

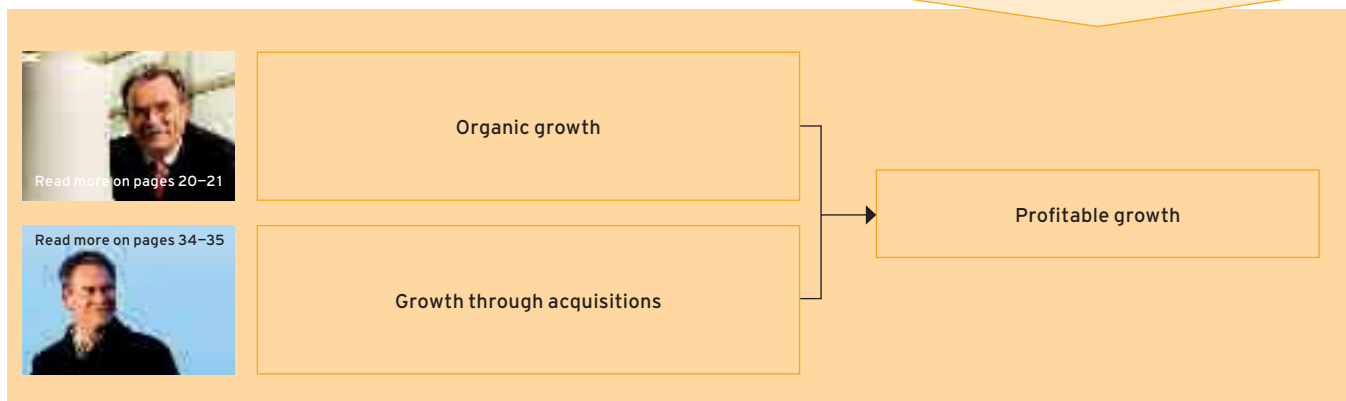
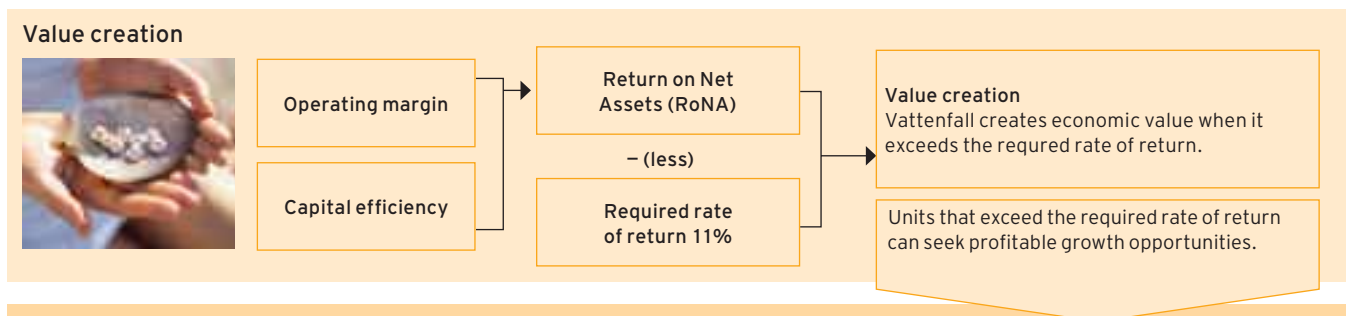
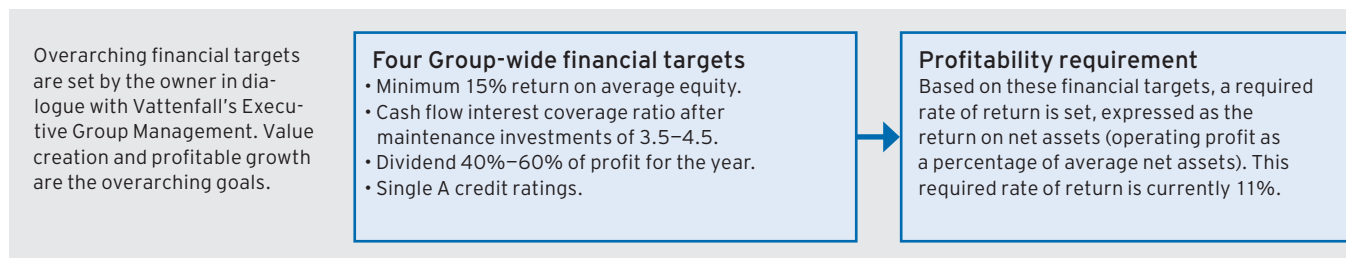
# SECURING THE FUTURE THROUGH FOCUS ON ECONOMIC VALUE CREATION

