

Vattenfall

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VATTENFALL

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+ stable outlook by S&P** and **A3 stable outlook by Moody's**

 **6.8 Million**
Electricity customers

 **1.8 Million**
Heat customers

 **900 000¹**
Electricity grid customers

 **2.3 Million**
Gas customers

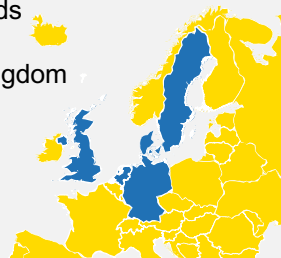
 **19,859**
Employees

Activities in the Value Chain

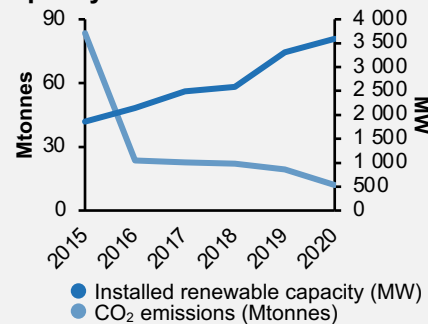


Main markets

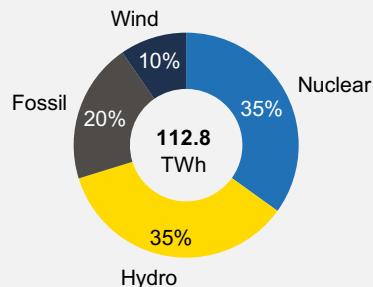
- Sweden
- Germany
- Netherlands
- Denmark
- United Kingdom



