

KEY STATISTICS 2019

ENERGY IN NUMBERS AND FIGURES.



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Preface

E-Control is mandated by law to draw up the Austrian electricity and natural gas statistics and to publish them at www.e-control.at. Among these publications are our annual statistical reports, which have become key tools for all those who work in the areas of electricity and natural gas.

E-Control has published this statistics booklet since 2009, presenting key data on the Austrian electricity and natural gas markets in an effort to give an overview of the Austrian economy as a whole, the energy industry and volume trends, and to offer more detailed information from our market statistics, capturing the effects of liberalisation on the electricity and gas markets or relating facts and figures about our wholesale and retail markets.

This brochure is meant as a quick introduction to the most important statistical information for all those who are interested in finding out about developments and interrelations on the Austrian energy market.



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Austrian energy statistics

Energy supply is crucial for our daily lives and for our economy, and energy statistics carry particular importance as well; this is also reflected in the way powers and duties in this field are distributed. While Statistics Austria is involved, most statistical duties for energy lie directly with the Minister for Sustainability and Tourism. By virtue of section 92 Elektrizitätswirtschafts- und -organisationsgesetz (Electricity Act) 2010 and section 147 Gaswirtschaftsgesetz (Gas Act) 2011, the Minister entrusts the statistical duties for electricity and gas to the regulatory authority E-Control.

Though this construction deviates from the usual Austrian distribution of competences, the operational statistics produced by E-Control are firmly integrated into the Austrian statistical system and represent the main primary statistical source for the electricity and gas part of the Austrian energy balance.

A major difference between statistics drawn up by Statistics Austria and those produced by E-Control consists in that the former must comply with the rules for energy balances and in particular for international comparability, while the latter depict commodity flows and markets.

This means different approaches to reflecting energy transformation and an exclusive focus of the energy balance on the energetic use of primary energy sources. For instance, any use of electrical energy or gas is counted as (potential) consumption in E-Control's operational statistics, i.e. we consider that it forms part of the market. The energy balance e.g. counts gas used in power plants as part of transformation when looking at primary energy use but as part of the electricity/heat balance (depending what it is transformed into) when looking at final energy. When gas is used e.g. by the chemical industry, it appears as non-energetic use (not as energetic use in chemical processes).

The documentation accompanying the energy balance for 2015 for the first time contained a detailed referencing that enabled going back and forth between the two approaches.

The economic situation in 2018

The Austrian economy expanded by 2.7%; this was an eight-year high. Statistics Austria detected a 0.6% rise in consumer prices, while gas prices were down by 0.2% and electricity prices by a full 6%.

Consumption trends in 2018

Electricity and gas consumption moved in opposite directions in 2018. Gas use fell by 4.7% to reach 90.7 TWh or 8 billion (bn) normal cubic metres (n cu m), in a quite drastic drop from a 8.2% increase in 2017. Households used 16.2 TWh gas overall in 2018, non-households 74.5 TWh. We believe that the decrease in consumption was due to less use of gas for space heating (down by 6.4% or 1.4 TWh).

Electricity consumption edged up ever so slightly, by 0.2% or 0.1 TWh, and stood at 66.4 TWh, i.e. the upwards tendency of the last 20 years (only reversed in 2009 and 2014) continued.

It resulted in 2018 from a 0.6% reduction in electricity consumption by households, and increases among small businesses (1.2%), medium-sized industry (0.8%), and large industry (1.3%). The latter two of these categories accounted for about half of all electricity consumption in 2018, channelled through only one-fifth of metering points.

Energy inputs in 2018

Domestic natural gas production decreased by 17.6% to 11.1 TWh. Withdrawals from storage stood at 69.8 TWh (down by 5.6%) and there were injections of 69.5 TWh (a decrease of 11.3%). Net imports were down by 4.5% from last year.

Domestic electricity production dropped (by 4%), to reach 68 TWh, including a 0.9 TWh reduction in hydro output (particularly out of run-of-river plants). Production from thermal power plants was down by 6.4% and that from RES by 6.6%. Both imports and exports fell markedly, by 4.4% (1.3 TWh) and 16.2% (3.7 TWh) respectively.

Storage situation at year-end 2018

Austrian gas storage held 58.4 TWh at year-end 2018, making for a 63.6% fill level. This corresponds to almost two-thirds of domestic gas consumption in 2018.

Overall, gas storage facilities with a capacity of 91.8 TWh are located on Austrian territory. The hourly withdrawal capacity is 44.6 GWh, the hourly injection capacity 35.8 GWh.

Fill levels of Austrian electricity storage at year-end 2018 stood at 2.1 TWh (64%).

Electricity storage in Austria has an overall capacity of 3.3 TWh.

Market structures and consumer behaviour in 2018

About 93% of the over 1.2 m customers (metering points) on the Austrian gas market are households, but they only account for just under one-fifth (about 18%) of consumption. Non-households (including gas-fired power plant) make for more than 80% of the gas consumed.

A total of 82.700 gas consumers (metering points) switched suppliers in 2018, which results in a 6.1% switching rate. Most switchers (78,000) were households, but a switching rate of 5.2% among non-household consumers confirms that this group is just as dynamic. Overall, 2018 was a very active switching year in Austria, with the highest rates noted in Upper Austria (8.8%), Carinthia (7.8%) and Lower Austria (6.5%).

On the electricity side, Austria has 6.2 m electricity metering points for 4.7 m customers. 82% of these metering points, and 87% of customers, are households, which means the non-household sector accounts for no more than 18% of metering points and 13% of customers. Looking at consumption, the picture is reversed: non-households account for about 75%, households are just shy of 25%.

Overall, more than 247,000 electricity metering points were switched to different suppliers in 2018, i.e. the overall switching rate was 4%. Large industrial customers were least active, with a switching rate of 0.9%. Medium-sized industry (2.7%), other small customers (3.4%) and households (4.2%, corresponding to 210,000 households) were more involved. In terms of regional differences, the highest switching rates were observed in Upper Austria (5.9%), Vienna (4.9%) and Carinthia (4.8%).

Overview

Economic indicators

Consumer price index, Jan 2010 = 100						
	Total		Electricity		Natural gas	
	Annual average	Change in % (*)	Annual average	Change in % (*)	Annual average	Change in % (*)
1995	78.2		58.6		73.9	
2000	83.8	1.4	66.1	2.4	78.3	1.2
2005	92.7	2.0	82.8	4.6	83.0	1.2
2010	101.5	1.8	99.9	3.8	100.3	3.9
2015	112.3	2.0	112.9	2.5	106.5	1.2
2016	113.3	0.9	110.7	-1.9	107.7	1.1
2017	115.7	2.1	109.0	-1.6	101.8	-5.4
2018	116.3	0.6	102.5	-6.0	101.6	-0.2

(*) average / from 2016 year-on-year rates of change

Source: Statistics Austria

Gross domestic product		
	m€ (rate of 2010)	Change in % (*)
1995	219 276	
2000	254 069	3.0
2005	277 307	1.8
2010	295 897	1.3
2015	312 252	1.1
2016	318 621	2.0
2017	326 749	2.6
2018	335 711	2.7

(*) average / from 2016 year-on-year rates of change

Source: Statistics Austria

The economic context for the electricity and gas statistics

Population, annual average		
	Population numbers	Change in % (*)
1995	7 948 278	
2000	8 011 566	0.2
2005	8 225 278	0.5
2010	8 361 069	0.3
2015	8 629 519	0.6
2016	8 739 806	1.3
2017	8 795 073	0.6
2018	8 837 707	0.5

(*) average / from 2016 year-on-year rates of change

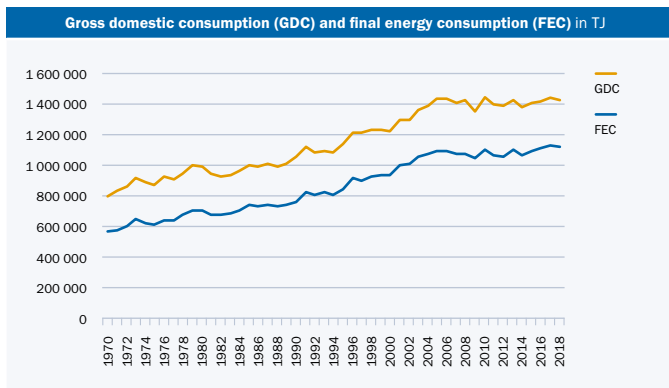
Source: Statistics Austria

Households				
	Single-person households	Multi-person households	Total	Average household size (persons)
1995	892 546	2 200 689	3 093 235	2.54
2000	976 630	2 260 453	3 237 083	2.45
2005	1 198 477	2 276 865	3 475 342	2.34
2010	1 300 166	2 323 587	3 623 753	2.28
2015	1 418 449	2 398 317	3 816 766	2.22
2016	1 429 495	2 435 324	3 864 819	2.22
2017	1 438 325	2 451 767	3 890 092	2.22
2018	1 456 593	2 459 500	3 916 093	2.22

Source: Statistics Austria

Relevant Austrian population indicators

Energy industry indicators



Source: Statistics Austria

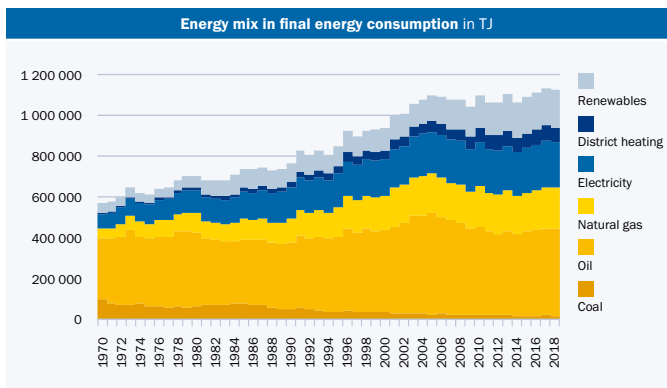
Gross domestic consumption and final energy consumption in TJ		
	Gross domestic consumption	Final energy consumption
1995	1 139 766	847 211
2000	1 224 463	937 129
2005	1 431 270	1 095 054
2010	1 440 600	1 099 165
2015	1 403 131	1 089 929
2016	1 414 018	1 109 585
2017	1 441 854	1 129 644
2018(*)	1 422 354	1 122 477

(*) provisional figures

Source: Statistics Austria

Main economic and energy consumption indicators

ENERGY BALANCE



Source: Statistics Austria

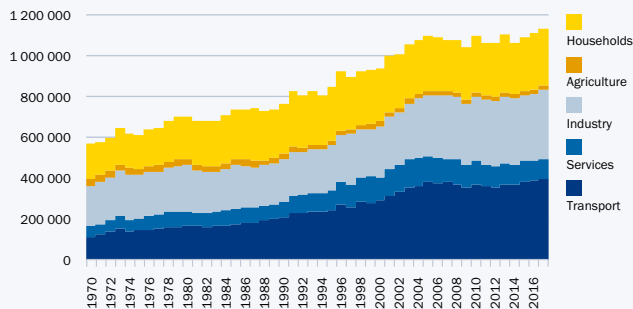
Energy mix in final energy consumption in TJ							
	Coal	Oil	Natural gas	Electricity	District heating	Renewables	Total
1995	38 011	364 904	144 612	166 122	35 515	98 047	847 211
2000	32 870	401 577	167 475	183 336	42 699	109 172	937 129
2005	22 895	496 351	193 033	206 998	50 854	124 922	1 095 054
2010	19 502	434 045	198 367	215 403	71 628	160 220	1 099 165
2015	17 292	410 982	190 486	219 898	70 317	180 955	1 089 929
2016	17 390	421 874	193 700	223 339	74 559	178 724	1 109 585
2017	18 299	429 778	200 299	226 036	75 653	179 579	1 129 644
2018(*)	17 182	430 045	196 421	227 048	69 870	181 911	1 122 477

