

Production of heat – by type

Terajoules

Table Notes

Direct use geothermal represents heat used directly for district heating, agriculture etc. without a commercial transaction taking place.

Direct use solar thermal represents heat used for the production of domestic hot water or for the seasonal heating of swimming pools (e.g. flat plate collectors, mainly of the thermosyphon type) without a commercial transaction taking place.

Please refer to the Definitions Section on pages ix to xv for the appropriate product description /classification, and xvi to xvii for the descriptions of relevant flows.

Figure 84: Heat production by region, 1990-2019

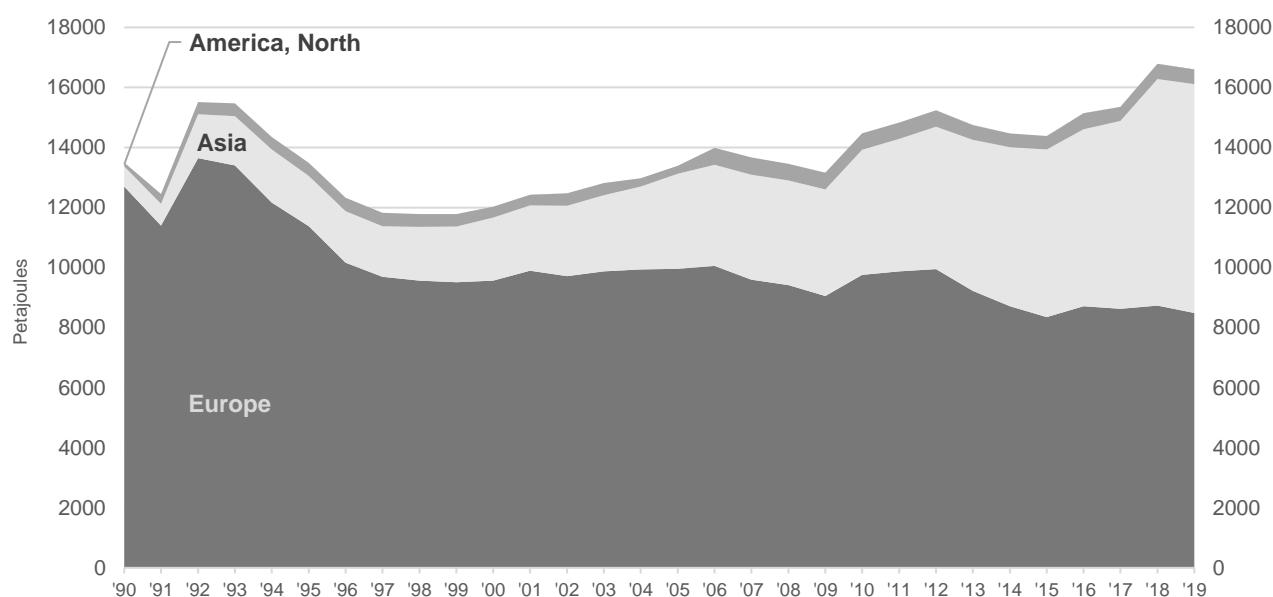


Figure 85: Major heat producing countries, 2019

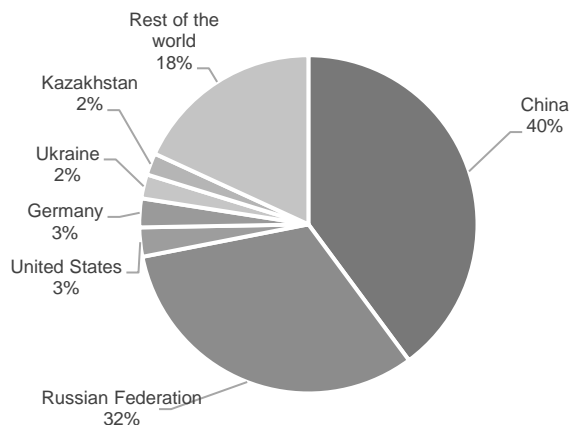


Figure 86: World heat production by type, 2019

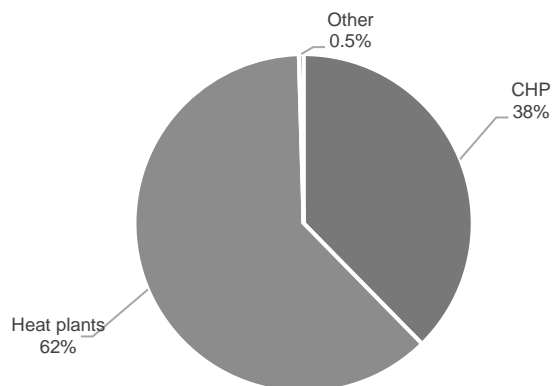


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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
World	2016	14,506,526	41,063	7,016	26,426	71,593	59,971	426,582	137,028	283,245
	2017	14,702,798	40,351	7,508	26,579	71,396	62,165	445,430	137,248	284,011
	2018	16,117,313	45,064	8,081	25,956	70,384	62,861	458,792	175,560	319,317
	2019	15,921,408	45,984	8,346	25,647	76,473	66,812	455,764	148,402	329,401
Africa	2016	..	..	..	..	3,730	..	..	..	7,124
	2017	..	..	..	..	3,880	..	..	..	7,551
	2018	..	..	..	..	5,094	..	..	..	7,836
	2019	..	..	..	..	4,820	..	..	..	7,991
Namibia	2016	..	..	..	..	..	..	..	..	126
	2017	..	..	..	..	..	..	..	..	140
	2018	..	..	..	..	..	..	..	..	152
