



Gunnar Groebler Head of Business Area Wind

Vattenfall Capital Markets Day, Solna, 19 September 2016

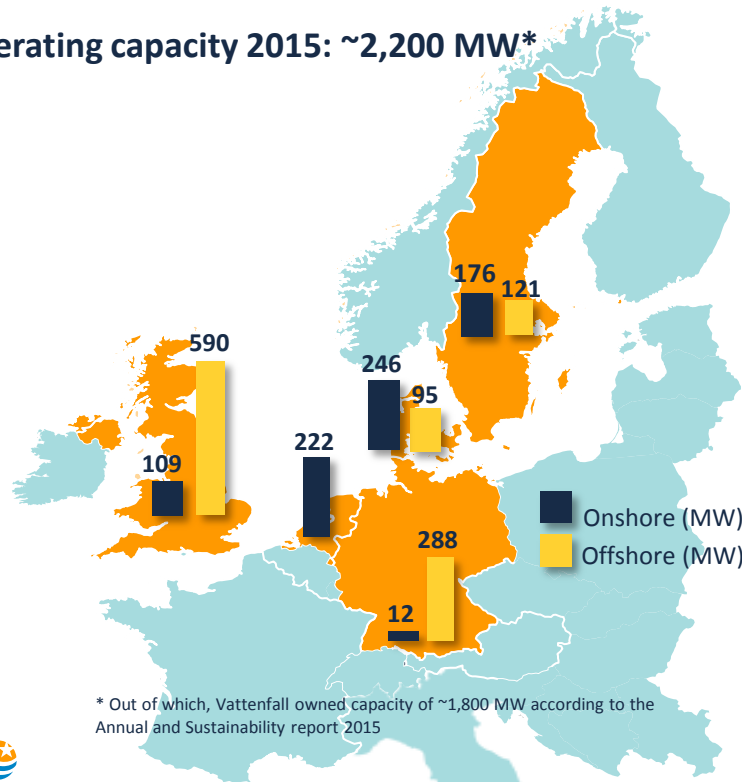
FACTS AND FIGURES – BA WIND

Business Area Wind, which is responsible for Vattenfall’s wind power operations, will be a leading developer and operator of wind power in Northwestern Europe

Key figures	2015
External net sales (MSEK)	4,267
EBIT (MSEK)	931
Underlying EBIT (MSEK)	1,469
Investments (MSEK)	8,855
Number of employees (FTE)	~600

Total operating capacity 2015: ~2,200 MW*

Key figures 2015	Onshore	Offshore
Installed capacity (MW), consolidated	771	1.093
Installed capacity (MW), pro rata	798	1.022
Electricity generation (GWh), consolidated	2.1	3.7
Electricity generation (GWh), pro rata	2.2	3.4
Capacity post FID 2016 (MW)	354	789



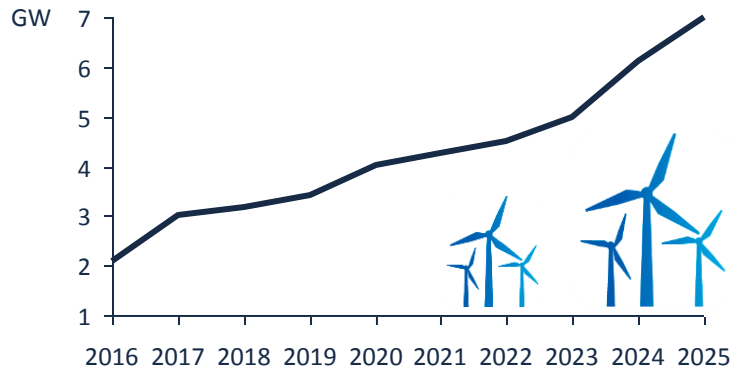
* Out of which, Vattenfall owned capacity of ~1,800 MW according to the Annual and Sustainability report 2015

