Power and Heat

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President, Power and Heat Sector

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Create the leading power and heat company

Fortum focuses on the Nordic energy market as a platform for long-term profitable growth

Create the leading power and heat company
Become the energy supplier of choice
Strengthen position as the leading clean fuels refining company

Excel in business performance

Targets
- Ensure outstanding profitability
- Focus on value-creating growth
- Benchmark performer in all key areas
A leading Nordic company

# 1 Heat
- Leader in district heating supplying 80 cities, more than 100,000 customers
- Strong industrial cooperation

Distribution
- Leading Nordic distribution company with 1.4 million customers in Finland, Sweden, Norway and Estonia

# 2 Generation
- One of Europe’s most efficient generators
- 14% market share of Nordic consumption

Retail
- Wide product offering for B2B and B2C customers
- 1.2 million electricity sales customers in the Nordic market
Operating profit and net assets by segment

Figures for 2003

**Operating profit**
- EUR million
  - Power Generation: 603
  - Heat: 247
  - Distribution: 173
  - Markets: 35

**Net assets**
- EUR million
  - Power Generation: 6,391
  - Heat: 3,129
  - Distribution: 2,466
  - Markets: -

- Power Generation
- Heat
- Distribution
- Markets
Well prepared for future challenges

Fortum’s Nordic power generation
51.2 TWh

- Hydro power 33% 1)
- Coal 13%
- Natural gas 1%
- Biomass 1%
- Peat 3%
- Others 3%
- Nuclear power 46%

- flexible generation portfolio
- ability to react quickly
- cost efficient
- excellence in operations and PMT activities
- 78% of generation CO₂ free

Nordic generation capacity
11,186 MW

Data for 2003
1) Extremely low level because of a dry year
The Nordic generation market is hydro-driven

Nordic Generation
363 TWh*

Wind power
Other thermal
Hydro
Nuclear

* In addition, net imports from other countries were 17 TWh

TWh
140
120
100
80
60
40
20
0

Denmark Norway Sweden Finland

Wind power
Gas turbines, etc.
Condensing power
CHP, industry
CHP, district heating
Nuclear power
Hydro power

1) incl. also condensing generation in CHP plants
Source: Nordel
Market price is set as a balance between demand and supply

Demand
- seasonal variation, hourly profile
- temperature dependence
- industry use, price elasticity

Supply
- hydro production
- thermal production
- exchange with Europe
Nordic inflow drives the spot price in the short term

- Nordic inflow and deficit or excess in water reservoirs affect the spot price and price volatility on the Nordic market.
CO₂ cost will impact electricity prices

- Additional CO₂ expense from allowance prices
Big uncertainty in the price of emission allowances

- Prices set by the supply and demand balance in the European CO$_2$ allowance market
- Mainly driven by the politically set targets for CO$_2$ reductions
- National allocation plans determine the supply-demand balance of allowances on the European level
Heat – focus on the Baltic Rim markets

Fortum heat production and sales 23.7 TWh in 2003

District heating ~250 TWh

Industrial heating ~300 TWh

* Approximated small and medium scale industrial heating (B2B) market
CHP – combined heat and power

CHP plants produce both heat and electricity

- economical use of fuels, operation and maintenance
- higher efficiency (90 %) compared to heat only plants
- environmentally benign; low CO₂ emissions

Fortum operates

- 11 CHP plants in Finland
- 8 CHP plants in Sweden
- small plants in Estonia and Poland
- CHP generation capacity: heat 2 454 MW, power 1 220 MW

Nynäshamn CHP plant in Sweden
Competitiveness in customized heating solutions

Fortum’s Nordic heat production
20.1 TWh in 2003

Experience of broad fuel mix

- Strengthening role of renewables
- Expanding waste to energy
  - tightening EU Directives
  - national waste use targets
  - solution of waste issue for municipalities and industries
- Experience and volume advantages in procurement and project management

Nordic heat production capacity 8,015 MW*

* Includes 100 % of Fortum Värme samägt med Stockholm stad
Fortum Värme – extensive heat business in Sweden

Fortum Värme owns and operates Scandinavia's largest district heating system in Stockholm, activities elsewhere in central Sweden

- CHP for heat production and power generation
- Use of heat pumps and hot water boilers
- Use of energy in the sea and waste water, solid wastes and other biofuels
- District cooling for process and comfort cooling
- Town gas for households, industrial and heating purposes

