

## List of Assets

#### December 2018

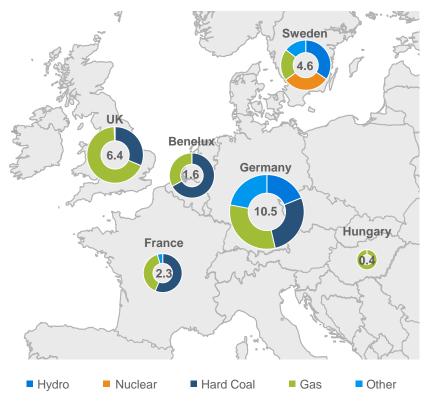




### European Generation Asset Overview and Asset List



### Well-diversified European generation portfolio



#### Net capacity by country and fuel type (GW)<sup>1,2</sup>

#### Net capacity by fuel type (GW)<sup>1,2</sup>



#### **Electricity production by technology (TWh)**





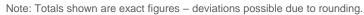
Note: Deviations may occur due to rounding

1. Net capacity for 2018 (accounting view); net generation capacity is reported for plants if plants were in operation at end of 2018 2. Excluding net generation capacities from Hydro LTCs in Austria and Switzerland of 646 MW in 2017 and 564 MW in 2018.

### **Asset overview**

#### **Overview – Capacity development, MW**<sup>1,2</sup>

		2017	2018
	Germany	1.988	1.991
Hydro	Sweden	1.579	1.579
Nuclear	Sweden	1.400	1.400
	Germany	2.902	2.902
Hard coal	UK	2.000	2.000
	France	1.190	1.190
	Benelux	1.070	1.070
Lignite	Germany	900	900
	Germany	3.333	3.333
	Sweden	948	947
Gas	UK	4.375	4.375
Gas	France	828	828
	Benelux	526	526
	Hungary	428	428
	Germany	1.418	1.418
Other <sup>3</sup>	Sweden	662	662
Other	UK	34	34
	France	94	244
Total <sup>4</sup>		25.676	25.827



1. Accounting view

UN

DE

2. Net generation capacity is reported for plants if plants were in operation at end of 2018.

3. Other includes Renewables, Biomass, Fuel Oil.

4. Excluding net generation capacities from Hydro LTCs in Austria and Switzerland of 646 MW in 2017 and 564 MW in 2018.

### Asset overview (cont'd)

#### **Overview – Electricity production, TWh<sup>1</sup>**

		2017	2018
Hydro	Germany	4.817	3.752
пуаго	Sweden	6.942	6.588
Nuclear	Sweden	11.122	10.729
	Germany	9.836	9.357
Hard cool	UK	2.562	3.571
Hard coal	France	3.367	2.049
	Benelux	8.558	5.841
Lignite	Germany	4.931	5.526
	Germany	967	782
	Sweden	5	7
Coc	UK	10.497	11.538
Gas	France	4.822	3.016
	Benelux	1.590	1.671
	Hungary	2.209	2.340
Other	France	169	513
Total		72.397	67.280



Sweden

France

Other

### **Details on the German power plant portfolio**

#### Hydro - Storage

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Walchensee	Consolidated	124	100.00%	1924	124	124
Roßhaupten	Consolidated	50	100.00%	1954	46	46
Hemfurth	Consolidated	20	100.00%	1915/1994	20	20
Helminghausen	Consolidated	1	100.00%	1924	1	1
Total		191			191	191

#### Hydro - Pumped storage

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Waldeck II	Consolidated	480	100.00%	1974	480	480
Langenprozelten	Consolidated	168	77.66%	1976	127	164
Happurg <sup>1</sup>	Consolidated	160	100.00%	1958/1963/1965	160	160
Waldeck I <sup>2</sup>	Consolidated	145	100.00%	1931/1933/2009	145	145
Oberberg	Consolidated	9	100.00%	1960/1985	9	9
Total		962			921	958



Note: Plants shown include those plants that were in operation at end of 2018. 1. Happurg facility mothballed in 2016.

