Vattenfall 9M and Q3 Results 2018

30 October 2018

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VATTENFALL

Vattenfall 9M and Q3 Results 2018

Opening remarks

- Short term volatility with big swings in markets for fuel, CO_2 and electricity
- Several events related to expansion in renewables and sales that support our strategic direction

- Stable earnings performance - Underlying operating profit (EBIT) decreased by SEK 0.7 bn to SEK 15.3 bn, although excluding one-off items in Heat (SEK 0.8 bn), group results are in line with last year
  - Higher costs for fuels and CO_2 in Heat compensated by increased contribution from Wind
  - Limited impact from higher electricity prices in Power Generation due to hedges
  - Increase in customer sales of electricity and gas

- A lowering of Sweden's corporate tax rate and a revaluation of the holdings in the Swedish Nuclear Waste fund supported an increase in profit for the period by SEK 2.2 bn to SEK 8.9 bn

- Decision by the city of Hamburg to buy back Vattenfall's share (74.9%) in the district heating system

- New regulation for Swedish distribution 2020-2023

Vattenfall 9M Results 2018

Overview

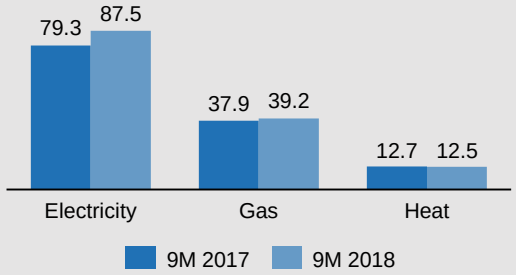
Result development

SEK bn	9M 2018	9M 2017	Δ
Net Sales	108.8	96.8	+12%
EBITDA	25.7	24.4	+5%
Underlying operating profit (EBIT)	15.3	16.0	-4%
EBIT	13.4	12.6	+6%
Profit for the period	8.9	6.7	+33%

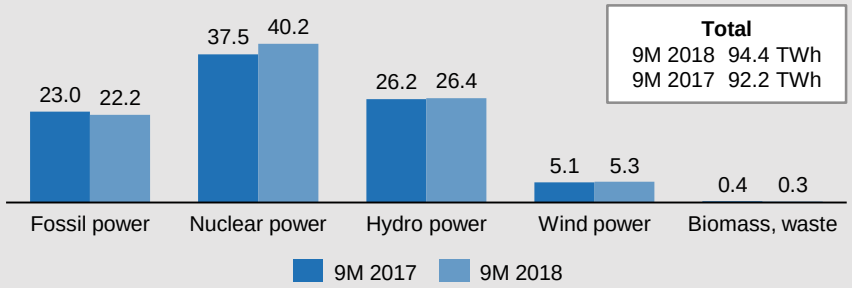
Financial targets

	9M 2018	9M 2017
Return on capital employed[1] (≥8%)	7.9	4.2
FFO/adjusted net debt[1] (22-27%)	20.6	24.1

Customer sales (TWh)



Electricity production (TWh)



[1] Last 12-month values

Customers & Solutions

Strong sales development and market expansion

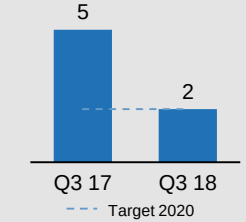
Highlights – 9M 2018

SEK bn	9M 2018	9M 2017
Net Sales	57,790	48,803
Underlying operating profit	1,159	1,246

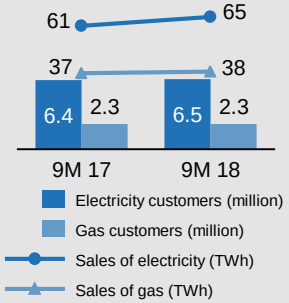
- Increase in net sales supported by increased wholesale prices and FX effects. Volume and customer growth in B2B Nordic and FR as well as B2C UK (iSupplyEnergy) and DE
- Slight decrease in underlying operating profit mainly due to UK market expansion and higher operating costs related to smarter customer relations, digitalisation and new businesses
- Vattenfall enters the French retail market
- Long-term agreement with Novo Nordisk and Novozymes on supply of renewable electricity from the Kriegers Flak wind farm
- New e-mobility partnerships in the Netherlands (McDonald's) and Sweden (real estate companies Diös and Klövern)

Key data

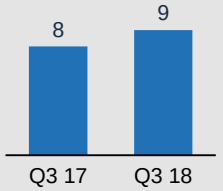
Net Promoter Score[1] (NPS) relative to peers

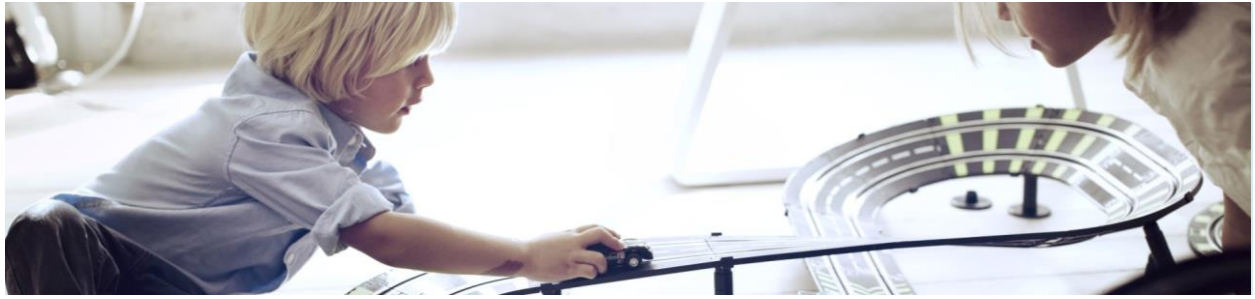


Retail sales development



Charging points for electric vehicles (thousand)





[1] The target is a positive NPS in absolute terms and +2 compared to Vattenfall's peer competitors to be achieved by 2020. The development from +5 to +2 means that Vattenfall continues to improve and is still ahead of peers who have been catching up.

Power Generation

Hedges still limiting positive contribution from higher price levels

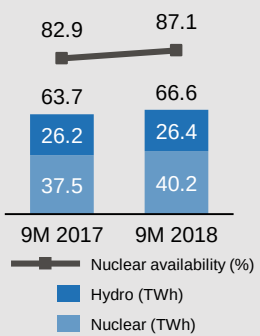
Highlights – 9M 2018

SEK bn	9M 2018	9M 2017
Net Sales	67,475	56,439
Underlying operating profit	8,475	8,139

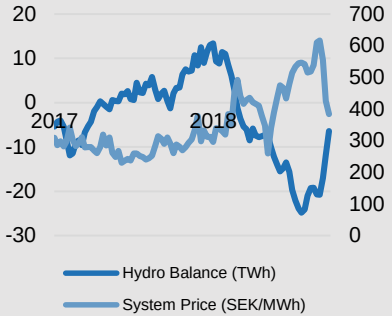
- Net sales and the underlying operating profit increased mainly due to
  - i. strong nuclear availability & generation and prolonged Ringhals 1 outage in 2017
  - ii. higher prices achieved in the Nordic countries
  - iii. abolished nuclear capacity tax and lower property tax for hydro (+SEK 1.8 billion)
- Stable hydro generation although decrease in third quarter due to low water inflows (hydro balance now back to normal)
- Hedges limiting impact of higher prices
- PPA for renewable wind power and balancing services for Aquila Capital's Kråktorpet wind farm in Sweden