Economic value creation and profitable growth are the most central of Vattenfall's strategic ambitions. They are a fundamental prerequisite for our ability to achieve the company's other objectives – not least regarding sustainability – and for realising Vattenfall's vision to be a leading European energy company.

Following a period of consolidation and integration of acquired operations, Vattenfall shifted its strategic focus in 2005 towards realising its vision of being a leading European energy company. This work rests on a platform of Vattenfall's five strategic ambitions. However, a fundamental precondition for being able to achieve this vision is to constantly grow the economic value that is generated by the operations. Consequently, value creation and profitable

growth have obtained further importance as key pillars in Vattenfall's strategy work and business planning, and thereby also in the setting of the Group's financial targets. The Board of Directors discusses the proposed targets and makes decisions to recommend them to the Annual General Meeting, where the owner then makes a formal decision. For more information on Vattenfall's current financial targets, see pages 2 and 3.

## Process for goal-steered value creation



### How does Vattenfall measure economic value creation in its various operations?

Since Vattenfall works in an exceptionally plant-intensive industry, management has opted to set a Group-wide return target that is expressed as a return on net assets (operating profit as a percentage of average net assets). The operating profit that is generated by operations is always assessed in relation to Vattenfall's asset base, on which the owners and lenders expect a reasonable return. The return target is currently 11% and is based on a balanced consideration of the financial targets that were adopted by the owner at the Annual General Meeting. This target, in turn, is translated into individually defined targets for each business unit, according to which operations are managed. The main reason for this reformulation to individual targets for each business unit is that Vattenfall's operations have widely varying conditions – mainly different asset bases in terms of size and age. Moreover, the company's equity and net financial income and expense are not distributed over the business units. The basic principle for this target formulation is that asset-intensive operations are assessed according to their re-

turn on the asset base, while service operations are assessed according to their operating margin.

Since Vattenfall's nuclear electricity generation and distribution facilities are asset-intensive, cash flow and capital allocation are central components in decision-making, such as when investments are evaluated. To maximise the impact of internal communication surrounding economic value creation and establish a common understanding of these targets within the organisation, Vattenfall has chosen to emphasise operating profit before tax rather than cash flow as a first step. The main reason for this is that operating profit is a key ratio that is clearer and easier to understand than cash flow. Moreover, cash flow requirements tend to punish investment, which is negative in an extremely plant-intensive industry such as electricity generation. In our internal communication, major emphasis has also been put on cost-effectiveness and efficiency-improvements at the business unit level.

#### Goals for the business units

Since equity is not distributed over the various operating units and since Vattenfall's operations are so different from each other, the Group-wide required rate of return is translated to individual targets for each business unit. If a business unit's performance exceeds this required rate of return, the unit can seek profitable expansion opportunities. If its performance is below the requirement, then profitability must be improved, assets must be reduced and growth must be restrained.

#### Financial targets at the business unit level

Since the book value of Vattenfall's electricity generation assets in many cases does not give a representative picture of the actual value, operating profit is instead measured against an indexed cost, i.e., an inflation-indexed value.

In Heat Generation, the same targets are used as at the Group-level, i.e., return on net assets.

The primary financial target for Vattenfall Trading Services is return on trading mandate. This unit is expected to generate a return on its trading via the foreign cables – SwePol Link and Kontek – that the unit is responsible for.

In Sales, the primary financial target is net return on a set value per customer.

Like in Electricity Generation, Electricity Distribution has a substantial asset base. Consequently, the return on replacement value is measured instead of on the book value, which would underestimate the value of the assets.