	2019	..	..	..	..	..	..	..	..	166
Senegal	2016	..	..	..	..	513	..	..	..	..
	2017	..	..	..	..	533	..	..	..	..
	2018	..	..	..	..	969	..	..	..	..
	2019	..	..	..	..	630	..	..	..	..
South Africa	2016	..	..	..	..	..	..	..	..	4,907
	2017	..	..	..	..	..	..	..	..	5,201
	2018	..	..	..	..	..	..	..	..	5,241
	2019	..	..	..	..	..	..	..	..	5,249
Tunisia	2016	..	..	..	..	3,217	..	..	..	2,091
	2017	..	..	..	..	3,347	..	..	..	2,210
	2018	..	..	..	..	4,125	..	..	..	2,443
	2019	..	..	..	..	4,191	..	..	..	2,576
America, North	2016	528,363	..	..	..	..	340	..	11,828	94,420
	2017	470,248	..	..	..	..	576	..	11,108	90,135
	2018	503,595	..	..	..	..	576	..	43,934	118,442
	2019	487,125	..	..	..	..	576	..	14,096	128,528
Canada	2016	19,628	..	..	..	..	..	..	..	1,760
	2017	19,294	..	..	..	..	..	..	..	1,797
	2018	25,648	..	..	..	..	..	..	..	1,810
	2019	24,047	..	..	..	..	..	..	..	1,810
Greenland	2016	*735	..	..	..	..	*340	..	..	..
	2017	*625	..	..	..	..	*576	..	..	..
	2018	*625	..	..	..	..	*576	..	..	..
	2019	*625	..	..	..	..	*576	..	..	..
Mexico	2016	..	..	..	..	..	..	..	..	10,180
	2017	..	..	..	..	..	..	..	..	10,888
	2018	..	..	..	..	..	..	..	..	12,531
	2019	..	..	..	..	..	..	..	..	13,796
St. Pierre-Miquelon	2016	..	..	..	..	..	..	..	..	..
	2017	..	..	..	..	..	..	..	..	..
	2018	..	..	..	..	..	..	..	..	..
	2019	32	..	..	..	..	..	..	..	..
United States	2016	508,000	..	..	..	..	..	..	11,828	82,480
	2017	450,328	..	..	..	..	..	..	11,108	77,450
	2018	477,322	..	..	..	..	..	..	43,934	104,101
	2019	462,421	14,096	112,922
America, South	2016	0	102	3,128
	2017	102	3,464
	2018	102	3,902
	2019	102	4,400

