

Region Nordics

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Nordics in a nutshell

Key facts Nordics ¹

Installed capacity electricity	18,662 MW
Generated electricity	95,100 GWh
Heat capacity	3,959 MW
Heat sales	9,900 GWh
# of distribution customers	927,000
# of sales customers	1,300,000
# of FTE	9,660

Overview of Assets

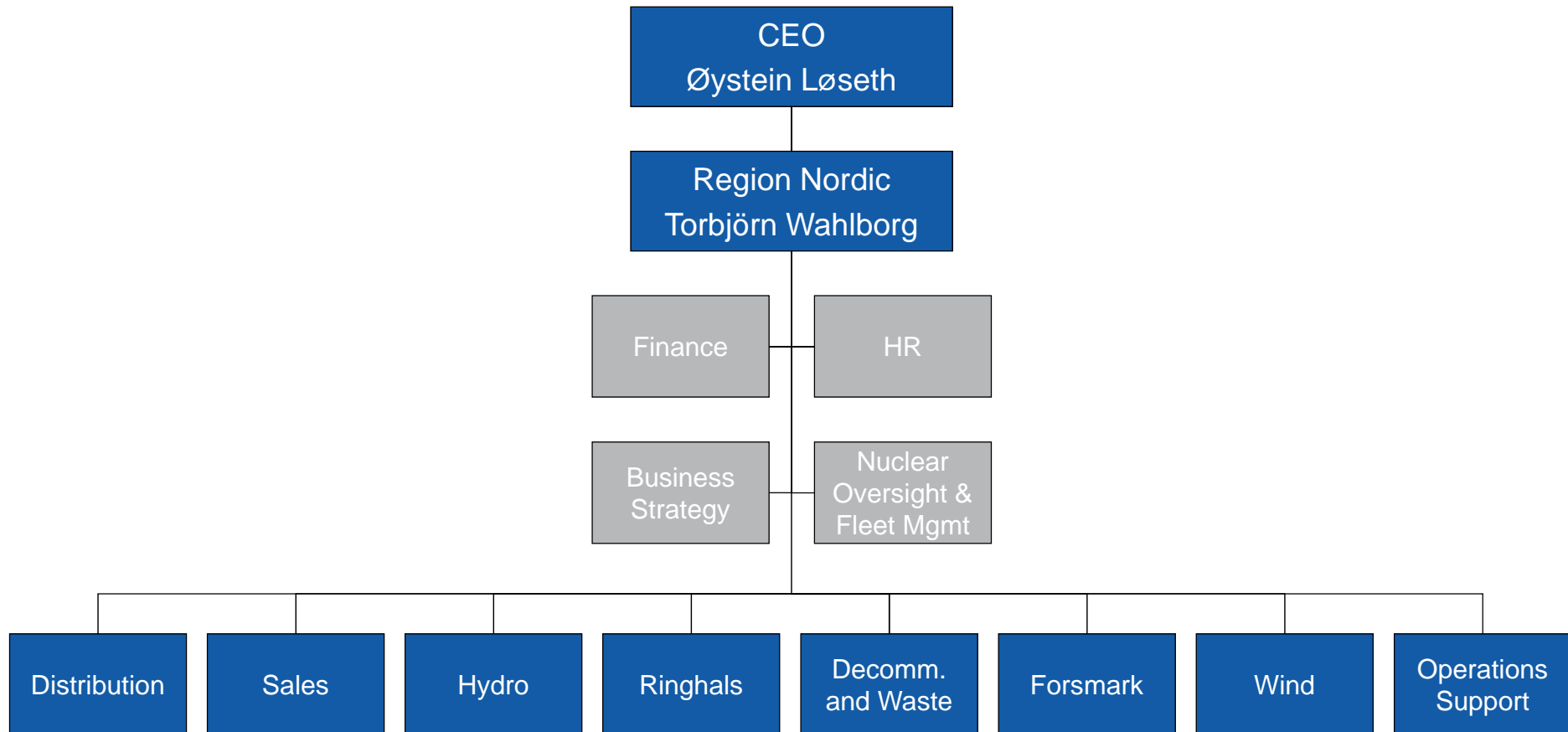
Hydro		• 8,320 MW (el.)
Nuclear		• 6,852 MW (el.) ²
Fossil		• 2,521 MW (el.)
Wind, Biomass, waste		• 969 MW (el.)
Distribution networks		• 179 000 km

1) As of December 31 2012. Consolidated figures. 2) Pro-rata capacity 4,687 MW.

Note: Divestments of the Thermal assets in Denmark will be conducted by the Continental/UK organisation.

