

ENERGY IN NORWAY

Production and consumption of electric energy in 2013

	Preliminary figures	
	GWh	% change 2012/2013
Hydropower production	129 022	-9.7
+ Thermal power production	3 324	
+ Wind power production	1 894	
= Total power production	134 240	-9.1
+ Imports	10 135	
- Exports	15 140	
= Gross consumption (total)	129 235	-0.5
- Electric boilers *)	3 716	
- Pumped storage power	790	
- Losses	10 512	
= Net consumption excl. electric boilers and pumped storage power	114 217	0.3
Of which:		
Energy intensive industry incl. pulp and paper industry	32 639	
General consumption	81 577	
Gross consumption, excl. electric boilers and pumped storage power	123 354	0.4
Of which:		
Energy intensive industry incl. pulp and paper industry	33 618	-3.0
General consumption	89 735	1.7
General consumption, gross, adjusted for temperature conditions	91 525	1.7

*) Only electric boilers

2015 - EDITION

The production of electric energy in 2013 was 129 TWh, a decrease of 9.7 percent compared to 2012. 96.1 percent of the production was hydropower. Total inflow in 2013 was 98 percent of normal compared to 103 percent in 2012. The energy content of the reservoirs at the end of 2013 was 57.5 TWh, which is 68.2 percent of the total capacity, a decrease of 1.9 TWh from the end of previous year.

At the end of 2013, the production from the Norwegian hydropower system is estimated at 131.4 TWh for years with average inflow.

Domestic gross consumption was 129.2 TWh, a decrease of 0.5 percent compared to 2012. The gross general consumption increased by 1.7 percent. Adjusted for temperature conditions, the general consumption increased also by 1.7 percent. Average annual increase over the past 10 years has been 1.4 percent.

The maximum system power load in 2013 related to domestic consumption was 24 180 MW.

In 2013 the power station installed capacity increased by 368 MW, an increase of 1.1 percent. Average annual increase in installed capacity over the past 10 years has been 1.6 percent.

As of 31 December 2013, the total installed capacity of the Norwegian power system (hydro, wind and thermal power stations) was 32 854 MW, of which 94.2 percent is hydropower.

Data in this folder concerning the electricity supply for 2012 and earlier years, are all taken from Statistics Norway. Information about individual power stations and reservoirs is obtained directly by the Norwegian Water Resources and Energy Directorate. The figures for 2013 are based on preliminary data from Statistics Norway and other sources, and must be regarded as approximate values. The table on oil and gas resources is based on information from the Directorate of Petroleum.

Statistics Norway is also the source for the tables giving district heating, production of important forms of energy, domestic deliveries of petroleum products, final energy consumption and the energy balance.

Units for power:
1 W (watt) = 1 Nm/s (newtonmeter/second)

Units for energy:
1 J (joule) = 1 Nm

Units for electric energy:
1 kWh = 3.6 · 10⁶ J

Prefixes:
k = kilo = 10³
M = mega = 10⁶
G = giga = 10⁹
T = tera = 10¹²
P = peta = 10¹⁵
E = exa = 10¹⁸

Eg.: 1 kWh = 3.6 · 10⁶ J = 3.6 MJ

Energy content of selected fuels:

Coal 28.1 MJ/kg
Fuel wood 16.8 MJ/kg
Petrol 43.9 MJ/kg
Light fuel oil 43.1 MJ/kg
Heavy fuel oil 40.6 MJ/kg
Crude oil 36.0 GJ/Sm³
Natural gas 40.4 MJ/Sm³

Hydropower potential as of 12.31.2013 (Mean annual production in GWh)

