

POWER PLANTS

Maximum capacity of electric power plants in Italy at 31 December 2015

By energy source

Figure 5

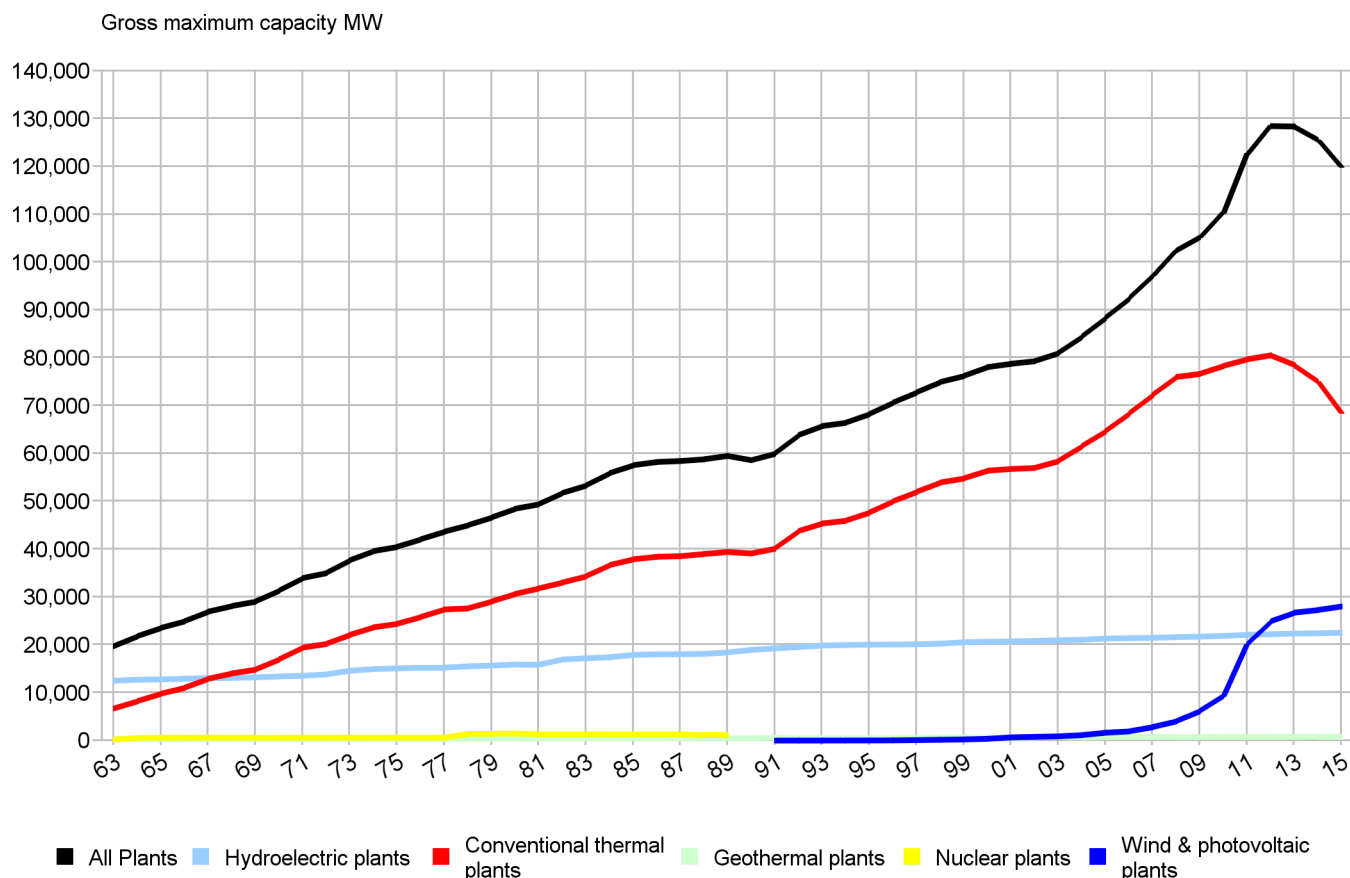


Table 5 (*)