2. Includes also Bringhausen.

Sweden

France

Other

# Details on the German power plant portfolio (cont'd)

#### Hydro - Run-of-river

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Kachlet	Consolidated	56	77.49%	1927	42	54
Aufkirchen	Consolidated	38	100.00%	1924	27	27
Eitting	Consolidated	36	100.00%	1925	26	26
Geisling	Consolidated	26	77.49%	1985	19	25
Bergheim	Consolidated	25	77.66%	1970	18	24
Vohburg	Consolidated	29	77.66%	1992	18	23
Pfrombach	Consolidated	24	100.00%	1929	22	22
Straubing	Consolidated	22	77.49%	1994	17	22
Bittenbrunn	Consolidated	21	77.66%	1969	16	20
Ingolstadt	Consolidated	20	77.66%	1971	15	20
Prem	Consolidated	22	100.00%	1971	19	19
Bertoldsheim	Consolidated	20	77.66%	1967	15	19
Altheim	Consolidated	18	100.00%	1951	18	18
Kaufering	Consolidated	18	100.00%	1975	17	17
Dornau	Consolidated	18	100.00%	1960	17	17
Gummering	Consolidated	17	100.00%	1957	17	17



Sweden

France

Other

## Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Niederaichbach	Consolidated	18	100.00%	1951	16	16
Dingolfing	Consolidated	18	100.00%	1957	15	15
Obernach	Consolidated	16	100.00%	1955	13	13
Ettling	Consolidated	13	100.00%	1988	13	13
Landau	Consolidated	13	100.00%	1984	13	13
Pielweichs	Consolidated	13	100.00%	1994	13	13
Oberpeiching	Consolidated	13	77.49%	1954	10	13
Unterbergen	Consolidated	14	100.00%	1983	12	12
Scheuring	Consolidated	14	100.00%	1980	12	12
Prittriching	Consolidated	12	100.00%	1984	12	12
Merching	Consolidated	14	100.00%	1978	12	12
Schwabstadl	Consolidated	13	100.00%	1981	12	12
Mühltal	Consolidated	13	100.00%	1924	11	11
Rain	Consolidated	12	77.49%	1955	9	12
Dessau	Consolidated	13	100.00%	1967	10	10
Urspring	Consolidated	12	100.00%	1966	10	10



Sweden

France

Other

## Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Ellgau	Consolidated	11	77.49%	1952	8	11
Kleinostheim	Consolidated	10	77.49%	1971	8	10
Feldheim	Consolidated	9	77.49%	1960	7	9
Epfach	Consolidated	8	100.00%	1948	8	8
Dornstetten	Consolidated	8	100.00%	1943	8	8
Kinsau	Consolidated	8	100.00%	1992	8	8
Lechblick	Consolidated	8	100.00%	1943	8	8
Finsing	Consolidated	8	100.00%	1924	8	8
Lechmühlen	Consolidated	8	100.00%	1943	8	8
Pitzling	Consolidated	8	100.00%	1944	8	8
Landsberg	Consolidated	8	100.00%	1943	8	8
Finsterau	Consolidated	8	100.00%	1950	8	8
Apfeldorf	Consolidated	7	100.00%	1944	7	7
Regensburg	Consolidated	8	77.49%	1977	6	7
Sperber	Consolidated	7	100.00%	1947	7	7
Bad Abbach	Consolidated	6	77.49%	1978	5	6



Sweden

France

Other

## Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Ottendorf	Consolidated	7	77.49%	1962	5	6
Viereth	Consolidated	7	77.49%	1925/1983	5	6
Gottfrieding TW	Consolidated	5	100.00%	2009	5	5
Schönmühl	Consolidated	5	100.00%	1922	5	5
Kesselstadt	Consolidated	5	100.00%	1921/1986	5	5
Gottfrieding	Consolidated	6	100.00%	1978	5	5
Freudenberg	Consolidated	5	77.49%	1934	3	4
Dettelbach	Consolidated	4	77.49%	1958	3	4
Rothenfels	Consolidated	7	77.49%	1939	6	6
Steinbach	Consolidated	4	77.49%	1939	3	4
Faulbach	Consolidated	4	77.49%	1939	3	4
Haag	Consolidated	4	100.00%	1923/1991	4	4
Offenbach	Consolidated	4	100.00%	1985	4	4
Pullach	Consolidated	5	100.00%	1904	4	4
Garstadt	Consolidated	4	77.49%	1956	3	4
Hirschaid	Consolidated	5	100.00%	1923	4	4