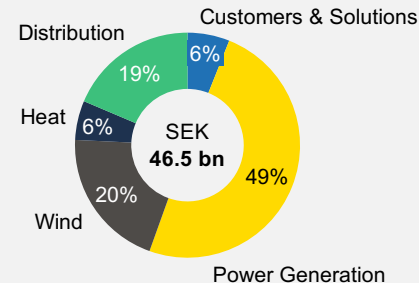
CO₂ emissions & Renewable capacity



Electricity generation breakdown by technology, 2020



EBITDA breakdown by segment, 2020

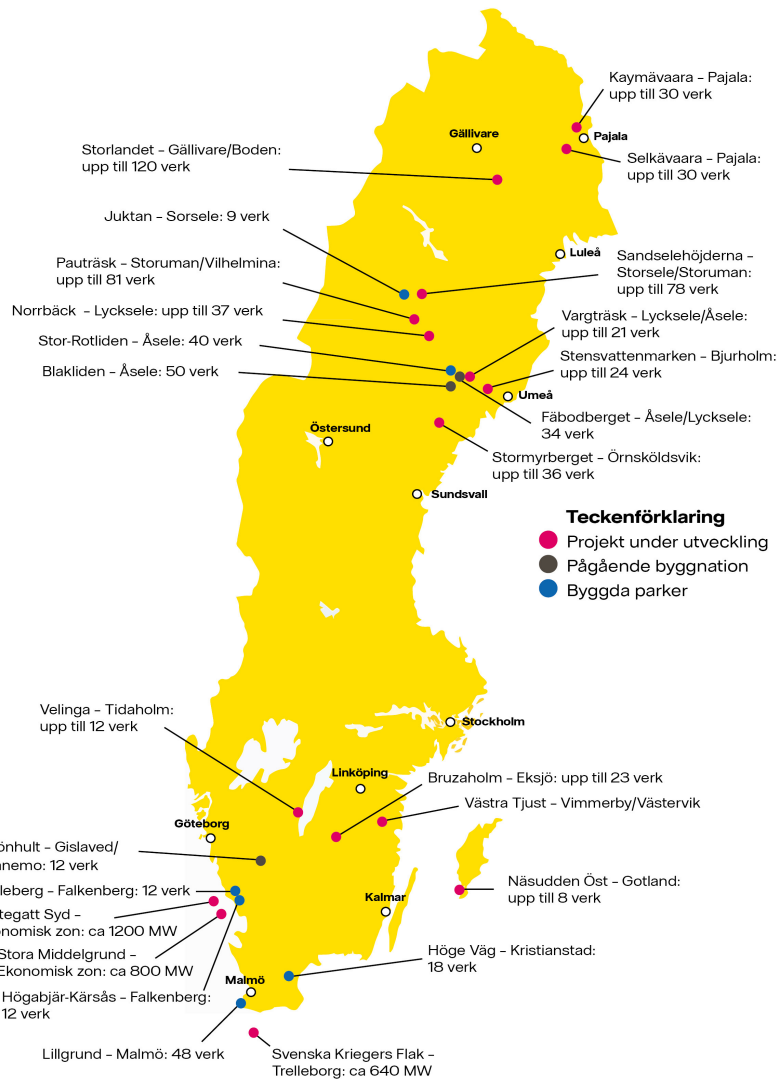


¹ Excluding Vattenfall's subsidiaries Gotlands Elnät and Västerbergslagens Elnät as well as the Berlin grid business which was sold to the city of Berlin on July 1st, 2021

Business Area Wind



Vattenfall wind project portfolio Sweden



Verk = WTG

Inauguration of project in May: Blakliden Fäbodberget (Sweden)

One of the top projects in the Swedish market, with strong fundamentals and excellent wind conditions



ACHIEVEMENT: One of Sweden's largest onshore wind farms by time of commissioning

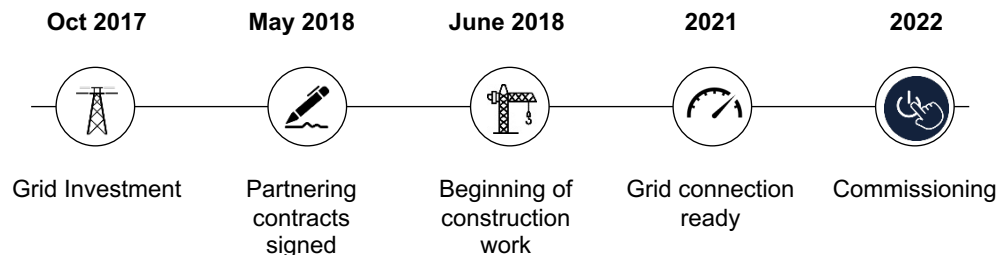
OUR WINNING FORMULA

- biggest onshore wind farm realized by Vattenfall;
- total Vattenfall investment volume of 3.5 billion SEK;
- Norsk Hydro secured 60 % of production via PPA for a period of 20 years;
- total yearly energy production of 1.1 TWh, equivalent to 220,000 Swedish households.

KEY DATA

Capacity	353 MW
Average wind speed	7.6 m/s at 112 m hub height
Turbine model	84 x V136-4.2 MW (Vestas)
Distance to service hub in Fredrika	35 km
Ownership	30% Vattenfall, 70% PKA and Vestas
PPA	Norsk Hydro