	Gross			Net		
	Producers	Autoproducers	Total	Producers	Autoproducers	Total
MW						2015
hydroelectric	22,434.4	125.9	22,560.3	22,098.6	121.4	22,220.0
thermal	64,085.2	5,332.4	69,417.6	61,569.8	5,136.3	66,706.1
<i>conventional</i>	63,264.2	5,332.4	68,596.6	60,801.8	5,136.3	65,938.1
<i>geothermal</i>	821.0	-	821.0	768.0	-	768.0
wind	9,161.9	..	9,161.9	9,136.9	..	9,137.0
photovoltaic	18,892.1	-	18,892.1	18,892.1	-	18,892.1
total	114,573.7	5,458.3	120,031.9	111,697.4	5,257.8	116,955.2

The "maximum capacity" of a power plant is the maximum electrical capacity that could be produced continuously throughout a prolonged period of operation on the assumption that all parts of the plant are entirely efficient and in optimal condition (flow and heat in the case of hydroelectric plants, availability of fuel and of cooling-water in the case of thermoelectric plants).

Maximum capacity in "gross" if measured at the terminals of the plant's generators, or "net" if measured at the plant's busbars, that is, less the power absorbed by the plant auxiliary services and less the losses in the transformers that are considered integral parts of the plant.

(*) For the definition of "Autoproducer" or "Self-Producer" see Introduction of the volume, on page 3.

Hydro plants

Nominal and maximum capacity and average annual energy capability of hydro plants in Italy at 31 December

Table 6

	Plants		Nominal capacity			
	no.	no.	Prime movers		Generators	
			MW	MW	MVA	MVA
	2014	2015	2014	2015	2014	2015
Producers	3,368	3,621	24,254.6	24,375.1	27,758.1	27,903.2
<i>variation 2015/2014</i>		7.5%		0.5%		0.5%
Autoproducers	71	79	137.6	140.7	173.5	177.2
<i>variation 2015/2014</i>		11.3%		2.2%		2.2%
Total	3,439	3,700	24,392.3	24,515.8	27,931.6	28,080.4
<i>variation 2015/2014</i>		7.6%		0.5%		0.5%

(*) Including energy capability from pumping inflows.

A "hydro plant" is a complex of hydraulic works, machinery, equipment, buildings and services for the conversion of hydraulic energy into electric energy. The "power station" is the plant comprising the building, the hydroelectric sets, the relative equipment and facilities such as the "station transformers". Two hydro plants with different heads, but having in common the power-station building, the discharge installations and part of the services, are considered as separate plants, each classified in its specific category (see definition on page 33).

In "pumped-storage plants", the pumps and the turbines are always connected to the same upper reservoir. The following two types of pumped-storage plants are distinguished according to the manner in which they are connected to the lower reservoir or reservoirs:

- "plants with contributory pumping", in which the pumps are connected to a lower reservoir separated from that into which the turbines are discharged. In this case it is not possible to provide for pumping cycles, and the function of the pumps, which may be installed in the powerhouse building or in a different

building, is solely to raise the water collected by the reservoir which supplies the pumps to the upper reservoir. Pumping with these plants is defined as "contributory pumping";

- plants in which the pumps and turbines are connected to the same lower reservoir: in this case the pumping cycle is repeatable a larger number of times, if required. These plants are considered respectively as "pure pumped-storage plants" or "mixed pumped-storage plants" when the natural inflows which supply the upper reservoir are, on average, above or below 5% the average volume of water feeding the turbines in a year. The pumping of these plants is defined as "voluntary pumping".

The "nominal capacity" of a hydraulic prime mover (turbine) or of an electrical generator is the maximum capacity obtainable, in continuous operation according to the accepted standards; the nominal capacity is a gross capacity. In a hydroelectric plant (or in a group of plants), nominal capacity is the sum of the nominal capacities of the machines (main and auxiliary) installed in the power plant.