County	Developed	Development / licence granted	Remaining*)	Protected	Total
Østfold	4 643	5	8	21	4 676
Akershus	970	65	0	75	1 109
Oslo	23	0	0	0	23
Hedmark	2 572	97	701	3 100	6 470
Oppland	6 240	106	1 913	4 869	13 129
Buskerud	9 095	166	1 047	1 196	11 504
Vestfold	18	0	153	36	207
Telemark	11 965	88	1 309	858	14 220
Aust-Agder	4 641	477	576	736	6 429
Vest-Agder	9 826	168	969	1 050	12 013
Rogaland	13 027	359	1 413	2 360	17 159
Hordaland	17 119	654	3 872	8 192	29 837
Sogn og Fjordane	15 626	1 055	5 069	6 742	28 492
Møre og Romsdal	7 333	162	1 902	4 883	14 280
Sør-Trøndelag	4 675	115	493	2 314	7 597
Nord-Trøndelag	3 280	101	605	3 189	7 175
Nordland	15 762	1 299	3 707	7 638	28 407
Troms	2 917	137	2 129	2 273	7 455
Finnmark	1 645	26	567	1 408	3 647
Total Norway	131 377	5 079	26 434	50 940	213 831

*) Including the following: Under licensing, under planning and remaining.

Oil and gas resources as of 12.31.2013

	Oil	Gas	NGL*)	Condensate	Total	
	mill Sm ³	mill Sm ³ o.e.	mill Sm ³ o.e.	mill Sm ³ o.e.	mill Sm ³ o.e.	EJ
Originally reserves	4 731	3 923	548	148	9 349	337
+ Resources in fields	337	185	42	3	567	20
+ Resources in discoveries	679	330	27	20	1 056	38
+ Increased extraction	155	90			245	9
+ Undiscovered	1 330	1 490		120	2 940	106
- Sold	3 897	1 874	304	108	6 183	223
= Remaining resources	3 336	4 144	313	182	7 975	287

*) Natural Gas Liquids

Changes in production capacity (MW)

	Installed capacity 12.31.2013	Net capacity added in 2013	Under construction	License granted, not built yet

Hydropower	30 960	270	646	1 211
Wind power	811	98	45	3 064
Thermal power	1 083			1 380
Total	32 854	368	691	5 655

Mean annual production (GWh)

	Mean annual production per 12.31.2013	Generation added in 2013	Under construction	License granted, not built yet
Hydropower	131 377	899	1 478	3 602
Wind power	2 288	314	135	8 492
Thermal power	7 812			12 000
Total	141 477	1 213	1 613	24 094

The largest hydropower stations in Norway as of 12.31.2013

Power station	County	Max. capacity (MW)	Mean ann. production (GWh)
Kvilldal	Rogaland	1 240	3 611
Sima	Hordaland	1 120	3 516
Tonstad	Vest-Agder	960	4 357
Aurland I	Sogn og Fjordane	840	2 508
Saurdal*)	Rogaland	640	1 335
Svartisen	Nordland	600	2 466
Rana	Nordland	500	2 172
Tokke	Telemark	430	2 328
Holen	Aust-Agder	390	831
Tyin	Sogn og Fjordane	374	1 450
Brokke	Aust-Agder	330	1 454
Evanger	Hordaland	330	1 351
Nedre Vinstra	Oppland	308	1 264
Skjomen	Nordland	300	1 191
Vinje	Telemark	300	1 051
Kobbelv	Nordland	300	750

*) Pumped storage power station

The largest reservoirs in Norway as of 12.31.2013

Reservoir	County	Max. reservoir capacity	
		mill. m ³	GWh
Storglomvatn	Nordland	3 506	4 589
Blåsjø	Aust-Agder/Rogaland	3 105	7 759
Tustervatn-Røsvatn	Nordland	2 363	2 063
Svartevatn	Vest-Agder/Rogaland	1 398	2 923
Mjøsa	Hedmark/Oppland/Akershus	1 312	337
Akersvatn	Nordland	1 276	1 531
Vatnedalsvatn	Aust-Agder	1 150	1 967
Møsvatn	Telemark	1 064	2 270
Altevatn	Troms	1 027	1 145
Kalvatn	Nordland	706	847

Investment, price index and prices

	2000	2005	2010	2011	2012
Gross investment in electricity supply (mill. NOK)	3 915	7 496	11 840	14 389	16 718
Acquisition of fixed assets (mill. NOK)					

- production plants	834	3 818	4 785	6 349	7 415
- transmission lines	269	369	786	1 877	2 475
- distribution network	2 160	2 364	4 164	4 628	5 337
- other	1 081	1 254	2 763	2 355	2 485
Gross investment in % of total domestic investment	1.3	1.9	2.2	2.4	2.5
Consumer price index (1998 =100)	106	115	129	130	131
Price of electric energy to households (øre/kWh)	50.4	74.8	103.8	101.5	81.2
Price of useful energy*) for light fuel oil (øre/kWh)	64.9	89.5	101.9	120.8	125.7

