

An aerial photograph of a city, likely Copenhagen, featuring a river, various buildings, and a prominent tall tower (Copenhagen Tower) in the background under a cloudy sky.

# Vattenfall 9M and Q3 Results 2019

29 October 2019  
Magnus Hall, CEO  
Anna Borg, CFO



VATTENFALL

# Vattenfall 9M Results 2019

## Opening remarks

- Power Generation and Wind contributed to marked improvements in results and delivery on financial targets
- Underlying EBIT increased by SEK 1.6 bn to SEK 16.9 bn – mainly due to higher achieved prices, higher wind speeds and a growing wind portfolio which was partially offset by negative effects of the storm “Alfrida”
- Profit for the period increased by SEK 5.5 bn to SEK 14.4 bn - mainly owing to one-off items related to the divestment of the district heating business in Hamburg and the sale of nuclear production rights in Germany
- Winning bid for the offshore wind farm Hollandse Kust Zuid 3 & 4 in the Netherlands (~750MW)
- Transfer of the district heating business in Hamburg was concluded
- Europe’s largest Power-to-Heat facility was connected in Berlin which enabled the closing of a coal-fired power plant
- Ringhals 2 on reduced capacity in preparation for the closure at the end of the year
- The name change of Nuon to Vattenfall was completed in the Netherlands
- The Energy Markets Inspectorate has decided on the revenue frames for 2020-2023 for Vattenfall Eldistribution

Post Q3



# Vattenfall 9M Results 2019

## Overview

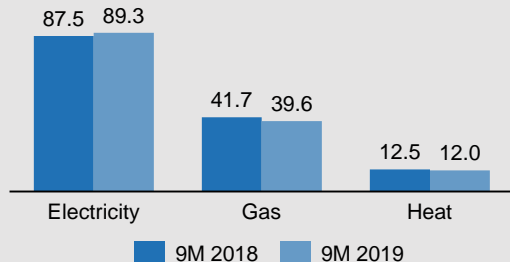
### Result development

SEK bn	9M 2019	9M 2018	Δ
Net Sales	120.2	107.1	+12%
EBITDA	33.6	25.7	+31%
Underlying operating profit (EBIT)	16.9	15.3	+11%
EBIT	19.7	13.4	+47%
Profit for the period	14.4	8.9	+61%

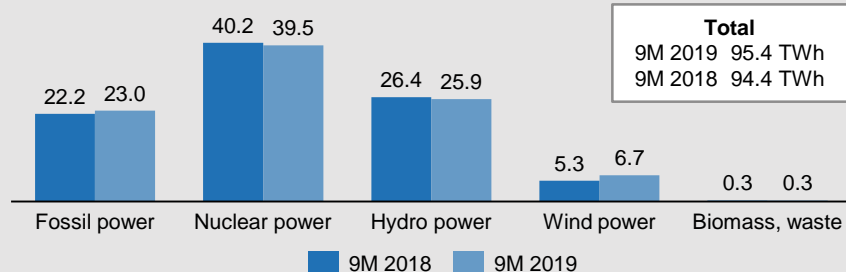
### Financial targets

	9M 2019	9M 2018
Return on capital employed <sup>1</sup> (≥8%)	9.2	7.9
FFO/adjusted net debt <sup>1</sup> (22-27%)	24.5	20.6

### Customer sales (TWh)



### Electricity production (TWh)



<sup>1</sup> Last 12-month values

# Customers & Solutions

Higher sales in most markets but lower underlying operating profit due to warm weather, growth activities and higher purchasing costs for electricity

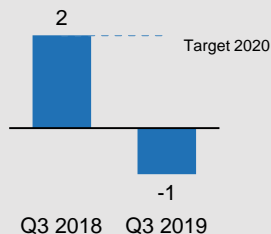
## Highlights

SEK million	9M 2019	9M 2018
Net Sales	64,086	57,790
Underlying operating profit	594	1,159

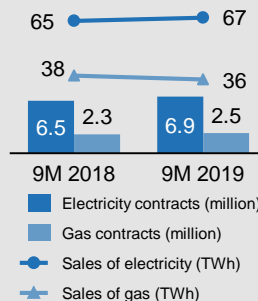
- Net sales increased as a result of higher sales in most of Vattenfall's markets. The largest contribution came from higher volumes and an increased customer base in Germany
- Underlying operating profit decreased mainly due to growth activities, lower gas sales (warmer weather) and higher purchasing costs for electricity. The latter will be compensated for by price increases
- Customer base grew from 8.9 to 9.4 million contracts, mainly due to growth in Germany and the acquisition of DELTA Energie
- Relative NPS decline caused by the storm "Alfrida" in the Nordics and price measures carried out in the Netherlands
- E-mobility agreement with Norwegian dairy group TINE

## Key data

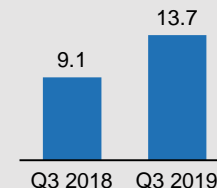
Net Promoter Score<sup>1</sup> (NPS) relative to peers



Retail sales development



Charging points for electric vehicles (thousand)



<sup>1</sup> The target is a positive NPS in absolute terms and +2 compared to Vattenfall's peer competitors to be achieved by 2020.

# Power Generation

Higher achieved prices and strong operating performance

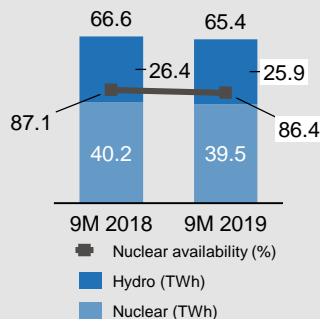
## Highlights

SEK million	9M 2019	9M 2018
Net Sales	74,699	67,475
Underlying operating profit	11,252	8,475

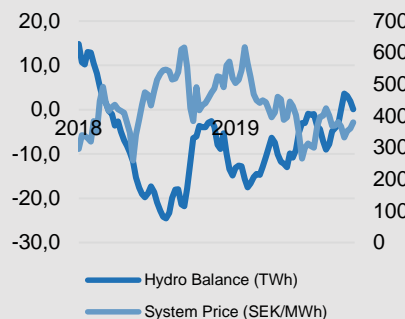
- Net sales increased due to higher achieved prices in the Nordics, higher electricity and gas sales (mainly in Germany) as well as positive currency effects
- Underlying operating profit increased mainly due to higher achieved prices
- Higher spot prices in 2018, partly driven by very low hydro balance which is now back to more normal levels
- Lower production partially due to Ringhals 2 operating at half capacity until the end of April. High availability in spite of outages
- Work has begun on reducing output at Ringhals 2 in preparation for the final decommissioning at year-end

## Key data

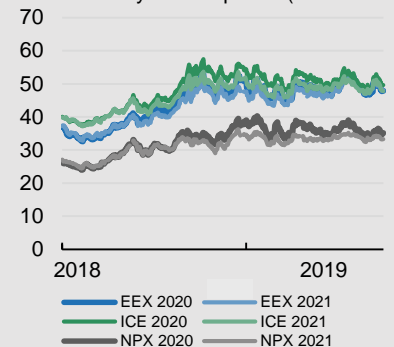
Production and availability



Nordic hydro balance and system price



Electricity futures prices (EUR/MWh)