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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
Chile	2016	..	..	..	..	0	..	..	..	1,739
	2017	..	..	..	..	..	..	..	..	2,082
	2018	..	..	..	..	..	..	..	..	2,465
	2019	..	..	..	..	..	..	..	..	2,919
Ecuador	2016	..	..	..	..	..	..	..	*102	..
	2017	..	..	..	..	..	..	..	*102	..
	2018	..	..	..	..	..	..	..	*102	..
	2019	..	..	..	..	..	..	..	*102	..
Peru	2016	..	..	..	..	..	..	..	..	1,389
	2017	..	..	..	..	..	..	..	..	1,382
	2018	..	..	..	..	..	..	..	..	1,437
	2019	..	..	..	..	..	..	..	..	1,482
Asia	2016	5,855,732	0	5,485	..	2,159	16,890	16,724	91,988	70,970
	2017	6,213,406	..	5,632	..	2,187	18,329	16,870	91,671	71,662
	2018	7,501,898	..	5,778	..	2,172	17,440	18,362	96,643	70,933
	2019	7,562,913	..	5,925	..	2,170	21,926	20,085	97,331	68,108
Armenia	2016	34	..	..	..	..	..	..	..	93
	2017	31	..	..	..	..	..	..	..	112
	2018	24	..	..	..	..	..	..	..	216
	2019	27	..	..	..	..	..	..	..	358
Azerbaijan	2016	7,282	..	..	..	..	..	..	..	..
	2017	6,580	..	..	..	..	..	..	..	..
	2018	12,236	..	..	..	..	3	..	..	..
	2019	14,013	..	..	..	..	3	..	..	..
China	2016	4,967,022	..	..	..	..	..	..	..	..
	2017	5,300,081	..	..	..	..	..	..	..	..
	2018	6,505,618	..	..	..	..	..	..	..	..
	2019	6,617,368	..	..	..	..	..	..	..	..
Cyprus	2016	50	..	..	..	..	..	..	65	2,887
	2017	54	..	..	..	..	..	..	65	2,940
	2018	54	..	..	..	..	..	..	65	3,015
	2019	51	..	..	..	..	..	..	65	3,062
Georgia	2016	0	0	..	..	..	..	..	642	127
	2017	..	..	..	..	..	..	..	658	128
	2018	..	..	..	..	..	..	..	670	129
	2019	..	..	..	..	..	..	..	680	130
Israel	2016	..	..	..	..	..	..	..	..	16,135
	2017	..	..	..	..	..	..	..	..	16,135
	2018	..	..	..	..	..	..	..	..	15,100
	2019	..	..	..	..	..	..	..	..	15,100
Japan	2016	13,869	..	..	..	..	5,691	2,664	5,366	10,387
	2017	13,937	..	..	..	..	5,754	2,713	5,367	9,677
	2018	13,357	..	..	..	..	6,948	2,462	5,367	8,447
	2019	13,357	..	..	..	..	6,948	2,462	5,367	7,736
Kazakhstan	2016	361,022	..	..	..	..	..	..	..	..
	2017	371,187	..	..	..	..	..	..	..	..
	2018	389,432	..	..	..	..	..	..	..	..
	2019	347,364	..	..	..	..	..	..	..	..
Korea, Republic of	2016	219,624	..	..	..	2,159	..	..	6,785	1,193
	2017	237,716	2,187	7,706	1,665
	2018	250,495	2,172	8,730	1,880
	2019	236,567	2,170	9,409	1,848