*) Efficiency rate 0.8

Energy balance 2013 in PJ

	Total	Coal and coke	Crude oil	Petroleum products	Natural gas and other gases	Waterfall energy	Electricity	District heating	Biofuels and waste
Primary production	8 151	52	3 032	529	4 009	471	0	0	58
Imports	347	30	77	197	0	0	37	0	7
Exports	7 170	58	2 452	839	3 764	0	55	0	2
Bunkers and stock changes	52	-9	21	40	0	0	0	0	0
Primary energy supply	1 276	32	636	-153	245	471	-18	0	63
Conversion	14	-5	-566	545	30	-471	480	22	-21
Energy sector own use	219	0	0	12	177	0	30	0	0
Non-energy use	82	2	0	59	20	0	0	0	0
Statistical differences and losses	219	0	70	62	44	0	39	5	0
Final energy consumption	776	26	0	264	33	0	393	18	43
Of which:									
Industry and mining	240	26	0	21	26	0	152	2	14
Transport	207	0	0	195	4	0	3	0	5
Other consumer groups	328	0	0	48	2	0	239	16	23

District heating 2000 - 2013

	Unit	2000	2005	2010	2011	2012	2013
Establishments	Number	25	38	80	86	89	91
Net production of district heating	TJ	5 777	9 224	17 398	15 257	16 999	19 017
Losses	TJ	531	765	1 917	1 829	1 800	2 094
Delivered consumer:							
Total	TJ	5 246	8 460	15 481	13 428	15 199	16 924
Households	TJ	758	1 422	3 682	2 714	3 287	3 794
Industry and mining	TJ	810	1 077	1 695	1 444	1 717	2 092
Services	TJ	3 643	5 956	10 096	9 256	10 181	11 034
Other	TJ	34	4	8	14	14	4
Average price (excl. VAT)	øre/kWh	31	48	65	66	57	59
Investment	mill. NOK	236	750	3 606	3 062	2 193	1 366

Domestic deliveries of petroleum products 2000 - 2013 in mill. liter

Products	2000	2005	2010	2011	2012	2013
Petrol			1 629	1 489	1 395	1 307
Auto diesel			3 348	3 462	3 595	3 717
Marine gas oil			1 794	1 856	1 897	1 745
Light heating oils			552	421	357	342
Heating and lighting kerosene			81	62	47	56
Jet kerosene			969	974	1 060	1 113
Heavy distillate and heavy fuel oil			549	509	423	397
Lubricant oils			63	70	68	71
Other petroleum products			950	864	833	651
Total	9 059	9 328	9 934	9 707	9 675	9 400

Production of important forms of energy 2000 - 2013

	Unit	2000	2005	2010	2011	2012	2013
Coal	1000 t	632	1 471	1 935	1 386	1 229	1 855
Crude oil	1000 Sm ³	181 181	148 137	104 388	97 513	89 197	84 948
Natural gas	Mill. Sm ³ o.e.	49 796	85 843	107 250	101 266	114 723	108 746
Electricity	GWh	142 816	137 811	123 630	127 631	147 716	134 240

Final energy consumption*) 2000 - 2013 in PJ

	2000	2005	2010	2011	2012
Coal and coke	19	25	25	25	26
Wood and black liquor	47	54	52	49	43
Gases	25	27	28	30	33
Petroleum products	264	278	272	270	264
Electricity	382	410	390	399	393
District heating	12	16	14	16	18
Total	749	808	780	789	776

*) Consumption by energy producing industries, consumption for non-energy purposes and losses in transportation and distribution are not included in the figures.