# Wind

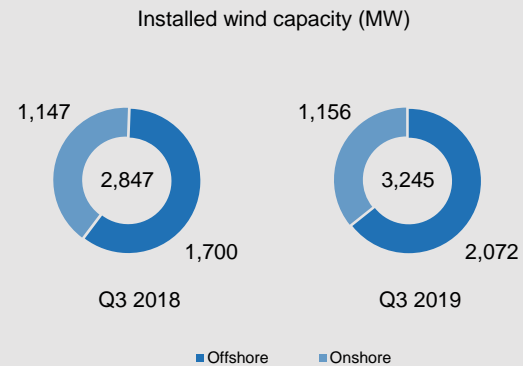
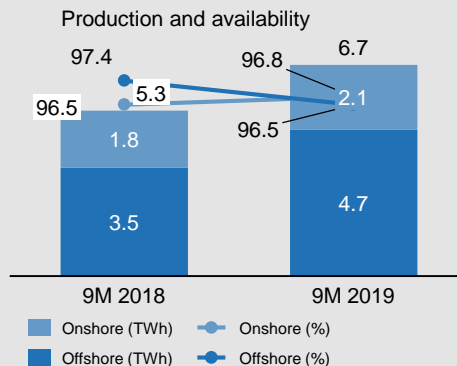
Stronger result contribution driven by additional capacity and higher wind speeds

## Highlights

SEK million	9M 2019	9M 2018
Net Sales	9,502	7,839
Underlying operating profit	2,474	1,902

- Net sales and underlying operating profit increased as a result of additional capacity<sup>1</sup> and higher production due to higher wind speeds
- Winning bid for offshore wind farm Hollandse Kust Zuid 3 & 4 in the Netherlands
- 11 turbines installed and first power delivered at the onshore wind farm Wieringermeer in the Netherlands. The total capacity will be 185 MW and commissioning is planned for 2020

## Key data



<sup>1</sup> During the last 12 months two wind farms were commissioned, Slufterdam (29 MW) and Horns Rev (373 MW of a total of 407 MW)

# Heat

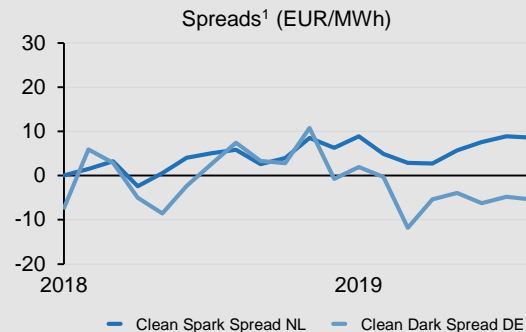
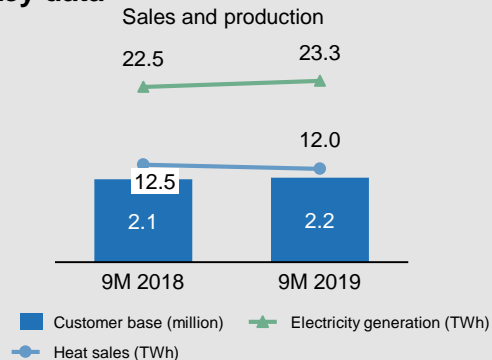
Strong customer growth and roadmap for the phase-out of coal in Berlin mapped out

## Highlights

SEK million	9M 2019	9M 2018
Net Sales	23,245	23,029
Underlying operating profit	318	260

- Net sales increased slightly mainly as a result of positive price effects in heat sales
- The underlying profit increased due to positive price effect in heat sales. Higher operating expenses, mainly due to maintenance costs within the heat business in Berlin, had an offsetting impact
- The transfer of the district heating business in Hamburg was concluded on 2 September
- Feasibility study together with the City of Berlin regarding the phase-out of coal in the city by 2030
- Power-to-Heat plant connected to district heating grid at Reuter West in Berlin. This enabled the closure of the coal-fired unit Reuter C

## Key data



<sup>1</sup> CSS NL with 50% efficiency, CDS DE with 38% efficiency

# Distribution

## Decision on new revenue frameworks received

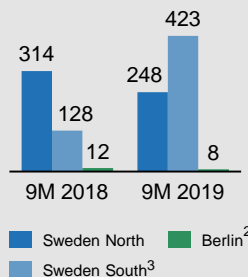
### Highlights

SEK million	9M 2019	9M 2018
Net Sales	16,604	16,285
Underlying operating profit	3,454	4,530

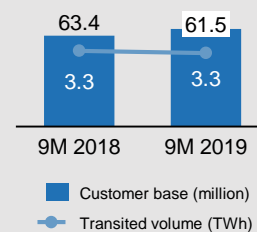
- Net sales increased where a lower distributed volume in Sweden was compensated by a higher contribution from Germany
- The underlying operating profit decreased mainly due to costs related to the storm "Alfrida" and higher depreciation, marginally countered by a higher contribution from Germany
- Decision received from The Energy Markets Inspectorate on the revenue frames for 2020-2023 where, as previously communicated, the allowed WACC has been set at 2.16%
  - A negative EBIT impact of ~SEK 2 bn p.a. is estimated on average over the next regulatory period
- SEK 1.8bn investment announced in the Stockholm region in order to strengthen the electricity network
- Cooperation with Echandia Marine in the field of electrified sea transportation

### Key data

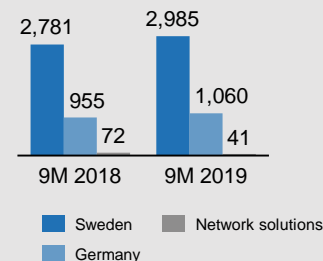
Service level (SAIDI, min)<sup>1</sup>



Customers and volumes



Investments (SEK mn)



<sup>1</sup> City network in Berlin results in lower SAIDI. Vattenfall's Swedish network covers both urban areas and large rural areas.

