



VATTENFALL

An aerial photograph of a city waterfront, likely Oslo, Norway. The image shows a wide river with several boats docked at a pier on the left. In the background, a dense urban landscape with various buildings and a prominent white dome is visible under a cloudy sky. The text is overlaid on the center of the image.

Vattenfall at the ESG seminar at Nordea

Daniel Gustafsson, Director of Onshore Development
Petra Sundfeldt, Transaction Manager

2023-11-07

Agenda

- **Vattenfall at a glance**
- **Our onshore wind portfolio**
- **Permitting challenges in Sweden**
- **Transaction track record in Sweden**
- **Questions**



Introduction

This is Vattenfall

One of Europe's largest producers
and retailers of electricity and heat




This is Vattenfall


In Brief

- Vattenfall is a leading European energy company
- We want to make **fossil-free living possible within one generation**
- We are driving the transition to a more sustainable energy system through growth in renewable production and climate smart energy solutions for our customers
- **100 per cent owned by the Swedish State**
- Our long-term credit ratings are **BBB+ positive outlook by S&P and A3 stable outlook by Moody's**

 **7.5 Million**
Electricity customers

 **2.0 Million**
Heat customers

 **1.0 Million**
Electricity grid customers

 **2.3 Million**
Gas customers

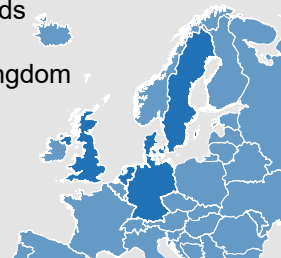
 **19,638**
Employees

Activities in the Value Chain ● Active ● Inactive

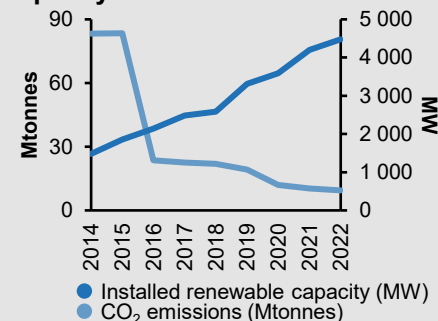


Main markets

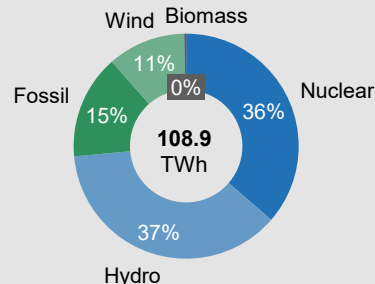
- Sweden
- Germany
- Netherlands
- Denmark
- United Kingdom



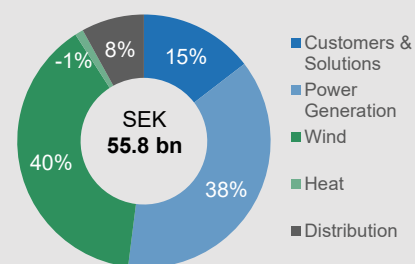
CO₂ emissions & renewable capacity



Electricity generation breakdown by technology, 2022



Underlying EBITDA breakdown by segment, 2022¹



¹ Breakdown excludes other and eliminations

Vattenfall Onshore Wind main markets

United Kingdom

In Operation: **623 MW**
Under Construction: **240 MW**
In Development: **1 190 MW**



Sweden

In Operation: **638 MW**
Under Construction: **205 MW**
In Development: **4 230 MW**



Denmark

In Operation: **213 MW**



The Netherlands

In Operation: **473 MW**
In Construction: **77 MW**
In Development: **220 MW**



Germany

In Operation: **7 MW**
In Development: **710 MW**



As of September 2023



Vattenfall's competitive advantages



Large experience and good understanding of national energy policies.



Close supplier collaboration with joint focus on decreasing levelized cost of energy



Ability to decrease O&M costs by applying latest business and industry standards



Focus on innovation and integration of Onshore Wind assets into the energy system