Sweden

France

Other

# Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Limbach	Consolidated	4	77.49%	1951	3	4
Abbach TW	Consolidated	4	77.49%	2000	3	4
Heubach	Consolidated	4	77.49%	1932	3	3
Wallstadt	Consolidated	4	77.49%	1930	3	3
Obernau	Consolidated	3	77.49%	1930	3	3
Eichel	Consolidated	3	77.49%	1939	2	3
Höllriegelskreuth	Consolidated	4	100.00%	1894/1940	3	3
Klingenberg	Consolidated	3	77.49%	1930	2	3
Harrbach	Consolidated	3	77.49%	1940	2	3
Kitzingen	Consolidated	3	77.49%	1956	2	3
Knetzgau	Consolidated	3	77.49%	1960	2	3
Wipfeld	Consolidated	3	77.49%	1951	2	3
Forchheim	Consolidated	3	77.49%	1964	2	3
Erlabrunn	Consolidated	3	77.49%	1934	2	3
Lengfurt	Consolidated	3	77.49%	1940	2	3
Himmelstadt	Consolidated	3	77.49%	1940	2	3



Sweden

France

Benelux

Other

# Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Gerlachshausen	Consolidated	3	77.49%	1957	2	2
Regensburg TW	Consolidated	2	77.49%	1990	2	2
Niedernach	Consolidated	2	100.00%	1951	2	2
Marktbreit	Consolidated	2	77.49%	1955	2	2
Goßmannsdorf	Consolidated	2	77.49%	1952	2	2
Randersacker	Consolidated	2	77.49%	1950	2	2
Hausen	Consolidated	2	77.49%	1965	2	2
Volkach	Consolidated	2	77.49%	1957	1	2
Speicherseekraftwerk	Consolidated	2	100.00%	1951	1	1
Klein Kinsau	Consolidated	2	100.00%	1992	1	1
Oberföhring	Consolidated	1	100.00%	2008	1	1
Untere Mainmühle	Consolidated	1	77.49%	1924/1988	1	1
Dietfurt TW	Consolidated	1	77.49%	1991	0	1
Finsing Bachsammler	Consolidated	0	100.00%	1950	0	0
Kesselbach	Consolidated	0	100.00%	1919	0	0
Krün	Consolidated	0	100.00%	1990	0	0



Sweden

France

Other

## Details on the German power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Lochbach	Consolidated	0	100.00%	1983	0	0
Neuses	Consolidated	0	77.49%	2015	0	0
Hallerndorf	Consolidated	0	100.00%	1952	0	0
Happach	Consolidated	0	100.00%	1958	0	0
Kaupersberg	Consolidated	0	100.00%	1921	0	0
Altenstadt	Not consolidated	1	60.00%	1990	0	0
Au	Not consolidated	10	60.00%	1930	6	0
Dillingen	Not consolidated	8	46.49%	1981	4	0
Donauwörth	Not consolidated	9	46.49%	1984	4	0
Faimingen	Not consolidated	10	46.49%	1965	5	0
Gundelfingen	Not consolidated	8	46.49%	1964	4	0
Günzburg	Not consolidated	9	46.49%	1962	4	0
Höchstädt	Not consolidated	11	46.49%	1982	5	0
Leipheim	Not consolidated	10	46.49%	1961	5	0
Oberelchingen	Not consolidated	10	46.49%	1960	5	0
Offingen	Not consolidated	8	46.49%	1963	4	0



Sweden

France

Other

# Details on the German power plant portfolio (cont'd)

#### Hydro - Run-of-river (cont'd)

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(WW)	(MW)
Schweinfurt	Not consolidated	4	58.12%	1963	2	0
Schwenningen	Not consolidated	9	46.49%	1983	4	0
Untereichen	Not consolidated	10	60.00%	1930	6	0
Total		1,036			815	842

#### Hard coal

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Heyden	Consolidated	875	100.00%	1987	875	875
Wilhelmshaven	Consolidated	757	100.00%	1976	757	757
Staudinger 5	Consolidated	510	100.00%	1992	510	510
Scholven B	Consolidated	345	100.00%	1968	345	345
Scholven C	Consolidated	345	100.00%	1969	345	345
Scholven FWK Buer	Consolidated	138	100.00%	1985	70	70
Kiel	Not consolidated	323	50.00%	1970	162	0
Total		3,293			3,064	2,902