##### Electricity generation

- Return on indexed cost

##### Heat

- Return on net assets

##### Trading

- Return on trading mandate
- Return on net assets (SwePol Link and Kontek)

##### Sales

- Net return on a set value per customer

##### Electricity networks (Transmission and Distribution)

- Return on replacement value (Nordic countries and Germany)
- Return on net assets (Poland)

# DRIVING FORCES, RISKS AND STRATEGIES FOR VALUE CREATION

Vattenfall's earnings are affected by certain fundamental driving forces and risks, such as electricity prices, fuel prices and political decisions. Vattenfall has adopted strategies, activities and risk management policies for all of its business units.

## Generation

### Driving forces

#### Electricity prices

Electricity prices are the single most important value-creation factor at Vattenfall. Losses can arise due to changes in the wholesale prices for the electricity that Vattenfall conducts physical and financial trading in. The price of electricity is affected by fundamental factors such as water supply, fuel prices, CO<sub>2</sub> emission allowances and electricity consumption. To manage price risk, Vattenfall sells and buys electricity through forward contracts. Business in the various electricity markets is handled by Vattenfall Trading Services' market access function.

#### Plant availability and efficiency/ available generation capacity

Production stops caused by ageing plants or operative problems can cause losses of income. Such losses can be compensated to some degree through insurance. About half of Vattenfall's electricity generation in the Nordic countries is derived from hydro power from Swedish hydro power plants. An increase in the hydrological balance, i.e., water levels in dams, can push down electricity prices, with lower income as a result. The earnings impact of such a drop in prices can be mitigated if electricity has been sold in advance in the forward market. Increased generation can also be sold on the spot market. This risk can be lowered through greater integration between the Nordic region and other markets.

#### Fuel prices

The Group is dependent on the price of coal and uranium, which are fuel for the power plants. However, most of Vattenfall's coal-fired plants use lignite from the Group's own mines. If the market price of hard coal and uranium rise more than what has been assumed in the Group's hedging strategy, it can entail higher costs and – if electricity and heating prices do not follow suit – lower margins. The cost of uranium accounts for a very small part of the total production cost for nuclear power, however.

### Energy and environmental policies

National targets for the share of electricity generation based on renewable resources are rising in all of Vattenfall's markets, which affects our investment plans. The return on such investment projects depends in large part on the subsidy systems.

Starting in 2005, most countries in the EU have been allocated quotas for CO<sub>2</sub> emission allowances in accordance with the EU burden-sharing agreement. Allocations of emission allowances will be gradually reduced, and quotas will be lowered up until 2012. Higher prices of emission allowances would increase the price of Vattenfall's fossil-based generation, but at the same time, higher income is generated if electricity prices also rise.

### Strategies/actions

- Optimisation of spot sales/hedging and production planning/control.
- Hedge future electricity prices through forward contracts.
- Raise capacity utilisation at existing generation facilities and implement efficiency improvement programmes.
- Growth through profitable investments in new capacity with focus on renewable energy.
- Hedge CO<sub>2</sub> emission allowance needs.
- Hedge future fuel costs.

### Key risks

- Electricity price risk
- Plant risk
- Fuel price risk
- Environmental risks and environmental liabilities

For a more detailed discussion of risks, see page 67.

## Trading

### Driving forces

Vattenfall Trading Services has been set up to minimise costs and to benefit from the advantages of having a large and central trading unit. The main purpose of this unit is to help the various business units hedge the risks that arise in their business activities and in such way create value-added. The unit serves as a sort of internal bank and is a central function for the Group's transactions on the raw material exchanges. At the same time, a consolidated risk profile can be created at the Group level, and risks in various portfolios and raw materials can be netted against each other.

Vattenfall Trading Services also has its own limited mandate to use its market expertise and take advantage of business opportunities in the raw material markets. The chief risks in this operation consist of volatile electricity and raw material prices, risks that can arise when a counterparty in a transaction fails to meet its obligations, and some currency risk in euros and Norwegian kronor in connection with price hedging of electricity primarily on Nord Pool.

### Strategies/actions

- Be an active market player and a driver of market development.
- Develop infrastructure to cover the entire Group.
- Gather all tradable raw material flows and be even more active in developing hedging strategies in these markets.