(*) provisional figures

Source: Statistics Austria

The input side of the Austrian energy balance

Final energy consumption by sectors in TJ



Source: Statistics Austria

Final energy consumption by sectors in TJ

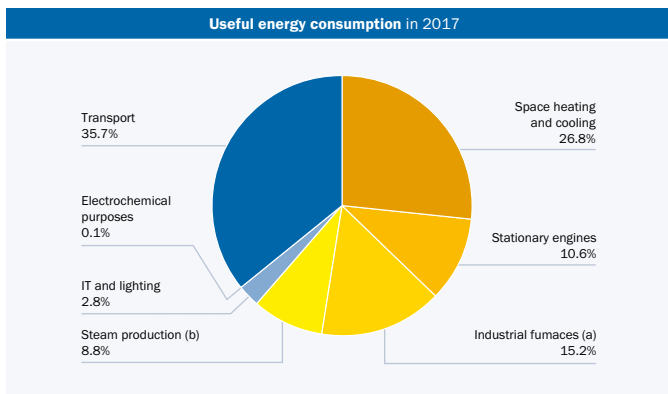
	Households	Agriculture	Industry	Services	Transport	Total
1995	262 860	22 671	220 775	96 397	244 507	847 211
2000	259 565	22 384	249 475	113 156	292 548	937 129
2005	269 039	20 071	300 745	125 065	380 134	1 095 054
2010	277 642	21 396	314 149	115 543	370 434	1 099 165
2015	265 927	21 720	318 625	101 304	382 353	1 089 929
2016	273 302	21 979	327 439	98 312	388 552	1 109 585
2017	276 446	22 041	337 596	99 960	393 601	1 129 644
2018(*)	270 559	22 283	326 442	101 829	401 364	1 122 477

(*) provisional figures

Source: Statistics Austria

The output side of the Austrian energy balance

USEFUL ENERGY



Source: Statistics Austria

Useful energy consumption in 2017		
	TJ	Share in %
Space heating and cooling	302 757	26.8
Stationary engines	120 033	10.6
Industrial furnaces (a)	171 885	15.2
Steam production (b)	99 868	8.8
IT and lighting	31 391	2.8
Electrochemical purposes	623	0.1
Transport	403 088	35.7
Total	1 129 644	100.0

(a) Cooling and freezing, electrical appliances

(b) Warm water and cooking

Source: Statistics Austria

Uses of energy in Austria as reflected in the energy balance (this and next page)

Natural gas – useful energy consumption in 2017

	TJ	Share in %	Share in total in %
Space heating and cooling	83 649	41.8	7.4
Stationary engines	2 497	1.2	0.2
Industrial furnaces (a)	55 787	27.9	4.9
Steam production (b)	46 189	23.1	4.1
IT and lighting	6	0.0	0.0
Electrochemical purposes	0	0.0	0.0
Transport	12 169	6.1	1.1
Total	200 299	100.0	17.7

(a) Cooling and freezing, electrical appliances

(b) Warm water and cooking

Source: Statistics Austria

Electricity – useful energy consumption in 2017

	TJ	Share in %	Share in total in %
Space heating and cooling	24 997	11.1	2.2
Stationary engines	104 353	46.2	9.2
Industrial furnaces (a)	49 697	22.0	4.4
Steam production (b)	3 385	1.5	0.3
IT and lighting	31 385	13.9	2.8
Electrochemical purposes	623	0.3	0.1
Transport	11 596	5.1	1.0
Total	226 036	100.0	20.0

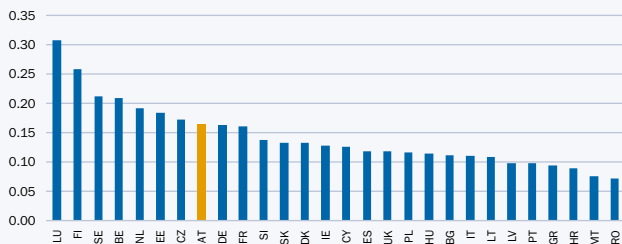
(a) Cooling and freezing, electrical appliances

(b) Warm water and cooking

Source: Statistics Austria

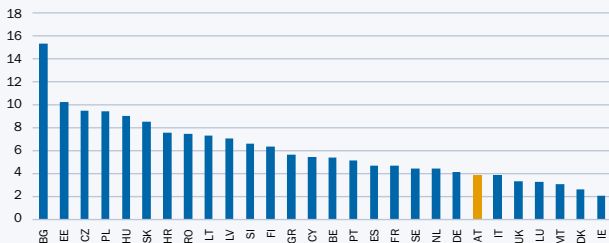
INTERNATIONAL ENERGY INDICATORS

Per capita energy consumption in EU countries in 2017, TJ/inhabitant



Source: Eurostat

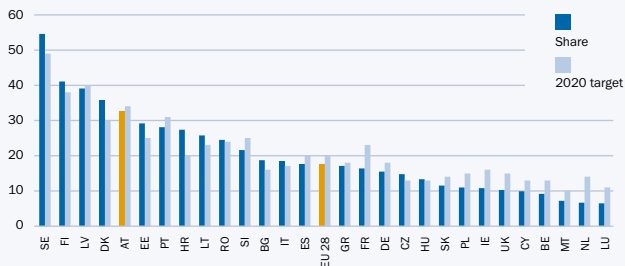
Gross domestic consumption of energy divided by GDP in 2017, TJ/m€



Source: Eurostat

Austrian energy indicators in the international context

Renewables shares in the EU in 2017 and the 2020 target, %



Source: Eurostat

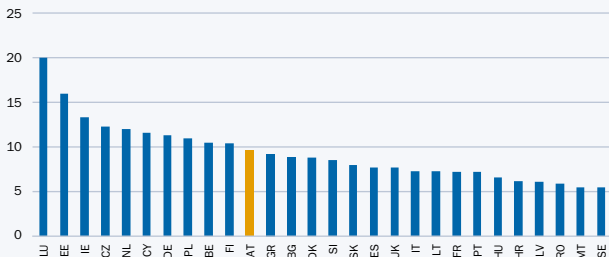
GREENHOUSE GAS EMISSIONS

Emissions in Austria and the 2020 target, 1990-2017, m t CO₂ equivalents



Source: Environment Agency Austria

Per capita emissions in EU countries in 2017, t CO₂ equivalents

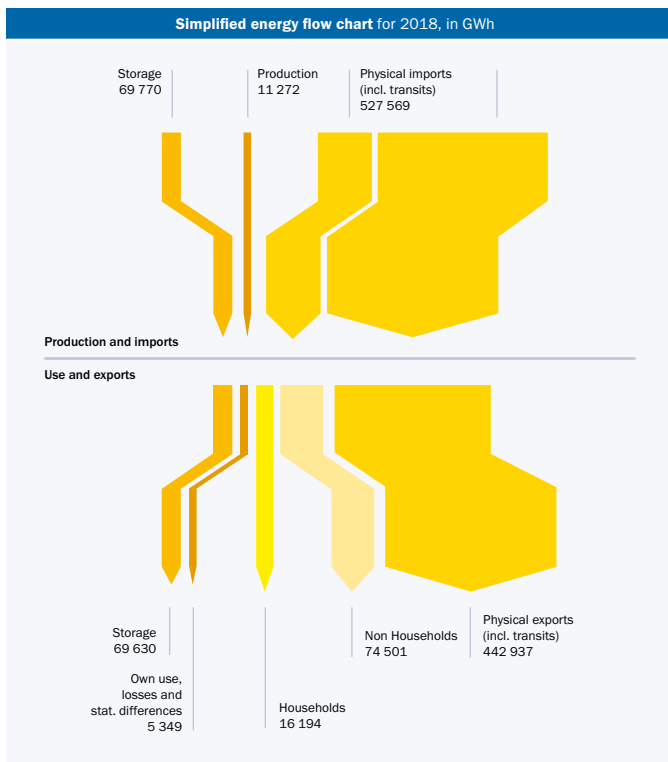


Source: Eurostat

Austrian emissions compared to emissions in other countries

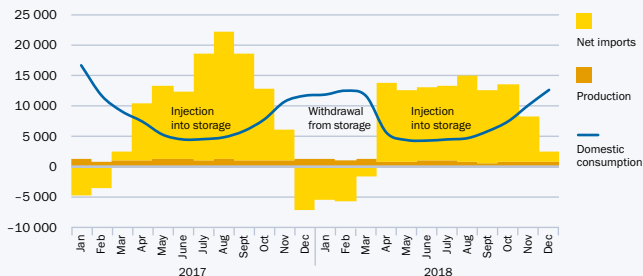
Operational statistics

Natural gas in Austria



Flow chart for natural gas in Austria

Natural gas balance in GWh



Natural gas balance for 2018

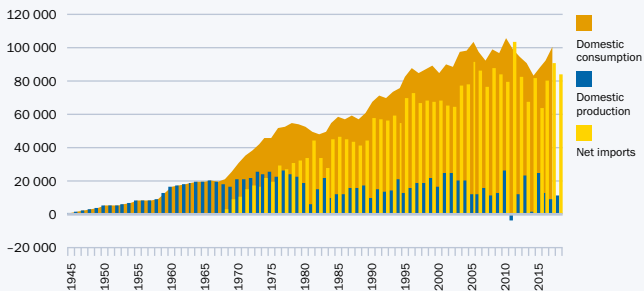
	m Nm ³	GWh	Year-on-year change in %
Supply to consumers (a)	8 025	90 681	-4.7
Own use and losses (b) and statistical differences (c)	475	5 363	—
Domestic consumption	8 499	96 044	-4.4
Injection into storage (d)	6 162	69 630	-11.3
Exports (d)	39 198	442 937	-4.0
Consumption and exports = production and imports	53 859	608 611	-4.9
Imports (d)	46 688	527 569	-4.5
Production (d)	982	11 101	-17.6
Injection of biogas (d)	15	171	15.0
Withdrawal from storage (d)	6 174	69 770	-5.6

(a) Supply to consumers (here: households, industry, chemical industry, refineries, thermal power plants etc.)