Sweden

France

Benelux

Other

### Details on the German power plant portfolio (cont'd)

#### Lignite

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Schkopau A+B	Consolidated	900	58.10%	1996	500	900
Total		900			500	900

#### Gas

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Irsching 5	Consolidated	846	50.20%	2010	425	846
Staudinger 4	Consolidated	622	100.00%	1977	622	622
Irsching 4	Consolidated	561	100.00%	2011	561	561
Franken I/2	Consolidated	440	100.00%	1976	440	440
Franken I/1	Consolidated	383	100.00%	1973	383	383
Huntorf	Consolidated	321	100.00%	1978	321	321
Kirchmöser	Consolidated	178	100.00%	1995	160	160
Total		3,351			2,912	3,333



Sweden

France

Benelux

Other

# Details on the German power plant portfolio (cont'd)

#### Other

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Irsching 3	Consolidated	415	100.00%	1974	415	415
Pleinting 2 <sup>1</sup>	Consolidated	0	100.00%	1976	0	0
Ingolstadt 3	Consolidated	386	100.00%	1973	386	386
Ingolstadt 4	Consolidated	386	100.00%	1974	386	386
Pleinting 1 <sup>1</sup>	Consolidated	0	100.00%	1968	0	0
Audorf	Consolidated	87	100.00%	1973	87	87
Itzehoe	Consolidated	88	100.00%	1972	88	88
Wilhelmshaven GT	Consolidated	56	100.00%	1973	56	56
Total		1,418			1,418	1,418



Sweden

France

Other

### **Details on the UK power plant portfolio**

#### Hard coal

			Pro-rata	Accounting		
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Ratcliffe U1	Consolidated	500	100.00%	1967	500	500
Ratcliffe U2	Consolidated	500	100.00%	1968	500	500
Ratcliffe U3	Consolidated	500	100.00%	1969	500	500
Ratcliffe U4	Consolidated	500	100.00%	1970	500	500
Total		2,000			2,000	2,000

#### Gas

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Grain 6	Consolidated	455	100.00%	2011	455	455
Grain 7	Consolidated	455	100.00%	2011	455	455
Grain 8	Consolidated	455	100.00%	2011	455	455
Killingholme Mod 1 <sup>1</sup>	Consolidated	300	100.00%	1992	300	300
Killingholme Mod 2 <sup>2</sup>	Consolidated	300	100.00%	1992	300	300
Enfield	Consolidated	408	100.00%	2002	408	408
Cottam Development Centre	Consolidated	435	100.00%	1998	435	435



Note: Plants shown include those plants that were in operation at end of 2018. 1. Killingholme 1 and 2 have been converted from CCGT to OCGT mid 2016 by reducing total capacity of both units from 900MW to 600MW. Germany United Kingdom Sweden France Benelux Other

### Details on the UK power plant portfolio (cont'd)

#### Gas (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Connah's Quay U1	Consolidated	345	100.00%	1996	345	345
Connah's Quay U2	Consolidated	345	100.00%	1996	345	345
Connah's Quay U3	Consolidated	345	100.00%	1996	345	345
Connah's Quay U4	Consolidated	345	100.00%	1996	345	345
Taylors Lane GT2	Consolidated	68	100.00%	1981	68	68
Taylors Lane GT3	Consolidated	64	100.00%	1979	64	64
Grain Aux GT1	Consolidated	27	100.00%	1979	27	27
Grain Aux GT4	Consolidated	28	100.00%	1984	28	28
Total		4,375			4,375	4,375

#### Other

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Ratcliffe Aux GT2	Consolidated	17	100.00%	1968	17	17
Ratcliffe Aux GT4	Consolidated	17	100.00%	1970	17	17
Total		34			34	34