Key data

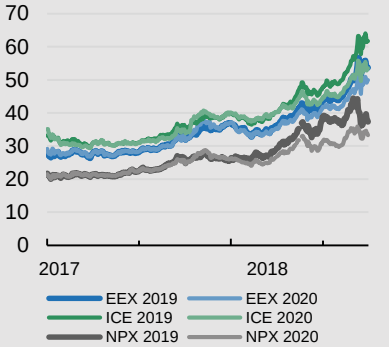
Production and availability



Nordic hydro balance and system price



Electricity futures prices (EUR/MWh)



Wind

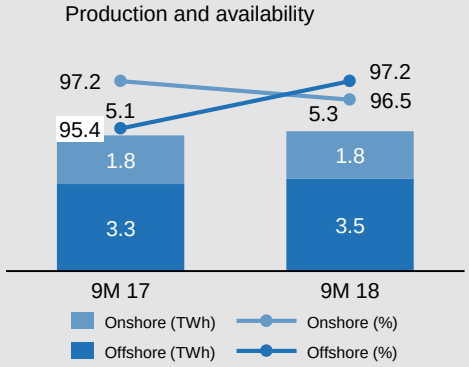
Positive earnings development and continued growth in installed capacity

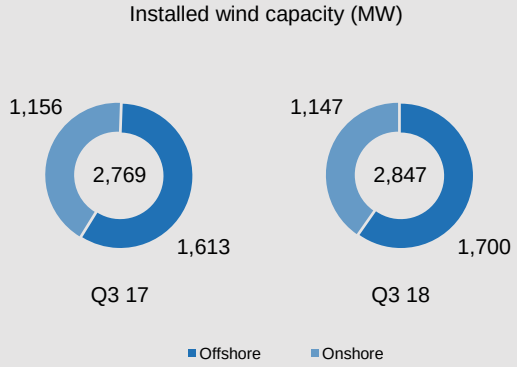
Highlights – 9M 2018

SEK bn	9M 2018	9M 2017
Net Sales	7,839	6,140
Underlying operating profit	1,902	752

- Net sales and the underlying operating profit increased as a result positive price and FX effects and additional capacity[1]
- Electricity generation increased slightly mainly due to additional capacity, partly offset by lower wind speeds, as well as grid outages and cable issues in Q3 2017
- Inauguration of the European Offshore Wind Deployment Centre, Aberdeen Bay in the UK (97 MW)
- Acquisition of the onshore wind power project Klevberget (125 MW) in Sweden
- Acquisition of two solar projects in the NL[2]

Key data





[1] Vattenfall's latest capacity additions include European Offshore Wind Deployment Centre, Aberdeen Bay (97 MW), Ray (54 MW), Pen y Cymoedd (228 MW) and Sandbank (288 MW)
[2] Coevorden (6.5 MW) and Gasseternijveen (4.0 MW)

Heat

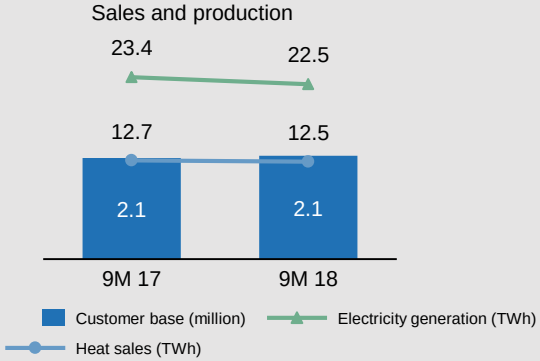
- Continued earnings pressure from higher costs for fuels and CO_2 emissions
- The city of Hamburg to buy back Vattenfall's share in the district heating system

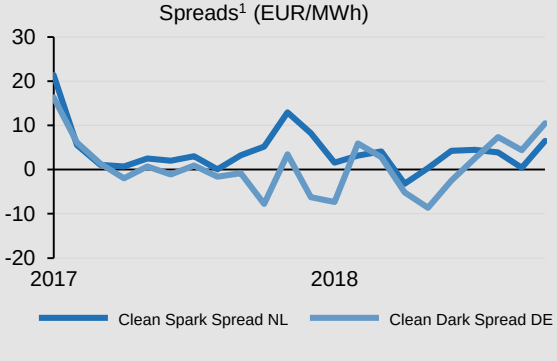
Highlights – 9M 2018

SEK bn	9M 2018	9M 2017
Net Sales	23,029	21,582
Underlying operating profit	260	2,397

- Increased net sales due to higher prices for electricity as well as positive currency effects
- Decrease in underlying operating profit[2] mainly due to deteriorated spreads with higher costs for gas and CO_2 emission allowances, resulting in lower electricity generation
- Reached CO_2 target in Berlin three years earlier than agreed
- The city of Hamburg to use its call option to buy back Vattenfall's 74.9% share in the district heating system for a contracted price of EUR 625 million by 1 January 2019 (next slide)

Key data





[1] CSS NL with 50% efficiency, CDS DE with 38% efficiency
[2] One-off items of about SEK 800 million in 2017, partly related to lower subsidies for gas-fired CHP plants in Germany

The City of Hamburg to buy back the district heating system

Vattenfall will need to let go of an asset with attractive long term potential, but is also increasing short term capacity for continued investments in a fossil-free future

The decision followed a majority voting for municipal ownership and a constructive dialogue with the city

- Referendum in 2013 with a majority vote in favour of regaining municipal ownership of the Hamburg gas, electricity and heat networks
- Vattenfall sold the electricity network to the City's holding company HGV and granted HGV a call option regarding the remaining 74.9% shares in the Hamburg heat business (HGV has been holding 25.1% since 2012)
- The contracted minimum price is EUR 950 mn (100%, equity value) and the actual payment will be EUR 625 mn for the 74.9% share
- Whilst Vattenfall would have liked to continue the partnership, we respect the decision by the City
- Returns and risks of the business are for the account of the City as from 1 January 2019
- Closing of the transaction likely in the course of 2019
- The transaction affects a total of around 700 FTEs[1]

The transaction target in brief

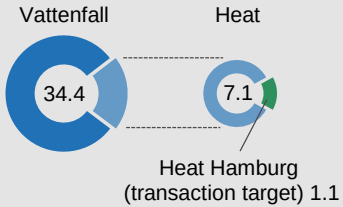
- Heating network (840 km, ~480k households)
- Wedel coal-fired CHP (350MW el, 420MW th)
- Tiefstack coal- and gas fired CHPs (310MW el, 780MW th)
- Haferweg gas/oil fired peak load (340 MW th)
- Other heating assets (total 110 MW th)

n.b. Moorburg CHP not part of the target

- ~EUR 200mn debt will go with the sale (mainly related to pensions)

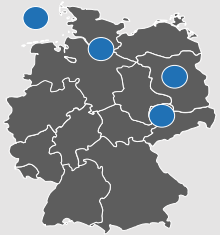
EBITDA in 2017 was 16% of Heat and 3% of Group