(b) For production, storage operation and transports (including transits)

(c) Statistical difference between calculated and metered supply to consumers

(d) Physical flow data (imports and exports include transits)

Natural gas consumption and supply in GWh**Natural gas balance in GWh**

	Supply to consumers (d)	Statistical difference (c)	Own use and losses (b)	Domestic consumption	Net imports	Domestic production (a)
1995	79 631	1	3 265	82 897	70 275	12 621
2000	80 514		4 612	85 126	68 635	16 491
2005	100 420	-401	4 065	104 083	92 019	12 065
2010	102 093	803	2 873	105 769	79 817	25 952
2015	84 585	-343	4 398	88 641	64 091	24 550
2016	87 966	-57	4 914	92 822	80 369	12 452
2017	95 163	-281	5 603	100 485	91 412	9 072
2018	90 681	318	5 045	96 044	84 632	11 413

(a) Production and net storage movements

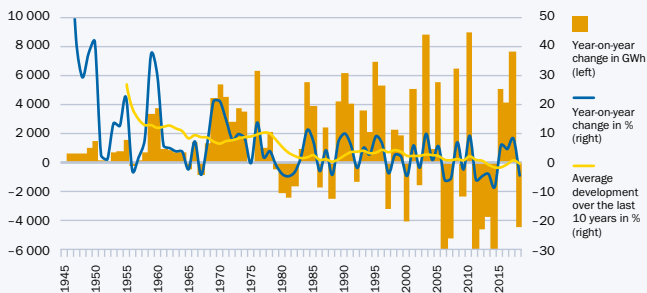
(b) For production, storage and transports (including transits)

(c) Statistical difference between calculated and metered supply to consumers

(d) Supply to consumers (here: households, industry, chemical industry, refineries, thermal power plants etc.)

Sources: Federal Ministry of Economics and Labour (for data up to 2002), E-Control (for data from 2002 onwards)

Natural gas consumption trends in GWh and %



Physical imports and exports of natural gas in 2018

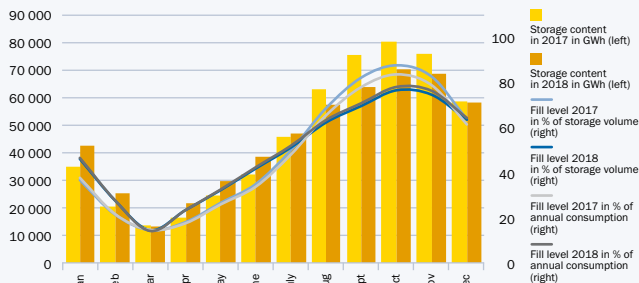
	Imports (*)		Exports (*)	
	in m Nm ³	in GWh	in m Nm ³	in GWh
Germany	7 107	80 311	5 577	63 023
Switzerland			57	648
Italy			27 512	310 889
Slovenia			1 171	13 228
Hungary			3 077	34 767
Slovakia	39 579	447 244	1 804	20 382
Czech Republic	1	14		
Total	46 688	527 569	39 198	442 937

(*) Physical flows metered at Austrian borders (including transits)

Main natural gas indicators for Austria (pages 19 – 21)

Natural gas infrastructure in Austria

Natural gas storage at month end (*) in 2018, in GWh and %



(*) Includes all storage facilities on the Austrian territory.

Natural gas storage facilities (*)

	Storage volume in GWh	Max. injection rate in MWh per hour	Max. withdrawal rate in MWh per hour
2005	32 202	13 254	14 887
2010	51 906	21 966	25 905
2015	92 685	36 272	44 817
2016	94 971	37 412	45 872
2017	91 774	36 166	44 260
2018	91 774	35 830	44 596

(*) Includes all storage facilities on the Austrian territory.

Domestic gas production		
	Max. production rate in MWh per hour	Max. production rate in 1,000 Nm ³ per hour
2010	2 319	207
2015	1 982	176
2016	1 611	142
2017	1 682	149
2018	1 743	154

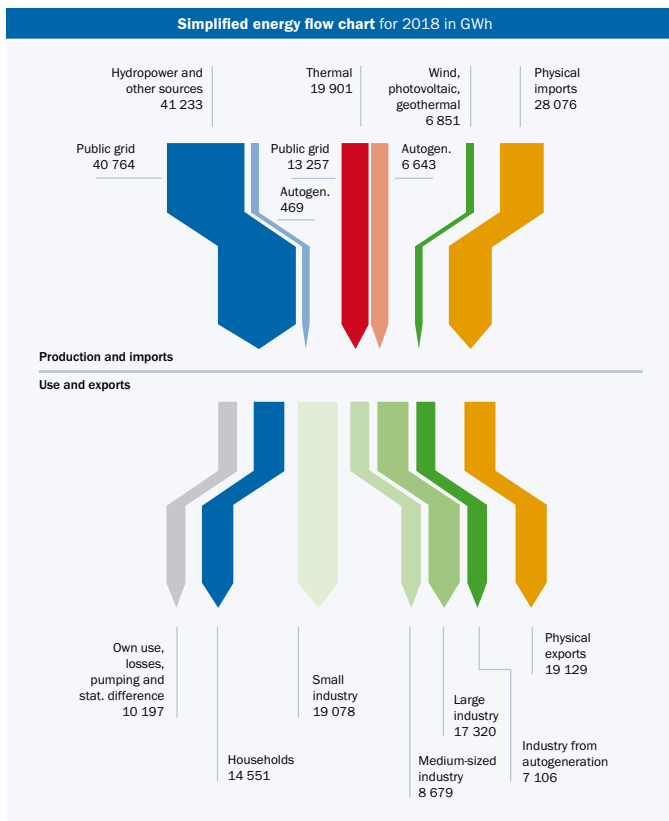
Network length at year end in km			
	Grid level 1, including transmission lines	Distribution lines at grid level 2	Local grids and distribution lines at grid level 3
2000 (*)	2 377	3 266	n.a.
2005	2 757	3 425	30 195
2010	3 143	3 685	33 027
2015	3 089	4 096	35 115
2016	3 092	4 111	35 625
2017	3 091	4 115	38 746
2018	3 134	4 100	38 998

(*) Partly estimated based on year of start of operation

Key figures on natural gas infrastructure in Austria (pages 22 and 23)

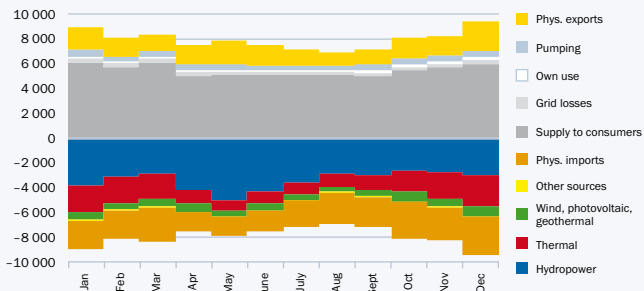
Electricity in Austria

(total electricity supply)



Electricity flow chart for Austria

Electricity balance 2018, in GWh

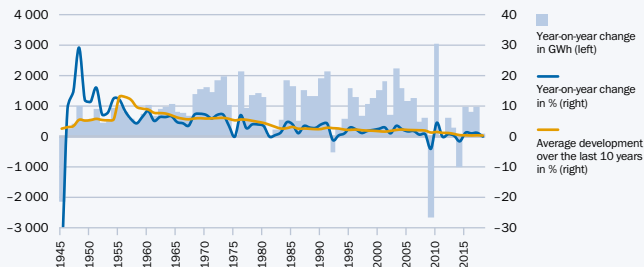


Electricity balance 2018

		2017 in GWh	2018 in GWh	Year-on-year change in GWh in %	
Supply to consumers (1)		66 231	66 374	143	0.2
Grid losses		3 337	3 336	-1	0.0
Own use		2 143	2 105	-37	-1.7
Domestic consumption		71 711	71 815	105	0.1
Pumping		5 545	5 116	-429	-7.7
Physical exports		22 817	19 129	-3 687	-16.2
Use and exports = generation and imports		100 072	96 061	-4 012	-4.0
Gross generation	Hydro	42 088	41 175	-912	-2.2
	Thermal	21 272	19 901	-1 371	-6.4
	Renewables (2)	7 337	6 851	-486	-6.6
	Other sources	14	58		
Physical imports		29 362	28 076	-1 286	-4.4

(1) Includes final energy consumption and the electricity consumption of the non-electricity energy sector

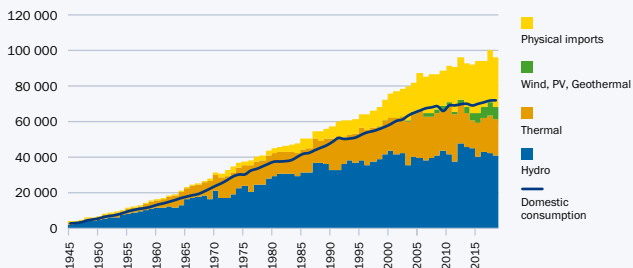
(2) Photovoltaics, wind and geothermal

Electricity consumption trends in GWh and %**Electricity balance in GWh**

	Supply to consumers	Own use	Grid losses	Domestic consumption	Electricity for pumping	Physical exports	Use and exports = generation and imports
1995	47 722	1 556	3 328	52 606	1 511	9 757	63 874
2000	53 751	1 566	3 195	58 512	1 990	15 216	75 718
2005	60 465	2 051	3 567	66 083	3 276	17 732	87 091
2010	63 308	2 089	3 534	68 931	4 576	17 472	90 979
2015	64 494	1 980	3 443	69 917	4 907	19 328	94 151
2016	65 373	2 025	3 342	70 740	4 339	19 207	94 286
2017	66 231	2 143	3 337	71 711	5 545	22 817	100 072
2018	66 374	2 105	3 336	71 815	5 116	19 129	96 061

Austrian electricity indicators (pages 25 – 28)

Domestic consumption and supply in GWh



Electricity balance in GWh

	Gross generation					Physical imports	Generation and imports = use and exports
	Hydro-power	Thermal	Wind, PV, Geothermal	Other sources	Total		
1995	38 477	18 110			56 587	7 287	63 874
2000	43 461	18 270	67		61 798	13 920	75 718
2005	39 574	26 126	1 347	-312	66 735	20 355	87 091
2010	41 575	27 384	2 096	16	71 070	19 909	90 979
2015	40 465	18 833	5 421	43	64 762	29 389	94 151
2016	42 916	19 043	5 900	60	67 919	26 366	94 286
2017	42 088	21 272	7 337	14	70 710	29 362	100 072
2018	41 175	19 901	6 851	58	67 985	28 076	96 061

Gross generation mix in 2018						
Energy source			GWh	Share in %		
Hydropower	Run of river	up to 10 MW	4 961	7.3	12.0	
		over 10 MW	22 406	33.0	54.4	
	Pumped storage	up to 10 MW	511	0.8	1.2	
		over 10 MW	13 297	19.6	32.3	
	Total hydro			41 175	60.6	100.0
Thermal	Fossil fuels and derivatives	Hard coal	1 789	2.6		9.0
		Lignite				0.0
		Coal derivatives (1)	1 823	2.7		9.2
		Oil derivatives (1)	641	0.9		3.2
		Natural gas	10 072	14.8		50.6
		Total	14 325	21.1		72.0
	Biofuels	Solid (2)	2 593	3.8		13.0
		Liquid (2)	0	0.0		0.0
		Gaseous (2)	589	0.9		3.0
		Sewage and landfill gases (2)	29	0.0		0.1
		Total (2)	3 211	4.7		16.1
	Other biofuels (3)		1 407	2.1		7.1
	Other fuels		958	1.4		4.8
	Total thermal (of which CHP)		19 901 (17 974)	29.3 (26.4)		100.0 (90.3)
	Renewables	Wind (4)		6 029	8.9	88.0
Photovoltaics (4)		822	1.2	12.0		
Geothermal (4)		0	0.0	0.0		
Total renewables (4)		6 851	10.1	100.0		
Other sources (5)			58	0.1		
Total			67 985	100.0		