<sup>2</sup> All outages longer than 1 second in medium and low voltage networks are included



# Financials

Anna Borg, CFO



VATTENFALL

# Vattenfall 9M Results 2019

## Financial highlights

### Key data

SEK bn	9M 2019	9M 2018
Net Sales	120.2	107.1
EBITDA	33.6	25.7
Underlying operating profit (EBIT)	16.9	15.3
EBIT	19.7	13.4
Profit for the period	14.4	8.9
Funds from Operations (FFO)	23.4	16.0
Cash flow operating activities	11.7	35.3
Net debt	59.6	42.4
Adjusted net debt	125.4	109.3
Adjusted net debt/EBITDA <sup>1</sup> (times)	3.0	3.1
<b>Financial targets</b>		
ROCE <sup>1</sup> (≥8%)	9.2	7.9
FFO/adjusted net debt <sup>1</sup> (22-27%)	24.5	20.6

<sup>1</sup> Last 12-month values

### Key developments

- Net sales increased by SEK 13.1 bn to SEK 120.2 bn mainly due to higher achieved prices, higher sales in Germany, the Nordics and the Netherlands, and higher wind production
- Underlying EBIT increased by SEK 1.6 bn. Higher contribution from Power Generation and Wind was partly offset by costs for the storm "Alfrida" in Sweden and a lower contribution from Customers & Solutions
- Profit for the period increased by SEK 5.5 bn to SEK 14.4 bn. One-off items had a positive impact, capital gain of SEK 3.1 bn from the divestment of the district heating operations in Hamburg and SEK 1.5 bn from the sale of nuclear production rights in Germany
- ROCE increased to 9.2%, mainly as a result of higher gross margin in segments Power Generation and Wind and the capital gain from the divestment of the district heating business in Hamburg
- FFO/Adjusted net debt increased to 24.5%, mainly due to higher EBITDA as well as lower paid tax

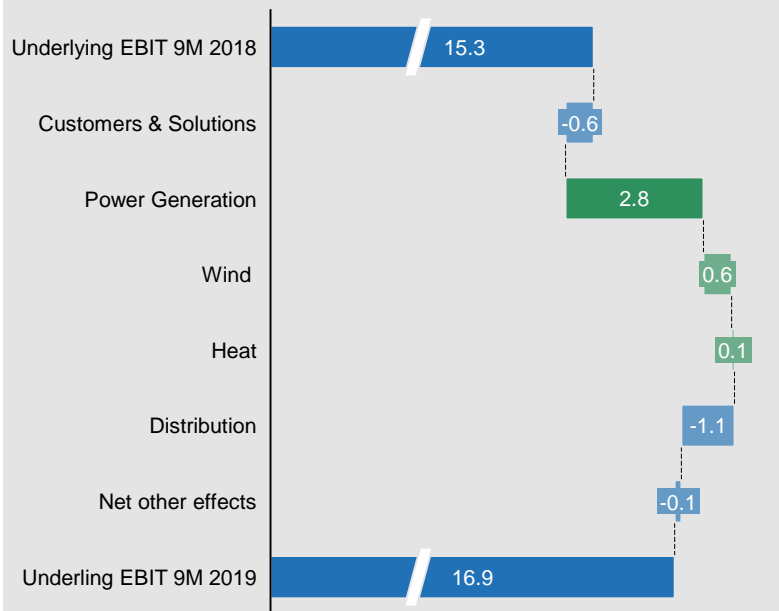


# Development of underlying EBIT 9M 2019

Increase from Power Generation and Wind offset by lower contribution from Distribution and Customers & Solutions

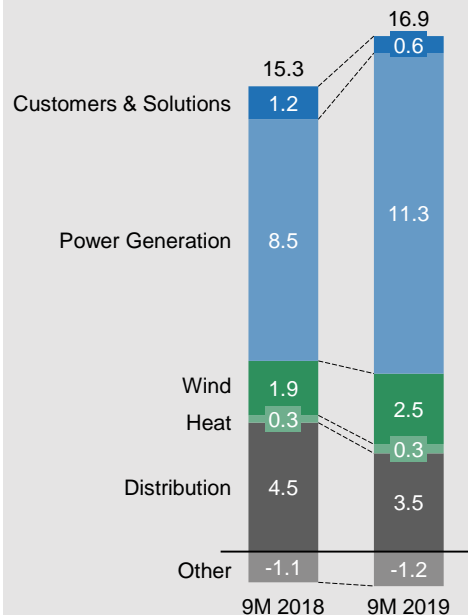
## Change in 9M 2019 vs. 9M 2018

SEK bn



## Breakdown per operating segment

SEK bn

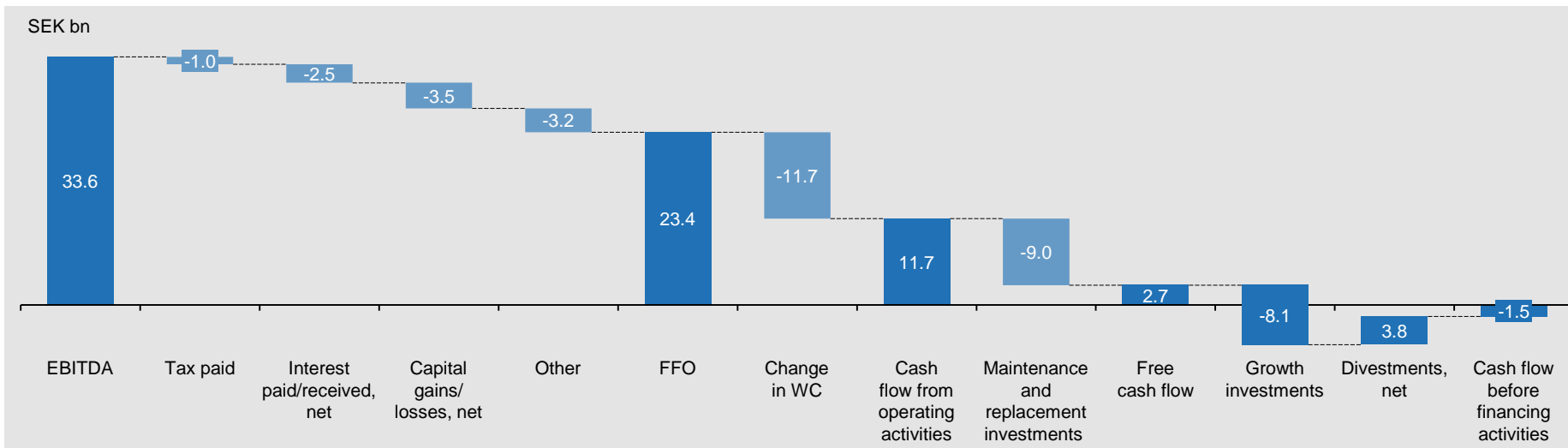


## Highlights

- Customers & Solutions: growth activities (B2C France, B2C Germany, E-mobility), lower gas sales (warmer weather) and higher costs for electricity purchases (to be compensated for by price increases)
- Power Generation: higher achieved prices as an improved hedge result outweighed the effect of lower spot prices
- Wind: positive contribution from added capacity and higher generation as a result of stronger winds
- Heat: positive price effects in sales of heat were slightly offset by higher operating expenses
- Distribution: costs for the storm "Alfrida" and higher depreciation due to investments

# Cash flow development 9M 2019

Operating cash flow negatively impacted by cash flow from changes in working capital



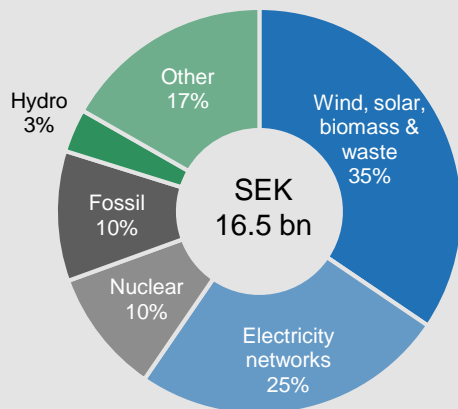
## Highlights

- FFO increased by SEK 7.4 bn mainly owing to lower paid tax and higher EBITDA.
- Cash flow from changes in working capital had a negative impact of SEK -11.7 bn, which is mainly attributable to changes in margin calls (SEK -13.1 bn) and changes related to CO<sub>2</sub> emission allowances (SEK -1.9 bn). The development of net receivables/liabilities following seasonality pattern in Customers & Solutions and Heat contributed positively (SEK 3.2 bn)