(SEK bn)



Core business activities and development in Germany will continue to be key for Vattenfall

- Wind - 655 MW installed capacity as well as a growing pipeline of solar and batteries
- Distribution network Berlin (34,710km, 2.3 million customers)
- District Heating Berlin (~1.3 million households)
- Sales Germany – 3.1 million electricity customers, 0.5 million gas customers
- Hydro power (pumped storage) – 2.9 GW installed capacity
- Trading



[1] Corrected since press release 2018-10-10

Distribution

Stable result development and continued work on grid improvements and new connections

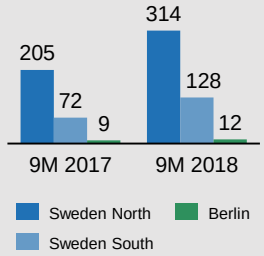
Highlights – 9M 2018

SEK bn	9M 2018	9M 2017
Net Sales	16,285	15,660
Underlying operating profit	4,530	4,442

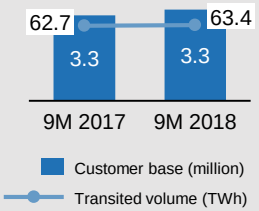
- Increase in net sales mainly owing to higher network tariffs and higher volumes in SE and positive currency effects for DE, partly offset by lower prices following lower costs from the transmission system operator in DE (TSO)
- Slight increase in underlying operating profit, mainly due to positive price and volume effects in Sweden, partly offset by higher operating expenses
- Increase in investments by 19% 9M 18 vs. 17
- Investments in more reliable electricity supply on the island of Gotland, SE
- EU CoordiNet project start for smarter use of the electricity grid
- Announcement of legislation for new revenue regulation 2020-2023 (next slide)

Key data

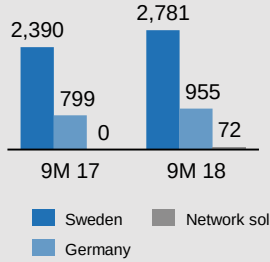
Service level (SAIDI, min)[1]



Customers and volumes



Investments (SEK mn)



[1] City grid in Berlin results in lower SAIDI. Vattenfall's Swedish grid covers both urban areas and large rural areas. SE North negatively impacted by more weather related outages and planned outages in 2018.

New revenue regulation for Swedish distribution

Significantly lower revenue frames for 2020-2023 in spite of major investment needs

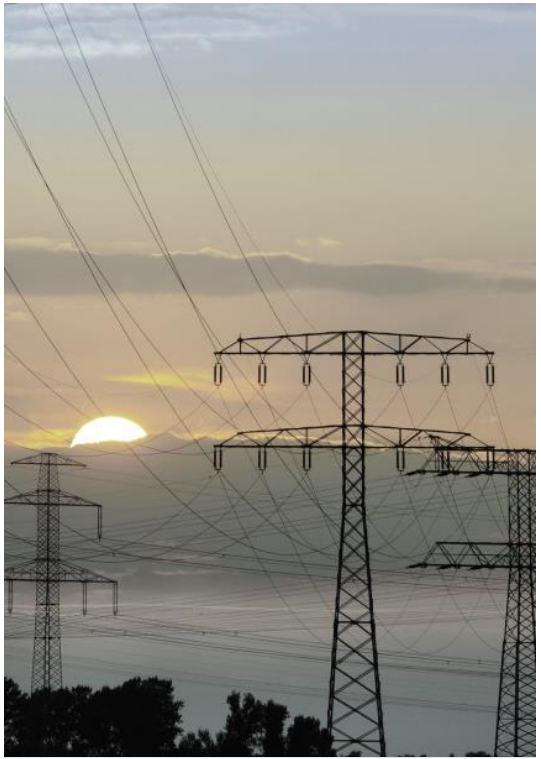
New regulation in brief

The Swedish Government announced a new regulation[1] on the revenue frames for distribution companies with effect as of the next regulatory period (2020-2023)

- Best estimate is a WACC of ~3% (compared to 5.85% in the current regulation period 2016-2019)
- The “38 Year Rule” (transition rule) is removed
- Multiple depreciation times compared to today’s two types, 10 and 40 years, are set out in the new regulation
- The new revenue frames together with decided parameters will be published during autumn 2019. Remaining parameters:
  - Efficiency requirement (Opex)
  - Quality requirement (SAIDI)
  - Risk premium

Decrease in future revenues and negative impact for customers

- Based on the current description of the new regulation, we estimate a negative annual revenue impact of > SEK 1 bn in a normalized theoretical scenario
- Although many of the investments are legally mandatory, the investment plan will be scrutinised and reduced where possible
- The new regulation will result in longer lead times and a strict prioritization between projects
- Significant economical challenges to continue future-proofing the grid for electrification, growth and increased renewables
- Increased risk for reduced quality on the regional grid



[1] https://svenskforfattningssamling.se/sites/default/files/sfs/2018-08/SFS2018-1520.pdf (in Swedish)

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Financials

Anna Borg, CFO

Vattenfall 9M Results 2018

Financial highlights

Key data

SEK bn	9M 2018	9M 2017
Net Sales	108.8	96.8
EBITDA	25.7	24.4
Underlying operating profit (EBIT)	15.3	16.0
EBIT	13.4	12.6
Profit for the period	8.9	6.7
Funds from Operations (FFO)	16.0	20.1
Cash flow operating activities	35.3	21.2
Net debt	42.4	56.8
Adjusted net debt	109.3	113.3
Adjusted net debt/EBITDA (times) [1]	3.1	4.1
Financial targets		
ROCE (≥8%) [1]	7.9	4.2
FFO/adjusted net debt (22-27%) [1]	20.6	24.1

Key developments

- Profit for the period increased by SEK 2.2 bn to SEK 8.9 bn
- Net sales increased by SEK 12.0 bn to SEK 108.8 bn due to increased sales volumes in the Nordics, France and UK, increased customer base in Germany and higher prices in the Nordics and Netherlands
- Underlying EBIT decreased by SEK 0.7 bn mainly due to pressured margins in Heat which was partly compensated by higher contribution from Wind
- ROCE at 7.9%. Improvement mainly related to higher nuclear provisions and impairments in 2017
- FFO/Adjusted net debt at 20.6%. Lower FFO mainly due to higher taxes paid and a one-off operational tax refund for nuclear DE in 2017

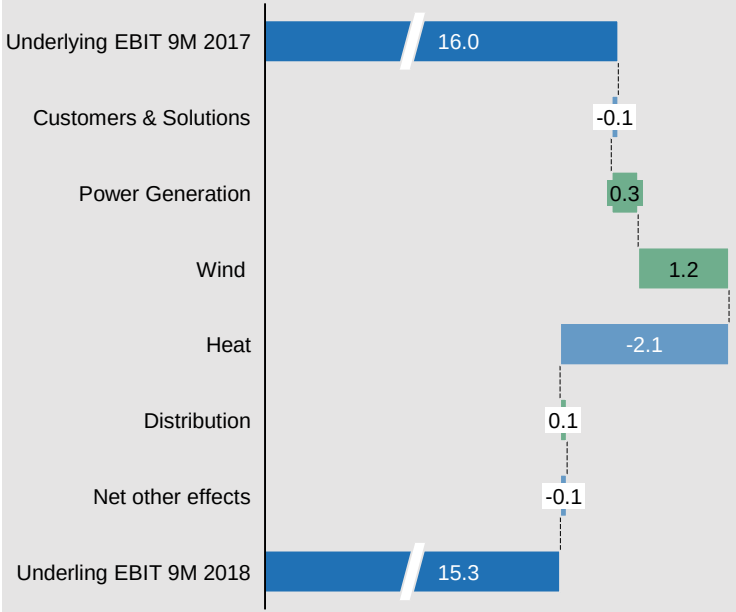
[1] Last 12-month values
[2] As of December 2017