### Key risks

- Price area risk
- Electricity price risk
- Credit risk
- Currency risk

For a more detailed discussion of risks, see page 67.

## Sales

### Driving forces

#### Number of customers/economies of scale

Increasing the number of customers and lowering cost-to-serve are central for economic value creation in Sales.

#### Cost effectiveness

Greater competition is putting pressure on margins in all of Vattenfall's markets, which is why it is very important to achieve a high level of cost effectiveness.

#### Long-term contracts

Major customers often require long-term, complicated contracts that are specially adapted for their respective operations. The Vattenfall Group tries to the extent possible in the market to hedge the risks that can be associated with these types of contracts.

#### Counterparties

If a customer fails to meet its payment obligation, this can lead to a loss of income. Vattenfall uses external rating information when such is available. If the company does not have an external credit rating, internal models are used to determine the counterparty's creditworthiness. Limitations in trading volume are continuously evaluated for each counterparty.

#### Volume

Changes in temperature and in the economy can result in customers using more or less electricity than expected. This gives rise to a risk that delivered volume will differ from what was planned. Vattenfall manages this volume risk by improving and developing processes for electricity consumption and, as a rule, taking it into consideration when setting the terms and conditions of contracts with customers.

### Strategies/actions

- Improve customer handling, such as through new IT systems.
- Offer competitive prices and contract forms.
- Develop new, individualised products.
- Provide advice on contract forms, energy savings and the environment.
- Implement Web-based self-service for the private market.

### Key risks

- Price area risk
- Electricity price risk
- Credit risk
- Volume risk

For a more detailed discussion of risks, see page 67.

## Electricity network

### Driving forces

#### Regulation of network activities

In Germany, Finland and Sweden, new models have been introduced for regulating network tariffs. These models have been formulated to encourage network operators to increase the efficiency of their respective systems and at the same time allow for a reasonable return on invested capital. In Germany, demands are being made to expand the distribution network to allow it to accommodate a higher percentage of wind power. The new regulations are putting downward pressure on network tariffs, with the risk that the costs associated with the expansion will not be fully covered.

#### Network losses

Variations arise in network loads over the short and long term. It can be very difficult to predict how large these variations will be. This risk is managed through careful follow-up of outcomes in relation to hedged volumes. For deviations that are judged to be enduring, the volume target is changed for hedges for future periods.

### Strategies/actions

- Cut costs in Transmission and Distribution.
- Increase pace of investment and quality in the electricity network.
- Increase security of supply through maintenance programmes.
- Invest in reducing bottlenecks.
- Strengthen preparedness organisation.
- Streamline and simplify handling of customer matters.
- Improve customer handling, such as through the installation of meters for remote reading in Sweden and Finland, and new IT systems.

### Key risks

- Network loss risk
- Plant risk
- Political risk
- Environmental risks and environmental liabilities
- Credit risk

For a more detailed discussion of risks, see page 67.

# VATTENFALL IS INVESTING IN GROWTH

Vattenfall's growth in the coming years will be based primarily on investments in new energy generation. Investment decisions are based on fundamental analyses of supply and demand.

Vattenfall's long-term goal is to attain a sizeable market share in a future, integrated European energy market. In a slightly shorter time perspective, the ambition is to be one of the three largest players in the regional and local markets in which Vattenfall chooses to be active. The expansion strategy covers both investments in Vattenfall's current market and establishment in priority markets in Europe in which Vattenfall is currently not active. A key precondition when evaluating establishment in new markets is that a leading market share can be achieved in the foreseeable future. Vattenfall will continue to be an integrated energy company, but its growth strategy will primarily be pursued through capacity increases in electricity and heat generation, both organically and through company acquisitions. As a result of convergence between electricity, coal

and natural gas, many growth-oriented utilities are taking strategic positions in natural gas. Vattenfall is no exception – opportunities to grow in the area of natural gas are being evaluated continuously.