# Capital expenditures

Renewables and networks accounted for the majority of investments

Investments per category, 9M 2019



Detailed overview of investments, 9M and Q3 2019

SEK bn	9M 2019	9M 2018	Δ	Q3 2019	Q3 2018	Δ
Hydro	0.6	0.7	-18%	0.2	0.3	-17%
Nuclear	1.6	1.6	+1%	0.4	0.6	-24%
Fossil	1.7	2.1	-19%	0.6	0.8	-29%
Wind, solar, biomass & waste	5.7	6.0	-5%	1.5	3.3	-54%
Electricity networks	4.1	3.8	+9%	1.5	1.4	+10%
Other <sup>1</sup>	2.8	1.4	+98%	0.6	0.7	-12%
<b>Total</b>	<b>16.5</b>	<b>15.6</b>	<b>+6%</b>	<b>4.9</b>	<b>7.0</b>	<b>-31%</b>

<sup>1</sup> Investments mainly related to the acquisition of shares (DELTA Energie) and other equipment



# Pension provisions

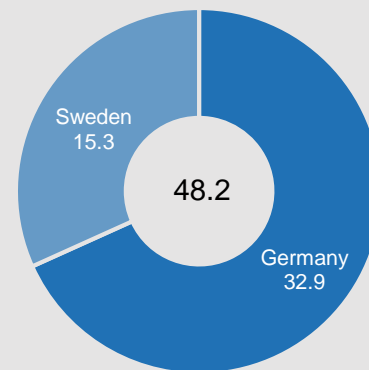
Increased pension provisions as a result of lower discount rates

## Overview of impact from changed discount rates on pension provisions

	Discount rate 30 Sep 2019	Discount rate 30 June 2019	Impact (SEK bn)	Pension provisions 30 Sep 2019 (SEK bn)
Germany	0.75%	1.25%	2.6	32.9
Sweden	1.50%	2.00%	1.2	15.3
			<b>3.8</b>	<b>48.2</b>

Following the decrease in market rates, the discount rates for Germany and Sweden have been lowered by 50 bps, which increased the pension provisions by SEK 3.8 billion

## Total pension provisions, 30 Sep 2019 (SEK bn)

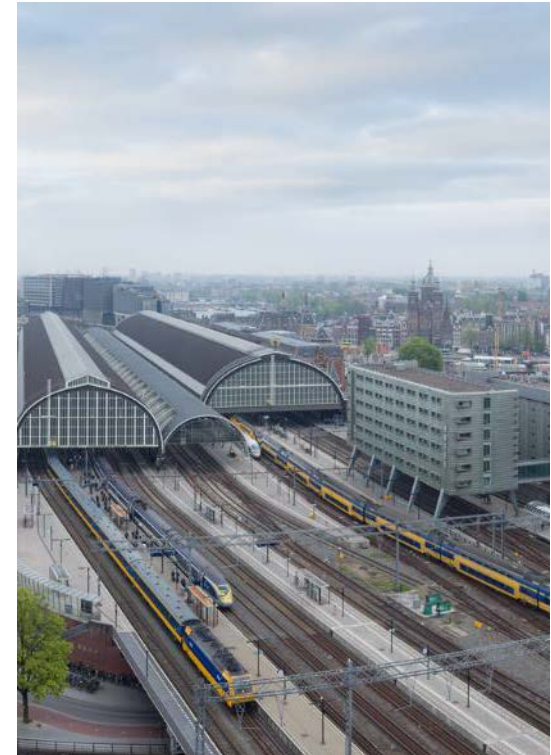


# Overview of key figures 9M and Q3 2019

Amounts in SEK bn unless indicated otherwise	9M 2019	9M 2018	Q3 2019	Q3 2018
Net sales	120.2	107.1	35.9	32.0
EBITDA	33.6	25.7	13.5	7.9
EBIT	19.7	13.4	8.7	3.7
Underlying operating profit (EBIT)	16.9	15.3	3.6	2.1
Profit for the period	14.4	8.9	6.7	1.8
Electricity generation (TWh)	95.4	94.4	28.7	27.8
Sales of electricity (TWh)	126.5	124.1	38.7	38.1
- of which, customer sales (TWh)	89.3	87.5	27.1	26.8
Sales of heat (TWh)	12.0	12.5	1.7	1.9
Sales of gas (TWh)	39.6	41.7 <sup>1</sup>	6.3	6.1 <sup>1</sup>
Return on capital employed (≥8%)	9.2 <sup>2</sup>	7.9 <sup>2</sup>	9.2 <sup>2</sup>	7.9 <sup>2</sup>
FFO/adjusted net debt (22-27%)	24.5 <sup>2</sup>	20.6 <sup>2</sup>	24.5 <sup>2</sup>	20.6 <sup>2</sup>

<sup>1</sup> The value has been adjusted compared with information previously published in Vattenfall's financial reports.