Development of underlying EBIT 9M 2018

- Decrease in Heat partly offset by increase in Wind
- Neutral result development excluding one-off items in Heat

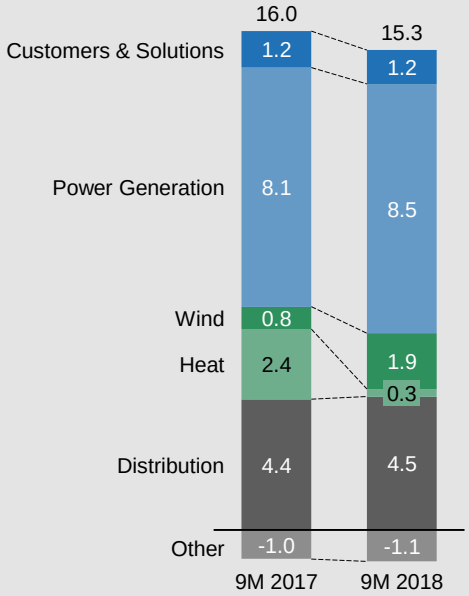
Change in 9M 2018 vs. 9M 2017

SEK bn



Breakdown per operating segment

SEK bn

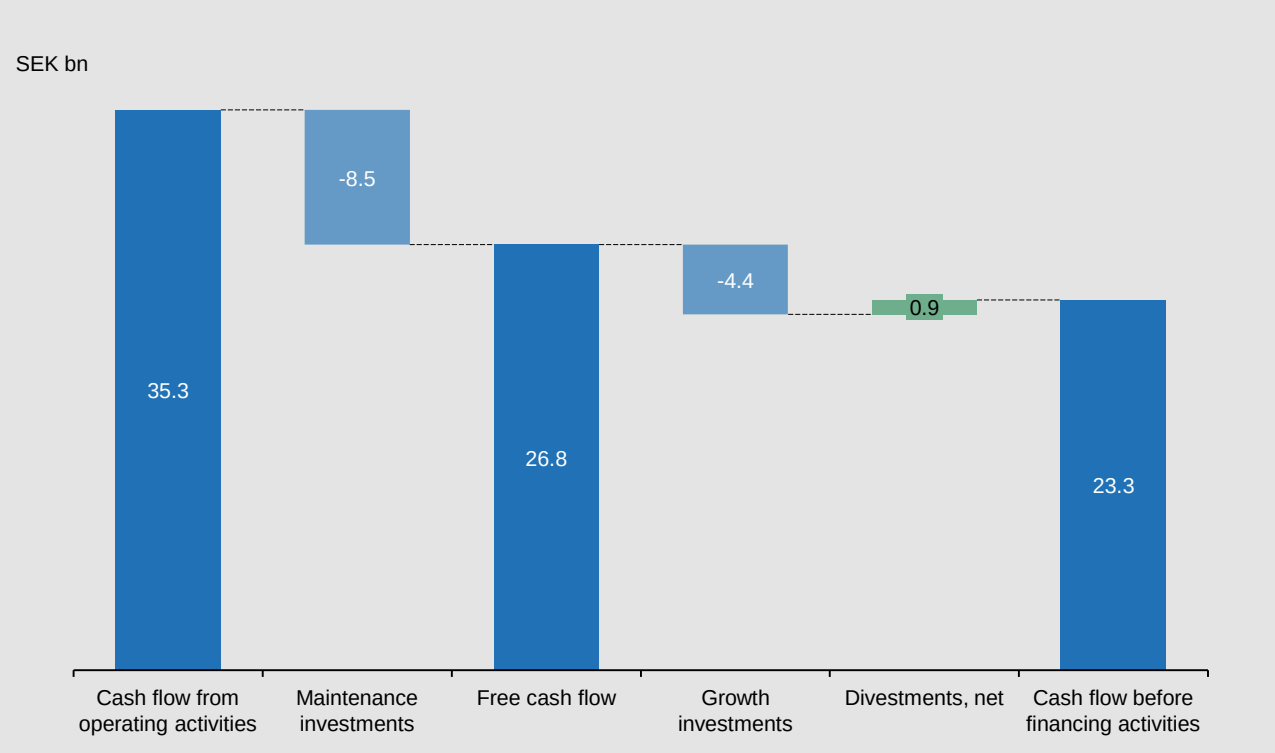


Highlights

- Customers & Solutions: increased net sales offset by higher operating expenses and UK expansion
- Power Generation: higher nuclear generation, higher prices and abolished nuclear capacity tax as well as lower property tax hydro partly offset by lower hydro generation. Hedges limiting positive impact from higher prices.
- Wind: higher prices, currency effects and new capacity
- Heat: deteriorated spreads (higher costs for fuels and certificates), resulting in lower electricity generation. Further impacted by one-off items (~SEK 800 mn) partly related to lower CHP subsidies
- Distribution: positive price and volume effects in Sweden, partially offset by higher operating expenses and depreciation

Cash flow development 9M 2018

Operating cash flow financing investments with significant margin



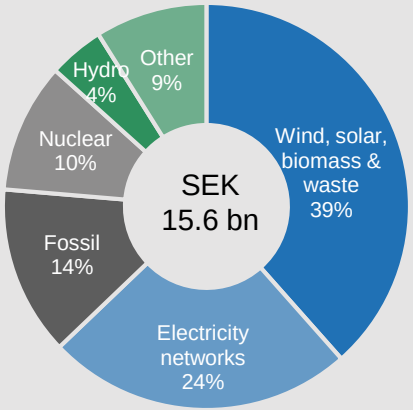
Highlights

- Cash flow from operating activities at SEK 35.3 bn. Positive impact from change in working capital by SEK 19.3 bn, mainly attributable to changes in margin calls and net changes in operating receivables/liabilities for Customers & Solutions and Heat following typical seasonality pattern
- Cash flow before financing activities at a high level, also supported by the positive impact from change in working capital
- Growth investments mainly in wind

Capital expenditures

>60% of investments in the first 9 months directed to renewables and networks

Investments per category, 9M 2018



Detailed overview of investments, 9M and Q3 2018

SEK bn	9M 2018	9M 2017	Δ	Q3 2018	Q3 2017	Δ
Hydro	0.7	0.7	-7%	0.3	0.2	+4%
Nuclear	1.6	1.3	+29%	0.6	0.4	+30%
Fossil[1]	2.1	1.0	+105%	0.8	0.2	+267%
Wind, solar, biomass & waste	6.0	3.8	+60%	3.3	1.1	+209%
Electricity networks	3.8	3.2	+19%	1.4	1.1	+18%
Other	1.4	3.1	-55%	0.7	1.8	-62%
Total	**15.6**	**13.1**		**7.0**	**5.0**	