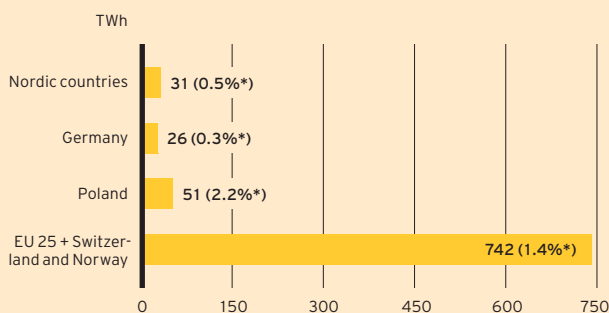
Opportunities to make major acquisitions have decreased in pace with a declining number of possible takeover candidates in relevant markets in Europe, which is driving up prices. Although Vattenfall is constantly analysing potential takeover candidates, its growth strategy is primarily focused on achieving organic growth. Investments in new electricity generation are steered by fundamental factors: either a projected growth in consumption, or an identified need to replace ageing facilities. Based on these fundamental factors, Vattenfall makes a long-term price forecast, which is the primary factor in an investment decision. Price stability

## Conditions for investment in new electricity generation

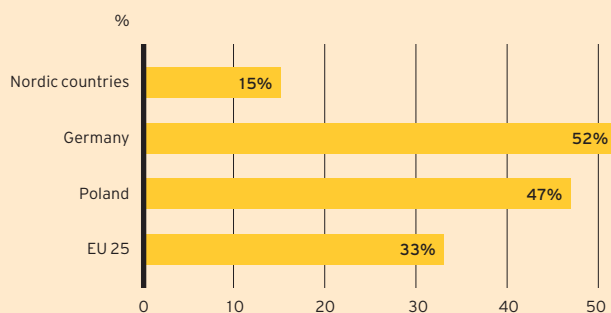
As a rule, investments in new electricity generation have a very long payback time, while there are many uncertainty factors during a facility's economic life. A deep understanding of market forces is therefore crucial when evaluating investment projects.

**The most fundamental preconditions for investing in a new power plant are anticipated growth in demand or a need to replace old capacity.**

Increase in annual electricity consumption, 2020 compared with 2005



Share of installed capacity that needs to be replaced before 2020



Source: EURELECTRIC, EURPROG 2005

\*) Annual growth in consumption, 2005-2020

is also a key component that affects the risk of an investment. Electricity prices in the Nordic countries fluctuate substantially compared with other European countries, since hydro power accounts for such a large share of electricity generation. Reservoir levels have a direct impact on the price of electricity. These differences will be smoothed out in the future if improvements can be made in transmission capacity between different price areas. Expansion plans are currently very restrained, so these differences will most likely remain in the foreseeable future.

### Extensive investment programme

A number of other factors also affect the attractiveness of individual markets, such as the extent of political regulation and subsidies, liquidity in the electricity market, and the structure of the supply curve. Vattenfall is continuously developing its model for assessing market attractiveness, which complements its fundamental analyses of supply and demand.

The profitability of a new plant is dependent on its capacity utilisation and on a price for generated electricity that covers the plant's total cost over the long term, including the cost of capital. This explains why investments in wind power, for example, are dependent on subsidies in order to be profitable.

Vattenfall has adopted a very extensive investment programme for the period 2007–2011. A total of SEK 134 billion will be invested, of which SEK 102 billion will be in electricity and heat generation, SEK 31 billion in network activities, and the remaining SEK 1 billion in other operations.

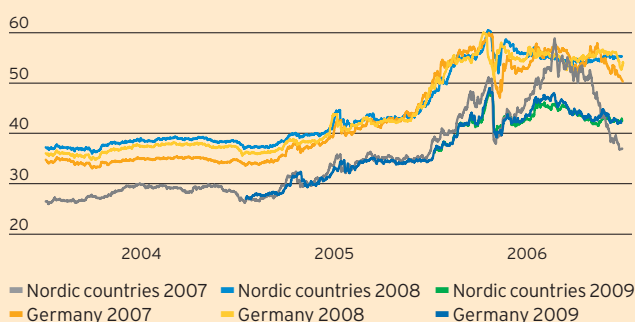
Vattenfall's ambition is to increase renewable electricity generation by approximately 10 TWh by 2016 – primarily in wind power.

