## Nordics in a nutshell

<table>
<thead>
<tr>
<th>Key facts Nordics ¹</th>
<th>Overview of Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Installed capacity electricity</strong></td>
<td>Hydro</td>
</tr>
<tr>
<td>18,662 MW</td>
<td>8,320 MW (el.)</td>
</tr>
<tr>
<td><strong>Generated electricity</strong></td>
<td>Nuclear</td>
</tr>
<tr>
<td>95,100 GWh</td>
<td>6,852 MW (el.)²</td>
</tr>
<tr>
<td><strong>Heat capacity</strong></td>
<td>Fossil</td>
</tr>
<tr>
<td>3,959 MW</td>
<td>2,521 MW (el.)</td>
</tr>
<tr>
<td><strong>Heat sales</strong></td>
<td>Wind, Biomass, waste</td>
</tr>
<tr>
<td>9,900 GWh</td>
<td>969 MW (el.)</td>
</tr>
<tr>
<td><strong># of distribution customers</strong></td>
<td>Distribution networks</td>
</tr>
<tr>
<td>927,000</td>
<td>179 000 km</td>
</tr>
<tr>
<td><strong># of sales customers</strong></td>
<td></td>
</tr>
<tr>
<td>1,300,000</td>
<td></td>
</tr>
<tr>
<td><strong># of FTE</strong></td>
<td></td>
</tr>
<tr>
<td>9,660</td>
<td></td>
</tr>
</tbody>
</table>

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.
The Nordic organisation

CEO
Øystein Løseth

Region Nordic
Torbjörn Wahlborg

Finance

HR

Business Strategy

Nuclear Oversight & Fleet Mgmt

Distribution
Sales
Hydro
Ringhals
Decomm. and Waste
Forsmark
Wind
Operations Support
### Future challenges and opportunities

<table>
<thead>
<tr>
<th>Market</th>
<th>Regulation</th>
<th>Operations</th>
</tr>
</thead>
</table>
| • Low prices and overcapacity<br>• Overcapacity created by stable demand and growth in wind and nuclear capacity | • Water Framework Directive (WFD) and Environmental Assessment<br>• Environmental Code Commission (Vattenverksamhetsutredningen)<br>• Customer Centric Model | • Meet cost / Operational excellence targets<br>• Financing of wind opportunities<br>• Improve reputation<br>• Keep current high availability in Nuclear and Hydro<br>• Regulatory pressure on distribution  
  - Increase availability  
  - Control cost<br>• Develop downstream business model for new energy landscape |

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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

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**Sustainable Heat and Electricity Production**

**Sustainable Consumption**

**Sustainable Financial Performance**

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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)

...And generation to grow by ~40 TWh

- Growing overcapacity due to wind & nuclear
- Increased interconnector capacity needed to manage renewable energy sources
- Impact of WFD\(^1\) and environmental assessment under assessment, potential impact on Nordic system ~10 TWh

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1. Water Framework Directive

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

<table>
<thead>
<tr>
<th>Water framework directive</th>
<th>Potential impact</th>
<th>Vattenfall measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>• EU directive from 2000</td>
<td>• Reduced hydro power production</td>
<td>• Discussions with regulator and stakeholders to secure reasonable implementation of directive</td>
</tr>
<tr>
<td>• Environmental objectives are to achieve good water status for all water streams, mitigation measure programme is to be defined</td>
<td>• Reduced regulation capacity, which is important for wind integration</td>
<td>• 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</td>
</tr>
<tr>
<td>• Rivers affected by large hydro power are defined as heavily modified and excepted, must instead fulfill good ecological potential, not defined yet</td>
<td>• Higher electricity prices/import during daytime</td>
<td></td>
</tr>
<tr>
<td>• Proposed measures:</td>
<td>• Larger variations in electricity price day/night</td>
<td></td>
</tr>
<tr>
<td>- Introduction of spring flood and minimum discharge in dry riverbeds</td>
<td>• Higher risk for flooding</td>
<td></td>
</tr>
<tr>
<td>- Reduction of short-term regulation</td>
<td>• Large volumes of water will be spilled (how will the 20-20-20 target be fulfilled?)</td>
<td></td>
</tr>
<tr>
<td>- Adjust the flows to natural seasonal flows (reduced seasonal storage capacity)</td>
<td>• Need for new production capacity (gas or coal)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduced flexibility of hydro power → Fundamental change in the prerequisites for which the power system was built for</td>
<td></td>
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### 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

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Wind operations</th>
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<tbody>
<tr>
<td>• Above 20% efficiency improvement from 2007 to 2013</td>
<td>• The LEC(^1) reduction roadmap has a target to reduce O&amp;M part of LEC by 10% in existing and 20% in new assets by 2020</td>
</tr>
<tr>
<td>• Continuous benchmarking through:</td>
<td>• Spare parts</td>
</tr>
<tr>
<td>• Swedish regulating authority (Vattenfall in top 10(^\text{th}) percentile)</td>
<td>• Blade upgrades</td>
</tr>
<tr>
<td>• Independent international benchmark (Vattenfall in 6(^\text{th}) position among 40 peers)</td>
<td>• Surveillance center interfaces</td>
</tr>
<tr>
<td>• Long-term perspective on investments leading to lower capex and opex. E.g.:</td>
<td>• Knowledge sharing across sites</td>
</tr>
<tr>
<td>• Weather robust networks (Vädersäkringsprogrammet)</td>
<td>• Divestment of non-core assets</td>
</tr>
<tr>
<td>• Smart networks enabling remote surveillance, remote trouble shooting, automatic fault management</td>
<td>• Performance and availability improvement</td>
</tr>
<tr>
<td><strong>Wind operations</strong></td>
<td><strong>Cluster implementation</strong></td>
</tr>
<tr>
<td>• Cluster implementation</td>
<td>• Operate existing assets in a cluster structure to realize geographical and technological synergies</td>
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<td>• Operate existing assets in a cluster structure to realize geographical and technological synergies</td>
<td>• Build new assets in clusters to further increase synergies</td>
</tr>
</tbody>
</table>

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