

Vattenfall Distribution

Roundtable 26 March 2021

The distribution grid

Important enabler of electrification and a decarbonised future





- Total electricity demand in EU is expected to rise significantly until 2030 (~1.8% per year)
- 500 GW renewables will be installed – 70% connected to the distribution grid
- Strongest contributions will come from the electrification of industry and transport sectors

The role of the DSO and distribution grid:

- The base for electrification and capacity expansion (e.g. 400 BEUR of investments in grids is estimated to be needed in EU 2020-2030)
- The connecting point for renewable energy (e.g. wind farms)
- The enabler for flexibility and demand management
- A key element in **enabling customer participation** (e.g. through smart meters)



Vattenfall Distribution

Leading owner and operator of electricity distribution grids

Overview

- Largest operator of regional electricity distribution grids in Sweden and top-3 position in local grids.
- Owner of city grid in Berlin. Vattenfall has offered to sell all shares in the electricity grid company Stromnetz Berlin GmbH to the State of Berlin.
- Business unit for operation and ownership of new grids in the UK established in 2017 and developing well, in IDNO and Power-as-a-Service solutions.
- In total approximately 3.3 million business and household customers
- Regulated business with stable demand.

Key data	FY 2020	FY 2019
Net sales (SEK bn)	21.6	22.5
Sweden Germany	12.0 9.6	11.8 10.7
Underlying EBIT ¹ (SEK bn)	5.3	5.0
Sweden Germany	4.2 1.1	3.9 1.1
Investments (SEK bn)	7.6	7.2
Sweden Germany	5.5 1.9	5.1 2.0
Regulatory Asset Base (SEK bn)	72.4	64
Sweden Germany	52.9 19.5	45.2 18.8
Number of customers (000s)	3,350	3,335
Sweden Germany	971 2,379	968 2,367
SAIDI ² (minutes/customer)		
Sweden Germany	148 9	439 10
Distribution grid (km)	171,822	170,212

¹ Operating profit excluding items affecting comparability

² SAIDI: System Average Interruption Duration Index SAIDI in 2019 for Sweden was impacted by the storm "Alfrida"

Underlying EBIT in 2020



Vattenfall Regulatory Asset Base 2020 (SEK bn)





Sweden's largest operator of electricity distribution grids

Overview

- The Swedish electricity distribution market is a fragmented market with 3 large players (E.ON, Vattenfall and Ellevio) having over 50% of the total market. The rest of the market is split between 170 other DSOs
- Vattenfall Distribution has **2 local electricity distribution** areas in Sweden, the Northern and Southern area
- Vattenfall Distribution is a consolidation of an old structure of more than 40 small separate grid operators and is today the largest player in the regional Swedish distribution grid market with a market share of over 50%
- The market growth due to the energy transition will mainly take place in the regional distribution grid

Market shares in Sweden

	Customers local grids	Markets share regional grid ²	Market share local grid ³
Vattenfall ¹	900,000	53%	16%
Ellevio	960,000	22%	17%
E.ON	1,030,000	23%	19%

¹ Excluding Vattenfall's subsidiaries Gotlands Elnät och Västerbergslagens Elnät ² Based on volume of transited energy excluding grid losses ³ Based on number of connections

Market shares regional grid



Market shares local grid





Energy transition to spur dramatic growth in electricity demand

Forecast – Change in electricity demand (Sweden)¹

Growth in renewable production capacity and ageing assets call for large grid investments



Electricity demand set to grow due to electrification and new electricity intensive businesses

- Electrification of industry and transports to increase total electricity demand.
- New businesses such as data centres and battery factories are also likely to have a significant impact.
- Efficiency improvements in the residential sector only have a small mitigating effect on total demand.

1 Source: Nepp, Färdplan för fossilfri el, Aug 2019



Energy transition to spur dramatic growth in electricity demand

Re-inforcements and ageing assets call for extensive grid investments



Asset age structure – Vattenfall Eldistribution¹

Existing grid assets are increasingly in need of reinvestments

- The distribution grid was built out predominantly in 1970-1990. These assets are now reaching the technical and regulatory end-of-life.
- We need to make reinforcements and new investments in the grid to accommodate more renewable energy and enable electrification.

1 Asset base per 2020-01-01



Vattenfall Distribution is well positioned to leverage on the energy transition



Geographical location of Vattenfall Distribution



The majority of energy intensive industries are connected to Vattenfall Distribution grid



A large part of new wind power is assumed to be connected to the regional grid



Confirmed permits Upcoming permits

Source: Vindbrukskollen *In many cases wind power cannot be connected to the local distribution grid and need to be connected to the regional distribution grid

Revenue Regulation – Recent Developments



Administrative Court Ruling in our favour

On 26 February, it was ruled that the WACC for the third regulatory period ("RP3") should be recalculated by the regulator. For this, they have to respect:

- the use of a stable, predictable and forward-looking approach as well as the regulatory risk of companies
- interruption costs as part of the controllable costs for 2014-2017

This decision has been appealed by the regulator. The Court has not yet decided on whether appeal will be granted or not.

Revenue Regulation – Recent Developments



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Carry-over and consolidated reporting to be decided

The government has submitted a proposal for legislation that would permit carry-over from previous regulatory periods. The law would enter into force 1 June 2021 and the decision is expected to be announced in the end of April.

Co-reporting (joint accounting of Vattenfall's southern and northern grid) is a prerequisite for price harmonization. Such a law is expected to arrive later in the year of 2021.

Revenue Regulation – Recent Developments



A deeper emphasis on cost efficiency is expected

The regulator has proposed a legislative amendment to extend the application of the efficiency requirement to total costs instead of only the controllable costs.

This would mean a development of the regulation to a so-called Totex model, where all costs are subject to a efficiency requirement based on a benchmarking process. For this, Data Envelopment Analysis is used.

Related to this, principles of preservation of capital might be discussed further on.



Regulation Political Outlook

The European Union has announced new energy and climate legislation which means new requirements on grid companies – the Clean Energy Package has an especially large effect on the grid companies.



More system responsibility is given to DSOs, which in collaboration with TSO must solve issues concerning quality and efficiency of grid-use. New skills and possibly also new business models have to be developed.



The government has initiated an **electrification commission** as well as an electricity grid dialogue to improve the regulation and to accelerate the electrification of the transport sector, with ensured exchange between the government, industry, research and society.

(i)

The government has also initiated an **electrification strategy**, to push electrification effort in Sweden at large.







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Current assessment indicates almost the double investment need for 2020-2030 compared to the previous 10-year period*