Sweden

France

Other

### **Details on the Swedish power plant portfolio**

#### Hydro - Storage

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Hjälta	Consolidated	178	100.00%	1949	178	178
Ramsele	Consolidated	171	100.00%	1958	163	163
Moforsen	Consolidated	140	100.00%	1968	140	140
Storfinnforsen	Consolidated	120	100.00%	1953	112	112
Bålforsen	Consolidated	88	100.00%	1958	88	88
Hällby	Consolidated	84	100.00%	1970	84	84
Edensforsen	Consolidated	73	100.00%	1956	73	73
Trångfors	Consolidated	73	100.00%	1975	73	73
Gulsele	Consolidated	72	100.00%	1955	72	72
Degerforsen	Consolidated	78	100.00%	1965	78	78
Edsele	Consolidated	60	100.00%	1965	60	60
Rätan	Consolidated	60	100.00%	1968	60	60
Lövön	Consolidated	36	100.00%	1973	36	36
Borgforsen	Consolidated	26	100.00%	1965	26	26
Betsele	Consolidated	26	100.00%	1965	25	25
Flåsjö	Consolidated	29	100.00%	1975	20	20



Sweden

France

Benelux

Other

# Details on the Swedish power plant portfolio (cont'd)

#### Hydro - Storage (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Yngeredsfors	Consolidated	19	100.00%	1964	19	19
Turinge	Consolidated	18	100.00%	1961	18	18
Bodum	Consolidated	13	100.00%	1975	12	12
Fjällsjö	Consolidated	13	100.00%	1976	12	12
Ledinge	Consolidated	10	100.00%	1982	10	10
Skåpanäs	Consolidated	9	100.00%	1957	9	9
Skogsforsen	Consolidated	8	100.00%	1939	8	8
Semla	Consolidated	4	100.00%	1920/1988	4	4
Rundbacken	Consolidated	2	100.00%	1916	2	2
Graninge	Consolidated	2	100.00%	1960	2	2
Lafssjö	Consolidated	2	100.00%	1980	2	2
Karlsnäs	Consolidated	1	100.00%	1952	1	1
Bergeforsen	Not consolidated	155	43.15%	1955	67	0
Blåsjön	Not consolidated	60	50.00%	1957	30	0
Gammelänge	Not consolidated	78	6.60%	1944	5	0
Krångede	Not consolidated	248	9.24%	1936	23	0



Sweden

France

Benelux

Other

# Details on the Swedish power plant portfolio (cont'd)

#### Hydro - Storage (cont'd)

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Kvarnfallet	Not consolidated	19	50.00%	1969	10	0
Linnvasselv	Not consolidated	70	9.86%	1962	7	0
Sippmikk	Not consolidated	4	50.00%	1953	2	0
Stensjöfallet	Not consolidated	95	50.00%	1968	48	0
Total		2,142			1,577	1,386

#### Hydro - Run-of-river

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting
Sile	Consolidation	(technical, www)	Slake	COD	(101 00)	(MW)
Forsse	Consolidated	59	100.00%	1968	52	52
Hällforsen	Consolidated	22	100.00%	1964	23	23
Ätrafors	Consolidated	13	100.00%	1917/1930	13	13
Sil	Consolidated	13	100.00%	1976	12	12
Granö	Consolidated	9	100.00%	1958	9	9

Sweden

France

Benelux

Other

# Details on the Swedish power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Bällforsen	Consolidated	8	100.00%	1950	8	8
Bursnäs	Consolidated	8	100.00%	1961	8	8
Genastorp	Consolidated	7	100.00%	1969	7	7
Torsebro	Consolidated	6	100.00%	1982	6	6
Nöbbelöv	Consolidated	4	100.00%	1956	4	4
Broby	Consolidated	4	100.00%	1959	4	4
Hemsjö Övre	Consolidated	4	100.00%	1907	4	4
Högsby	Consolidated	4	100.00%	1920	4	4
Njura	Consolidated	2	100.00%	1962	2	2
Hornsö	Consolidated	2	100.00%	1993	2	2
Storå	Consolidated	2	100.00%	1961	2	2
Östanå	Consolidated	2	100.00%	1943	2	2
Finsjö Nedre	Consolidated	2	100.00%	1993	2	2
Högfors	Consolidated	2	100.00%	1978	2	2
Horkoneryd	Consolidated	2	100.00%	1984	2	2
Blankaström	Consolidated	2	100.00%	1917	2	2