Strong focus on environment, land protection and sustainability

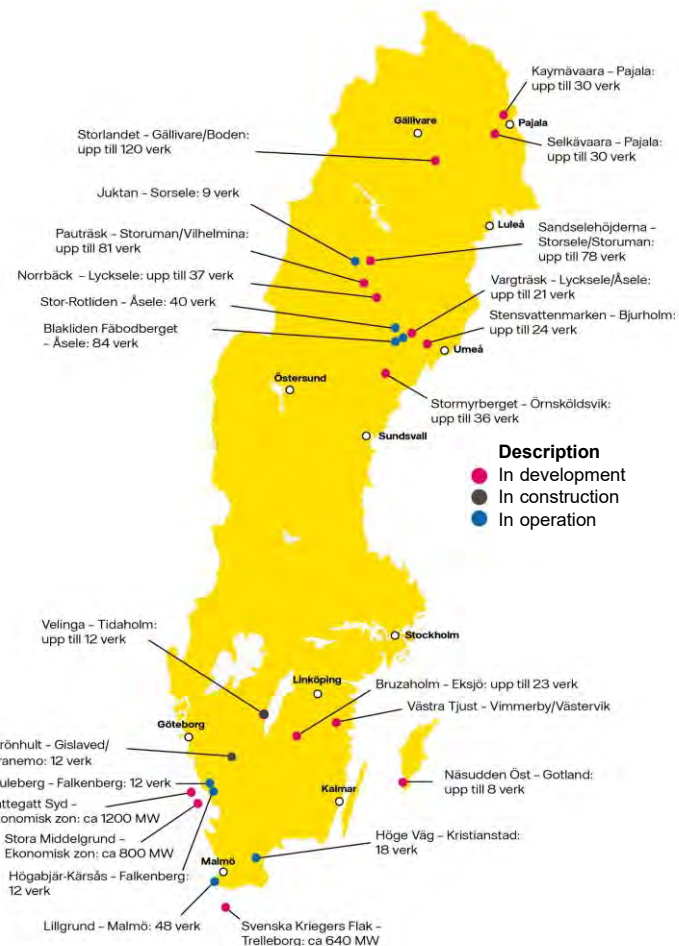
Market	Development	Construction	Operational
United Kingdom	1190	240	623
Denmark	-	-	213
The Netherlands	220	77	473
Sweden	4230	205	638
Germany	710	-	7
Total (MW)	6,350	522	1954

Business Area Wind

Onshore wind Sweden

In development with FID 2023-2027

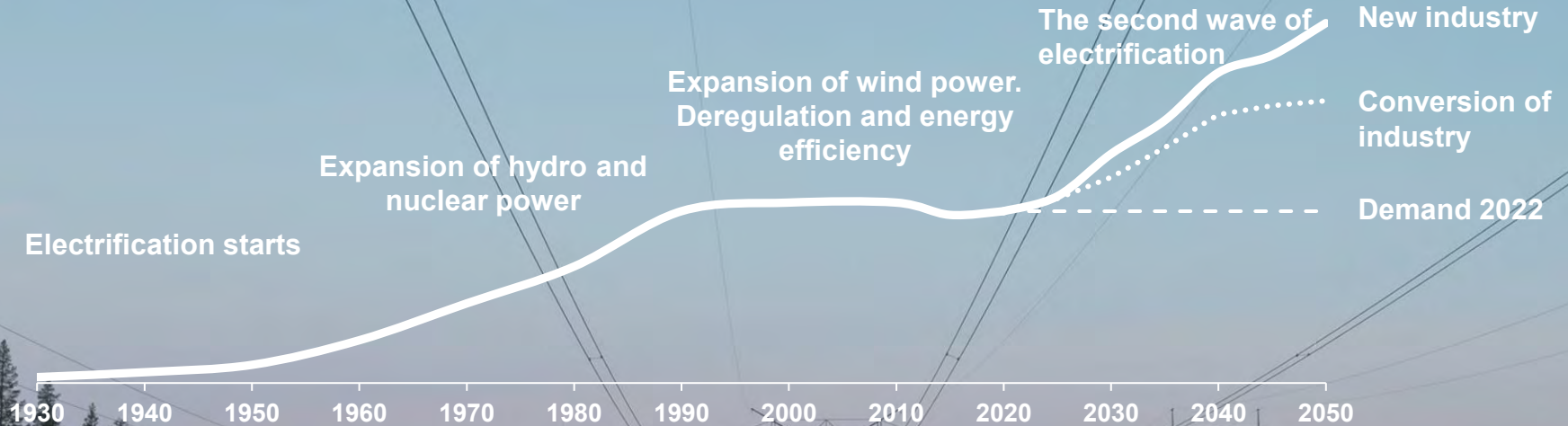
Project	FID estimate	COD estimate	Capacity (MW)	Tip height	Price Area
Bruzaholm	FID taken Mar-23	2025	140	240	SE3
Velinga	FID taken Oct-23	2025	60	180	SE3
Vargträsk	2024	2026	84	230	SE2
Stormyrberget	2025	2028	250	220	SE2
Sandselehöjderna	2025	2028	350	220	SE2
Pauträsk	2025	2028	320	200	SE2
Norrback	2025	2028	200	200	SE2
Storlandet	2027	2030	2,000	250	SE1
Stenvattsmarken	2026	2029	150	200 (270)	SE2
Kaymävaara	2027	2029	250	250	SE1
Selkävaara	2027	2029	200	250	SE1