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The Nordic organisation



Future challenges and opportunities

Market

- Low prices and overcapacity
- Overcapacity created by stable demand and growth in wind and nuclear capacity

Regulation

- Water Framework Directive (WFD) and Environmental Assessment
- Environmental Code Commission (Vattenverksamhetsutredningen)
- Customer Centric Model

Operations

- Meet cost / Operational excellence targets
- Financing of wind opportunities
- Improve reputation
- Keep current high availability in Nuclear and Hydro
- Regulatory pressure on distribution
 - Increase availability
 - Control cost
- Develop downstream business model for new energy landscape

Focus areas in Vattenfall's strategy – Nordic perspective



Selected growth in renewables

- Use partnerships and capital recycling to secure a continued strong position in wind
- Focus on repowering (DK) and top quartile projects (SE, deemed necessary to reach required investment return) in Sweden



Strong Nordic Position

- Improve financial performance and reputation by delivering on strategic focus areas
- Take a leading role in strengthening the Nordic energy system as global role model
- Enable realization of interconnector projects with focus on Nordic-UK cables
- Manage implications of EU WFD to protect benefits of hydro power in the system



Define options to meet 65 Mtonnes CO₂ target by 2020

- Completion Bio-CHP project in Uppsala
- Divestment of thermal plants in Denmark (ongoing process)



Smart Energy Enabler

- Build customer insights in order to strengthen customer interaction and targeted offerings



Strengthen focus on Operational Excellence and reduce cost

- Reach region's share of group opex targets
- Strengthen Operational excellence tools, methods and culture
- Reach availability targets in Nuclear and Hydro
- Maximize capital efficiency in Nuclear

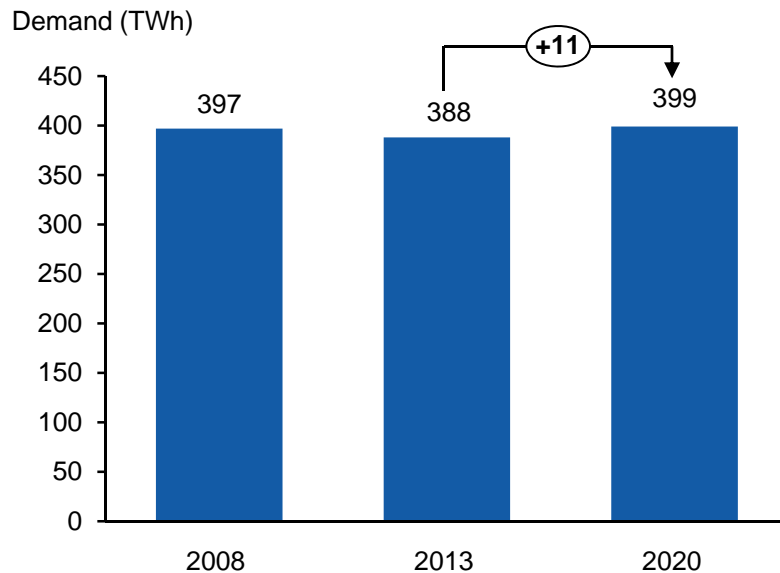
Sustainable Heat and Electricity Production

Sustainable Consumption

Sustainable Financial Performance

Nordic market in a 2020 perspective – Growing overcapacity

Demand is expected to return to 2008 levels...

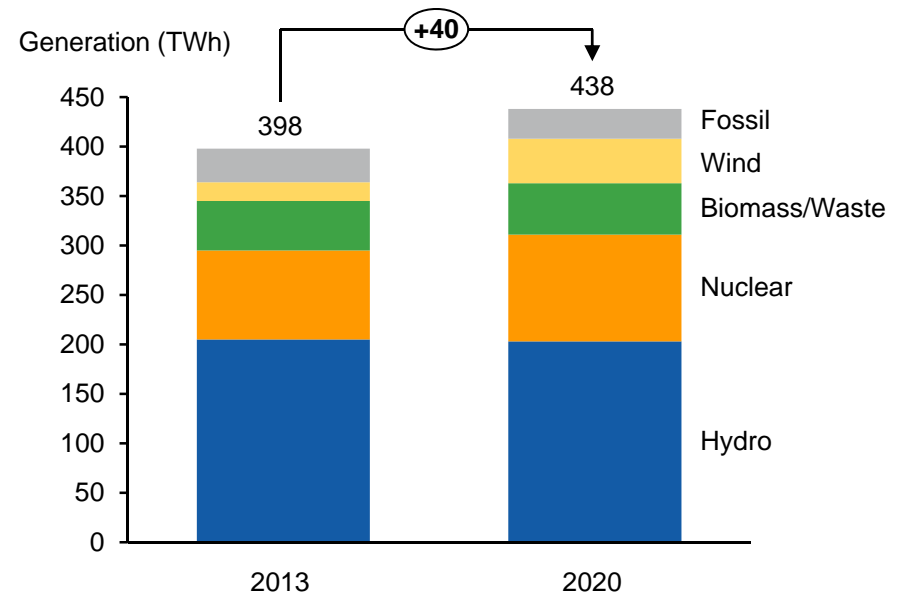


- 2008-2013: Global recession
- 2013-2020: Economic recovery, population and demand growth, service sector, energy efficiency (negative impact)