Sweden

France

Benelux

Other

# Details on the Swedish power plant portfolio (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Emsfors	Consolidated	2	100.00%	1952	2	2
Hemsjö Nedre	Consolidated	2	100.00%	1917	2	2
Västgöthyttefors	Consolidated	2	100.00%	1921	2	2
Delary	Consolidated	2	100.00%	1949	2	2
Knislinge	Consolidated	2	100.00%	1925/1976	2	2
Ronneby	Consolidated	2	100.00%	1950	2	2
Kallinge	Consolidated	1	100.00%	1985	1	1
Djupafors	Consolidated	1	100.00%	1948	1	1
Fagersta	Consolidated	1	100.00%	1988	1	1
Västanfors	Consolidated	1	100.00%	1948	1	1
Morgårdshammar	Consolidated	1	100.00%	1982	1	1
Uddnäs	Consolidated	1	100.00%	1988	1	1
Marieberg	Consolidated	1	100.00%	1918	1	1
Uman	Consolidated	1	100.00%	1990	1	1
Verperyd	Consolidated	1	100.00%	1921	1	1
Brantafors	Consolidated	1	100.00%	1921	1	1



Sweden

France

Other

# Details on the Swedish power plant portfolio (cont'd)

#### Hydro - Run-of-river (cont'd)

		Capacity				Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(WW)	(MW)
Finsjö Övre	Consolidated	1	100.00%	1920	1	1
Karlslund	Consolidated	1	100.00%	1980	1	1
Lagfors	Consolidated	1	100.00%	1989	1	1
Klåvben	Not consolidated	3	50.00%	1949	1	0
Total		203			195	193

#### Nuclear

		Capacity			Pro-rata		
Site	Consolidation	(technical, MW)	Stake	COD	(WW)	(MW)	
Oskarshamn 3	Consolidated	1,400	54.50%	1985	763	1,400	
Forsmark 1	Not consolidated	984	9.30%	1980	92	0	
Forsmark 2	Not consolidated	1,120	9.30%	1981	104	0	
Forsmark 3	Not consolidated	1,159	10.80%	1985	125	0	



Sweden

France

Benelux

Other

# Details on the Swedish power plant portfolio (cont'd)

#### Nuclear (cont'd)

		Capacity				Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(WW)	(MW)
Ringhals 1	Not consolidated	881	29.60%	1976	261	0
Ringhals 2	Not consolidated	904	29.60%	1975	267	0
Ringhals 3	Not consolidated	1,063	29.60%	1981	315	0
Ringhals 4	Not consolidated	1,103	29.60%	1983	326	0
Total		8,614			2,253	1,400

#### Gas

		Capacity				Accounting	
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)	
Öresundsverket <sup>1</sup>	Consolidated	447	100.00%	2009	447	447	
Halmstad GT 12	Consolidated	172	100.00%	1992	172	172	
Halmstad GT 11	Consolidated	78	100.00%	1972	78	78	
Öresundsverket GT G24	Consolidated	63	100.00%	1971	63	63	
Öresundsverket GT G25	Consolidated	63	100.00%	1972	63	63	



Sweden

France

Other

# Details on the Swedish power plant portfolio (cont'd)

#### Gas (cont'd)

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Barsebäck GT1	Consolidated	42	100.00%	1974	42	42
Barsebäck GT2	Consolidated	42	100.00%	1974	42	42
Karlshamn G13	Consolidated	37	100.00%	1973	37	37
Öresundsverket Diesel G26	Consolidated	3	100.00%	2015	3	3
Total		947			947	947

#### Other

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Karlshamn G2	Consolidated	334	100.00%	1971	334	334
Karlshamn G3	Consolidated	328	100.00%	1973	328	328
Total		662			662	662



Germany United Kingdom Sweden France Benelux

### **Details on the French power plant portfolio**

#### **Hard Coal**

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Emile Huchet 6	Consolidated	595	100.00%	1981	595	595
Provence 5	Consolidated	595	100.00%	1984	595	595
Total		1,190			1,190	1,190

#### Gas

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Emile Huchet 7	Consolidated	414	100.00%	2010	414	414
Emile Huchet 8	Consolidated	414	100.00%	2010	414	414
Total		828			828	828

#### **Biomass**

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Provence 4	Consolidated	150	100.00%	2018	150	150
Total		150			150	150



Other

Sweden

France

Other

# Details on the French power plant portfolio (cont'd)

#### **Onshore Wind**

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Kergrist	Consolidated	26	100.00%	2010	26	26
Caulières	Consolidated	18	100.00%	2010	18	18
Ambon	Consolidated	10	100.00%	2008	10	10
Muzillac	Consolidated	10	100.00%	2008	10	10
Lehaucourt	Consolidated	10	100.00%	2007	10	10
Les Vents de Cernon 1	Consolidated	10	100.00%	2008	10	10
Total		84			84	84