Versatile energy sources for district heating 2003

- Oil 14%
- Coal 14%
- Bio oils 18%
- Pellets 14%
- Waste/sea water 23%
- Return fuel 6%
- Waste 11%
- 70% renewable fuels
Heat experience spreads in the Baltic Rim

Baltic heat markets are developing

**Opportunity to differentiate**
- long experience in CHP
- value added energy concepts (B2B)
- wide experience in district heating
- expanding waste to energy

**Sweden**
- DH* privatisations expected
- Future CHP opportunity (gas)

**Finnland and Estonia**
- DH privatisations
- Waste to energy

**Norway**
- DH as heating alternative
- Outsourcing of industrial heating anticipated

**Baltics and Poland**
- DH privatisations
- CHP
- Energy outsourcing in evolving industries

* District Heating
Service is a competence center

Key supporting competences for P&H businesses

- Excellence in operation and maintenance
- Strong position in the Nordic market and selected international markets
- Divestment of non-core businesses
- Rearranging Infrastructure Services in Sweden

Competitive position in international asset management / O&M business

Restructuring of present business
The Nordic distribution market

14 million distribution customers

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fortum</td>
<td>64%</td>
<td>64%</td>
</tr>
<tr>
<td>Vattenfall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hafslund</td>
<td></td>
<td></td>
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<tr>
<td>Nesa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Close to 550 distribution companies

- Denmark: ~80
- Finland: ~90
- Norway: ~180
- Sweden: ~190
## Fortum Distribution

2003

<table>
<thead>
<tr>
<th></th>
<th>Customers (31.12.2003)</th>
<th>Market share $^{1)}$</th>
<th>Distribution network (TWh/a)</th>
<th>Regional network (TWh/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>855,000</td>
<td>14 %</td>
<td>14.2</td>
<td>15.8</td>
</tr>
<tr>
<td>Finland</td>
<td>400,000</td>
<td>14 %</td>
<td>6.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Norway</td>
<td>93,000</td>
<td>3 %</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>22,000</td>
<td>3 %</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,370,000</strong></td>
<td></td>
<td><strong>21.9</strong></td>
<td><strong>21.1</strong></td>
</tr>
<tr>
<td><strong>Nordic</strong></td>
<td><strong>1,348,000</strong></td>
<td>$\sim$ 9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Based on volume transmitted in distribution networks
2) Pro forma market share in Norway. Pro forma volume in Norway was 2.2 TWh/a
Purpose of regulation in distribution

• Electricity distribution is accepted as a natural monopoly and the national authorities regulate the transmission and distribution tariffs
• The Internal Electricity Markets (IEM) Directive sets the framework for national regulations in distribution - different national regulatory models result from differences in timing of power market opening

The aim is to
• improve investment and operating efficiency of distribution companies
• ensure that customers benefit from the efficiency gains
• secure the quality of supply

The role of the regulator is to
• define reasonable rate of return on capital invested
• based on calculation models that today vary from country to country
# Principally four different regulatory models

<table>
<thead>
<tr>
<th>Model</th>
<th>Regulation</th>
<th>In use</th>
<th>Key principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of return</td>
<td>Ex-post¹)</td>
<td>Finland</td>
<td>Maximum allowed rate of return based on actual or defined cost data</td>
</tr>
<tr>
<td>Price Cap</td>
<td>Ex-ante²)</td>
<td>Netherlands, Austria</td>
<td>Maximum prices for products</td>
</tr>
<tr>
<td>Revenue Cap</td>
<td>Ex-ante²)</td>
<td>Norway, Denmark, Spain, Spain, Ireland, UK</td>
<td>Maximum annual income limit based on historical or defined cost data</td>
</tr>
<tr>
<td>Yardstick Regulation</td>
<td>Ex-post¹)</td>
<td>Sweden³)</td>
<td>Performance benchmarking</td>
</tr>
</tbody>
</table>

According to the IEM Directive*, models should:

- support long term development of the business
- be non-discriminating
- be cost-reflective
- ensure viability of the networks

¹) Ex-post = methodologies decided beforehand, but prices/revenues supervised afterwards
²) Ex-ante = both methodologies and prices/revenues supervised beforehand
³) A special application

* Internal Electricity Markets Directive
Different distribution tariffs across Europe

Distribution tariffs in the Nordic countries are low compared to most European countries.