Outlook for the future electricity demand and supply in Sweden

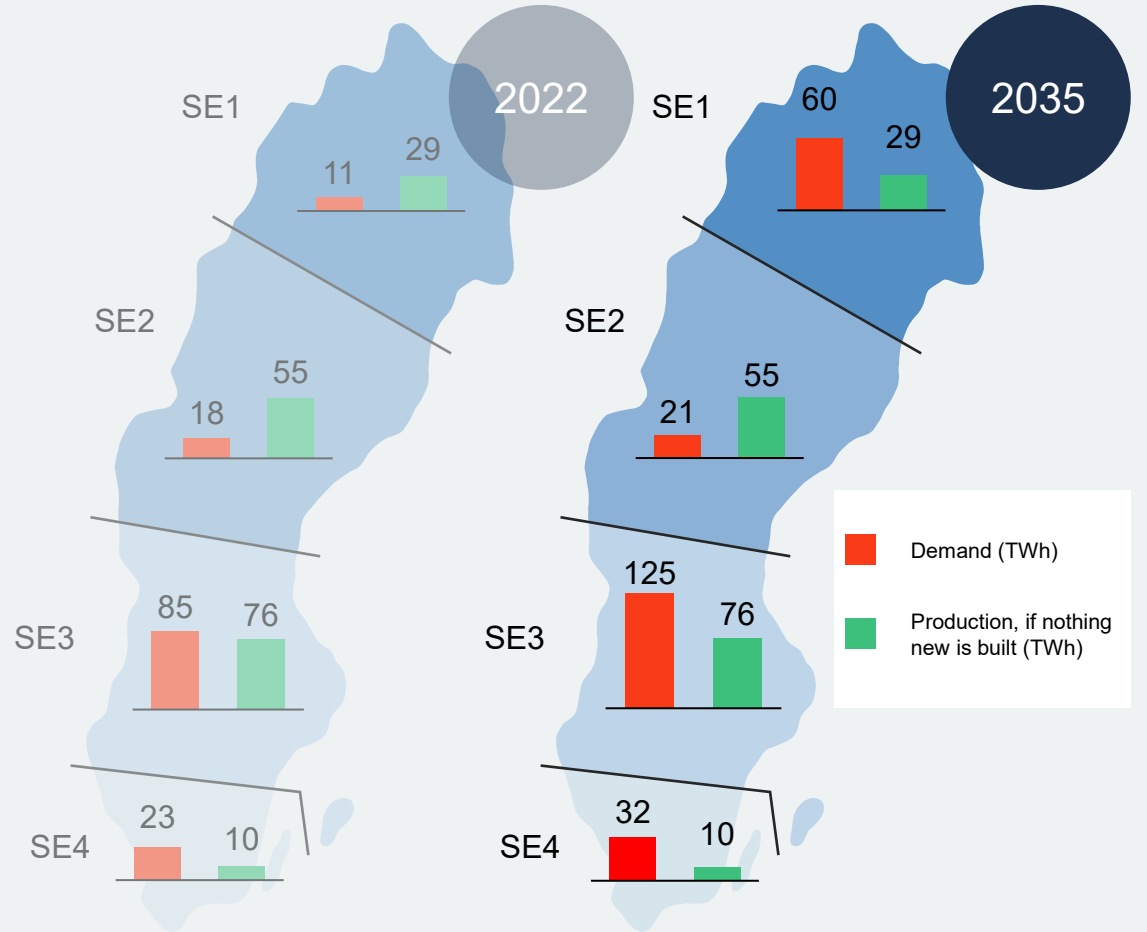
Pathway to re-industrialisation for Sweden