1. Water Framework Directive

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...And generation to grow by ~40 TWh



- Growing overcapacity due to wind & nuclear
- Increased interconnector capacity needed to manage renewable energy sources
- Impact of WFD¹ and environmental assessment under assessment, potential impact on Nordic system ~10 TWh

Vattenfall is engaging with authorities to secure a reasonable implementation of WFD

Water framework directive

- EU directive from 2000
- Environmental objectives are to achieve good water status for all water streams, mitigation measure programme is to be defined
- Rivers affected by large hydro power are defined as heavily modified and excepted, must instead fulfill good ecological potential, not defined yet
- Proposed measures:
 - Introduction of spring flood and minimum discharge in dry riverbeds
 - Reduction of short-term regulation
 - Adjust the flows to natural seasonal flows (reduced seasonal storage capacity)

Potential impact

- Reduced hydro power production
- Reduced regulation capacity, which is important for wind integration
- Higher electricity prices/import during daytime
- Larger variations in electricity price day/night
- Higher risk for flooding
- Large volumes of water will be spilled (how will the 20-20-20 target be fulfilled?)
- Need for new production capacity (gas or coal)
- Reduced flexibility of hydro power → Fundamental change in the prerequisites for which the power system was built for

Vattenfall measures

- Discussions with regulator and stakeholders to secure reasonable implementation of directive
- There are substantial potentials for environmental improvement with limited impact on production. Vattenfall cooperates with stakeholders for increased biodiversity with limited power production losses as a contribution to good ecological potential

Smart Energy Enabler in Nordic

B2B - examples

Swedish construction company NCC:

“Commodity” (~100 GWh p.a.) and smart offerings

- The offerings consist of a flexible administrative solution for construction power, tailored purchasing strategy, Financial Portfolio Management and Environmental Product Declaration
- In addition, ongoing discussions include further power sales and services, e.g. E-mobility infrastructure and sub-metering

Facebook data centre: “Commodity” (0.3-1.0 TWh p.a.) and smart offerings

- Data centers is a growing energy segment
- Offerings to Facebook include price and efficiency advisory, Energy online portal, tailored purchasing strategy, Physical Portfolio Management and Environmental Product Declaration
- In addition, ongoing discussions include “commodity” deliveries and services in all core countries, Solar PV and maintenance of high voltage equipment.

B2C - examples

- **Develop customer insights** to target the customer with the right ERPS and the right type of interaction (e.g. continue and improve segmentation)

- **Develop new energy related products and services (ERPS) to meet customers needs, e.g.:**

- Fast access to information through EnergyWatch and MyPages
- Energy efficiency solutions
- Price risk management
- “Vintersäkring” (Winter season fixed price)
- Green living

- **Develop the customer interaction**

- Improved customer support (up-selling capability, multi-channel access through web, phone and email)
- EnergyWatch service
- Traditional and new media

Examples of ongoing Operational Excellence initiatives

Distribution

- Above 20% efficiency improvement from 2007 to 2013
- Continuous benchmarking through:
 - Swedish regulating authority (Vattenfall in top 10th percentile)
 - Independent international benchmark (Vattenfall in 6th position among 40 peers)
- Long-term perspective on investments leading to lower capex and opex. E.g.:
 - Weather robust networks (Vädersäkringsprogrammet)
 - Smart networks enabling remote surveillance, remote trouble shooting, automatic fault management

Wind operations

- The LEC¹ reduction roadmap has a target to reduce O&M part of LEC by 10% in existing and 20% in new assets by 2020
 - Spare parts
 - Blade upgrades
 - Surveillance center interfaces
 - Knowledge sharing across sites
 - Divestment of non-core assets
 - Performance and availability improvement
- Cluster implementation
 - Operate existing assets in a cluster structure to realize geographical and technological synergies
 - Build new assets in clusters to further increase synergies

1. Levelized Energy Cost

Summary – Main activities in Nordic

- Deliver on Opex targets
- Ensure strengthened reputation and trust
- Keep availability in Nuclear and Hydro on high levels
- Build a position as Smart Energy Enabler
- Continue to strengthen the financial performance of the Sales business
- Implement adjustments in Nuclear fleet according to new regulations (stress tests)
- Receive permission for final repository of nuclear waste
- Promote interconnectors – particularly Nordic - UK
- Ensure maintained strength of the Swedish hydro system by a well balanced implementation of the Water Framework Directive
- Actively work to create a regulatory distribution framework allowing for high quality and investments in smart capabilities
- Develop growth options