Company acquisitions are outside the scope of this investment programme.

**A long-term price forecast based on fundamental parameters is the most important factor underlying an investment decision.**

**German and Nordic electricity forward prices.** Forward prices express the market's aggregate expectation of future electricity prices. A liquid forward market currently exists only for terms of up to 3–4 years. On top of this, Vattenfall makes its own long-term price forecasts based on extensive analyses of fundamental factors.

EUR/MWh



Sources: Nord Pool och European Energy Exchange (EEX).

**An investment can be considered if the long-term average price covers the entire cost of the new facility (variable and fixed, including cost of capital).**

**What does new electricity generation cost?  
See next page**

Investment decisions are influenced by many other uncertain factors:

#### Commercial conditions

- Balance between supply and demand
- Margin cost for existing capacity
- Competitive structure
- Business climate/economic growth

#### Market structure

- Liquidity
- Degree of integration with neighbouring markets (transit capacity)

#### Regulatory/political conditions

- Subsidies
- Political orientation

# WHAT DOES NEW ELECTRICITY GENERATION COST?

In order for an investment in new electricity generation to be profitable, the price of electricity must be at such a level that covers all costs, including the cost of capital. Currently a price of at least € 4–5 cents/kWh is needed. Cost structures differ for various types of energy and depend on a variety of factors, such as fuel prices. In many countries, such as in Sweden and Germany, renewable energy such as wind power are subsidised in order to be competitive.



Total cost per kWh\*

€ cents 3.7–4.4

€ cents 4.4–6.6

€ cents 4.9–5.6

## Nuclear power

## Hydro power

## Coal condensing (hard coal, lignite)

New capacity is planned or is under construction in several European countries, including Bulgaria, Finland, France, Poland, Romania and the UK. The newer generation III and coming generation IV reactors incorporate improved safety features, such as passive safety systems that would limit the effects of an accident in the reactor without human response. Progress has also been made in the development of final storage of spent nuclear fuel.

Hydro power accounts for nearly half of Sweden's electricity generation and is thus the largest source of renewable energy. The build-up of hydro power began nearly a hundred years ago and continued into the 1970s. Since then, only a few plants have been added in Sweden. Four Swedish rivers are protected from the use of hydro power. In Europe, roughly 75% of potential hydro power has been developed. The largest countries in terms of hydro power are the US, Canada, China, Brazil and Norway.

Hard coal is the most commonly used fuel in the world and will continue to be the most important source of energy for the foreseeable future. Coal is cheap to extract and therefore competitive in many countries. Coal can be used in power plants, in combined heat and electricity plants and in heat plants. Many countries that are working to reduce emissions of greenhouse gases want to restrict the use of coal and other fossil fuels. However, new technology for separating carbon dioxide and storing it could make coal virtually CO<sub>2</sub> emission-free.

### Advantages

- Good fuel availability
- No CO<sub>2</sub> emissions in electricity generation

- High efficiency
- No emissions to air or water
- Water (and thus energy) can be stored
- Easy to regulate generation

- Good fuel availability from politically stable regions and an effective world market for hard coal. The world's coal reserves are expected to last at least 250 years

### Disadvantages

- Long construction time and high technological complexity results in high cost of capital
- Safety concerns
- Final storage of spent nuclear fuel is an unsolved issue in many countries

- Highly dependent on water supply
- Major intrusion on nature that changes landscape
- Few exploitation objects
- High investment cost

- Relatively long construction time
- High environmental impact, mainly through CO<sub>2</sub> emissions. Lignite CO<sub>2</sub> emissions are roughly 30% higher than for hard coal

### Cost example\*

Generation capacity: 1,600 MW  
Annual generation: 12 TWh

Generation capacity:  
Small scale: up to 10 MW (in EU)  
Large scale: up to 440 MW  
Normal generation: approx. 4,000 hrs/year

Generation capacity: 700 MW  
Annual generation  
Hard coal: 4.2 TWh  
Lignite: 5.25 TWh

### Fixed cost, mainly cost of capital, € cents/kWh

3.2–3.9 (incl. tax on nuclear capacity of 0.4)