GROW WIND OPERATING PORTFOLIO FROM 1.8 GW TO 4 GW IN 2020

Vattenfall continues to invest more than EUR 5bn within the next few years, 500 MW FID taken 2016

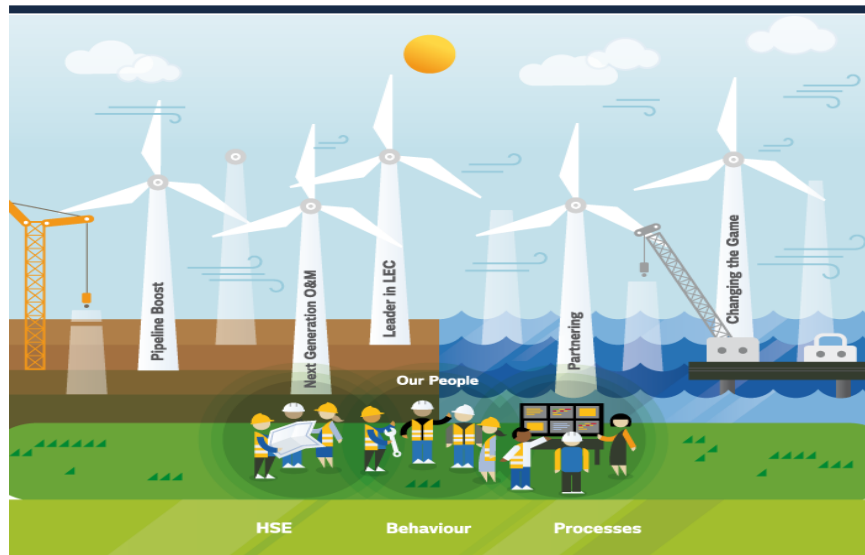
Investing in renewables is the way forward for Vattenfall ...

- Number two in offshore wind in Northwestern Europe plus strong onshore pipeline
- Strong platform and track record to build on



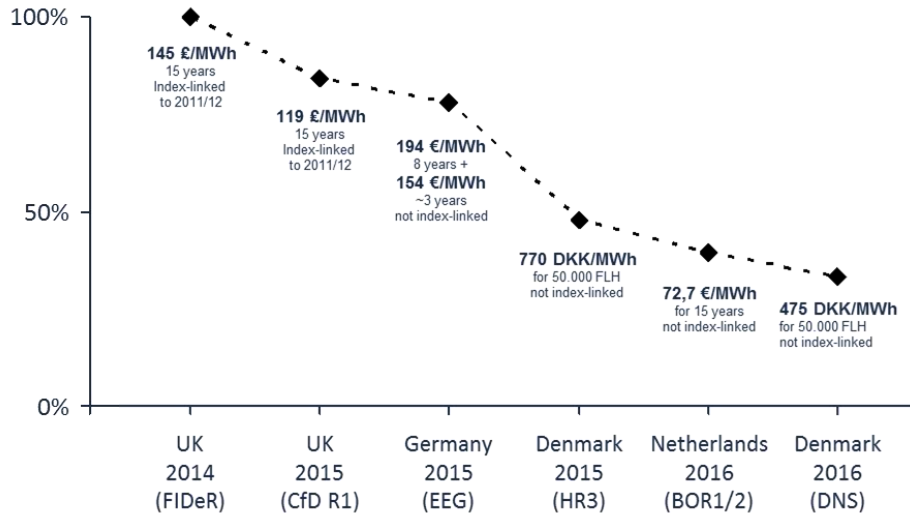
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... and by 2020 Vattenfall will operate 4 GW and will be leader in LEC*...