[1] Investments mainly related to coal to gas transition; Marzahn gas-fired CHP, Reuter heat-only boiler, Lichterfelde gas-fired CHP (updated to a more efficient and environmental compatible combined cycle gas turbine)

Overview of key figures 9M and Q3 2018

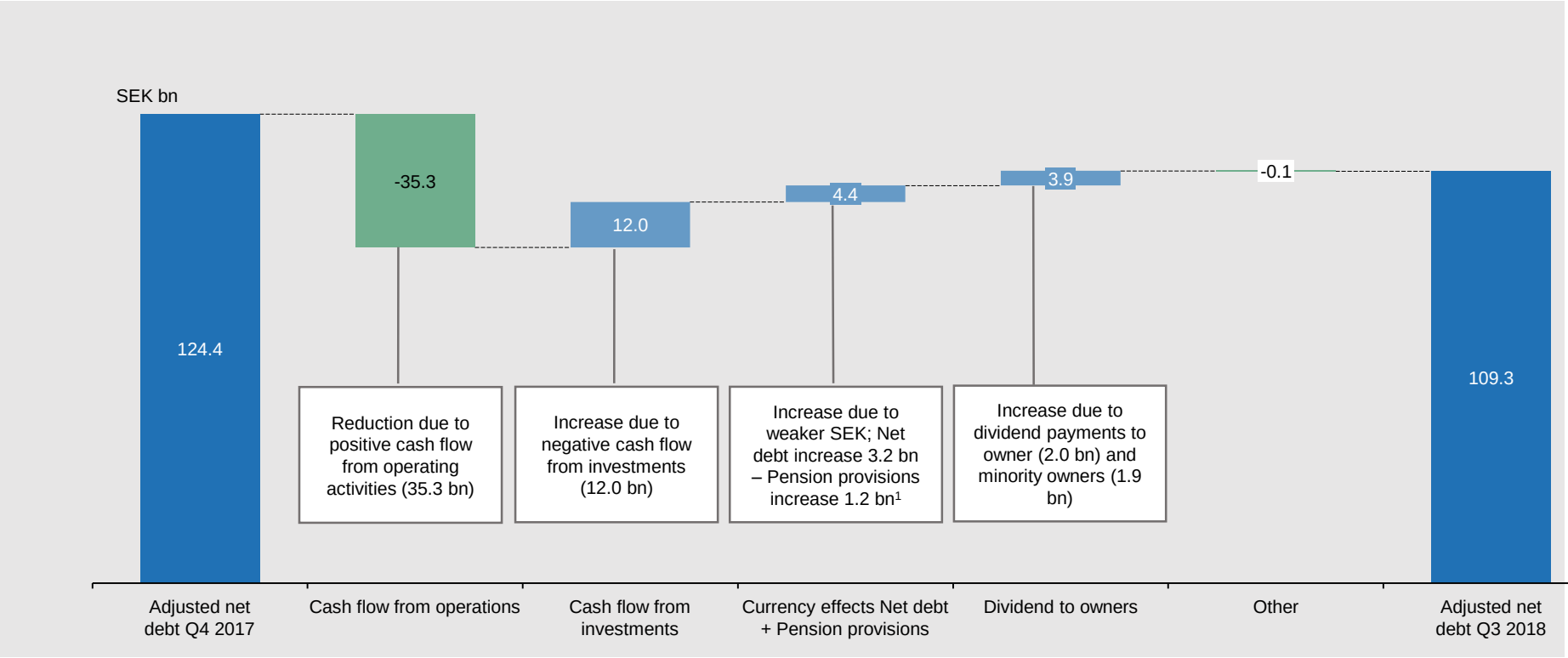
Amounts in SEK bn unless indicated otherwise	9M 2018	9M 2017	Q3 2018	Q3 2017
Net sales	108.8	96.8	32.5	27.4
EBITDA	25.7	24.4	7.9	5.9
EBIT	13.4	12.6	3.7	2.1
Underlying operating profit (EBIT)	15.3	16.0	2.1	2.8
Profit for the period	8.9	6.7	1.8	0.7
Electricity generation (TWh)	94.4	92.2	27.8	27.3
Sales of electricity (TWh)	124.1	113.6	38.1	33.9
- of which, customer sales (TWh)	87.5	79.3	26.8	22.9
Sales of heat (TWh)	12.5	12.7	1.9	1.9
Sales of gas (TWh)	39.2	37.9	5.3	5.9
Return on capital employed (≥8%)[1]	7.9	4.2	7.9	4.2
FFO/adjusted net debt (22-27%)[1]	20.6	24.1	20.6	24.1

[1] Last 12-month values

Appendix

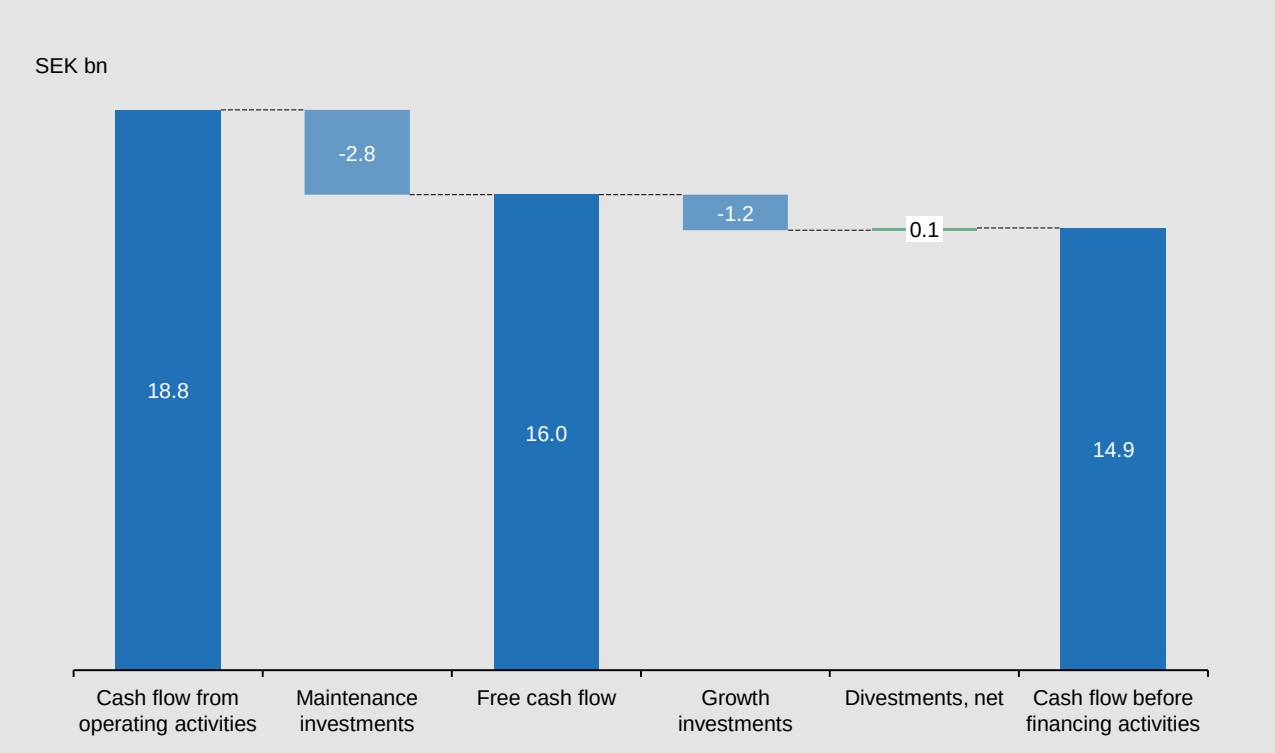
Development of adjusted net debt YTD 2018