#### Solar

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Brigadel	Consolidated	8	100.00%	2011	8	8
Le Lauzet	Consolidated	3	100.00%	2010	3	3
Total		11			11	11



Sweden

France

Other

### **Details on the Benelux power plant portfolio**

#### **Gas (Netherlands)**

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Rotterdam Capelle GT 3	Consolidated	220	100.00%	1996	213	213
Galileistraat CHP	Consolidated	0	100.00%	1988	0	0
Den Haag CHP	Consolidated	112	100.00%	1981	107	107
Leiden CHP	Consolidated	83	100.00%	2004	85	85
UCML	Consolidated	70	100.00%	2003	70	70
Rotterdam Capelle GT 1	Consolidated	24	100.00%	1982	26	26
Rotterdam Capelle GT 2	Consolidated	25	100.00%	1982	25	25
UCML BPT	Consolidated	0	100.00%	2003	0	0
Total		534			526	526

#### Hard coal (Netherlands)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Maasvlakte 3	Consolidated	1,070	100.00%	2013	1,070	1,070
Total		1,070			1,070	1,070



Germany United Kingdom Sweden France Benelux Other

### **Details on the remaining power plant portfolio**

#### **Gas (Hungary)**

-		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(MW)
Gönyü	Consolidated	428	100.00%	2011	428	428
Total		428			428	428

### International Power Asset List



Brazil

### **Details on the Russian power plant portfolio**

#### Gas

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Surgutskaya TG 1	Consolidated	790	83.73%	1985	661	790
Surgutskaya TG 2	Consolidated	790	83.73%	1985	661	790
Surgutskaya TG 3	Consolidated	790	83.73%	1986	661	790
Surgutskaya TG 4	Consolidated	790	83.73%	1987	661	790
Surgutskaya TG 5	Consolidated	790	83.73%	1987	661	790
Surgutskaya TG 6	Consolidated	790	83.73%	1988	661	790
Yaivinskaya TG 5	Consolidated	410	83.73%	2011	343	410
Surgutskaya TG 8	Consolidated	390	83.73%	2011	326	390
Surgutskaya TG 7	Consolidated	386	83.73%	2011	324	386
Shaturskaya TG 7	Consolidated	383	83.73%	2010	320	383
Shaturskaya TG 4	Consolidated	196	83.73%	1978	164	196
Shaturskaya TG 5	Consolidated	196	83.73%	1978	164	196
Smolenskaya TG 1	Consolidated	195	83.73%	1978	163	195
Smolenskaya TG 2	Consolidated	195	83.73%	1979	163	195
Smolenskaya TG 3	Consolidated	195	83.73%	1985	163	195
Shaturskaya TG 1	Consolidated	186	83.73%	1971	156	186



Brazil

## Details on the Russian power plant portfolio (cont'd)

#### Gas (cont'd)

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Shaturskaya TG 2	Consolidated	186	83.73%	1972	156	186
Shaturskaya TG 3	Consolidated	186	83.73%	1972	156	186
Yaivinskaya TG 1	Consolidated	140	83.73%	1963	117	140
Yaivinskaya TG 2	Consolidated	140	83.73%	1964	117	140
Yaivinskaya TG 3	Consolidated	140	83.73%	1964	117	140
Yaivinskaya TG 4	Consolidated	140	83.73%	1965	117	140
Shaturskaya TG 6	Consolidated	75	83.73%	1982	62	75
Total		8,479			7,100	8,479

#### Lignite

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(MW)	(WW)
Berezovskaya GRES TG 1	Consolidated	754	83.73%	1987	632	754
Berezovskaya GRES TG 2	Consolidated	754	83.73%	1991	632	754
Berezovskaya GRES TG 3 <sup>1</sup>	Consolidated	754	83.73%	2015	632	754
Total		2,263			1,895	2,263



Note: Plants shown include those plants that were in operation at end of 2018. 1. Berezovskaya GRES TG 3 facility currently under unscheduled repairs.