<sup>2</sup> Last 12-month values

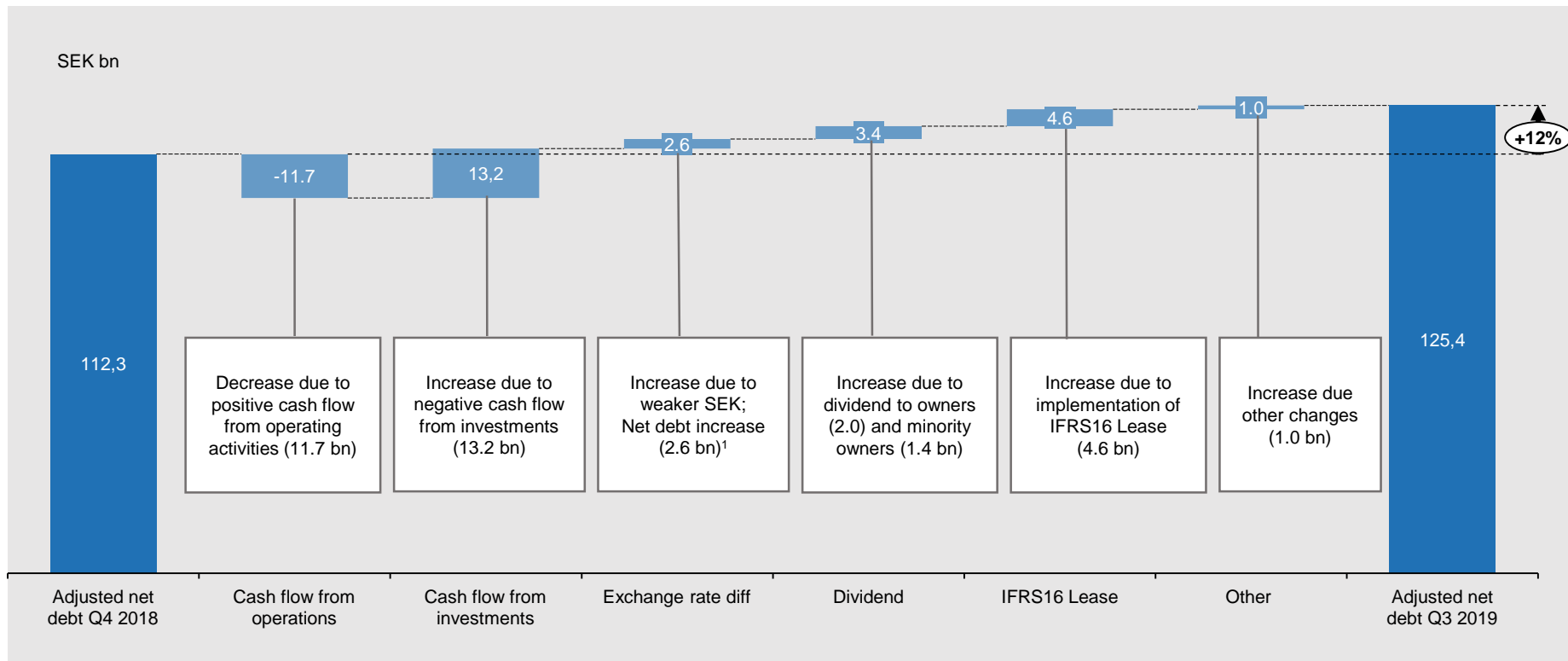


# Appendix



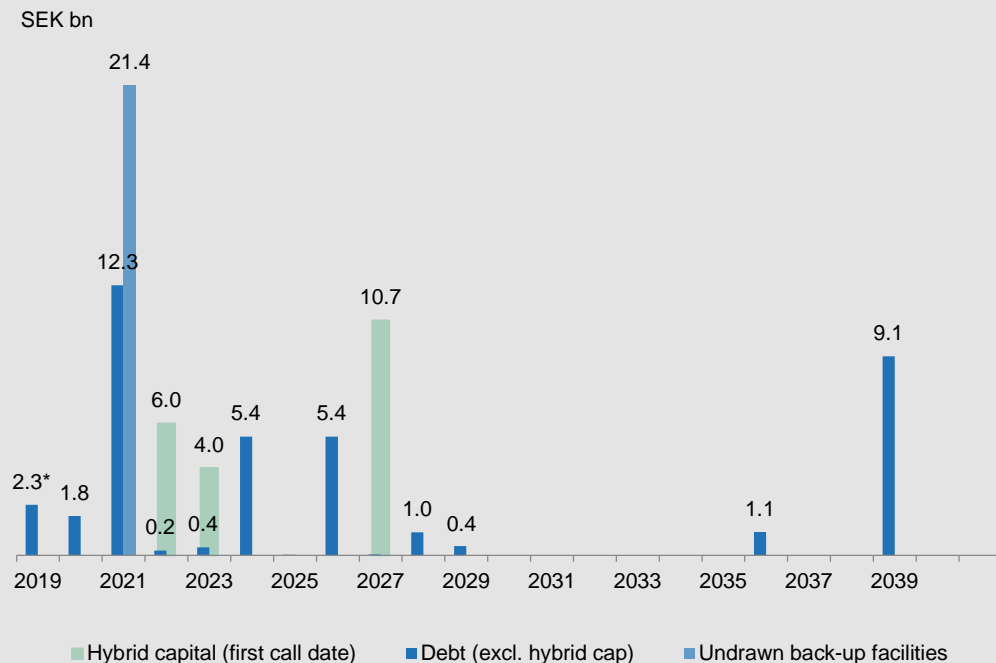
# Development of adjusted net debt 9M 2019

Adjusted net debt increase mainly due to IFRS16, dividend payments and negative currency effects



<sup>1</sup> SEK weakened against EUR (from 10.25 to 10.70); translation of EUR denominated net debt into SEK leads to increase in adjusted net debt

# Debt maturity profile<sup>1</sup>



\* Short term debt are excluded (Repo, ECP and SCP) (7,0) <sup>1</sup> Commercial paper (ECP) Loans from associated companies, minority owners, margin calls received (CSA) and valuation at fair value are excluded and currency derivatives for hedging debt in foreign currency are included

	30 Sep. 2019	31 Dec. 2018
Duration (years)	4.8	4.4
Average time to maturity (years)	6.6	6.4
Average interest rate (%)	4.0	4.5
Net debt (SEK bn)	59.6	47.7
Available group liquidity (MSEK)	28.2	34.5
Undrawn committed credit facilities (MSEK)	21.4	20.5

## Cumulative maturities excl. undrawn back-up facilities

	2019-2021	2022-2024	From 2025
Debt incl. hybrid capital	16.4	15.9	27.7
<i>% of total</i>	27%	27%	46%

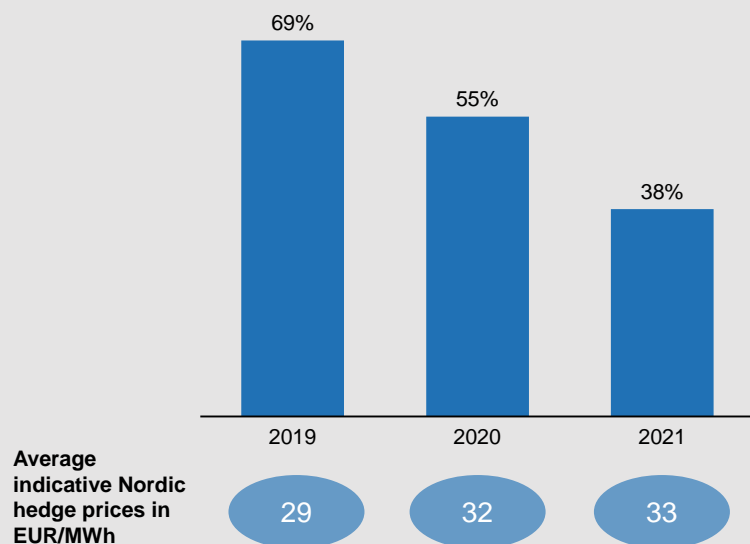


# Price development

## Hedging, achieved prices and sensitivity analysis

Vattenfall continuously hedges its future electricity generation through sales in the forward and futures markets. Spot prices therefore have only a limited impact on Vattenfall's earnings in the near term

Estimated Nordic<sup>1</sup> hedge ratio (%) and indicative prices



Achieved prices<sup>2</sup> - Nordic portfolio

Jan-Sep 2019	Jan-Sep 2018	Jul-Sep 2019	Jul-Sep 2018	Full-year 2018	Last 12 months
32	29	29	28	30	31