Adjusted net debt reduction due to positive cash flow from operating activities



[1] SEK weakened against EUR (from 9.84 to 10.31); translation of EUR denominated net debt and pension provisions into SEK leads to increase in Adjusted net debt

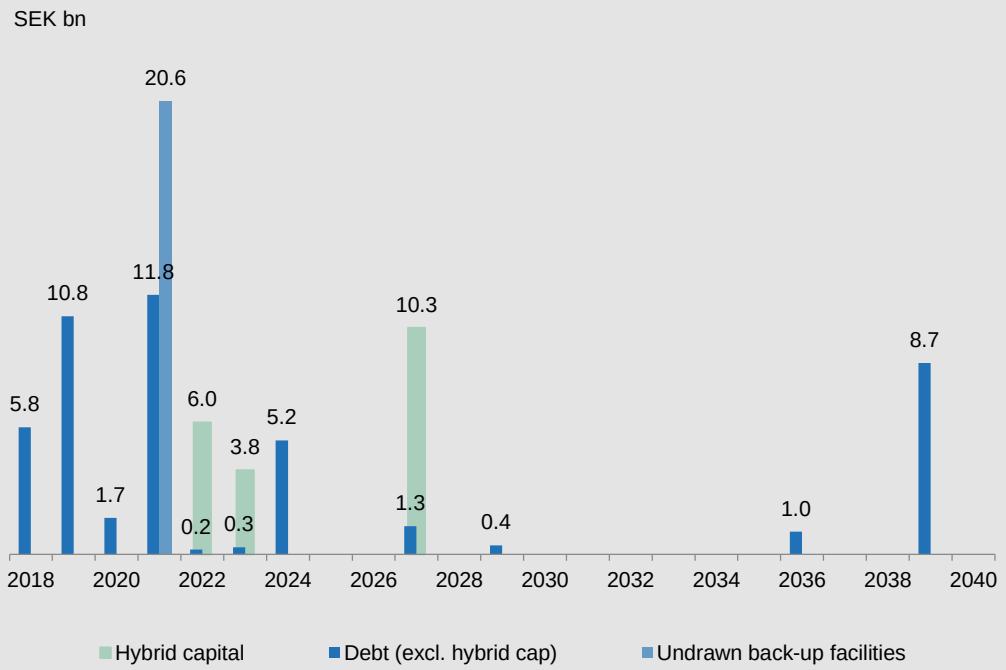
Cash flow development Q3 2018



Highlights

- Cash flow from operating activities at SEK 18.8 bn, change in working capital had a positive impact by SEK 15.6 bn mainly attributable to changes in margin calls and cash development of net receivables/liabilities in the Customers & Solutions and Heat operating segments following seasonal patterns

Debt maturity profile[1]



	30 Sep. 2018	31 Dec. 2017
Duration (years)	4.4	4.3
Average time to maturity (years)	6.6	6.9
Average interest rate (%)	4.4	4.4
Net debt (SEK bn)	42.4	59.3
Available group liquidity (MSEK)	34.0	19.9
Undrawn committed credit facilities (MSEK)	20.6	19.7

Cumulative maturities excl. undrawn back-up facilities

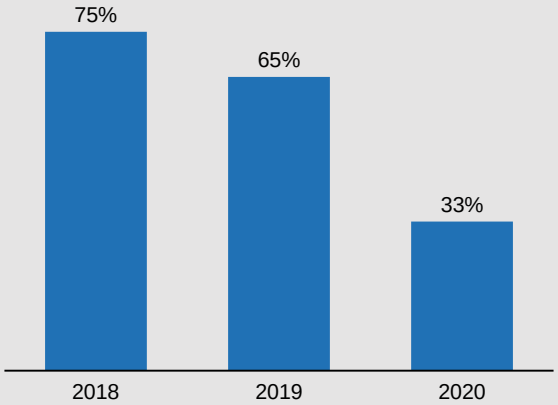
	2018-2020	2021-2023	From 2024
Debt incl. hybrid capital	18.3	22.2	27.0
% of total	*27%*	*33%*	*40%*

[1] 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

Price hedging

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[1] hedge ratio (%) and indicative prices



Average indicative Nordic hedge prices in EUR/MWh

2018	2019	2020
27	28	30

Sensitivity analysis – Continental[2] portfolio

Market quoted	**+/- 10% price impact on future profit before tax, MSEK[3]**			
	2019	**2020**	**2021**	**Observed yearly volatility**
Electricity	+/- 2,147	+/- 1,909	+/- 1,863	19% - 22%
Coal	-/+ 464	-/+ 386	-/+ 325	21% - 26%
Gas	-/+ 1,009	-/+ 906	-/+ 815	14% - 18%
CO_2	-/+ 454	-/+ 514	-/+ 553	41% - 47%

[1] Nordic: SE, DK, NO, FI
[2] Continental: GE, NL, UK
[3] The denotation +/- entails that a higher price affects operating profit favorably, and -/+ vice versa

Continued strong liquidity position

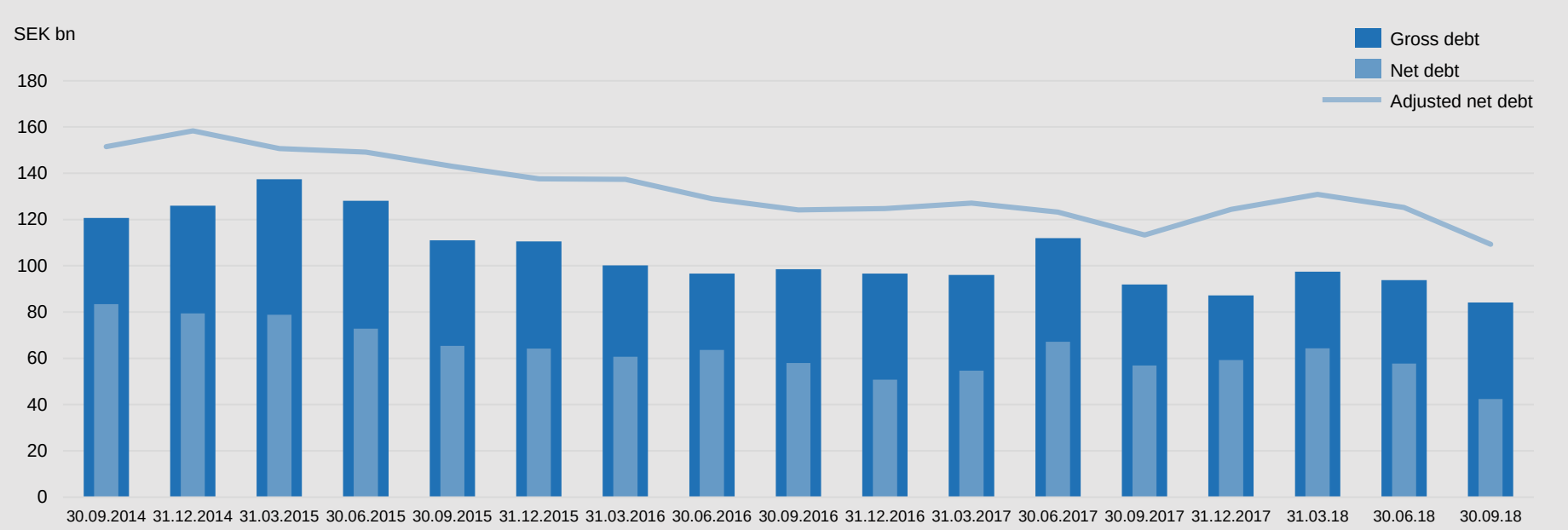
Group liquidity	SEK bn
Cash and cash equivalents	19.7
Short term investments	21.5
Reported cash, cash equivalents & short term investments	**41.2**
Unavailable liquidity[1]	-7.2
Available liquidity	**34.0**