(1) Coal and oil derivatives used for electricity generation

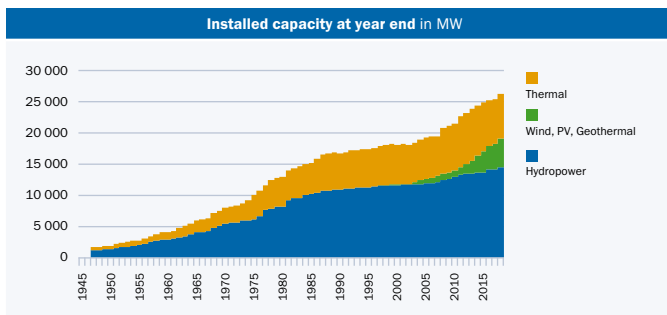
(2) Only biofuels as defined by Austrian law

(3) Biofuels as defined by Union law, except for (2)

(4) Injection by certified renewable power plants as defined by Austrian law

(5) Generation that can neither be broken down by primary energy source nor assigned to a type of power station

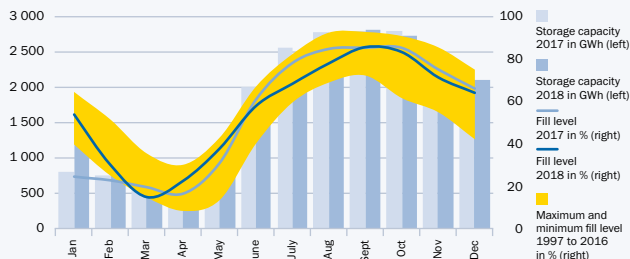
Power plants in Austria



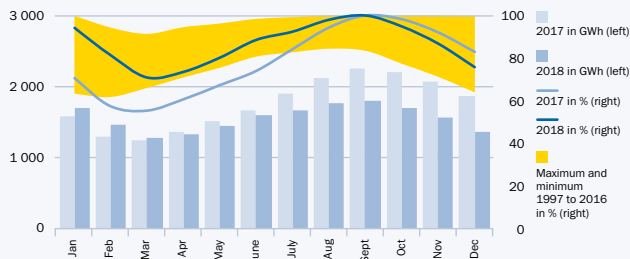
Installed capacity at year end in MW							
Gross maximum capacity							
	Hydropower plants			Wind, PV, Geothermal	Thermal	Total	Net maximum capacity
	Run of river	Pumped storage	Total				
1995	—	—	11 306	—	6 134	17 440	16 959
2000	5 256	6 407	11 664	49	6 315	18 028	17 532
2005	5 347	6 491	11 837	841	6 534	19 213	18 703
2010	5 412	7 520	12 932	1 054	7 433	21 419	20 844
2015	5 662	7 987	13 650	3 362	7 768	24 780	24 177
2016	5 700	8 418	14 118	3 764	7 323	25 204	24 624
2017	5 716	8 435	14 151	4 080	7 183	25 415	24 842
2018	5 722	8 795	14 516	4 507	7 193	26 216	25 640

Key figures on electricity infrastructure in Austria (pages 29 – 34)

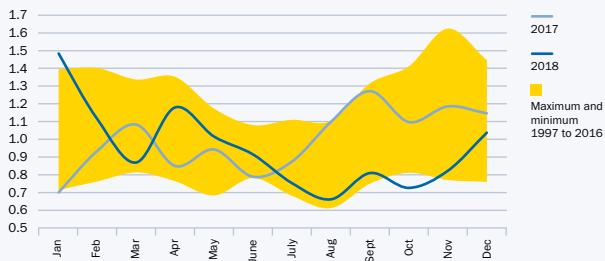
Storage capacity and fill levels at month end – large reservoirs of public generators, in GWh and %



Fossil fuel stocks at month end – thermal power plants of public generators, in GWh and %



Energy capability factor – run-of-river power plants of public generators



Annual energy capability factor – large run-of-river power plants of public generators

2017	2018	1997 to 2016 maximum	1997 to 2016 minimum
0.99	0.93	1.16	0.87

Energy availability – power plants of public generators (*), in %						
	Thermal power plants			Pumped storage power plants		
	Availability factor	Utilisation factor	Outages	Availability factor	Utilisation factor	Outages
2000	76.7	32.6	5.9	93.6	18.6	2.6
2005	85.3	42.7	5.3	93.3	19.7	1.1
2010	84.3	35.9	15.0	84.2	18.7	7.7
2015	80.4	12.1	13.7	93.0	17.3	2.3
2016	79.1	16.1	13.7	88.8	15.6	2.2
2017	76.5	21.1	20.1	90.7	15.4	3.6
2018	83.6	18.5	16.4	93.2	15.7	4.3

(*) Power plants with a capacity of at least 25 MW that inject into Austrian control areas

Combined heat and power (CHP)						
	Efficiency of thermal power plants in %			Capacity of thermal power plants in MW		
	With CHP		Without CHP	With CHP		Without CHP
	Overall efficiency (1)	Effective electric efficiency (2)	Efficiency (3)	Thermal capacity	Maximum capacity	Maximum capacity
2000	68.9	49.5	42.8	6 648	3 964	2 351
2005	69.9	52.9	41.5	7 545	4 511	2 023
2010	72.7	57.2	40.2	8 680	5 761	1 672
2015	72.0	52.5	37.7	8 667	6 063	1 705
2016	75.1	56.9	36.9	8 977	6 424	898
2017	74.1	56.7	37.1	8 969	6 188	996
2018	75.4	58.6	32.5	8 832	6 389	804

(1) Electricity and heat output divided by total fuel input

(2) Electricity output divided total by fuel input minus heat output

(3) Electricity output divided by fuel input

Firm capacity in 2018 – run-of-river plants of public generators (*)					
Type of power plant	Up to 50 MW	50 MW to 100 MW	100 MW to 250 MW	Over 250 MW	Total
Capacity in MW					
Run-of-river plants with pondage	204	250	—	—	454
Run-of-river plants without pondage	126	83	444	310	963
Total run-of-river plants	330	333	444	310	1 418
Share in maximum capacity in %					
Run-of-river plants with pondage	40.3	46.3	—	—	43.4
Run-of-river plants without pondage	38.7	53.6	38.5	34.1	37.9
Total run-of-river plants	39.6	47.9	38.5	34.1	39.5

(*) Power plants with a capacity of at least 25 MW that inject into Austrian control areas

Public grid in Austria

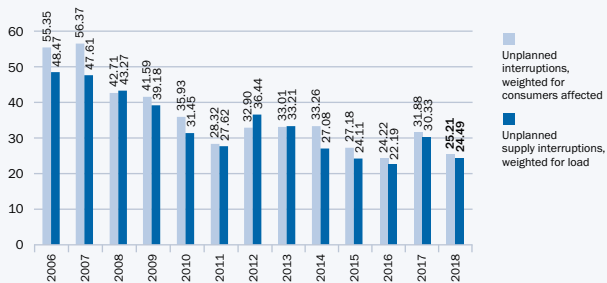
Route length (*) of the public grid at year-end 2018					
Voltage level	Overhead lines		Cables		Total
	km	Share in %	km	Share in %	km
380 kV	1 386	0.6	54	0.0	1 439
220 kV	1 878	0.8	7	0.0	1 884
110 kV	6 120	2.6	632	0.3	6 751
1 kV to 110 kV	24 306	10.2	40 770	17.1	65 076
Up to 1 kV	30 454	12.8	132 368	55.6	162 822
Total	64 143	27.0	173 830	73.0	237 974

(*) Including high and ultra-high voltage lines of public generators

High voltage substations in the public grid at year-end 2018		
Voltage level	Number of transformers	Total capacity in MVA
Primary voltage up to 200 kV	1 032	43 991
Primary voltage over 200 kV	89	31 225
High voltage to high, medium and low voltage	1 121	75 216

Medium voltage substations in the public grid at year-end 2018		
Voltage level	Number of transformers	Total capacity in MVA
Medium voltage to medium and low voltage	79 469	32 359

Interruption of electricity supply, in minutes



Quality of electricity supply in Austria

Market statistics

Austrian gas market

Consumption structure					
Supply to consumers					
Consumer category	Unit	2017	2018	Change absolute	Change in %
Households	GWh	17 596	16 194	-1 402	-8.0
Small business and industry (1)	GWh	8 856	8 335	-521	-5.9
Medium-sized industry (2)	GWh	8 074	7 570	-504	-6.2
Large industry (3)	GWh	60 664	58 597	-2 068	-3.4
Statistical difference	GWh	-27	-14		
Total supply to consumers	GWh	95 163	90 681	-4 482	-4.7
Number of metering points (MP) / Number of Consumer (Cs)					
Consumer category	Unit	2017	2018	2017	2018
Households	1 000	1 245.1	1 228.8	1 178.0	1 159.8
Small business and industry (1)	1 000	91.9	106.1	70.8	86.9
Medium-sized industry (2)	1 000	8.1	7.2	1.0	0.9
Large industry (3)	1 000	2.6	2.8	0.2	0.2
Total number of metering points	1 000	1 347.7	1 344.9	1 250.0	1 247.8
Average consumption (per MP) / Average consumption (per Cs)					
Consumer category	Unit	2017	2018	2017	2018
Households	kWh/..	14 132	13 179	14 937	13 963
Small business and industry (1)	kWh/..	96 397	78 562	125 135	95 931
Medium-sized industry (2)	MWh/..	993.9	1 051.2	8 349.3	8 410.6
Large industry (3)	MWh/..	23 225.2	20 815.9	304 845.8	292 983.4
Total	kWh/..	70 612	67 427	76 133	72 675

(1) annual withdrawal up to 2.8 GWh

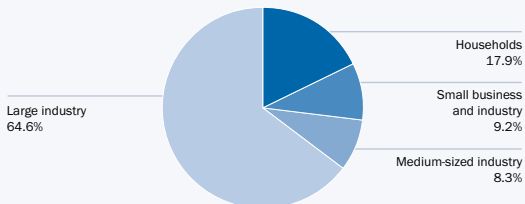
(2) annual withdrawal from 2.8 GWh/a to 28 GWh

(3) annual withdrawal exceeding 28 GWh

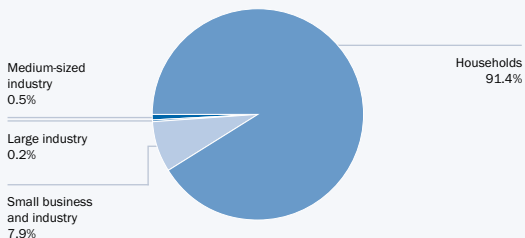
Statistical difference: Difference between metered consumption and individual reporting. Negative values may result from discrepancies between the settlement period and calendar year

Structure of the Austrian natural gas market in terms of consumer groups and areas within Austria (pages 36 – 38)

