattenfall's other onshore and offshore wind power plants in Sweden, Finland, England, Germany and Poland have a total capacity of 195 MW.

Wave power - the power contained in the waves of the seas and oceans - is an unexploited resource that may provide a useful addition to our energy supply in the future. As yet, however, the technology is still at the research stage. At Islandsberg outside Lysekil and Fiskebäckskil, Vattenfall is conducting trials in collaboration with Uppsala University in which a linear generator is using the energy of the waves to generate electricity. This is one of several technologies that we are now studying actively.

Biofuels and waste are mainly used to produce heat. We have been committed to the use and development of bioenergy for 30 years. Today, we operate around 90 biofuel-fired plants in Sweden, Finland, Germany and Denmark and are thus one of the world's largest purchasers and users of biofuels. Biofuels now account for approximately 23 per cent (more than 100 TWh/year) of Sweden's energy supply and this percentage is expected to increase.

Waste is a partly renewable fuel. Since the EU introduced a ban on the disposal of flammable waste at

landfills, industrial and household waste has increased in importance as a fuel.

Using biofuels and waste to fire power or heat plants is much more difficult than using fossil fuels. Vattenfall has devoted several years of R&D to the development of technologies for converting waste into energy.

We have waste combustion plants in cities such as Uppsala and Hamburg.

Climate change

Greenhouse gas emissions are a threat to the climate. An increase in the percentage of carbon dioxide in the atmosphere leads to increases in average temperatures and thus to changes in the living conditions of all life on Earth. Curbing climate change is the overriding environmental challenge of our time.

Apart from our long-term investments to reduce emissions of greenhouse gases and increase the output of existing power plants, we have proposed a global model for distributing the environmental burden and reducing the emissions of carbon dioxide.

The model is based on the principles that all of the countries of the world should participate in relation

to their share of the global production of goods and services, that no country should be denied the right to economic development and that no country should be forced to endure far-reaching social change.

The model has a time scale of 100 years and is intended as a "third alternative" to the alternatives represented by the Kyoto Protocol and the policies of the USA. It combines an emissions ceiling and trading mechanisms with initiatives to accelerate technological development.

The global perspective and the long-term horizon are two important factors that distinguish the model from the EU's emissions trading scheme.

Vattenfall's environmental policy

All of today's energy sources that are used globally will continue to be needed in the foreseeable future. Energy, especially in the form of electricity is the basis for the modern society and contributes to quality of life. Every energy source and each operation is to be managed in an efficient and responsible way. Vattenfall manages many different technologies and has a diversity of energy sources. Our major sources are hydropower, coal, nuclear power, biofuels, peat, wind power and waste. To a lesser extent, we also use gas, oil, geothermal and solar energy. Vattenfall handles many different environmental issues and we regard the management of greenhouse gas emissions, air quality, soil protection, land use, water protection, waste management, hydro dam safety, nuclear safety and energy efficiency to be our main focus areas.

Vattenfall's ambition is to be Number One for the environment and to be recognised for this.

This means that:

We manage our operations with openness, effectiveness and accountability and, for each energy source and each type of technology, we strive to be the best in class.

We do our utmost to choose modern, efficient and environmentally-effective technologies while making a sound assessment, balancing environment and economy when making investments.

We strive to increase our use of energy sources that have no or low emissions of carbon dioxide and other emissions. (Biofuels are considered carbon dioxide-neutral.)

We invest in research and development to improve energy efficiency in our operations and to reduce carbon-dioxide emissions from power plants based on fossil fuels.

We have a structured and systematic approach to taking environmental aspects into account, including setting requirements and targets as well as performing follow-ups. We handle this as an integral part of our business management. We evaluate environmental performance when selecting suppliers, contractors and business partners.

Our performance in environmental matters creates the right conditions for a sound business development and for improving our competitive position. We comply with existing laws, regulations and permits. By making continuous improvements, our ambition is to be in the lead and set a good example in the markets where we are active. Within our sphere of activity, we focus on environmental protection, pollution prevention and human health. Our actions are characterised by respect for the cultures of the regions in which we operate. We are committed to maintaining an open dialogue concerning the environmental aspects of our management, operations and products. We endeavour to achieve sustainable development in our economic, social and environmental performance.

The complete version of the environmental policy and more information can be found at:

www.vattenfall.com,

Send questions to: environment@vattenfall.com

www.vattenfall.com