Committed credit facilities	Facility size, EUR bn	SEK bn
RCF (maturity Dec 2021)	2.0	20.6
Total undrawn		20.6

Debt maturities[2]	SEK bn
Within 90 days	5.8
Within 180 days	12.7

[1] German nuclear ”Solidarvereinbarung” 3.7 SEK bn, Margin calls paid (CSA) 2.6 SEK bn, Insurance “Provisions for claims outstanding” 0.9 SEK bn
[2] Excluding loans from minority owners and associated companies

Debt development

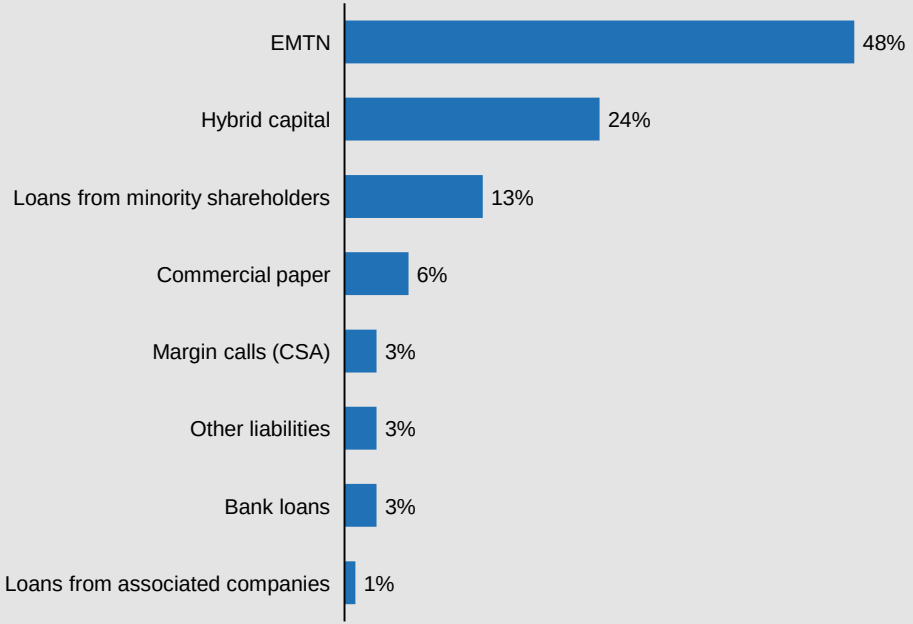


Net debt improved by SEK 16.9 bn compared with the level at 31 Dec. 2017. Adjusted net debt decreased by SEK 15.1 bn to SEK 109.3 bn at 30 September 2018. For the calculation of adjusted net debt, see slide 25.

Breakdown of gross debt

Total debt: SEK 84.2 bn (EUR 8.2 bn)

External market debt: SEK 73.1 bn (EUR 7.1 bn)



Debt issuing programmes	Size (EUR bn)	Utilization (EUR bn)
EUR 10bn Euro MTN	10.0	3.7
EUR 2bn Euro CP	2.0	0.8
SEK 15bn Domestic CP	1.5	0.0
Total	13.5	4.5

- 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

[1] EMTN= Euro Medium Term Notes

Reported and adjusted net debt

Reported net debt (SEK bn)	301 Sep. 2018	31 Dec. 2017
Hybrid capital	-19.9	-19.1
Bond issues and commercial papers and liabilities to credit institutions	-47.8	-52.1
Liabilities to associated companies	-0.5	-0.5
Liabilities to minority shareholders	-10.6	-10.4
Other liabilities	-5.4	-5.1
Total interest-bearing liabilities	**-84.2**	**-87.2**
Reported cash, cash equivalents & short-term investments	41.2	26.9
Loans to minority owners of foreign subsidiaries	0.6	1.0
Net debt	**-42.4**	**-59.3**

Adjusted net debt (SEK bn)	30 Sep. 2018	31 Dec. 2017
Total interest-bearing liabilities	-84.2	-87.2
50% of Hybrid capital	9.9	9.6
Present value of pension obligations	-43.2	-42.0
Wind & other environmental provisions	-7.1	-6.5
Provisions for nuclear power (net)	-31.1	-30.7
Margin calls received	2.9	3.3
Liabilities to minority owners due to consortium agreements	9.4	9.2
= Adjusted gross debt	**-143.3**	**-144.3**
Reported cash, cash equivalents & short-term investments	41.2	26.9
Unavailable liquidity	-7.2	-7.0
= Adjusted cash, cash equivalents & short-term investments	**34.0**	**19.9**
= Adjusted net debt	**-109.3**	**-124.4**

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	**Total Ringhals: 30.5**	**Total Ringhals: 30.5[1]**	
Forsmark 1	984	1980	66.0			
Forsmark 2	1,120	1981	66.0			
Forsmark 3	1,170	1985	66.0	**Total Forsmark: 26.1**	**Total Forsmark: 17.2**	
Total Sweden	**6,974**	**-**		**56.9[2]**	**48.0[2]**	**35.2[3]**
Brunsbüttel	771	1977	66.7	11.6	7.8	
Brokdorf	1,410	1986	20.0	0	3.1	
Krümmel	1,346	1984	50.0	6.9	6.9	
Stade[4]	640	1972	33.3	0	1.0	
Total Germany	**4,167**	**-**	**-**	**18.5**	**18.8**	
Total SE & DE	**11,141**			**75.4**	**66.7**	

[1] Vattenfall is 100% liability of Ringhals decommissioning, while owning only 70.4%
[2] Total provisions in Sweden (IFRS accounting) include provisions of SEK 0.2 bn related to Ågesta
[3] Vattenfall's share of the Nuclear Waste Fund. IFRS consolidated value is SEK 41.9 bn.
[4] Stade is being dismantled