Consumption structure – supply to consumers 2018



Consumption structure – number of metering points 2018

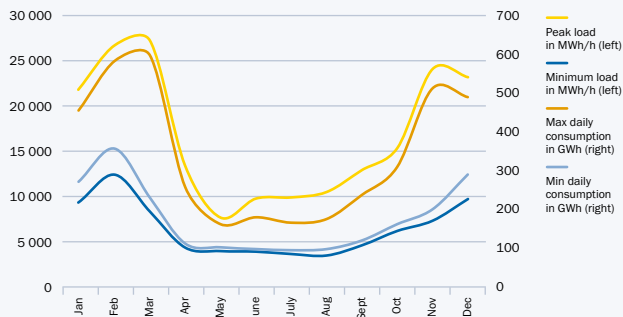


Consumption structure – supply to consumers by grid zone in GWh					
Federal province / grid zone		2017	2018	Change absolute	Change in %
Burgenland		2 403	2 331	–72	–3.0
Carinthia		2 175	1 995	–180	–8.3
Lower Austria		21 026	19 743	–1 282	–6.1
Upper Austria		23 780	22 287	–1 493	–6.3
Salzburg		3 291	3 018	–273	–8.3
Styria		15 033	14 161	–872	–5.8
Tyrol		4 225	4 133	–93	–2.2
Vorarlberg		2 436	2 331	–105	–4.3
Vienna		20 821	20 696	–126	–0.6
Austria	Statistical difference	–27	–14	–	–
	Total supply to consumers	95 163	90 681	–4 482	–4.7

Statistical difference: Difference between metered consumption and individual reporting per consumer category

Consumption structure – number of metering points by grid zone in 1 000				
Federal province / grid zone	2017	2018	Change absolute	Change in %
Burgenland	53.2	52.2	–1	–1.7
Carinthia	13.8	13.8	0	–0.5
Lower Austria	294.1	294.3	0	0.1
Upper Austria	144.6	144.1	–1	–0.4
Salzburg	36.6	36.6	0	0.1
Styria	67.3	67.4	0	0.1
Tyrol	51.7	53.5	2	3.5
Vorarlberg	36.0	36.5	0	1.1
Vienna	650.5	646.6	–4	–0.6
Austria	1 347.7	1 344.9	–3	–0.2

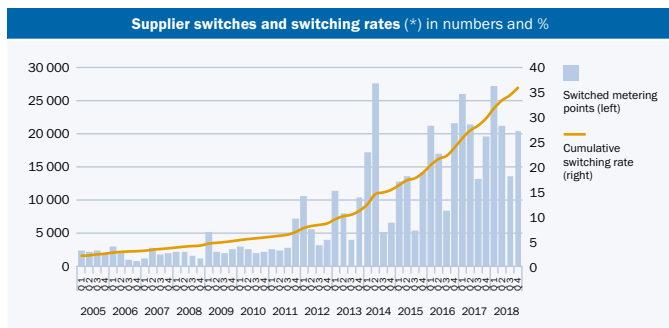
Load indicators for 2018 in MWh/h and GWh



Load indicators

	Annual peak load	Annual minimum load	Maximum daily minimum load	Maximum daily consumption	Minimum daily consumption	Peak load utilisation period
Year	MWh/h	MWh/h	MWh/h	GWh	GWh	h
2014	20 291	3 674	14 679	428	94	3 883
2015	20 673	3 286	14 234	432	90	4 092
2016	24 591	3 585	18 228	525	90	3 577
2017	27 115	3 510	22 280	604	96	3 510
2018	27 234	3 486	21 176	597	95	3 330

Load indicators of natural gas supply in Austria

THE EFFECTS OF LIBERALISATION: GAS SWITCHING RATES

(*) By number of metering points

Supplier switches and switching rates (*)					
	2005	2010	2015	2017	2018
Number of supplier switches					
Households	8 058	8 018	42 662	74 593	77 842
Small business and industry		1 711	3 330	5 684	4 423
Medium-sized industry	837	54	58	121	196
Large industry		16	9	20	246
Total	8 895	9 799	46 059	80 418	82 707
Switching rates in %					
Households	0.6	0.6	3.4	6.0	6.3
Small business and industry		2.2	4.3	6.2	4.2
Medium-sized industry	1.2	6.0	6.9	1.5	2.7
Large industry		8.5	4.6	0.8	8.7
Total	0.7	0.7	3.4	6.0	6.1

(*) By number of metering points

Supplier switches (*) by grid zone					
Federal province / grid zone	2005	2010	2015	2017	2018
Burgenland	50	139	1 160	2 155	2 093
Carinthia	37	28	585	1 193	1 076
Lower Austria	2 180	3 142	12 557	18 844	19 149
Upper Austria	1 273	1 582	7 972	13 261	12 641
Salzburg	78	65	568	1 183	1 352
Styria	158	643	3 172	4 790	3 932
Tyrol	—	2	400	1 672	1 465
Vorarlberg	—	2	304	790	845
Vienna	5 119	4 196	19 341	36 530	40 154
Austria	8 895	9 799	46 059	80 418	82 707

(*) By number of metering points

Switching rates (*) by grid zone in %					
Federal province / grid zone	2005	2010	2015	2017	2018
Burgenland	0.1	0.3	2.3	4.1	4.0
Carinthia	0.3	0.2	4.2	8.6	7.8
Lower Austria	0.8	1.1	4.3	6.4	6.5
Upper Austria	0.9	1.1	5.5	9.2	8.8
Salzburg	0.3	0.2	1.6	3.2	3.7
Styria	0.3	1.0	4.7	7.1	5.8
Tyrol	—	0.0	0.8	3.2	2.7
Vorarlberg	—	0.0	0.9	2.2	2.3
Vienna	0.7	0.6	2.9	5.6	6.2
Austria	0.7	0.7	3.4	6.0	6.1

(*) By number of metering points

Gas switching rates (pages 40 – 41)

Austrian electricity market (public grid)

Consumption structure					
Supply to consumers					
Consumer category	Unit	2017	2018	Change	
Households	GWh	14 634	14 551	-83	-0.6%
Small business and industry	GWh	18 856	19 078	222	1.2%
Medium-sized industry	GWh	8 610	8 679	69	0.8%
Large industry	GWh	17 094	17 320	227	1.3%
Own use from the public grid	GWh	-529	-478		
Statistical difference	GWh	229	118		
Total supply to consumers	GWh	58 893	59 268	375	0.6%
Number of metering points				... of consumer	
Consumer category	Unit	2017	2018	2017	2018
Households	1 000	4 980.5	5 033.7	3 993.8	4 080.6
Small business and industry	1 000	1 073.0	1 070.6	608.3	603.3
Medium-sized industry	1 000	36.0	31.5	1.1	1.0
Large industry	1 000	32.0	31.3	0.2	0.2
Total number of metering points	1 000	6 121.5	6 167.1	4 603.3	4 685.2
Average consumption per metering point				... per consumer	
Consumer category	Unit	2017	2018	2017	2018
Households	kWh/...	2 938	2 891	3 664	3 566
Small business and industry	kWh/...	17 573	17 820	30 999	31 621
Medium-sized industry	kWh/...	239 058	275 861	8 145 837	8 305 672
Large industry	kWh/...	533 444	553 502	72 430 889	71 868 027
Total	kWh/...	9 621	9 610	12 793	12 650

Households: residential sector

Small business and other small consumers: Consumers with an annual withdrawal from the public grid of less than 4 GWh

Medium-sized industry: Consumers with an annual withdrawal from the public grid between 4 GWh and 20 GWh

Large industry: Consumers with an annual withdrawal from the public grid of more than 20 GWh

Own use from the public grid is no final consumption (no further breakdown)

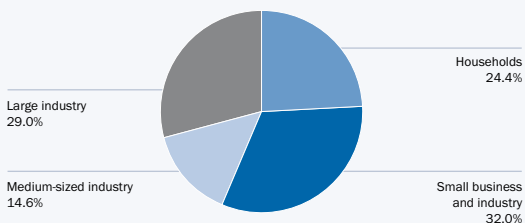
Statistical difference: Difference between metered consumption and individual reporting.

Remarks:

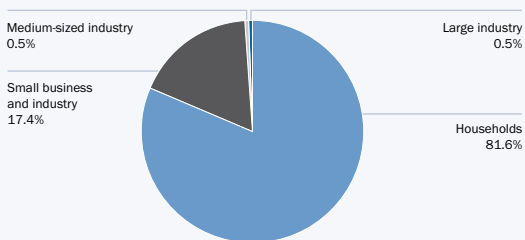
The breakdown by the two consumer categories households and non-households starts only with the reporting year 2016. An assignment to these two consumer categories before this date can only be modelled.

Consumer (Sites) are to be reported from 2016 onwards.

Consumption structure – supply to consumers 2018



Consumption structure – number of metering points 2018



Consumption structure – supply to consumers by grid zone in GWh

Federal province / grid zone		2017	2018	Change	
Burgenland		1 681	1 695	14	0.8
Carinthia		4 294	4 318	24	0.6
Lower Austria		8 494	8 634	140	1.7
Upper Austria		11 178	11 338	160	1.4
Salzburg		3 691	3 663	-28	-0.8
Styria		8 875	8 859	-16	-0.2
Tyrol		5 750	5 711	-39	-0.7
Vorarlberg		2 660	2 667	7	0.3
Vienna		12 570	12 743	173	1.4
Austria	Own use from the public grid	-529	-478	–	–
	Statistical difference	229	118	–	–
	Total supply to consumers	58 893	59 268	375	0.6

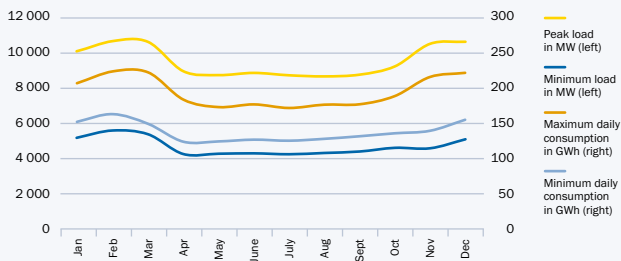
Own use from the public grid is no final consumption (no further breakdown)

Statistical difference: Difference between metered consumption and individual reporting.