4.4–6.6 incl. tax, operation and maintenance

Hard coal: 1.9–2.3 (incl. operation and maintenance)  
Lignite: 2.0–2.6 (incl. operation and maintenance)

### Variable cost (mainly fuel, including CO<sub>2</sub> emission allowances, € cents/kWh)

0.5 (incl. cost for final storage of 0.2)

0 (No value has been assigned to the so-called water value)

Hard coal: 3.1–3.3  
Lignite: 2.9–2.9

### Total cost, € cents/kWh

3.7–4.4

4.4–6.6

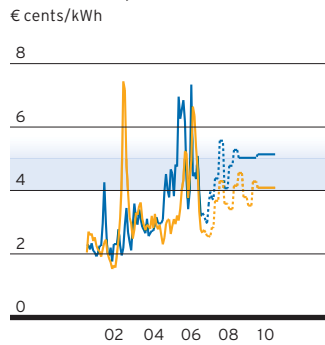
Hard coal: 5.0–5.6  
Lignite: 4.9–5.5

The chart above shows cost estimations for various types of electricity generation facilities. The calculations are based on typical size, lifetime and annual generation output for the respective type of plant.

\*) It should be noted that the costs indicated cannot be interpreted as Vattenfall's actual costs, since the conditions for each specific investment can differ from these assumptions.

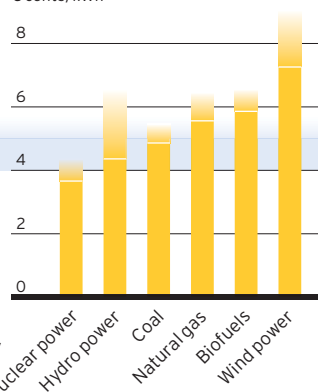
Investments in new electricity generation capacity require a long-term electricity price of at least € 4–5 cents/kWh.

German and Nordic electricity spot and forward prices, 2001–2010

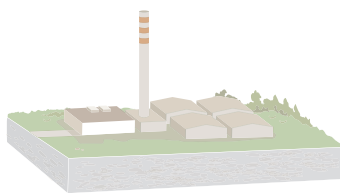


Sources: Nord Pool and European Energy Exchange (EEX).

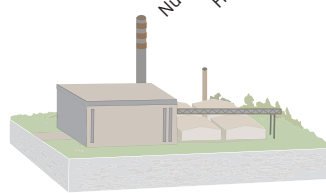
Total cost for new electricity generation



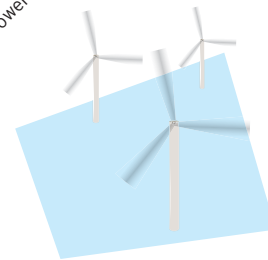
■ EEX spot price – monthly averages  
 ■ EEX forward price  
 ■ Nord Pool spot price – monthly averages  
 ■ Nord Pool forward price



€ cents 5.6–6.5



€ cents 6.0–6.6



€ cents 7.3–9.1

### Natural gas combined cycle

Natural gas is cleaner than coal and oil. Upon combustion, the only emissions are essentially carbon dioxide, steam and nitrogen oxides – plus lower volumes of CO<sub>2</sub> than when using coal and oil. This is why natural gas is the fastest growing source of electricity generation in the world. Many countries want to replace coal and oil with natural gas for environmental reasons. The largest natural gas wells are in Russia and the Middle East.

- Lower environmental impact and higher efficiency than coal and oil
- Low investment cost

- Concerns over fuel availability (the largest reserves are in politically unstable regions)
- High and unpredictable fuel cost (major price fluctuations)
- Environmental impact (emissions of CO<sub>2</sub>, among other things)

Generation capacity: 400 MW  
 Annual generation: 2.4 TWh

1.1–1.3

4.5–5.2

5.6–6.5

### Combined heat and power from biofuels

From an environmental perspective, biofuels are very good if they are used in a plant with controlled combustion and flue gas cleaning. If growing trees absorb as much carbon dioxide that is emitted upon combustion, then there will be no net emission of carbon dioxide into the atmosphere.