TIMELINE



Our commitments toward Net Zero

-49%

Emission intensity
reduction since 2017

1.5°C

Target for own emission
reductions – alignment
with 1.5°C trajectory

Net Zero

Emissions in our
full value chain

→ 2021

→ 2030

→ 2040

Towards a fossil free Sweden

– electrical system enables that

**Substantial
electrification**



**Large development
of fossilfree
electrical production**



**A whole new
energysystem**

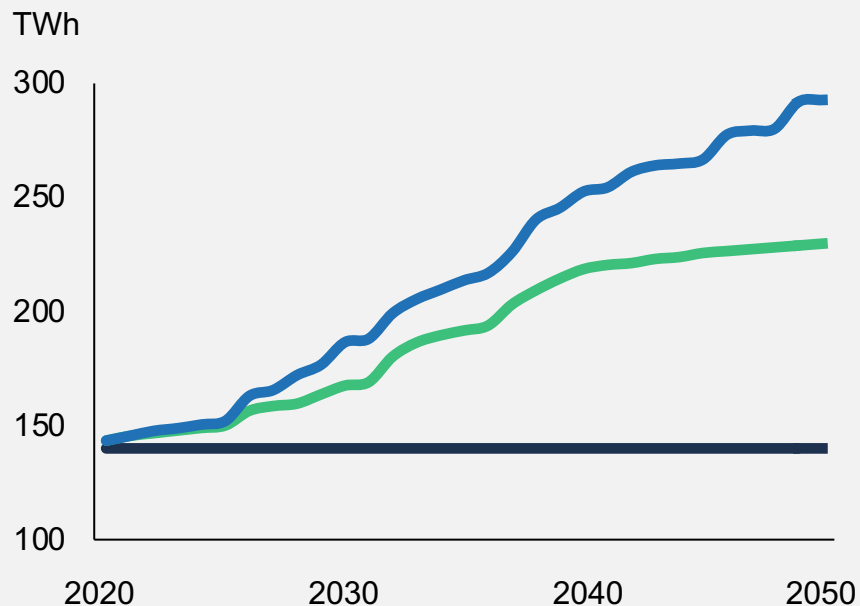


**Climate neutral
2045**



The Swedish Electrification Revolution

Plan for double electricity demand



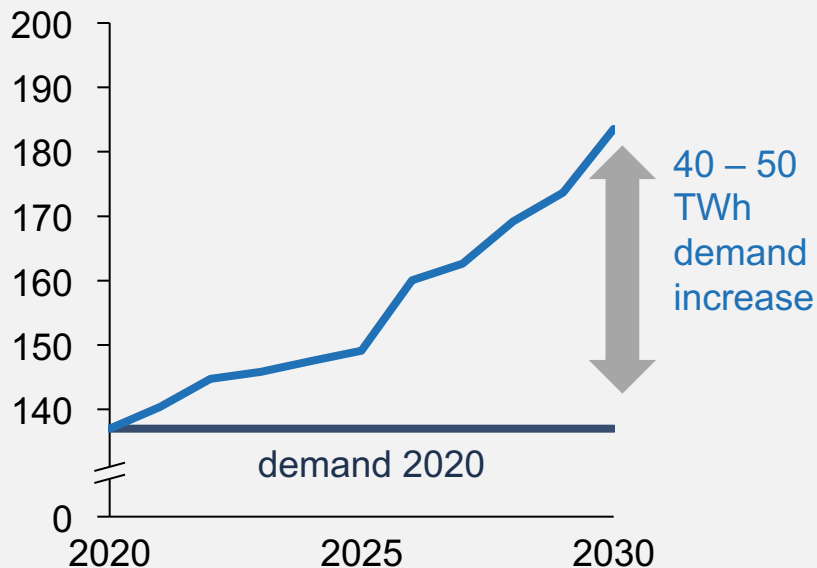
New industry and export
with global climate impact

Decarbonization of
industry and transport

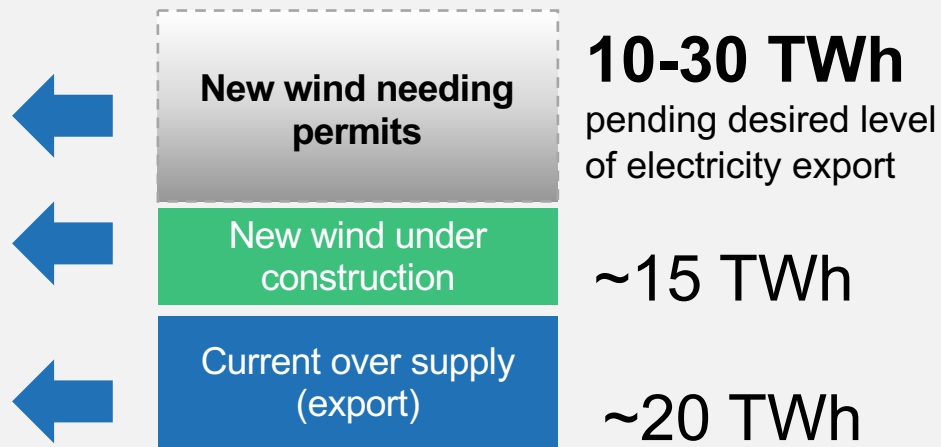
Electricity demand 2020

Wind power require permits to supply the increased demand for electricity until 2030

Electricity demand until 2030, TWh



Required production to meet demand increase



Electrification of the industry - powered by onshore wind:

All scenarios of future need of supply includes wind

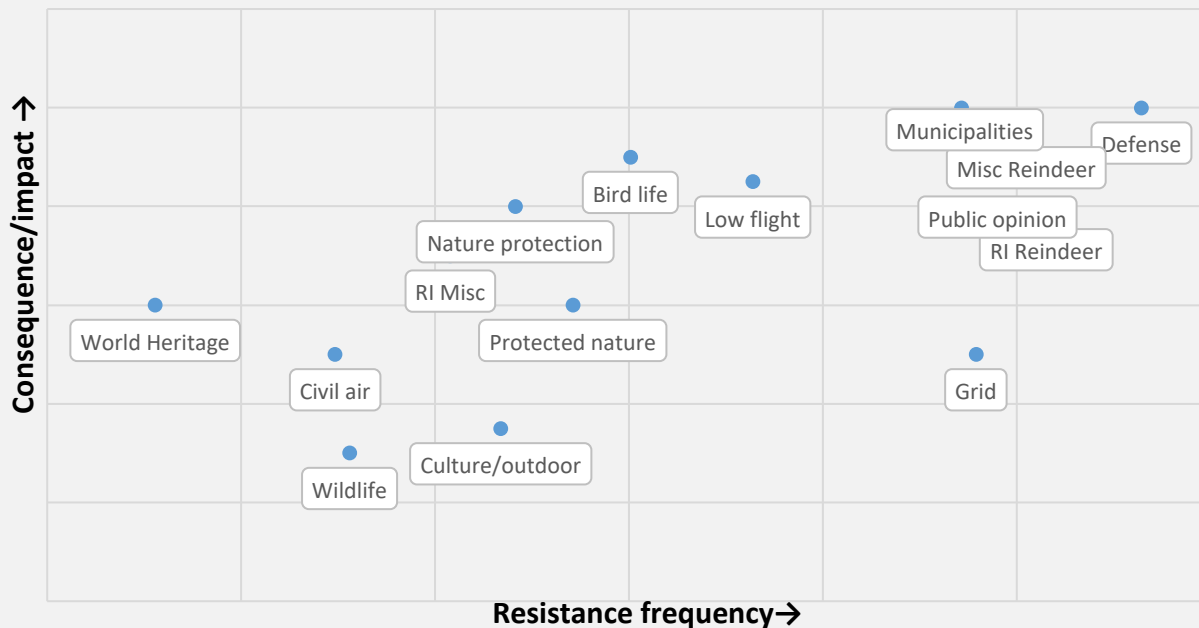
- **Until mid-2030 – onshore wind is preferred**
 - Fossil free and renewable
 - Low cost compared to alternatives
 - Developed technology
 - Can be build during the time frame
- **From mid-2030:**
 - Keep the door open for all fossil free alternatives
 - Significant need of both onshore and offshore wind
- **Northern Sweden:**
 - Large forests areas, with relatively few residents
 - Good wind conditions
 - Possibilities for H2 storage
 - Closeness to new industrial demand



Challenges

Conflicting of interests to be handled

Resistance frequency and consequence analysis



Challenges

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

Municipality rejected projects 2021



Municipality approved projects 2021



Comments

- Media reporting on projects in development phase was observed during the period January 1st 2021- February 15th 2022
- 21 projects were formally or informally rejected by municipality veto during the period
- 1 project was approved by the municipality

This positive development also arouses natural questions

Will we be able to supply sufficient electricity?

- The requirement for large investments in wind power in the north of Sweden is a corner stone in supplying the energy for the transformation.
- Laws, regulations and prioritization need to improve considerably for this to be possible.
- We must prioritize wisely and the goal must be clear; to reach net zero emissions of greenhouse gases 2045, in balance with other important interests.
- As much as we need brave politicians and wise priorities, we need to work fast.



Sustainable wind expansion demands solutions

- Determine national and regional planning target
- Conflicts of interest must be solved to reach the climate goal
- Permit procedures must be predictable, streamlined and done with a wholistic perspective
- Enhanced local acceptance is fundamental for sustainable development
- The regulation on obstacle lighting is adjusted to international law



Conclusion

It's possible

**It will demand a
lot of effort**

**In addition to the
technical
challenges**

Thank you



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