Consumption structure – number of metering points and consumer by grid zone in 1 000

Federal province / grid zone		Number of metering points		Number of consumer	
		2017	2018	2017	2018
Burgenland		213.0	214.5	168.5	169.8
Carinthia		391.6	392.6	278.9	281.1
Lower Austria		853.8	858.4	652.5	657.6
Upper Austria		1 027.8	1 037.3	748.5	742.0
Salzburg		437.8	439.6	279.8	281.1
Styria		942.0	947.2	675.2	694.9
Tyrol		483.1	487.1	373.3	378.4
Vorarlberg		237.0	240.9	188.7	193.3
Vienna		1 535.3	1 549.5	1 238.0	1 287.1
Austria		6 121.5	6 167.1	4 603.3	4 685.2

Load indicators for 2018 in MW and GWh



Load indicators

	Annual peak load	Annual minimum load	Maximum daily min. load	Daily baseload supply	Peak load utilisation time	Load factor (M)
	MW	MW	MW	GWh	h	
2014	10 126	4 023	6 653	44 623	5 935	0.68
2015	10 066	4 075	6 554	45 958	6 071	0.69
2016	10 397	4 085	6 969	46 777	5 947	0.68
2017	10 578	4 085	7 170	47 687	5 919	0.68
2018	10 705	4 257	7 326	47 829	5 878	0.67

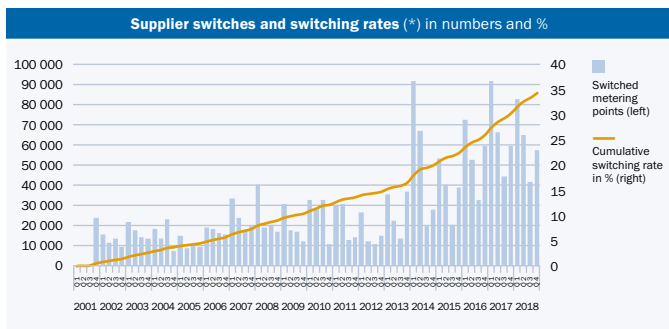
Peak load utilisation time = consumption / peak load [during reference period]

Load factor = peak load utilisation time / number of hours [in the reference period]

Structure of the Austrian electricity market in terms of consumer groups and areas within Austria (pages 42 – 44)

Load indicators of electricity supply in Austria (this page)

THE EFFECTS OF LIBERALISATION: ELECTRICITY SWITCHING RATES



(*) By number of metering points

Supplier switches and switching rates (*)					
	2005	2010	2015	2017	2018
Number of supplier switches					
Households	22 768	69 781	102 571	215 359	209 177
Small business and industry	19 686	34 387	50 039	45 017	36 893
Medium-sized industry	164	224	163	1 372	843
Large industry	21	10	35	847	269
Total	42 639	104 402	152 808	262 595	247 182
Switching rates in %					
Households	0.6	1.7	2.3	4.3	4.2
Small business and industry	1.2	2.1	3.0	4.2	3.4
Medium-sized industry	6.3	12.2	8.2	3.8	2.7
Large industry	11.0	5.2	16.7	2.6	0.9
Total	0.8	1.8	2.5	4.3	4.0

(*) By number of metering points

Supplier switches (*) by grid zone					
Federal province / grid zone	2005	2010	2015	2017	2018
Burgenland	335	1 402	3 826	6 352	5 707
Carinthia	5 078	3 760	13 795	21 177	18 689
Lower Austria	6 322	21 580	17 570	30 402	32 416
Upper Austria	11 952	20 077	36 731	65 163	60 768
Salzburg	1 057	1 476	3 757	6 812	6 974
Styria	3 502	26 180	32 533	41 172	33 501
Tyrol	2 028	1 706	4 140	10 930	9 657
Vorarlberg	240	607	2 221	3 517	3 389
Vienna	12 125	27 614	38 235	77 070	76 081
Austria	42 639	104 402	152 808	262 595	247 182

(*) By number of metering points

Switching rates (*) by grid zone in %					
Federal province / grid zone	2005	2010	2015	2017	2018
Burgenland	0.2	0.7	1.9	3.0	2.7
Carinthia	1.4	1.0	3.5	5.4	4.8
Lower Austria	0.8	2.6	2.1	3.6	3.8
Upper Austria	1.3	2.1	3.6	6.3	5.9
Salzburg	0.3	0.4	0.9	1.6	1.6
Styria	0.4	2.9	3.5	4.4	3.5
Tyrol	0.5	0.4	0.9	2.3	2.0
Vorarlberg	0.1	0.3	1.0	1.5	1.4
Vienna	0.8	1.9	2.5	5.0	4.9
Austria	0.8	1.8	2.5	4.3	4.0

(*) By number of metering points

Electricity switching rates (pages 46 – 47)

Green electricity injection and support payments (Austria, 2018 and 2017)				
Primary energy source	Injection in GWh	Net support in m €	Supported green electricity share in total supply, in %	Average support in cent/kWh
2018	(1)			
Supported small hydro	1 505.6	82.9	2.5	5.51
Other renewables	8 278.6	963.7	14.0	11.64
Wind	5 060.6	463.5	8.5	9.16
Wastes with high biog. fraction	2 013.7	260.4	3.4	12.93
Biogas (*)	568.0	98.8	1.0	17.39
Liquid biomass	0.1	0.0	0.0001	11.69
Photovoltaics	620.4	140.1	1.05	22.59
Sewage and landfill gas	15.8	0.8	0.03	5.37
Geothermal	0.2	0.0	0.0004	4.33
Total small hydro and other renewables	9 784.2	1 046.5	16.5	10.70
2017	(2)			
Supported small hydro	1 624.6	82.9	2.8	4.78
Other renewables	8 903.0	1 025.9	15.1	11.52
Wind	5 745.9	524.7	9.8	8.67
Wastes with high biog. fraction	1 999.4	263.2	3.4	13.38
Biogas (*)	565.2	94.4	1.0	17.53
Liquid biomass	0.1	0.0	0.0002	13.21
Photovoltaics	574.3	142.8	0.98	26.56
Sewage and landfill gas	18.0	0.7	0.03	4.58
Geothermal	0.1	0.0	0.0001	3.48
Total small hydro and other renewables	10 527.7	1 108.8	17.9	10.53

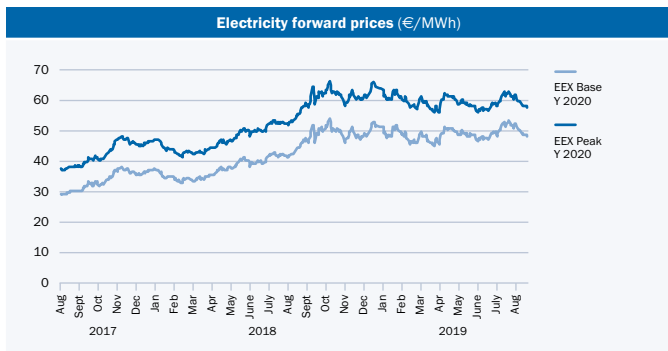
(*) incl. operation markups

(1) Relating to the total electricity supplied to consumers from the public grid in 2018, i.e. 59 320 GWh (as of 06/2019)

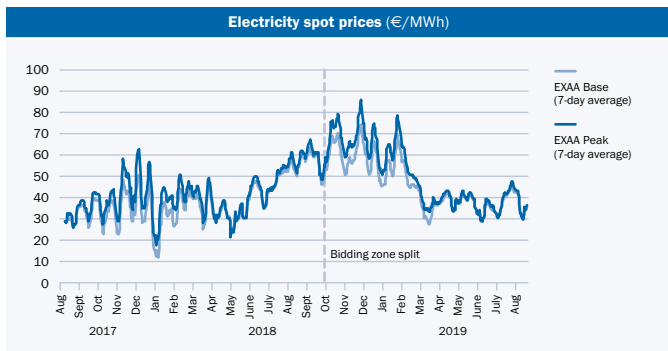
(2) Relating to the total electricity supplied to consumers from the public grid in 2017, i.e. 58 804 GWh (as of 06/2019)

Source: Green power settlement agent OeMAG, E-Control, June 2019 – preliminary values

Wholesale markets



Source: EEX (settlement prices for Phelix-DE/AT futures)



Source: EXAA (Until 30/9/2018: AT/DE prices; from 1/10/2018: AT prices)

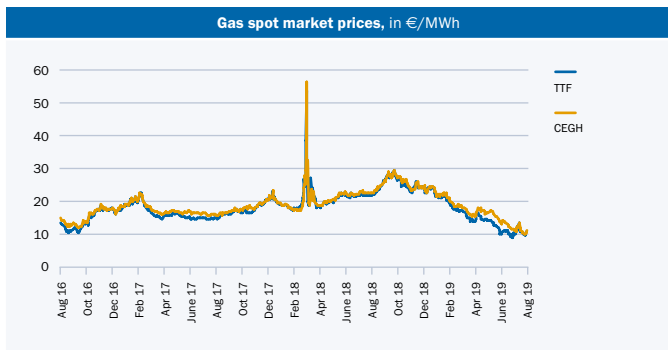
Price developments in a variety of relevant wholesale markets (pages 49 – 55)

Electricity forward and spot prices in €/MWh				
	EEX Base		EEX Peak	
	Day-ahead average	Y 2020 average	Day-ahead average	Y 2020 average
2017	34.49	30.57	38.40	39.07
2018	46.44	42.09	50.22	52.61
2019	40.55	48.92	43.00	59.43
January 2018	29.78	35.44	37.39	44.78
February 2018	40.15	33.93	44.24	42.72
March 2018	39.04	34.42	42.52	43.15
April 2018	31.94	37.04	31.87	45.86
May 2018	32.52	39.66	33.01	49.08
June 2018	42.69	39.71	44.09	50.10
July 2018	49.18	42.09	50.30	52.69
August 2018	56.63	44.26	58.94	55.27
September 2018	55.55	49.35	57.65	61.34
October 2018	62.37	50.46	70.07	62.58
November 2018	62.24	48.53	70.42	60.83
December 2018	55.24	50.63	62.11	63.52
January 2019	57.32	49.63	65.04	61.51
February 2019	46.73	47.14	51.02	58.87
March 2019	33.23	47.15	36.29	58.40
April 2019	38.74	49.56	39.83	60.26
May 2019	38.60	48.80	39.34	58.73
June 2019	33.20	47.85	33.77	57.36
July 2019	39.54	51.25	40.60	60.77
August 2019	36.06	49.87	36.61	59.20

Source: EXAA, EEX

Gas spot market prices, in €/MWh					
	TTF (NL) average	CEGH (AT) average		TTF (NL) average	CEGH (AT) average
2017	19.80	20.65	October 2018	25.66	26.50
2018	22.86	22.81	November 2018	24.52	24.62
2019	14.56	16.02	December 2018	23.74	24.09
January 2018	18.62	18.66	January 2019	21.47	22.09
February 2018	21.02	19.68	February 2019	18.04	19.21
March 2018	23.22	23.28	March 2019	15.69	17.17
April 2018	19.58	19.81	April 2019	15.13	17.16
May 2018	21.64	21.84	May 2019	13.28	16.11
June 2018	21.94	22.39	June 2019	10.47	13.27
July 2018	22.23	22.97	July 2019	10.96	11.49
August 2018	23.86	24.37	August 2019	10.16	10.63
September 2018	27.99	28.26			

Sources: ICIS Heren, CEGH

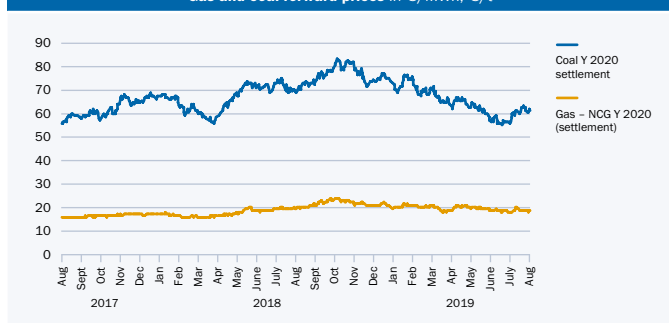


Sources: ICIS Heren, CEGH

Gas and coal forward prices in €/MWh, €/t

Y 2020					
	Gas average	Coal average		Gas average	Coal average
December 2017	17.38	66.76	November 2018	21.40	74.91
January 2018	17.29	66.79	December 2018	21.21	74.74
February 2018	16.53	62.21	January 2019	20.84	73.23
March 2018	16.52	58.58	February 2019	20.55	69.63
April 2018	17.30	63.85	March 2019	19.42	66.70
May 2018	19.10	71.36	April 2019	20.36	64.88
June 2018	19.05	70.97	May 2019	19.85	61.68
July 2018	19.79	71.74	June 2019	18.90	56.88
August 2018	20.48	71.96	July 2019	19.00	60.61
September 2018	22.46	76.86	August 2019	18.13	58.63
October 2018	22.87	80.91			