Plant costs vary widely, depending on size. Small plants have a higher investment cost per MW.

- Low environmental impact from large, modern facilities
- CO<sub>2</sub>-neutral

- The market for biofuels is still undeveloped in many countries, and conflicts with other uses for the fuel can arise
- Particle emissions from poorly equipped facilities

Generation capacity:  
 30 MW electricity and 80 MW heat  
 Annual generation:  
 0.14 TWh electricity and 0.36 TWh heat

4.6–5.1

1.4–1.5

6.0–6.6

### Wind power

Wind is a source of energy that has been used over the ages by people to run various types of equipment, such as mills, pumps and boats. Around 30 years ago, wind power was also harnessed for the commercial generation of electricity. Wind is a renewable source of energy that is available around the world. Operation of a wind power plant has virtually no environmental impact. The growth of wind power has progressed quickly – annual growth has been around 30% in recent years.

- No emissions to the air or water

- Higher need for balancing power due to the unpredictability of wind-based electricity generation
- Stability of the electricity grid can be adversely affected with a high share of wind power in the system
- Requires subsidies
- Landscape aesthetics

Generation capacity: 110 MW  
 Annual generation: 0.33 TWh  
 Pertains to an offshore wind power farm

7.3–9.1 (including maintenance costs of approx. 1.7)

0

7.3–9.1

Assumptions: Cost of capital: 8%–9%. Price for CO<sub>2</sub> allowances: EUR 20/tonne, Hard coal: USD 70/tonne, Natural gas: EUR 27/MWh. Exchange rate: EUR 1 = SEK 9.05. References: Elforsk rapport 03:14, 2003, Morgan Stanley Research February 2007.

Organic growth

## BUILDING THE NEW GENERATION OF COAL-FIRED POWER PLANTS

Large parts of Germany's energy production must be replaced by 2020. Vattenfall, which is the country's third-largest producer of electricity, is one of the most important players in this transformation process in which outdated, inefficient energy generation is being replaced by modern, state-of-the-art power plants.

In 2006 Vattenfall made the decision to expand the Boxberg coal-fired power plant in Sachsen, where a new 675 MW plant will complement the existing facilities (1,907 MW) starting in 2011.

"In the new plant, all processes will be optimised," says Reinhardt Hassa, head of the Mining and Generation and Electricity Generation business units at Vattenfall Europe. "The plant will have an efficiency rate of 44%, which is an increase of 2 percentage points over existing plants, with a sharp reduction in emissions. For example, CO<sub>2</sub> emissions will be 30% lower than in older coal-fired plants."

Investing heavily in fossil fuels when the struggle for climate change is at the top of everyone's agenda may sound like a contradiction in terms. But in today's situation, there are no other realistic alternatives for meeting Germany's energy needs – coal is and will continue to be Germany's dominant source of energy. Lignite is cost effective, and the country's domestic reserves will last for many decades into the future, which is also important when natural gas and oil supplies are uncertain.

There are considerable synergies in expanding the Boxberg facility. Not far from the power plant is Nochten, Vattenfall's own open-cast mine, where Vattenfall can cost-efficiently extract 20 million tonnes of lignite per year, corresponding to approximately 20TWh in electricity generation. "We are also developing a new open-cast mine in Reichwalde," adds Hassa. "The assets in our open-cast mines will last an average of 30–40 years."

Despite the near proximity of the raw material, emission allowance trading in the EU will put pressure on the plant's economy.

"But the same requirements apply for our competitors. In Boxberg we will be developing a plant with optimal performance, so I am not particularly worried," says Hassa.

Parallel with the investment at Boxberg, Vattenfall is developing entirely new technology to separate, handle and convert carbon dioxide into liquid form, where it can be pumped into bedrock. In May 2006, German Chancellor Angela Merkel participated in the groundbreaking ceremony at the Schwarze Pumpe pilot plant (30 MW), 20 km from Boxberg. The plant will be commissioned in 2008.

"In 15 years we will be able to have large and competitive coal-fired plants that can generate electricity without emitting any carbon dioxide. And we at Vattenfall are the engines behind this development," says a proud Reinhardt Hassa.