Sweden's electricity demand – historic and forecasted



Electricity production

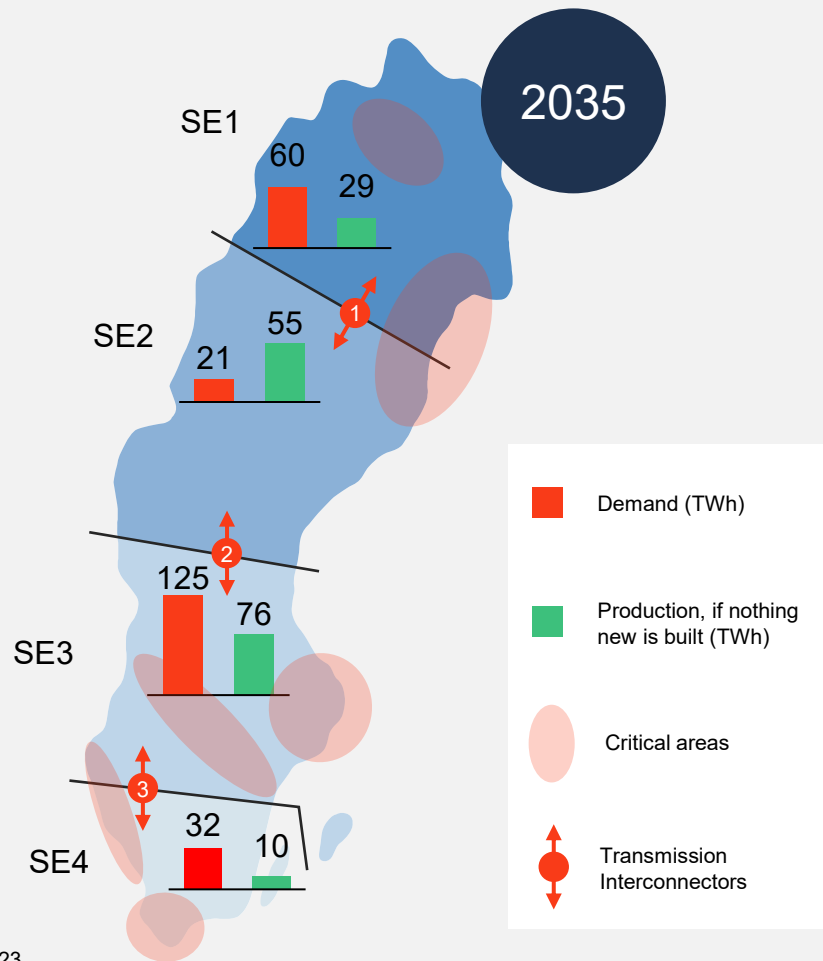
Demand and production by price area



Source: Vägen till nyindustrialisering för Sverige – en färdplan för elsystemet?, Vattenfall 2023

Energy transmission

Transmission is already a bottleneck today



Source: Vägen till nyindustrialisering för Sverige – en färdplan för elsystemet?, Vattenfall 2023



Onshore wind is one of the main technologies to deliver the needed power before 2035...

... however, several challenges exist

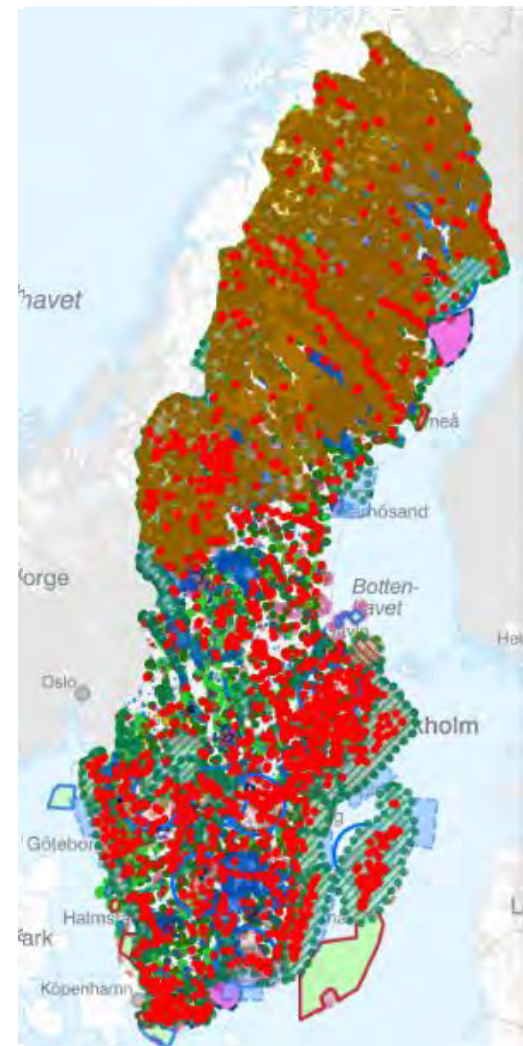
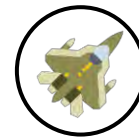
The permit process in Sweden

Sweden has great potential for Onshore wind

– but many conflicts of interest

On top of this, consider

- Noise/distance to housing regulations
- Municipality veto rights
- Local acceptance
- Aviation lights on turbines
- Grid connection
- Wind resource
- Other technical considerations



Challenges

Generally strong support for wind power – but challenges for new projects

Municipality rejected projects 2021



Municipality rejected projects 2022



Comments

- In 2021, 33 of 44 projects were affected by the municipal veto; 6 pre-consultations, 14 pre-submission and 13 after application submission.
- In 2022, 12 of 17 projects were affected by the municipal veto; 4 pre-consultation, 1 pre-submission and 7 after application submission.