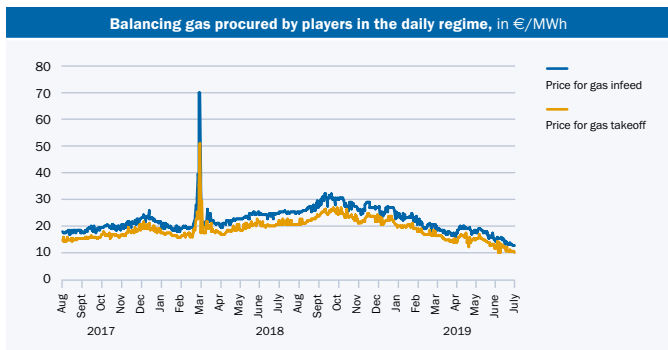
Source: EEX, ICE

Gas and coal forward prices in €/MWh, €/t

Source: EEX, ICE

Gas import price (2002 = 100)					
	Import index	Change in %		Import index	Change in %
2005	100.00		2015	132.41	-10.83
2006	129.23	29.23	2016	94.38	-28.72
2007	119.06	-7.87	2017	108.34	14.79
2008	167.60	40.77	2018	132.89	22.66
2009	121.51	-27.50	January 2019	142.23	7.03
2010	135.08	11.16	February 2019	136.70	-3.89
2011	161.35	19.44	March 2019	120.12	-12.13
2012	178.09	10.38	April 2019	109.74	-8.65
2013	178.98	0.50	May 2019	105.22	-4.12
2014	148.49	-17.03	June 2019	95.44	-9.30

Source: EEX, ICE



Source: Austrian Gas Clearing and Settlement (AGCS)

Brent oil forward market (next month) in €/barrel and \$/barrel

	€/barrel	USD/barrel	Month-on-month change of € in %
December 2017	54.02	64.09	
January 2018	56.59	69.04	4.77
February 2018	53.18	65.66	-6.04
March 2018	54.06	66.70	1.66
April 2018	58.61	71.74	8.42
May 2018	65.37	77.02	11.52
June 2018	65.02	75.93	-0.53
July 2018	64.16	74.98	-1.32
August 2018	63.94	73.85	-0.34
September 2018	67.85	79.11	6.12
October 2018	70.19	80.61	3.44
November 2018	58.18	66.14	-17.11
December 2018	50.82	57.67	-12.65
January 2019	52.72	60.18	3.74
February 2019	56.79	64.46	7.73
March 2019	59.30	67.03	4.42
April 2019	63.58	71.57	7.20
May 2019	62.55	70.06	-1.62
June 2019	55.73	62.95	-10.90
July 2019	57.23	64.20	2.68
August 2019	53.20	59.30	-7.04

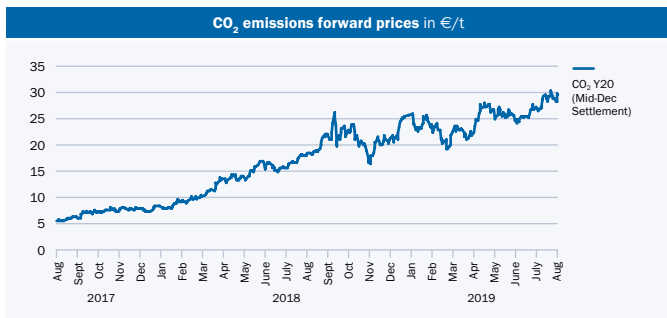
Source: ICE, Oesterreichische Nationalbank (OeNB)

Brent oil forward market in €/barrel

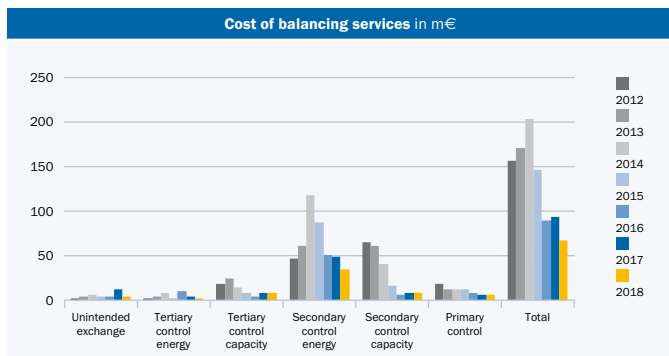
Source: ICE, Oesterreichische Nationalbank (OeNB)

CO ₂ emissions forward prices in €/t			
	EEX CO ₂ Y20 (MidDec)		EEX CO ₂ Y20 (MidDec)
2018	16.48	October 2018	20.71
2019	25.14	November 2018	20.10
January 2018	8.52	December 2018	23.27
February 2018	9.65	January 2019	23.89
March 2018	11.83	February 2019	21.53
April 2018	13.68	March 2019	22.43
May 2018	15.25	April 2019	26.11
June 2018	15.71	May 2019	25.84
July 2018	17.06	June 2019	25.53
August 2018	19.68	July 2019	28.35
September 2018	22.41	August 2019	27.77

Source: EEX

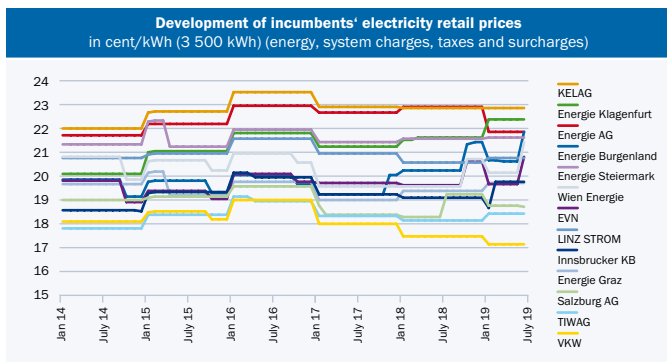


Source: EEX



Source: APG, own calculations

Retail markets

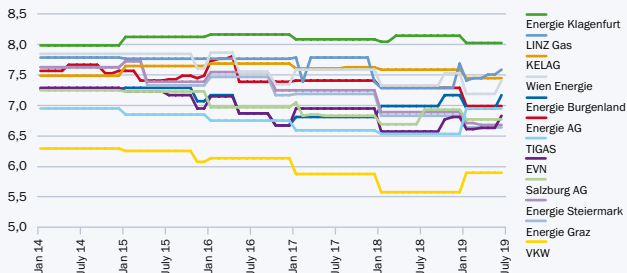


Source: E-Control, tariff calculator

Development of electricity retail prices in cent/kWh				
Energy prices of all suppliers				
	1st quartile	Median	3rd quartile	weighted average
January 2014	6.405	7.146	7.781	7.246
July 2014	6.020	6.638	7.330	6.921
January 2015	6.053	6.488	7.314	6.891
July 2015	5.870	6.211	6.958	6.657
January 2016	5.439	6.980	6.096	—
July 2016	5.346	6.935	5.961	—
January 2017	5.250	6.647	5.829	6.031
July 2017	5.260	6.610	5.790	6.021
January 2018	5.157	6.515	5.814	6.044
July 2018	5.295	6.710	5.920	6.201

Retail price developments for electricity and gas (pages 57 – 58)

Development of incumbents' gas retail prices
in cent/kWh (15 000 kWh) (energy, system charges, taxes and surcharges)



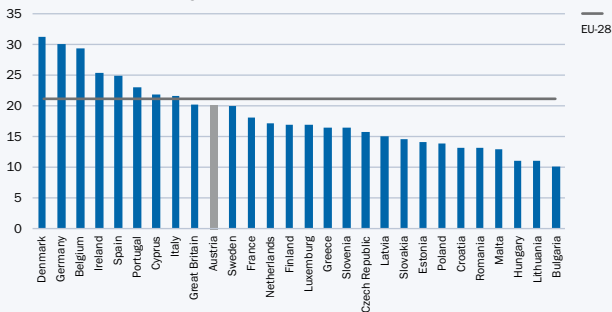
Source: E-Control, tariff calculator

Development of gas retail prices in cent/kWh

	Energy prices of all suppliers			
	1st quartile	Median	3rd quartile	weighted average
January 2014	3.175	3.445	3.632	—
July 2014	3.192	3.427	3.589	—
January 2015	3.150	3.330	3.526	—
July 2015	3.097	3.270	3.512	—
January 2016	2.792	3.117	3.363	—
July 2016	2.639	3.009	3.182	—
January 2017	2.643	2.988	3.176	3.092
July 2017	2.650	2.956	3.167	3.122
January 2018	2.509	2.861	3.128	3.054
July 2018	2.607	2.913	3.198	3.218

Household electricity prices in Europe, H2 2018 (2 500 – 5 000 kWh)

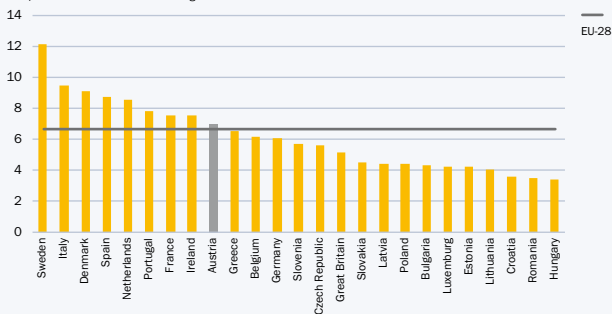
Cent/kWh incl. all taxes and surcharges



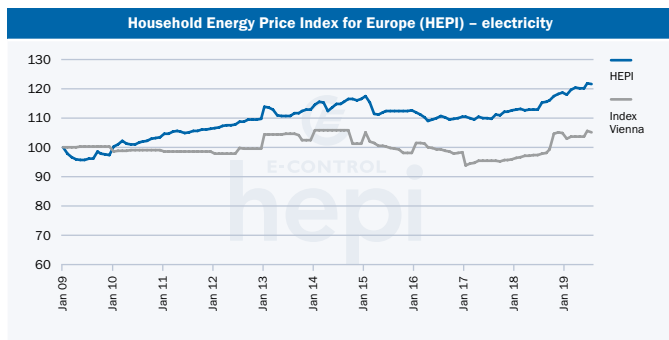
Source: Eurostat (as of 18 June 2019)

Household gas prices in Europe, H2 2018 (5 555.6 – 55 556 kWh)

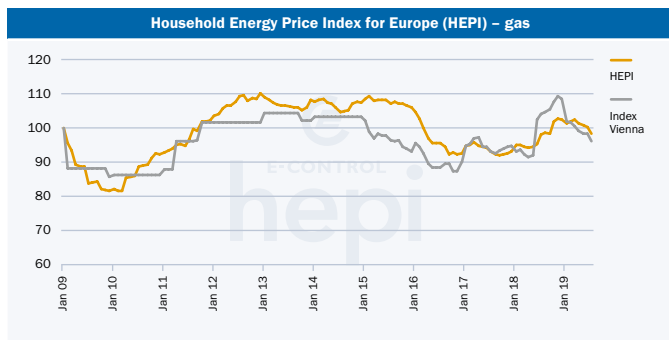
Cent/kWh incl. all taxes and surcharges



Source: Eurostat (as of 14 June 2019)



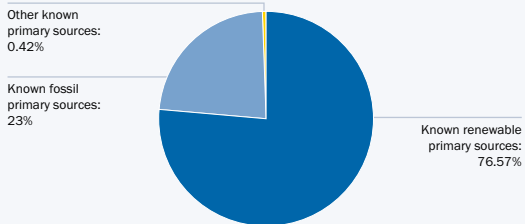
Sources: E-Control, MEKH and VaasaETT Ltd.