Brazil

### **Details on the Brazilian power plant portfolio**

Gas

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Parnaiba I	Not consolidated	668	6.10%	2013	41	0
Parnaiba II	Not consolidated	512	6.10%	2015	31	0
Parnaiba III	Not consolidated	174	6.10%	2013	11	0
Parnaiba IV	Not consolidated	55	6.10%	2013	3	0
Total		1,409			86	0

#### Hard coal

Site	Consolidation	Capacity (technical, MW)	Stake	COD	Pro-rata (MW)	Accounting (MW)
Itaqui	Not consolidated	322	6.10%	2013	20	0
Total		322			20	0



Brazil

Other

### **Details on the remaining power plant portfolio**

#### **Czech Republic**

		Capacity			Pro-rata	Accounting
Site	Consolidation	(technical, MW)	Stake	COD	(WW)	(WW)
Teplarna Tabor	Consolidated	20	51.95%	1991	11	20
Solar Energy Znojmo	Not consolidated	1	24.98%	2008	0	0
Bioplyn Trebon	Not consolidated	1	24.67%	1974	0	0
Total		22			11	20



## Details on assets decommissioned or disposed in 2018

			Capacity (technical,			Pro-rata	Accounting
Site	Country	Fuel Type	MW)	Stake	COD	(MW)	(WW)
Pecem II	Brazil	Hard Coal	334	54,13%	2013	168	0



## Global Commodities Storage and Pipelines



### Portfolio of gas storages

#### Gas storage portfolio at a glance

Storage	Country	Capacity <sup>1</sup>	Main applications
Epe L-Gas		0.4	Peak shaving
Krummhörn		0.2	Peak shaving
Nüttermoor		0.1	Peak shaving
Epe H-Gas		1.4	Peak shaving and seasonal use
Eschenfelder	n	<0.1	Peak shaving and seasonal use
Etzel ESE		1.1	Seasonal use and peak shaving
Etzel EGL		1.0	Seasonal use and peak shaving
Breitbrunn		1.0	Seasonal use
Bierwang		0.8	Mainly seasonal use
7 Fields		1.7	Mainly seasonal use
Holford		0.2	Peak shaving
Total		7.9	

#### **Key value drivers**

Arbitrage

System

Insurance

• Storage can enable time arbitrage value to be		
captured – gas is injected at times of low		
	prices and withdrawn at times of higher prices	
•	For seasonal storage this is usually summer	

 For seasonal storage this is usually summer and peak winter months, for mid and fast churn storage (peak shaving) arbitrage vale can be captured over shorter time periods

• Storage close to demand centers can help to lower network investment costs by reducing size of pipelines to meet peak demand

 System operators can require location swaps or certain gas qualities to ensure system stability; storage can be used to support this

• Storage can provide a safeguard against the high impact of unexpected technical failures, geopolitical risk or severe weather

 A "security of supply" premium is not currently compensated by the system given well-supplied European gas markets



### **Pipeline participations**



Key metrics				
Stake	20% <sup>1,2</sup>			
Capacity (100%)	36.5 bcm/a			
Start-up date	2011			

#### **Business description**

- Runs from the Nord Stream landfall point in Northern Germany over c.
  470km south to the end point at the German-Czech border
- Pro-rata transmission capacity long-term marketed to customers
- Technical operation provided by majority owner OPAL Gastransport which is indirectly owned by Wintershall and Gazprom

Source: OPAL Gastransport GmbH

#### BBL



Key metrics				
Stake	20% <sup>1</sup>			
Capacity (100%)	16 bcm/a			
Start-up date	2006			

#### **Business description**

- 235km gas pipeline through the Southern part of the North Sea, connecting the Netherlands and the UK
- Capacity marketed via standardised auctions for certain products (forward flow, interruptible forward flow, interruptible reverse flow)
- The other partners in BBL are Gasunie (60%) and Fluxys (20%)

Source: BBL Company

#### Transitgas



Key metrics				
Stake	3% <sup>1</sup>			
Capacity (100%)	18 bcm/a			
Start-up date	1974			

#### **Business description**

- Pipeline system with a combined length of c. 292km, crossing Switzerland from North to South, with a connection to the French grid in the West and the Italian grid in the South
- Constructed, maintained and operated by Transitgas AG, which is a partnership between Swissgas (51%), FluxSwiss (46%) and Uniper (3%)

Source: Transitgas AG



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