The leading hydropower producing countries in 2012

(Source: IEA)

Country	Hydropower production		Total electricity production	
	TWh	Ann. change 2002-12 (%)	TWh	Ann. change 2002-12 (%)
China	872	11.7	4 994	11.7
Brazil	415	3.8	552	4.8
Canada	381	0.8	634	0.5
USA	298	0.2	4 291	0.6
Russia	167	0.2	1 071	1.9
Norway	143	1.0	148	1.2
India	126	6.3	1 128	6.3
Japan	84	-0.9	1 034	-0.2
Venezuela	82	3.3	127	3.3
Sweden	79	1.8	167	1.3
World	3 756	3.3	22 752	3.4

Energy and electricity consumption for selected countries in 2012

(Source: IEA)

Country	Total energy consumption ^{*)}		Electricity consumption ^{**)}	
	Per capita (GJ)	Ann. change 2002-12 (%)	Per capita (kWh)	Ann. change 2002-12 (%)
Canada	301	-1.0	15 558	-0.9
USA	285	-1.6	12 947	-0.3
Finland	257	-1.1	15 687	-0.3
Norway	244	-0.1	23 656	-0.4
Australia	232	-0.3	10 218	-0.5
Sweden	221	-0.8	14 289	-0.9
Russia	221	2.1	6 602	2.2
New-Zealand	179	-0.6	9 298	-0.2
France	162	-1.2	7 367	0.1
Germany	160	-1.0	7 138	0.3
Japan	149	-1.3	7 753	-0.2
Denmark	130	-1.7	6 040	-0.8
United Kingdom	126	-2.3	5 452	-1.2
Spain	113	-1.8	5 647	0.1
South Africa	112	0.7	4 410	-0.3
Italy	109	-1.3	5 277	-0.5
Poland	106	0.8	3 851	1.8
China	90	8.4	3 475	11.2
Argentina	82	2.5	3 027	4.1
Thailand	79	3.3	2 479	4.3
Turkey	65	3.8	2 760	5.3
Brazil	59	2.6	2 509	3.3
Egypt	41	2.1	1 804	4.8
Vietnam	31	3.3	1 273	12.6
Angola	29	0.3	239	9.1
India	27	2.5	760	6.1
Pakistan	20	0.6	447	1.9
Tanzania	19	1.3	101	3.7
Mozambique	17	-0.5	454	5.7
World	80	1.4	2 972	2.3

^{*)} Total primary energy supply (excl. bunkers)

^{**)} Total domestic consumption (excl. losses in distribution system)