Sources: E-Control, MEKH and VaasaETT

International electricity and gas price comparisons (pages 59 – 60)

Electricity labelling in Austria in 2018



Austrian electricity labelling in 2018

Terms and definitions

When using material from this brochure, please quote E-Control as your source of information.

Austrian electricity, natural gas and renewables statistics

The responsibility for statistical data collection on fossil fuels and electricity lies with the Austrian Federal Minister for Sustainability and Tourism.

Statistical work on electricity and gaseous energy carriers is conducted by E-Control (section 52 Electricity Act and section 59 Natural Gas Act). The details and scope of this statistical work and regulations on the publication of the results are contained in the Electricity Statistics Ordinance 2016 (issued by the Ministry of Science, Research and Economy, FLG II no 17/2016) and the Gas Statistics Ordinance 2017 (issued by E-Control's Executive Board, FLG II no 417/2017).

The results of data collection and analyses are published on our website at www.e-control.at/en/statistics.

Glossary

Final energy consumption in energy statistics is the consumption of energy for any purpose other than transformation into other forms of energy. Final energy is the useful energy available to a consumer (e.g. for heating, lighting, mechanical uses). Neither transformation losses nor transport losses or natural gas supplied to gas-fired power stations are part of final energy consumption.

Supply to consumers in gas and electricity statistics is the energy withdrawn from the grid or autogenerated by consumers (final customers) and consumed by them. The concept embraces both gas supplied to gas-fired power plants and electricity supplied to refineries. This also holds for the electricity generated by refineries in their own power plants and used to process oil.

Gross domestic consumption in energy statistics is the energy needed to cover all domestic energy demand. Apart from final energy consumption and final non-energy consumption, it includes transformation losses, own use of the energy sector and non-energetic uses of fossil fuels (e.g. the use of coal for making electrodes). Please note that breakdown according to individual energy sources or regional breakdown of the gross domestic consumption might yield negative values where export rates are high.

Useful energy consumption in energy statistics is the final energy consumption minus consumption losses (depending on the equipment's efficiency e.g. in lighting, heating or cooling devices). Useful energy can normally be broken down into space heating and cooling, process heat (steam production and industrial furnaces), mechanical uses (stationary engines), transport, IT and lighting, and electrochemical uses.

Electricity and natural gas balances in electricity and natural gas statistics cover the respective markets and rely solely on physical flow data. Please note that the electricity balance includes the total gross electricity production at the generator terminals (i.e. also electricity produced in pumped storage plants) but also energy consumption for pumping. The natural gas balance includes all imports and exports metered at Austria's borders, and all storage movements, regardless of whether the gas is destined for domestic or foreign consumption.

Natural gas conditions

All volumes in Nm^3 refer to natural gas in normal state, i.e.

temperature: 0°C

humidity: 0 percent

absolute pressure: 1 013.25 mbar

Latest valid calorific value (kWh/Nm^3): 11.200

Public grid means the grid in the Austrian control areas APG, TIRAG (up to 2010) and VKW (incl. VIW) as well as the Austrian supply areas connected to foreign control areas.

Fossil fuels are fuels from natural resources formed from biomass through natural processes over time. The term is also used to refer to secondary fuels produced from primary fossil fuels (e.g. coke or gasoline).

Renewable energy is generated from geothermal energy, solar power or gravity, i.e. from non-finite energy sources, or from biomass as a finite energy source.

Please note that electricity statistics differentiate between (i) hydropower, (ii) wind, solar and geothermal energy, and (iii) biofuels; renewables shares are itemised according to generation types.

Biofuels as used in the Austrian Green Electricity Act are in particular the following renewable, non-fossil energy sources: biomass, wastes containing a high biogenous fractions, landfill and sewage gas, biogas, meat and bone meal, black liquor, and sewage sludge.

Units of mass and volume are physical units for the purpose of metering mass or volume in different states of matter (solid, liquid, gaseous), such as litres or cubic metres.

Energy units quantify a fuel's or energy source's energy content. Electric energy and hydropower are measured in kilowatt hours (kWh), the heat of thermal energy in calories or joule. In the interest of comparability, solid, liquid and gaseous fuels may also be measured in energy units; converting physical into energy units is achieved by means of conversion factors that relate one unit of a fuel to the heat produced from it (see the calorific values in different energy balances).

Units of measurement

1 V	=	1 volt		
1 A	=	1 ampere		
1 W	=	1 watt		
1 Hz	=	1 hertz	=	1 oscillation/sec
1 J	=	1 joule	=	1 watt second (Ws) = $0.27778 \cdot 10^{-3}$ Wh
1 Wh	=	1 watt hour	=	$3.6 \cdot 10^3$ joule

Most common multiple and sub-multiple prefixes

Multiple	Sub-multiple
10^1 deca (da)	10^{-1} deci (d)
10^2 hecto (h)	10^{-2} centi (c)
10^3 kilo (k)	10^{-3} milli (m)
10^6 mega (M)	10^{-6} micro (μ)
10^9 giga (G)	10^{-9} nano (n)
10^{12} tera (T)	10^{-12} pico (p)
10^{15} peta (P)	10^{-15} femto (f)
10^{18} exa (E)	10^{-18} atto (a)

Units used

1 kV	= 1 kilovolt	= 1 000 V
1 kW	= 1 kilowatt	= 1 000 W
1 MW	= 1 megawatt	= 1 000 kW
1 GW	= 1 gigawatt	= 1 000 MW
1 TW	= 1 terawatt	= 1 000 GW
<hr/>		
1 kWh	= 1 kilowatt hour	= 1 000 Wh
1 MWh	= 1 megawatt hour	= 1 000 kWh
1 GWh	= 1 gigawatt hour	= 1 000 MWh
1 TWh	= 1 terawatt hour	= 1 000 GWh
<hr/>		
1 kJ	= 1 kilojoule	= 1 000 J
1 MJ	= 1 megajoule	= 1 000 kJ
1 GJ	= 1 gigajoule	= 1 000 MJ
1 TJ	= 1 terajoule	= 1 000 GJ

Multilingual terms

Deutsch	English	Français
Laufkraftwerk	run-of-river power plant	centrale gravitaire
Speicherkraftwerk	storage power plant	station de pompage-turbinage
Wasserkraftwerk	hydropower plant	centrale hydroélectrique
Steinkohle	hard coal	houille
Braunkohle	lignite	lignite
Derivate	derivative	dérivés
Erdgas	natural gas	gaz naturel
Fossile Brennstoffe	fossil fuels	combustibles fossiles
Biogene Brennstoffe	biofuels	biocombustibles
Wärmekraftwerk	thermal power plant	centrale thermique
Windkraftwerk	wind power plant	centrale éolienne
Photovoltaikanlage	solar / photovoltaic power plant	centrale photovoltaïque
Geothermie	geothermal energy	géothermie
Speicherentnahme	storage withdrawal	prélèvement
Speichereinpressung	storage injection	stockage
Eigenverbrauch	own use / consumption	usage propre
Verlust / Netzverlust	(grid) losses	pertes en ligne
Pumpstromaufwand / Verbrauch f. Pumpspeicherung	consumption for pumped storage / pumping	consommation des pompes
Haushalte	households	secteur résidentiel
Sonstige Kleinkunden	other small consumers	autres clients profilés
Lastganggemessene Kunden	load-metered consumers	clients mesurés
Inlandstromverbrauch	domestic electricity consumption	consommation intérieure
Abgabe an Endkunden	supply to consumers	livraison aux consommateurs
Energetischer Endverbrauch	final energy consumption	consommation finale d'énergie
Nutzenergie(verbrauch)	useful energy (consumption)	énergie utile (consommation)
Heizwert	net calorific value	pouvoir calorifique inférieur
Brennwert	gross calorific value	pouvoir calorifique supérieur

International conversion factors

Units of mass					
To:	kg	t	lt	st	lb
From:	Multiply by:				
kg Kilogramme	1	0.001	9.84×10^{-4}	1.102×10^{-3}	2.2046
t Ton	1 000	1	0.984	1.1023	2 204.6
lg Long ton	1 016	1.016	1	1.120	2 240
st Short ton	907.2	0.9072	0.893	1	2 000
lb Pound	0.454	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}	1

Source: IEA

Units of energy					
To:	TJ	Gcal	Mtoe	MMBtu	GWh
From:	Multiply by:				
TJ Terajoule	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal Gigacalorie	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
Mtoe Million tons of oil equivalent	4.1868×10^4	10^{07}	1	3.967×10^7	11 630
MBtu Million British thermal units	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.931×10^{-4}
GWh Gigawatt hour	3.60	860	8.6×10^{-5}	3412	1

Source: Eurostat, IEA

Units of volume						
To:	US gal	UK gal	bbl	ft ³	l	m ³
From:	Multiply by:					
US gal US gallon	1	0.8327	0.02381	0.1337	3.785	0.0038
UK gal UK gallon	1.201	1	0.02859	0.1605	4.546	0.0045
bbl Barrel	42.0	34.97	1	5.615	159	0.159
ft³ Cubic foot	7.48	6.229	0.1781	1	28.3	0.0283
l Litre	0.2642	0.22	0.0063	0.0353	1	0.001
m³ Cubic metre	264.2	220	6.289	35.3147	1 000	1

Source: IEA

Calorific values in the Austrian energy balance

Statistics Austria, arithmetic means over the past five years			
Energy source	Gigajoule / ...	Gross domestic consumption	Final energy consumption
Hard coal	t	28.54	27.638
Lignite	t	20.43	20.428
Brown coal briquettes	t	19.80	19.800
Coke oven coke	t	28.79	28.786
Crude oil	t	42.50	—
Petrol	t	41.28	41.418
Diesel	t	42.42	42.419
Gas oil	t	42.86	42.855
Fuel oil	t	40.96	41.443
Natural gas	1 000 cu m	36.35	36.353
Industrial waste	t	13.43	15.380
Fuelwood	t	14.31	14.311
Biofuels	t	12.05	13.317
Geothermal energy	MWh	3.60	3.600
District heat	MWh	—	3.600
Hydropower	MWh	3.60	—
Wind and photovoltaics	MWh	3.60	—
Electric energy	MWh	3.60	3.600

Source: Statistics Austria

Notes

Editorial

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