Sensitivity analysis – Continental<sup>3</sup> portfolio

Market quoted	+/- 10% price impact on future profit before tax, MSEK <sup>4</sup>			Observed yearly volatility
	2020	2021	2022	
Electricity	+/- 1,728	+/- 1,766	+/- 1,757	19% - 26%
Coal	-/+ 185	-/+ 173	-/+ 166	21% - 23%
Gas	-/+ 864	-/+ 818	-/+ 844	19% - 25%
CO <sub>2</sub>	-/+ 451	-/+ 464	-/+ 437	47% - 52%

<sup>1</sup> Nordic: SE, DK, FI

<sup>2</sup> Achieved prices from the spot market and hedges. Includes Nordic (SE, DK, FI) hydro, nuclear and wind power generation

<sup>3</sup> Continental: DE, NL, UK

<sup>4</sup> The denotation +/- entails that a higher price affects operating profit favorably, and +/- vice versa

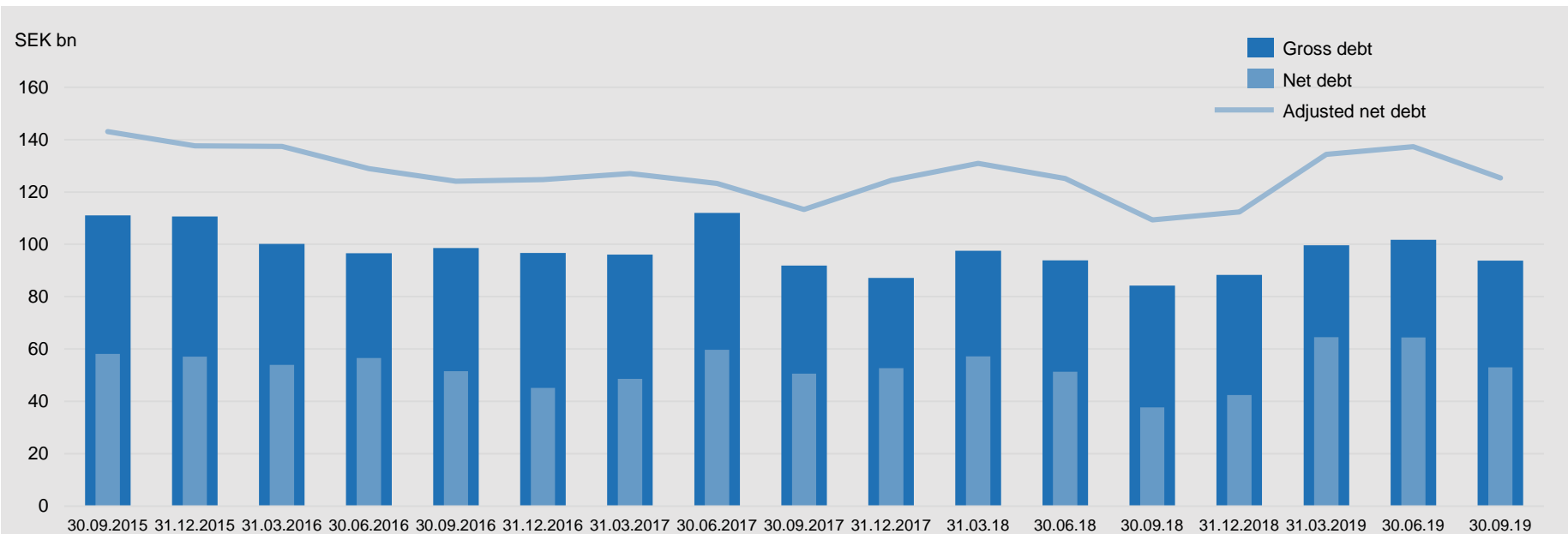
# Liquidity position

<b>Group liquidity</b>	<b>SEK bn</b>	<b>Committed credit facilities</b>	<b>Facility size, EUR bn</b>	<b>SEK bn</b>
Cash and cash equivalents	12.8	RCF (maturity Dec 2021)	2.0	21.4
Short term investments	21.2	Total undrawn		21.4
<b>Reported cash, cash equivalents &amp; short term investments</b>	<b>33.9</b>	<b>Debt maturities<sup>2</sup></b>		<b>SEK bn</b>
Unavailable liquidity <sup>1</sup>	-5.7	Within 90 days		2.3
<b>Available liquidity</b>	<b>28.2</b>	Within 180 days		2.7

<sup>1</sup> German nuclear "Solidarvereinbarung" 2.4 SEK bn, Margin calls paid (CSA) 2.4 SEK bn, Insurance "Provisions for claims outstanding" 0.8 SEK bn

<sup>2</sup> Excluding loans from minority owners and associated companies

# Debt development

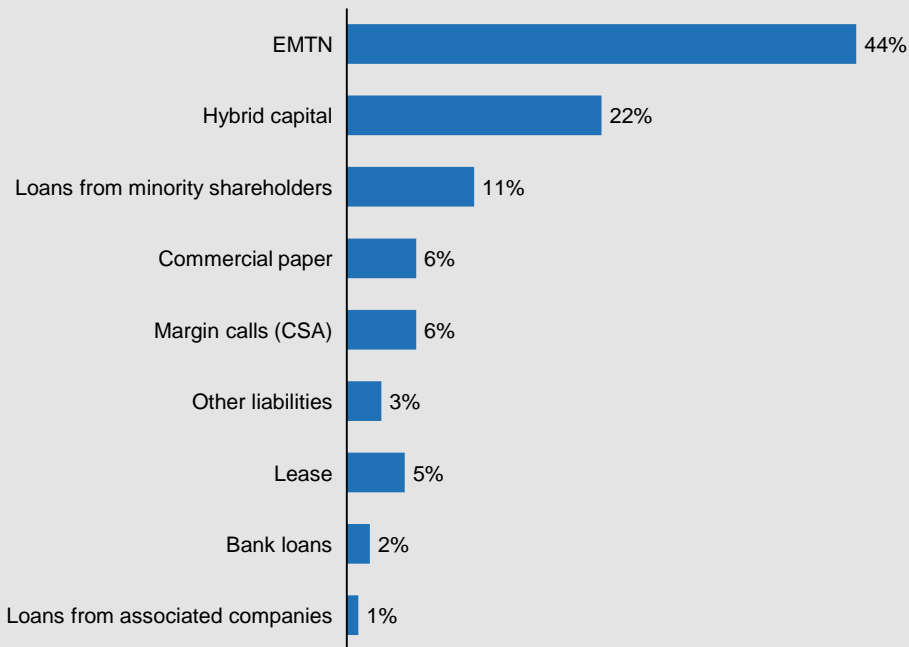


Net debt increased by SEK 11.9 bn compared with the level at 31 Dec. 2018. Adjusted net debt increased to SEK 125.4 bn, SEK 13.0 bn higher compared with the level at 31 December 2018. For the calculation of adjusted net debt, see slide 23.