The permit process in Sweden

Long lead times in permitting process significantly delays build out of onshore wind

Average 5-6 years from public consultation to FID, but cases with 10+ years exist

1-4 years

1. Investigations

- Exploration of potential area
- Consideration to nature and people
- Contact with key stakeholders

2. Public consultation

- With authorities, nearby residents and other stakeholders
- Possibility to ask questions and contribute with views and information

3. Application with EIS

- Application handed in to The County Board
- The EIS (MKB) describes the parks possible effects on the environment

1-2 years

4. Appeals

- Permission can be overruled
- There are two court levels to appeal to:
 - Mark- och miljödomstolen (MMD)
 - Mark- och miljööverdomstolen (MÖD)

1 year

5. Procurement

- Divides into different main contracts
- Always on business grounds and UN Global Compacts principals

6. Investment decision

- Project receives permission by the Board of Vattenfall
- Sometimes together with external financing

1-3 years

7. Construction

- Size and complexity decides the time
- Ground works, roads, installation

8. Operations

- Produces electricity 95% of the yearly hours
- Monitoring all year, service and maintenance

9. Restoration

- The ground is being restored and most of the material is being recycled
- Funds are guaranteed before construction starts for the restoration



Examples of investigations and inventories in the Environmental Impact Assessment (EIA/MKB)

- Bird inventories
- Bat Inventory
- Reindeer investigation
- Natural value inventory
- Cultural environment investigation
- Archaeological investigation
- Landscape Analysis
- Geohydrological investigation
- Hydrological investigation
- Sound and shadow calculations

The permit process in Sweden

Key changes in permitting process requested by the industry

More predictable and shorter permitting process



Incentives for the municipalities

Increased cooperation with the Swedish Armed forces for coexistence

Be a frontrunner in sustainability to accelerate fossil free living with the power of renewables!



Vattenfall Business Area Wind

BA Wind Foundation	'Be a frontrunner in sustainability'				
Focus Areas	A GHG emission reduction	B Sustainable procurement	C Sustainable resource use	D Biodiversity protection	E Foster social sustainability
	Reduce GHG emissions across our supply chain and operations (scope 1, 2 & 3)	Partnership with suppliers to increase sustainability	Minimize use of resources and lead transition towards a Circular Economy	Avoid significant impacts, protect and enhance biodiversity	Avoid negative and foster positive impacts on people & communities human rights
Objectives & targets	<u>2040 Group level</u> Net zero emission Plane travel: Cap CO2 emission from flight travels at 50% of flight travel emissions in 2019 2030 - Scope 3: 50% emission reduction supply chain goods and services by 2030 compared to 2020 (SCORE)		<u>2030 Group level</u> Towards a circular business BA Wind: From 2021 - Blade Waste: Landfill ban, 50% recycling by 2025, 100% by 2030	<u>2030 Group level</u> Towards net positive impact (NPI)	<u>Group level</u> Sustainability policy, CoCfS
EnSu foundation	 Legal & commitment compliance		 Zero accidents & incidents		

Track record

Vattenfall Onshore Wind Sweden latest transactions

- 2023 Signing of a cPPA for Bruzaholm wind farm (SE3) with Volvo Group
- 2023 Acquisition of an early-stage wind farm project in Östra Göinge (SE4), with a potential of 150MW
- 2021 Divestment of 100% of project rights for Klevberget wind farm (150MW) in SE2 to OX2
- 2021 Divestment of 100% of the shares for Grönhult wind farm (SE3) to The Renewables Infrastructure Group Limited (TRIG) in a RtB stage. Project reached COD June 2023.
- 2018 Divestment of 70% of the shares for the 353 MW Blakliden/Fäbodberget Wind Farm in SE2 to PKA and Vestas in a RtB stage. Project reached COD May 2022. ~60% of production sold in a PPA to Norsk Hydro



Q&A



Thank you

Contact

Daniel Gustafsson

Director of Development

daniel.gustafsson@vattenfall.com

+46 76 770 73 15

Petra Sundfeldt

Transaction manager

petra.sundfeldt@vattenfall.com

+46 706 175 352