Production and consumption of electric energy

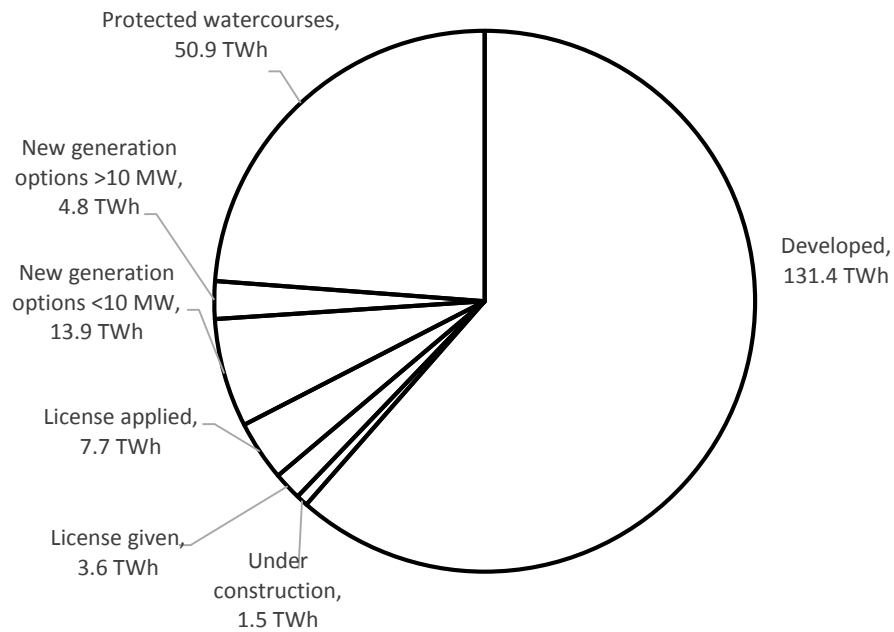
County	Production capacity 12.31.2013 (MW)	Production		Net consumption in 2012 incl. non-priority power					
		2012 (GWh)	2011 (GWh)	Energy intensive industry incl. pulp and paper industry (GWh)	General consumption			Households and agriculture	
					Total (GWh)	Mining and other industries (GWh)	Services and transport (GWh)	Total (GWh)	Per capita (households only) (kWh)
Østfold	889	5 204	4 901	2 142	3 951	551	1 295	2 105	6 867
Akershus	183	1 046	948	89	7 594	360	2 955	4 278	7 443
Oslo	32	116	66	63	9 248	305	4 830	4 113	6 701
Hedmark	582	2 940	2 602	16	3 052	412	1 010	1 630	6 957
Oppland	1 569	7 193	6 865	29	3 487	455	1 222	1 809	7 369
Buskerud	2 034	11 187	10 697	543	4 370	557	1 472	2 341	7 373
Vestfold	4	15	14	129	3 518	476	1 157	1 885	7 249
Telemark	2 599	14 256	12 630	2 726	2 855	399	986	1 469	7 646
Aust-Agder	1 192	5 087	3 942	209	1 598	161	557	880	7 049
Vest-Agder	2 192	10 627	8 204	3 146	2 659	477	885	1 297	6 794
Rogaland	4 176	12 787	11 480	3 436	7 503	1 754	2 176	3 572	7 164
Hordaland	4 518	20 682	16 910	2 734	10 145	3 655	2 539	3 951	7 438
Sogn og Fjordane	4 146	16 327	14 487	4 884	1 789	287	612	890	7 032
Møre og Romsdal	1 666	8 402	6 746	5 135	5 387	2 065	1 281	2 041	7 253
Sør-Trøndelag	1 241	5 932	4 819	1 549	4 349	342	1 723	2 284	6 526 ^{*)}
Nord-Trøndelag	844	3 624	3 220	1 340	2 115	312	722	1 081	6 526 ^{*)}
Nordland	3 646	15 868	13 560	5 755	4 441	575	1 551	2 314	8 618
Troms	705	3 010	2 446	622	2 858	204	1 113	1 542	8 904
Finnmark	616	3 338	3 025	0	3 169	1 749	583	838	10 270
Svalbard	20	74	68	0	70	30	18	22	-
Total Norway	32 853	147 716	127 631	34 546	84 160	15 128	28 687	40 345	7 282

^{*)}Total Sør- and Nord-Trøndelag

Production and consumption of electric energy 1995 - 2012 in GWh

	1995	2000	2005	2009	2010	2011	2012	Ann. change 2000-2012 (%)
Hydropower production	122 487	142 289	136 452	126 077	117 152	121 553	142 810	
+ Thermal power production	514	496	860	4 719	5 599	4 795	3 358	
+ Wind power production	10	31	499	977	879	1 283	1 548	
= Total production	123 011	142 816	137 811	131 773	123 630	127 631	147 716	
+ Imports	2 300	1 474	3 653	5 650	14 673	11 255	4 190	
- Exports	8 962	20 529	15 695	14 633	7 123	14 329	22 006	
= Gross consumption (total)	116 349	123 761	125 769	122 790	131 180	124 557	129 900	0.4
- Non-priority power	7 514	10 518	5 595	4 998	4 494	4 046	4 179	
- Pumped storage power	1 367	673	1 091	1 135	574	1 807	1 536	
- Losses	10 018	10 732	10 630	9 287	10 050	7 807	9 658	
= Net consumption excl. electric boilers and pumped storage power	97 450	101 838	108 453	107 370	116 062	110 897	114 527	1.0
- Energy intensive industry incl. pulp and paper industry	33 503	35 685	40 728	31 828	34 075	34 217	33 654	-0.5
= General consumption	63 947	66 153	67 725	75 542	81 987	76 680	80 873	1.7
Of which:								
Households and agriculture	3 5587	35 685	35 404	37 914	41 489	37 646	40 002	1.0
Mining and other industries	8 539	8 444	9 149	12 295	13 420	13 540	14 319	4.5
Services and transport	19 821	22 024	23 172	25 333	27 078	25 494	26 552	1.6

Hydropower potential as of 1.1.2014 (mean annual production)



Useful energy excluding energy intensive industry and transport