OFFSHORE INDUSTRY TREND

Vattenfall's competitive advantage is based on three pillars: fast adaptation to the tender landscape, ability to decrease O&M costs applying latest business standards, lean and agile organisation set-up



Turbine size development has the most significant impact on reduction of LEC

- Winning bid levels of 475 DKK/MWh (Vattenfall – Danish Nearshore) and 72.7 EUR/MWh (Dong – Borssele 1/2) considered new industry benchmarks
- Overall, tremendous decrease in subsidies in a competitive tender environment over 2-3 years
- Figures are only considering revenue streams and are not scope-adjusted, e.g., UK OFTO and grid charges. This might lead to 5-15% correction factor, which does not question the trend as such

PARTNERING IS A CORNERSTONE FOR FUTURE GROWTH STRATEGY

1

Enabling

- Enable capital recycling to finance further growth of the wind portfolio
- Giving cash available for the strong wind build out

2

Leveraging

- Early capitalization of the Construction and Generation capability
- Leverage the strong capabilities in Construction and Generation to manage the project and operational risk
- Ensure economies of scale in Construction and Generation to secure the market leading position

3

Competing

- Competitiveness in both Levelised Cost of Energy and attracting lower cost of capital
- A strong track record in Construction and Generation will reduce the perceived risk of Wind, and thereby the needed risk premium for investors
- Partnership as a mean to create a competitive advantage by attracting low cost of capital in the changing competitive tendering, with financial investors entering the market directly

BUSINESS DEVELOPMENT

Vattenfall continues to build new business with focus on PV technology and battery storage for integration of renewables

Achievements 2016

PV@Wind (Pendine, Pen y Cymoedd): 5 MW taken into operation

Battery@Wind: tender won in UK for 22 MW enhanced frequency response battery

2nd Life(used batteries): close to the launch

Further actions Battery Storage

Battery@Wind: scouting new locations

Battery@Hamburg Harbour

Further actions PV

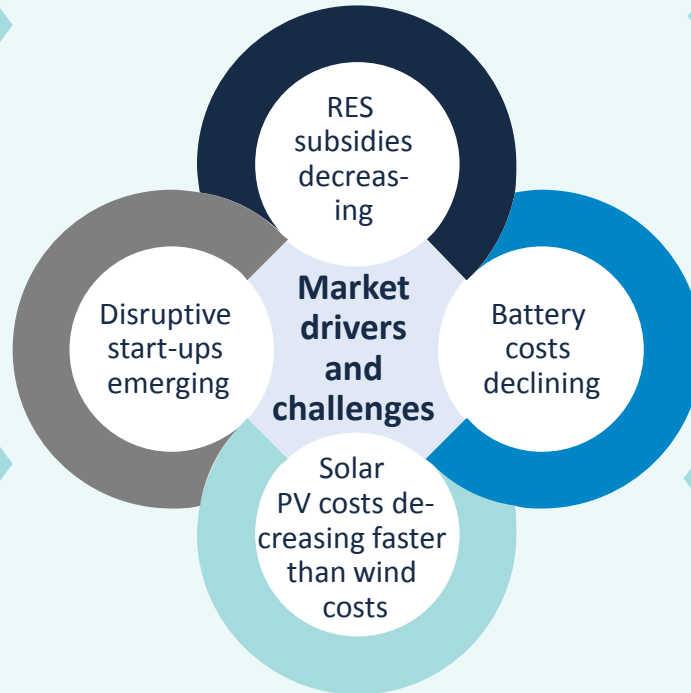
PV@Site (Powerplants, Renaturation Area)

PV@customer: develop offers together with BA Customer & Solutions for industry customers