Impairment history 2009 – 9M 2018

SEK bn		2009	2010	2011	2012	2013	2014	2015	2016	2017	9M 2018	Total
The Netherlands	Thermal assets		4.3[1]	0.4[2]	8.6[2]	14.7	2.6		2.8			33.4
	Trading					6.5[1]	10.0[1]		0.7			17.2
	Other	1.2	1.2			1.5[2]	1.9					5.8
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
Impairments		**5.5**	**11.1**	**11.3**	**12.3**	**30.1**	**23.8**	**36.8**	**33.8**	**0.4**	**0.0**	**165.1**
Reversed impairment losses		-1.3	-1.3	-0.4	0.0	0.0	0.0	-0.5	-0.9	0.0	0.0	-4.4
Impairments (net)		**4.2**	**9.8**	**10.9**	**12.3**	**30.1**	**23.8**	**36.3**	**32.9**	**0.4**	**0.0**	**160.7**

[1] Impairment of goodwill
[2] Impairment of assets and goodwill

Wind - Installed capacity (MW[1]) Q3 2018

	Onshore[2]	Offshore	Total
United Kingdom	396	687	1.083
Denmark	245	158	403
The Netherlands	241	108	349
Sweden	246	111	357
Germany	19	636	655
Total (MW)	**1.147**	**1.700**	**2.847**

United Kingdom – ROC scheme	
Thanet	300
Ormonde (51%)	150
EOWDC[3]	97
Kentish Flats	90
Kentish Flats Extension	50
Pen Y Cymoedd	228
Ray	54
Edinbane	41
Clashindarroch	37
Swinford	22
Parc Cynog incl. Solar[2]	9
Pendine	5
Installed capacity (MW)	**1.083**

Sweden – certificate scheme	
Lillgrund	111
Stor-Rotliden	78
Högabjär-Kärsås (50%)	38
Höge Väg (50%)	38
Hjuleberg (50%)	36
Juktan (50%)	29
Östra Herrestad	16
Näsudden	11
Installed capacity (MW)	**357**

Denmark – FIT scheme	
Horns Rev 1 (60%)	158
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
Vellingmærsk	1
Installed capacity (MW)	**403**

Germany – EEG scheme	
DanTysk (51%)	288
Sandbank (51%)	288
alpha ventus (26%)	60
Jänschwalde	12
Westküste (20%)	7
Installed capacity (MW)	**655**

The Netherlands – MEP/SDE(+)	
NoordzeeWind (50%)	108
Princess Alexia	122
Eemmeerdijk	17
Irene Vorrink	17
Jaap Rodenburg	17
Windpoort (40%)	13
Hoofdplaatpolder (70%)	10
Reyndersweg (50%)	9
Echteld	8
De Bjirmen	6
Oom Kees (12%)	6
Oudendijk	5
Mariapolder	5
Hiddum Houw	4
Enkhuizen	2
Installed capacity (MW)	**349**

[1] Capacity in operation: total capacity of the wind farms that Vattenfall has an ownership in. Minority shares included as 100%
[2] 5 MW Solar
[3] EOWDC – European Offshore Development Centre (Aberdeen Bay)

Pipeline of key wind farms in our 5 core countries

Construction

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Com-missioning	Current status
DK	Horns Rev 3	406	FIT	X	50.000hrs	100	2019	Under construction
NL	Slufterdam	29	SDE+	X	15yrs	100	2019	Under construction
NL	Wieringermeer	180	SDE+	X	15yrs	100	2020	Under construction
NL	Wieringermeer	115	SDE+	X	15yrs	100	2020	Under construction
SE	Blakliden + Fäbodberget	353	Certs	N/A	15yrs	100	2021/2022	Under construction
		Total 1,083 MW						

Development

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Com-missioning	Current status
NL	Moerdijk	~27	SDE+	X	15 yrs	100	2020	Procurement
NL	Haringvliet	~22	SDE+	X	15 yrs	100	2020	Procurement
NL	Nieuwe Hemweg	~20	SDE+	X	15 yrs	100	2020	Procurement
UK	South Kyle	~200	-	N/A	-	100	2022	Procurement
DK	NK II	~120	-	N/A	-	100	2022	Permit application ongoing, subsidy bid expected Q1 2019
DK	Nørre Økse Sø	~50	-	N/A	-	80	2021	Permits received, subsidy bid Q4 2018
NL	Hollandse Kust Zuid 1 & 2	~700	-	X	-	100	2022	Permit irrevocable Q3-2018, preparing for procurement
DK	Danish Near Shore	344	FIT	X	50.000hrs	100	2020	Procurement
DK	Kriegers Flak	605	FIT	X	50.000hrs	100	2021	Procurement
UK	Thanet Extension	272	CFD		15 yrs	100	2024	Early planning, application for a Development Consent Order submitted
UK	Norfolk Vanguard	1.800	CFD		15 yrs	100	2027	Early planning, application for a Development Consent Order submitted
UK	Norfolk Boreas	1.800	CFD		15 yrs	100	2028	Concept/Early planning
		Total >6GW						

Offshore

Onshore

Solar & batteries

Large scale solar & batteries pipeline under construction

Large Scale Solar

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Commissioning	Current status
NL	Velsen	2.3	SDE+	X	15 full-load yrs	100	2018	In commissioning
NL	Eemshaven	5.5	SDE+	X	15 full-load yrs	100	2018	Construction started
NL	Hemweg	2.4	SDE+	X	15 full-load yrs	100	2018	Preparing for construction
		Total 10.2 MW						

Batteries

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Commissioning	Current status
UK	Battery @ PyC	22	EFR and CM	X	1-4 yrs EFR 5-15 CM	100	2018	In commissioning phase
NL	Battery @ Alexia	3	FCR	weekly	15 years	100	2018	In commissioning phase
DE	Hafenbatterie	1	Cooperation with BMW and Bosch, FCR	weekly		100	2018	In commissioning phase
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	In commissioning
DE	Decentral - Pilot project	1	No support scheme → Peak shaving			100	2018	In commissioning
		Total 28 MW						

PCR – Primary Control Reserve CM – Capacity Mechanism EFR – Enhanced Frequency response FCR - Frequency Response Regulation

Solar & batteries

Decentral solar installed capacity and pipeline

Decentral solar Commissioned

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Commissioning	Current status
DE	Tenant electricity/ Mieterstrom	0.27	EEG (small scale)	X	20 years	100	2018	FID / Framework agreement signed / BA Heat will be asset owner
DE	B2B customers – direct sale	0.1	EEG / own consumption	X	20 years	0	2018	
NL	B2B customers – direct sale / Leasing	0.5	SDE+		15 Full-load yrs	0	2018	
		Total 0.77 MW						

Decentral solar Construction

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Commissioning	Current status
DE	PV@VF sites	1.35	EEG (small scale)	X	20 years	100	2018	130kWp – in commissioning 1.1 MWp – Construction started 120kWp – Preparing for construction
DE	Tenant electricity/ Mieterstrom	0.59	EEG / Tenant electricity	X	20 years	100	2018	FID / Framework agreement signed / BA Heat will be asset owner
NL	B2B customers – direct sale / Leasing	0.9	SDE+		15 Full-load yrs	0	2018	Project KennermerVisgroep preparing for construction
NL	Direct sale	9	SDE+	X	15 Full-load yrs	0	2018 / 2019	Construction started
		Total 11.84 MW						