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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
Kyrgyzstan	2016	9,904	..	..	..	..	..	..	..	..
	2017	7,966	..	..	..	..	..	..	..	..
	2018	13,798	..	..	..	..	..	..	..	..
	2019	12,424	..	..	..	..	..	..	..	..
Lebanon	2016	..	..	..	..	..	..	..	..	1,017
	2017	..	..	..	..	..	..	..	..	*1,060
	2018	..	..	..	..	..	..	..	..	*1,060
	2019	..	..	..	..	..	..	..	..	1,060
Mongolia	2016	45,213	..	..	..	..	..	..	..	..
	2017	47,296	..	..	..	..	..	..	..	..
	2018	52,355	..	..	..	..	..	..	..	..
	2019	55,589	..	..	..	..	..	..	..	..
Other Asia	2016	66,802	..	..	..	..	..	..	..	4,225
	2017	64,130	..	..	..	..	..	..	..	4,262
	2018	97,523	..	..	..	..	..	..	..	3,945
	2019	89,906	..	..	..	..	..	..	..	3,808
State of Palestine	2016	..	..	5,485	..	..	..	..	..	..
	2017	..	..	5,632	..	..	..	..	..	..
	2018	..	..	5,778	..	..	..	..	..	..
	2019	..	..	5,925	..	..	..	..	..	..
Tajikistan	2016	1,648	..	..	..	..	..	..	..	..
	2017	1,793	..	..	..	..	..	..	..	..
	2018	*3,499	..	..	..	..	..	..	..	..
	2019	3,519	..	..	..	..	..	..	..	..
Thailand	2016	..	..	..	..	..	..	..	..	281
	2017	..	..	..	..	..	..	..	..	388
	2018	..	..	..	..	..	..	..	..	423
	2019	..	..	..	..	..	..	..	..	423
Turkey	2016	38,839	..	..	..	..	..	14,060	79,130	34,625
	2017	43,301	..	..	..	..	..	14,157	77,875	35,295
	2018	41,613	..	..	..	..	..	15,900	81,810	36,718
	2019	42,991	..	..	..	..	..	17,623	81,810	34,583
Turkmenistan	2016	9,846	..	..	..	..	..	..	..	..
	2017	10,877	..	..	..	..	..	..	..	..
	2018	10,877	..	..	..	..	..	..	..	..
	2019	10,877	..	..	..	..	..	..	..	..
Uzbekistan	2016	*114,578	..	..	..	..	*11,199	..	..	..
	2017	*108,458	..	..	..	..	*12,575	..	..	..
	2018	*111,018	..	..	..	..	*10,489	..	..	..
	2019	*118,859	..	..	..	..	*14,975	..	..	..
Europe	2016	8,122,431	41,063	1,530	26,426	65,704	42,741	408,549	24,924	92,133
	2017	8,019,144	40,351	1,876	26,579	65,330	43,261	427,367	26,309	94,900
	2018	8,111,820	45,064	2,303	25,956	63,118	44,846	439,163	26,981	101,042
	2019	7,871,370	45,984	2,421	25,647	69,483	44,310	434,512	28,940	102,277
Albania	2016	*113	..	..	..	..	..	..	..	504
	2017	113	..	..	..	..	..	..	..	553
	2018	122	..	..	..	..	..	..	..	564
	2019	151	..	..	..	..	..	..	..	558
Austria	2016	84,528	587	90	..	110	..	..	300	7,571
	2017	87,886	591	93	..	89	514	7,536
	2018	83,290	573	93	..	93	30	..	473	7,472
	2019	83,937	470	91	..	91	384	..	476	7,393

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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
Belarus	2016	249,665	..	..	..	..	..	..	..	..
	2017	253,365	..	..	..	..	..	..	..	..
	2018	260,497	..	..	..	..	..	..	..	..
	2019	247,488	..	..	..	..	..	..	..	..
Belgium	2016	25,393	52	..	..	11,320	..	..	..	1,027
	2017	22,109	51	..	..	11,272	..	..	..	1,062
	2018	24,190	53	..	..	10,288	..	..	..	1,154
	2019	20,915	56	..	..	9,901	..	..	..	1,148
Bosnia and Herzegovina	2016	5,657	..	..	..	..	..	..	..	..
	2017	5,793	..	..	..	..	..	..	..	..
	2018	5,759	..	..	..	..	..	..	..	..
	2019	5,571	..	..	..	..	..	..	..	..
Bulgaria	2016	45,663	..	..	612	1,927	..	..	1,450	937
	2017	41,627	..	..	696	1,844	..	..	1,450	983
	2018	35,433	..	..	718	1,818	..	..	1,450	1,044
	2019	35,920	..	..	660	2,217	..	..	1,470	1,092
Croatia	2016	11,411	..	..	..	..	..	..	379	484
	2017	12,430	..	..	..	..	..	..	345	538
	2018	12,698	..	..	..	..	..	..	320	584
	2019	13,182	..	..	..	..	..	..	301	647
Czechia	2016	124,778	..	..	883	325	67	1,533	..	699
	2017	120,551	..	..	908	322	101	1,070	..	731
	2018	115,419	..	..	864	706	109	1,135	..	753
	2019	113,717	..	..	853	669	125	1,027	..	767
Denmark	2016	129,150	112	1,392	..	..	822	3,457	..	589
	2017	128,886	76	1,733	..	..	1,138	3,774	..	597
	2018	127,210	55	2,157	..	..	1,490	4,087	..	603
	2019	122,786	34	2,270	..	..	1,955	4,338	..	611
Estonia	2016	24,141	..	..	..	..	..	..	..	..
	2017	24,304	..	..	..	..	..	..	..	..
	2018	24,889	..	..	..	..	..	..	..	..
	2019	21,958	..	..	..	..	..	..	..	..
Finland	2016	185,583	..	..	..	5,080	4,106	1,019	..	69
	2017	173,685	..	..	..	4,731	4,429	10,080	..	75
	2018	170,696	..	..	..	4,446	4,344	10,077	..	83
	2019	165,855	..	..	..	4,567	4,283	10,570	..	91
France	2016	158,101	4,397	..	..	..	519	4,499	1,681	6,948
	2017	161,535	5,613	..	..	..	527	3,641	1,681	7,207
	2018	150,717	5,986	..	..	..	982	3,278	1,681	7,583
	2019	156,479	6,481	..	..	..	1,362	4,872	1,681	7,843
Germany	2016	461,067	797	6	..	..	..	7,389	3,329	27,689
	2017	461,662	641	7	..	..	..	7,492	3,563	28,266
	2018	460,597	1,333	8	..	..	..	6,133	3,558	31,942
	2019	449,395	1,732	13	..	..	..	6,341	3,390	30,525
Greece	2016	2,134	..	..	..	..	..	..	423	11,071
	2017	2,137	..	..	..	..	..	..	370	11,365
	2018	2,167	..	..	..	..	..	..	371	11,607
	2019	2,203	..	..	..	..	..	..	432	11,968
Hungary	2016	48,096	2,700	..	649	..	..	2,321	2,120	468
	2017	46,514	2,749	..	637	2,588	2,588	493
	2018	44,065	2,540	..	620	2,641	2,761	527
	2019	41,854	2,864	..	585	..	81	3,069	2,832	560