# Breakdown of gross debt

Total interest-bearing liabilities: SEK 93.8 bn (EUR 8.8 bn)

External market debt: SEK 82.3 bn (EUR 7.7 bn)



Debt issuing programmes	Size (EUR bn)	Utilization (EUR bn)
EUR 10bn Euro MTN	10.0	3.5
EUR 2bn Euro CP	2.0	0.6
SEK 15bn Domestic CP	1.4	0.2
Total	13.4	4.3

- All public debt is issued by Vattenfall AB
- The main part of debt portfolio has no currency exposure that has an impact on the income statement. Debt in foreign currency is either swapped to SEK or booked as hedge against net foreign investments.
- No structural subordination

<sup>1</sup> EMTN= Euro Medium Term Notes

# Reported and adjusted net debt

Reported net debt (SEK bn)	30 Sep. 2019	31 Dec. 2018	Adjusted net debt (SEK bn)	30 Sep. 2019	31 Dec. 2018
Hybrid capital	-20.6	-19.8	Total interest-bearing liabilities	<b>-93.8</b>	-88.3
Bond issues and commercial papers and liabilities to credit institutions	-48.6	-50.3	50% of Hybrid capital	10.3	9.9
Liabilities to associated companies	-0.8	-0.5	Present value of pension obligations	-48.3	-39.7
Liabilities to minority shareholders	-10.7	-10.4	Wind & other environmental provisions	-8.3	-7.7
Lease liabilities	-4.6	0,0	Provisions for nuclear power (net)	-29.5	-31.9
Other liabilities	-8.5	-7.2	Margin calls received	5.3	3.4
<b>Total interest-bearing liabilities</b>	<b>-93.8</b>	<b>-88.3</b>	Liabilities to minority owners due to consortium agreements	10.7	9.2
Reported cash, cash equivalents & short-term investments	33.9	40.1	Adjustment related to assets/liabilities held for sale	0.0	-1.7
Loans to minority owners of foreign subsidiaries	0.2	0.5	<b>= Adjusted gross debt</b>	<b>-153.6</b>	<b>-146.8</b>
<b>Net debt</b>	<b>-59.6</b>	<b>-47.7</b>	Reported cash, cash equivalents & short-term investments	33.9	40.1
			Unavailable liquidity	-5.7	-5.6
			<b>= Adjusted cash, cash equivalents &amp; short-term investments</b>	<b>28.2</b>	<b>34.5</b>
			<b>= Adjusted net debt</b>	<b>-125.4</b>	<b>-112.3</b>



# Nuclear provisions

Reactor	Net capacity (MW)	Start (year)	Vattenfall share (%)	Vattenfall provisions, SEK bn (IFRS accounting)	Vattenfall provisions, SEK bn (pro rata)	Sw nuclear waste fund SEK bn (Vattenfall pro rata share)
Ringhals 1	879	1976	70.4			
Ringhals 2	809	1975	70.4			
Ringhals 3	1,070	1981	70.4			
Ringhals 4	942	1983	70.4	<b>Total Ringhals: 30.9</b>	<b>Total Ringhals: 30.9<sup>1</sup></b>	
Forsmark 1	984	1980	66.0			
Forsmark 2	1,120	1981	66.0			
Forsmark 3	1,170	1985	66.0	<b>Total Forsmark: 26.7</b>	<b>Total Forsmark: 17.6</b>	
<b>Total Sweden</b>	<b>6,974</b>	<b>-</b>		<b>60.2<sup>2</sup></b>	<b>50.1<sup>2</sup></b>	<b>39.1<sup>3</sup></b>
Brunsbüttel	771	1977	66.7	11.4	7.6	
Brokdorf	1,410	1986	20.0	0	3.6	
Krümmel	1,346	1984	50.0	7.1	7.1	
Stade <sup>4</sup>	640	1972	33.3	0	1.0	
<b>Total Germany</b>	<b>4,167</b>	<b>-</b>	<b>-</b>	<b>18.5</b>	<b>19.3</b>	
<b>Total SE &amp; DE</b>	<b>11,141</b>			<b>78.7</b>	<b>69.4</b>	

<sup>1</sup> Vattenfall has 100% liability for Ringhals decommissioning, while owning only 70.4%

<sup>2</sup> Total provisions in Sweden (IFRS accounting) include provisions of SEK 0.4 bn (pro rata SEK 0.2 bn considering share in Studsviks fonden) related to Ågesta, and SEK 2.3 bn (pro rata SEK 0.9 bn considering share in Studsviks fonden) related to SVAFO

<sup>3</sup> Vattenfall's share of the Nuclear Waste Fund. IFRS consolidated value is SEK 45.8 bn.

<sup>4</sup> Stade is being dismantled

# Impairment history 2009 – 2019

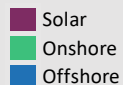
SEK bn		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	9M 2019	Total
The Netherlands	Thermal assets		4.3 <sup>1</sup>	0.4 <sup>2</sup>	8.6 <sup>2</sup>	14.7	2.6		2.8				33.4
	Trading					6.5 <sup>1</sup>	10.0 <sup>1</sup>		0.7				17.2
	Other	1.2	1.2			1.5 <sup>2</sup>	1.9				0.1		5.9
Germany	Thermal assets			0.3		4.3	5.7	19.2	26.1				55.6
	Nuclear assets			10.5									10.5
	Transmission		5.1										5.1
	Other					0.1	1.1	0.3	2.3	0.4			4.2
The Nordic Countries	Renewable assets						1.4		0.1				1.5
	Thermal assets	4.1				3.0		0.1					7.2
	Nuclear assets							17.0	0.4				17.4
	Other								0.3				0.3
UK	Renewable assets						1.1	0.2					1.3
Not allocated		0.2	0.5	0.1									0.8
Impairment Liberia					1.3								1.3
Impairments; shares in Enea S.A. Poland					2.4								2.4
Impairments; shares in Brokdorf and Stade									1.1				1.1
<b>Impairments</b>		<b>5.5</b>	<b>11.1</b>	<b>11.3</b>	<b>12.3</b>	<b>30.1</b>	<b>23.8</b>	<b>36.8</b>	<b>33.8</b>	<b>0.4</b>	<b>0.1</b>	<b>0.0</b>	<b>165.2</b>
Reversed impairment losses		-1.3	-1.3	-0.4	0.0	0.0	0.0	-0.5	-0.9	0.0	0.0	0.0	-4.4
<b>Impairments (net)</b>		<b>4.2</b>	<b>9.8</b>	<b>10.9</b>	<b>12.3</b>	<b>30.1</b>	<b>23.8</b>	<b>36.3</b>	<b>32.9</b>	<b>0.4</b>	<b>0.1</b>	<b>0.0</b>	<b>160.8</b>

<sup>1</sup> Impairment of goodwill

<sup>2</sup> Impairment of assets and goodwill

# Wind - Installed capacity (MW<sup>1</sup>) Q3 2019

	Solar	Onshore	Offshore	Total
United Kingdom	5	391	687	1 083
Denmark	0	243	531	774
The Netherlands	8	259	108	375
Sweden	0	244	110	355
Germany	3	19	636	658
<b>Total (MW)</b>	<b>17</b>	<b>1 156</b>	<b>2 072</b>	<b>3 245</b>