Source: Third benchmarking report on the implementation of the internal electricity and gas market by European Commission. 3/2004
# Nordic regulation models

## Model parameters

<table>
<thead>
<tr>
<th>Regulation principle</th>
<th>Finland(^1)</th>
<th>Sweden(^2)</th>
<th>Norway(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of return</td>
<td></td>
<td>Yardstick regulation with benchmarking based on hypothetical efficient company</td>
<td>Revenue cap based on historical costs, efficiency requirement and return on book value</td>
</tr>
<tr>
<td>Asset base</td>
<td>Present value of network</td>
<td>Repurchase value for fictitious network calculated with model parameters</td>
<td>Historical book value of network</td>
</tr>
<tr>
<td>Calculated on regulatory asset</td>
<td>WACC with parameters(^4) defined by the Regulator</td>
<td>Fixed interest rate defined by the Regulator</td>
<td>Risk free interest rate (3y average) plus two percentage points</td>
</tr>
<tr>
<td>Depreciation</td>
<td>Straight line from repurchase value</td>
<td>Calculated from fictitious network</td>
<td>Historical depreciation (inflated)</td>
</tr>
<tr>
<td>Operating costs</td>
<td>Historical costs (four year average)</td>
<td>Percentage of fictitious network plus customer specific adjustment</td>
<td>Inflated historical costs (three year average)</td>
</tr>
<tr>
<td>Efficiency requirement</td>
<td>General 1.3% adjusted by volume increase</td>
<td>Requirement included in model parameters</td>
<td>General 1.5% and company specific 0 - 5.2% based on DEA model</td>
</tr>
<tr>
<td>Allowed return</td>
<td>Based on WACC</td>
<td>Actual operation vs. fictitious network parameters defines return</td>
<td>2 - 20% return on book value of network assets depending on efficiency</td>
</tr>
</tbody>
</table>

\(^1\)New Finnish regulation model, which is taken in use in 2005. Parameters based on current knowledge

\(^2\)Planned new Swedish model. Parameters based on current knowledge

\(^3\)Current Norwegian model

\(^4\)for equity (fixed 70%) risk free rate 5 years bond, beta fixed 0.3, market risk premium 5%, for debt risk free rate + premium 0.6 percentage points.
A balanced portfolio of businesses

- Scale synergies: Distribution - Markets
- Skill synergies: Generation&PMT - Heat - Service
- Stable earnings and cash flows: Heat - Distribution
- Flexibility: All
Still room for development in the Nordic market

• The deregulated Nordic area will meet a tightening supply-demand balance

• There is still room for development
  • further consolidation
  • development of Nordic transmission grid
  • further harmonisation, including the regulation of distribution, metering procedures, other legislation etc.
Russia - a new industry structure is evolving

<table>
<thead>
<tr>
<th>Share of private ownership</th>
<th>State controlled companies</th>
<th>Privatized companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>System operator</td>
<td>65-100%</td>
</tr>
<tr>
<td>&lt;25%</td>
<td>Federal Grid Company (FGC)</td>
<td>75-100%</td>
</tr>
<tr>
<td>48%</td>
<td>Holding of IDCs</td>
<td></td>
</tr>
<tr>
<td>48%</td>
<td>Holdings of guaranteeing suppliers, isolated energos</td>
<td></td>
</tr>
<tr>
<td>&lt;49%</td>
<td>4 hydro wholesale generation companies (WGCs)</td>
<td></td>
</tr>
<tr>
<td>49-100%</td>
<td>6 thermal wholesale generation companies (WGCs)</td>
<td></td>
</tr>
<tr>
<td>49%</td>
<td>14-16 territorial generation companies (TGCs)</td>
<td></td>
</tr>
<tr>
<td>4-5 inter-regional distribution companies (IDCs)</td>
<td>Target structure planned to emerge in 2008</td>
<td></td>
</tr>
</tbody>
</table>
Significant generation under reform

NW Russia TGC1 total 6 094 MW*

- Kolenergo 1 928
- Karelenenergo 914
- Lenenergo 3 252

* NW Russia total generation capacity 14 354 MW including also generation outside the reform (e.g. nuclear)

Source: Fortum, company web pages
Well prepared for further growth

- Flexible production portfolio
- Excellent in operations, PMT
- Experience from versatile fuels in heat generation
- Integration capabilities
- Strong position in all areas of power and heat value chain

Highly experienced in the competitive Nordic area, and well prepared for future challenges
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