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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
Iceland	2016	13	30,946	..	..	..	959	..	3,298	..
	2017	61	29,394	..	..	..	797	..	3,273	..
	2018	19	33,223	..	..	..	929	..	3,277	..
	2019	16	33,039	..	..	..	947	..	3,265	..
Ireland	2016	..	..	..	..	..	..	..	..	506
	2017	..	..	..	..	..	..	..	..	529
	2018	..	..	..	..	..	..	..	..	567
	2019	..	..	..	..	..	..	..	..	573
Italy	2016	223,037	810	3	..	..	..	..	5,222	8,378
	2017	232,623	793	4	..	..	..	..	5,478	8,741
	2018	228,673	878	6	..	..	..	..	5,364	9,145
	2019	230,526	870	6	..	..	..	..	5,477	9,544
Kosovo	2016	46	..	..	..	..	749	..	..	14
	2017	45	..	..	..	..	772	..	..	14
	2018	45	..	..	..	..	787	..	..	15
	2019	28	..	..	..	..	830	..	..	16
Latvia	2016	28,959	..	..	..	..	8	0	..	..
	2017	29,983	..	..	..	..	6	12	..	..
	2018	29,682	..	..	..	..	6	..	..	..
	2019	28,604	..	3	..	..	5	..	..	2
Liechtenstein	2016	388	..	37	..	..	..	..	..	..
	2017	387	..	38	..	..	..	..	..	..
	2018	417	..	37	..	..	..	..	..	..
	2019	432	..	36	..	..	..	..	..	..
Lithuania	2016	33,652	41	..	..	9,446	9	..	..	..
	2017	34,957	15	..	..	11,765	9	..	..	..
	2018	34,623	..	..	..	11,272	9	..	..	..
	2019	31,735	..	..	..	11,034	9	..	..	..
Luxembourg	2016	2,432	..	..	..	..	..	..	..	86
	2017	2,759	..	0	..	..	..	..	..	91
	2018	3,125	..	0	..	..	..	..	..	99
	2019	4,026	..	0	..	..	..	..	..	102
Malta	2016	3	..	..	..	..	..	..	..	207
	2017	3	..	..	..	..	..	..	..	209
	2018	0	..	..	..	..	..	..	..	211
	2019	1	..	..	..	..	..	..	..	212
Netherlands	2016	116,294	..	..	..	8,559	..	2,149	2,844	1,147
	2017	112,489	..	..	..	8,279	..	1,506	3,047	1,139
	2018	100,247	..	..	..	8,047	..	341	3,731	1,156
	2019	105,081	..	..	..	9,031	..	..	5,564	1,207
North Macedonia	2016	2,239	..	..	..	..	..	..	210	..
	2017	2,419	..	..	..	..	..	..	198	..
	2018	2,245	..	..	..	..	..	..	190	..
	2019	2,051	..	..	..	..	..	..	184	..
Norway	2016	15,948	..	..	..	3,360	5,458	792	..	..
	2017	16,737	..	..	..	3,535	5,478	829	..	..
	2018	17,827	..	..	..	3,648	5,023	713	..	..
	2019	18,418	..	..	..	3,581	4,824	763	..	..
Poland	2016	292,247	..	..	..	495	4	54	930	2,189
	2017	299,016	659	5	78	946	2,280
	2018	294,097	457	5	115	991	2,383
	2019	286,234	528	3	286	1,050	3,009