## United Kingdom – ROC scheme

■ Thanet	300
■ Ormonde (51%)	150
■ Aberdeen	97
■ Kentish Flats	90
■ Kentish Flats Extension	50
■ Pen Y Cymoedd	228
■ Ray	54
■ Edinbane	41
■ Clashindarroch	37
■ Swinford	22
■ Parc Cynog	4
■ PV@Cynog	5
■ Pendine	5

**Installed capacity (MW) 1 083**

## Sweden – certificate scheme

■ Lillgrund	110
■ Stor-Rottliden	78
■ Högabjär-Kärsås (50%)	38
■ Höge Väg (50%)	37
■ Hjuleberg (50%)	36
■ Juktan (50%)	29
■ Östra Herrestad	16
■ Näsudden	10

**Installed capacity (MW) 355**

## Denmark – FIT scheme

■ Horns Rev 1 (60%)	158
■ Horns Rev 3 <sup>2</sup>	373
■ Klim (98%)	67
■ Nørrekær Enge 1 (99%)	30
■ Rejsby Hede	23
■ Hagesholm	23
■ Nørre Økse Sø	17
■ Tjæreborg Enge	17
■ Hollandsbjerg	17
■ Bajlum (89%)	15
■ DræbyFed	9
■ Ryå	8
■ Ejsing (97%)	7
■ Nordjyllandsværket	6
■ Lyngmose	5

**Installed capacity (MW) 774**

## Germany – EEG scheme

■ DanTysk (51%)	288
■ Sandbank (51%)	288
■ alpha ventus (26%)	60
■ Jänschwalde	12
■ Westküste (20%)	7
■ Decentral Solar installations	3

**Installed capacity (MW) 658**

## The Netherlands – MEP/SDE(+)

■ NoordzeeWind (50%)	108
■ Princess Alexia	122
■ Slufterdam	29
■ Eemmeerdijk	17
■ Irene Vorrink	17
■ Jaap Rodenburg	17
■ Windpoort (40%) <sup>3</sup>	3
■ Hoofdplaatpolder (70%)	10
■ Reyndersweg (50%)	9
■ Echteld	8
■ De Bijrmen	6
■ Oom Kees (12%)	6
■ Oudendijk	5
■ Mariapolder	5
■ Hiddum Houw	4
■ Eemshaven	6
■ Velsen	2
■ Enkhuizen	2
■ Decentral Solar installations	0

**Installed capacity (MW) 375**

<sup>1</sup> Capacity in operation: total capacity of the wind farms that Vattenfall has an ownership in.

Minority shares included as 100%

<sup>2</sup> Horns Rev 3 commissioning ongoing, as per Q3 2019 45 turbines operational

<sup>3</sup> Windpoort is in the process of being decommissioned

# Pipeline of key wind farms in our 5 core countries

## Construction

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Ownership (%)	Commissioning	Current status
DK	Horns Rev 3	407	FIT	X	50,000hrs	100	2019	Finalising construction
DK	Kriegers Flak	605	FIT	X	50,000hrs	100	2021	Under construction
NL	Wieringermeer	185	SDE+	X	15 yrs	100	2019/2020	Under construction
NL	Wieringermeer ext.	118	SDE+	X	15 yrs	100	2020	Under construction
NL	Moerdijk	27	SDE+	X	15 yrs	100	2020	Under construction
NL	Haringvliet	22	SDE+	X	15 yrs	100	2020	Under construction
NL	Nieuwe Hemweg	19	SDE+	X	15 yrs	100	2020	Under construction
SE	Blakliden + Fäbodberget	353	Certs	N/A	-	30	2021/2022	Under construction

**Total 1,736 MW**

## Development

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Ownership (%)	Commissioning	Current status
UK	South Kyle	~200	-	N/A	-	100	2022	Procurement
NL	Jaap Rodenburg	~34	SDE+	X	15 yrs	100	2022	Procurement
DK	NK II	~150	-	N/A	-	100	2021	Permitting phase
DK	Nørre Økse Sø	~50	-	N/A	-	80%	2021	Permitting phase
NL	Hollandse Kust Zuid 1-4	~1,500	-	X	-	100	2022/2023	Procurement
DK	Vesterhav projects	344	FIT	X	50,000hrs	100	2023	Consenting
UK	Thanet Extension	272	CFD		15 yrs	100	2025	Early planning, application for a Development Consent Order submitted
UK	Norfolk Vanguard	1,800	CFD		15 yrs	100	2028	Early planning, application for a Development Consent Order submitted
UK	Norfolk Boreas	1,800	CFD		15 yrs	100	2028	Early planning, application for a Development Consent Order submitted

**Total  
>5GW**

Offshore  
Onshore

# Solar & batteries

Large scale solar & batteries pipeline under construction

	Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Ownership (%)	Commissioning	Current status
Large Scale Solar	NL	PV@Heat	10	SDE+	X	15 full-load yrs	100	2018 / 2019	Finalization / Handover to O&M
	NL	Coevorden	6.5	SDE+	X	15 full-load yrs	100	2019	Construction phase
	NL	Haringvliet	37.9	SDE+	X	15 full-load yrs	100	2020	Pre-construction phase
				<b>Total 54.4 MW</b>					
Decentral solar Commissioned	DE	Tenant electricity/ Mieterstrom	0.9	EEG (small scale)	X	20 years	100	2018 / 2019	Program finalized
	DE	PV@VF sites	1.1	EEG (small scale)	X	20 years	100	2019	Program finalized
	DE	B2B customers – direct sale	0.4	EEG / own consumption	X	20 years	0	2019	Program finalized
	NL	B2B customers – direct sale / Leasing	5.7	SDE+		15 Full-load yrs	0	2019	
				<b>Total 8.1 MW</b>					
Decentral solar Construction	DE	PV@VF sites	6.7	EEG	X	20 years	100	2020	
	NL	Direct sale	7.3	SDE+	X	15 Full-load yrs	0	2019	
				<b>Total 13.0 MW</b>					

# Solar & batteries

Large scale solar & batteries pipeline under construction

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Ownership (%)	Commissioning	Current status
DE	NEW 4.0	1	Funding in R&D operation and FCR	Weekly for PFC	1-3 yrs funding 4-15 yrs FCR	100	2018	Operating
DE	Jungheinrich	1	No support scheme → Peak shaving			100	2018	Operating
SWE	Åre	1	No support scheme → Peak shaving			0	2019	Operating
UK	Battery @ PyC	22	EFR and CM	X	1-4 yrs EFR 5-15 CM	100	2019	Operating
NL	Battery @ Alexia	3	FCR	weekly	15 years	100	2019	Commissioning phase
DE	Hafenbatterie	1	Cooperation with BMW and Bosch, FCR	weekly		100	2019	Commissioning phase
SWE	Networks	1	No support scheme			0	2019	Contracts signed
NL	E-Mobility	0.25	No support scheme			0	2019	Contracts signed
DE	Ingredion	0.5	No support scheme → Peak shaving			0	2019	Contracts signed
NL	Battery @ Haringvliet	12	FCR			100	2020	Contracts signed

**Total 42.5 MW**

PFC – Primary Frequency Control

FCR - Frequency Response Regulation

CM – Capacity Mechanism

EFR – Enhanced Frequency response