Entrepreneurial Culture

Idea Funnel & Innovation Radar
Disrupt Workshops

Set-up platform to cooperate with Start-Ups

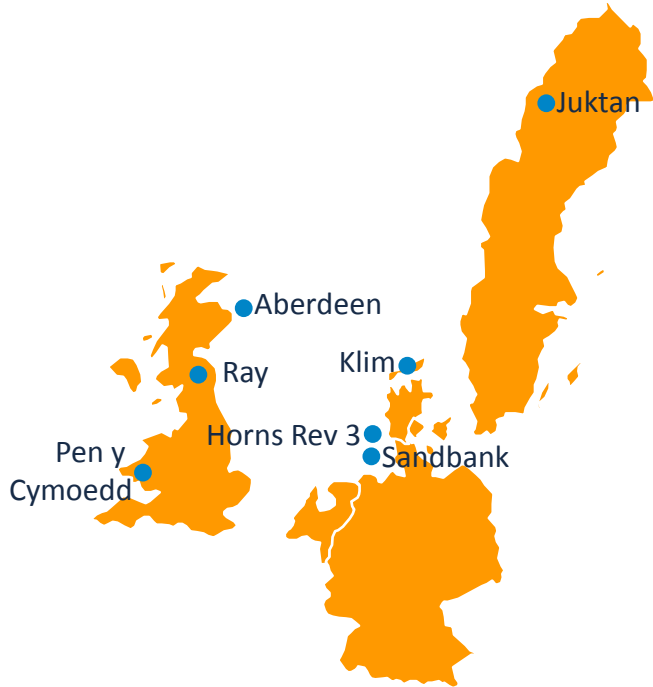


OUR LARGEST WIND FARMS IN OPERATION



Country	Name	Type	No Turbines	Installed capacity (MW)	Owner-ship (%)
UK	Thanet	Offshore	100	300	100
DE	DanTysk	Offshore	80	288	51
DK	Horns Rev	Offshore	79	158	60
UK	Ormonde	Offshore	30	150	51
NL	Princess Alexia	Onshore	36	121	100
SE	Lillgrund	Offshore	48	110	100
NL	Egmond aan Zee	Offshore	36	108	50
UK	Kentish Flats	Offshore	30	90	100
SE	Stor-Rotliden	Onshore	40	78	100

MAJOR PROJECTS IN DEVELOPMENT & CONSTRUCTION



Country	Name	Type	Installed capacity (MW)	Ownership (%)	Commissioning
DK	Horns Rev 3	Offshore	400	100	2019
DE	Sandbank	Offshore	288	51	2016
UK	Pen y Cymoedd	Onshore	228	100	2017
UK	Aberdeen	Offshore	91	100	2018
DK	Klim (repowering)	Onshore	67	100	2016
UK	Ray	Onshore	49	100	2016

CHANGING REGULATORY ENVIRONMENT

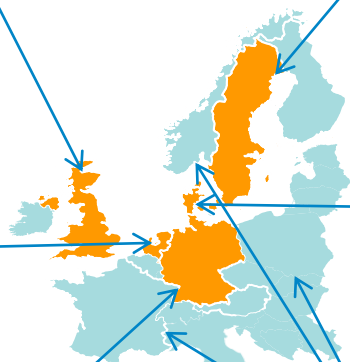
Post-Brexit: New Department for Business, Energy and Industrial Strategy (DBEIS). Contracts for Difference and Capacity Market auctions still expected in Q4 2016

- Onshore: Tory government cut onshore subsidies. Major impairments in several projects
- Offshore: Offshore support announced to continue (10GW before 2020 + 10 GW after 2020)

- Onshore: Stable subsidy regime with capacity additions required to reach the Dutch renewable target of 14% for 2020

- Offshore: 4x700 MW until 2023

- Onshore: New auction scheme to be introduced; 2.8 GW/year capacity addition
- Offshore: New auction scheme to be introduced; transition (2x1,46 GW) to centralised auction system (0,73 GW annually)



New renewables target: 100% Renewables in 2040 without Nuclear

- Onshore: Revenues fully exposed to market prices; uncertainty about continuation post 2020
- Offshore: No offshore-specific subsidy

- Onshore: Discussion about energy law ongoing

- Offshore: Kriegers Flak tender upcoming in centralised system; first round DK Near Shore; discussion around energy law ongoing

New Markets

- PL & NO: Market entry assessed; put on hold due to unfavourable regulatory regimes
- FR: New central auction system to be introduced

IMPROVED TECHNOLOGIES AND PROCESSES LEAD TO LOWER COSTS

Larger turbines and increased performance in terms of higher availability and production imply cost savings of 10-30% and reduces the maintenance cost per MWh