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Country or area	Year	Combustible fuels	Geo-thermal	Solar thermal	Nuclear	Chemical sources	Heat pumps and electric boilers	Other sources	Direct use geothermal	Direct use solar thermal
Portugal	2016	18,846	..	..	..	..	..	..	57	3,515
	2017	19,101	..	..	..	..	..	..	65	3,683
	2018	20,180	..	..	..	..	..	..	73	3,953
	2019	20,927	..	..	..	..	..	..	72	4,033
Republic of Moldova	2016	10,606	..	..	..	..	..	..	..	..
	2017	10,251	..	..	..	..	..	..	..	..
	2018	10,658	..	..	..	..	..	..	..	..
	2019	9,670	..	..	..	..	..	..	..	..
Romania	2016	76,505	256	..	..	..	..	..	1,071	22
	2017	74,328	262	..	..	..	..	..	1,098	31
	2018	71,225	246	..	..	..	..	..	1,066	31
	2019	61,203	243	..	..	..	..	..	1,045	30
Russian Federation	2016	4,988,962	207	..	14,637	..	12,852	363,085	..	..
	2017	4,924,203	0	..	14,593	..	13,366	373,030	..	..
	2018	5,064,879	0	..	14,011	..	14,646	388,539	..	..
	2019	4,914,229	..	..	14,246	..	13,209	380,746	..	..
Serbia	2016	36,097	..	..	..	..	..	..	214	..
	2017	37,089	..	..	..	..	..	..	213	..
	2018	36,178	..	..	..	..	..	..	215	..
	2019	33,505	..	..	..	..	..	..	220	..
Slovakia	2016	35,325	140	2	1,976	..	63	10	66	232
	2017	35,434	148	1	2,096	..	95	7	63	272
	2018	29,113	159	2	1,917	..	107	17	58	297
	2019	29,079	175	2	1,882	..	119	14	58	316
Slovenia	2016	8,982	18	..	..	..	..	..	488	440
	2017	9,434	18	..	..	..	..	..	577	441
	2018	9,296	19	..	..	..	..	..	560	443
	2019	9,124	19	..	..	..	..	..	582	443
Spain	2016	..	..	..	..	..	..	..	789	12,278
	2017	..	..	..	..	..	..	..	789	12,912
	2018	..	..	..	..	..	..	..	789	13,597
	2019	..	..	..	..	..	..	..	789	14,265
Sweden	2016	176,404	..	..	..	..	17,025	20,459	..	468
	2017	173,473	..	..	..	..	16,434	21,996	..	464
	2018	173,343	..	..	..	..	16,366	20,707	..	457
	2019	170,111	..	..	..	..	16,175	21,301	..	446
Switzerland	2016	20,515	..	..	1,330	..	100	..	19	2,450
	2017	20,698	..	..	1,320	..	102	..	17	2,508
	2018	20,431	..	..	1,350	..	13	..	18	2,565
	2019	22,532	..	..	1,380	..	..	..	18	2,642
Ukraine	2016	414,323	..	..	6,339	25,082	..	1,782	..	..
	2017	374,362	..	..	6,329	22,833	..	1,263	..	..
	2018	381,170	..	..	6,476	22,342	..	1,379	..	..
	2019	346,992	..	..	6,041	27,865	..	1,185	..	..
United Kingdom	2016	65,128	..	..	..	..	..	..	34	2,145
	2017	66,695	..	..	..	..	..	..	34	2,179
	2018	66,597	..	..	..	..	..	..	34	2,208
	2019	65,435	..	..	..	..	..	..	34	2,232
Oceania	2016	1,309	8,187	15,470
	2017	1,193	8,058	16,298
	2018	1,267	7,901	17,162
	2019	1,167	7,933	18,096

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Australia	2016	14,872
	2017	15,698
	2018	16,560
	2019	17,493
French Polynesia	2016	75
	2017	76
	2018	78
	2019	80
New Caledonia	2016	140
	2017	141
	2018	141
	2019	141
New Zealand	2016	1,309	8,187	364
	2017	1,193	8,058	364
	2018	1,267	7,901	364
	2019	1,167	7,933	364
Niue	2016	*16
	2017	*16
	2018	*16
	2019	*16
Samoa	2016	3
	2017	*3
	2018	*3
	2019	*3