Maximum capacity				Average annual energy capability (*)			
Gross		Net		Gross		Net	
MW	MW	MW	MW	GWh	GWh	GWh	GWh
2014	2015	2014	2015	2014	2015	2014	2015
22,311.7	22,434.4 0.5%	21,978.9	22,098.6 0.5%	55,670.5	56,103.2 0.8%	54,835.4	55,261.7 0.8%
122.8	125.9 2.5%	118.8	121.4 2.2%	618.3	632.8 2.4%	609.0	623.3 2.4%
22,434.5	22,560.3 0.6%	22,097.7	22,220.0 0.6%	56,288.8	56,736.0 0.8%	55,444.4	55,885.0 0.8%

The "energy capability from natural inflows" of a hydroelectric plant in a given period is the maximum quantity of electric energy that it could possibly produce or store with said inflows in the period considered, on the assumption of complete utilisation of the inflows and that all parts of the plant are efficient. Energy capability may be gross or net and is calculated in a manner analogous to that defined for production (see page 25).

The "average energy capability from natural inflows" of a hydro plant in a given period is the arithmetic mean of the related energy capabilities during the largest possible number of consecutive years.

The "average energy capability from contributory-pumping inflows" of a hydro plant in a given period is defined in a manner analogous to energy capability from natural inflows, but with reference to a net head height equivalent to the difference between the level of the upper reservoir of the plant and that of the reservoir which supplies the pumps.

The "average energy capability from voluntary-pumping inflows" of a pure or mixed pumped-storage hydro plant in a given period is calculated conventionally on the basis of considerations that take into account the duty that this type of plant is called to perform in the generating system.

Situation of hydro plants in Italy in 2015

Table 7

	Plants		Nominal capacity	
	no.	Category	Prime movers	Generators
			kW	kVA
Situation at 31/12/2014	3,439		24,392,271	27,931,619
Plants commissioned in 2015	265		119,633	144,910
Piemonte	51	Run of river	27,472	31,500
Valle d'Aosta	12	Run of river	3,690	4,363
Lombardia	56	Run of river	17,308	21,149
Trentino Alto Adige	43	Run of river	36,361	45,475
Veneto	30	Run of river	12,968	15,141
Friuli Venezia Giulia	6	Run of river	1,331	1,481
Liguria	7	Run of river	1,189	1,371
Emilia Romagna	23	Run of river	8,490	11,167
Toscana	19	Run of river	6,432	7,988
Umbria	2	Run of river	200	223
Marche	6	Run of river	1,702	1,980
Lazio	4	Run of river	482	565
Campania	1	Run of river	500	633
Basilicata	1	Run of river	310	360
Calabria	3	Run of river	1,178	1,493
Sicilia	1	Run of river	20	21
Existing modified or decommissioned plants in 2015	-4		3,941	3,875
Situation at 31/12/2015	3,700		24,515,845	28,080,404

The **categories** in which hydro plants are classified are defined on page 33.

The electrical capacity of a set of reservoirs is the amount of electricity that their downstream hydro plants could generate through the complete emptying of the reservoirs' "water operating capacity", lacking natural flows and water losses.

Gross maximum capacity	Average annual gross energy capability				Total
	from natural inflows	from pumping inflows		Total	
		contributory	voluntary		
kW	GWh	GWh	GWh	GWh	
22,434,517	50,288.7	183.7	5,816.4	56,288.8	
116,931	453.8	0.0	0.0	453.8	
27,039	108.7	-	-	108.7	
3,639	15.0	-	-	15.0	
16,897	78.1	-	-	78.1	
35,420	126.5	-	-	126.5	
12,538	55.0	-	-	55.0	
1,325	4.4	-	-	4.4	
1,142	4.0	-	-	4.0	
8,408	24.5	-	-	24.5	
6,324	22.2	-	-	22.2	
200	1.0	-	-	1.0	
1,645	6.4	-	-	6.4	
459	2.1	-	-	2.1	
500	1.0	-	-	1.0	
197	1.4	-	-	1.4	
1,178	3.5	-	-	3.5	
20	0.1	-	-	0.1	
8,810	-6.6	0.0	0.0	-6.6	
22,560,258	50,735.9	183.7	5,816.4	56,736.0	

Nominal and maximum capacity and average annual gross energy capability of hydro plants in Italy at 31 December 2015

By major geographical area and category of plant

Table 8

	Plants	Nominal capacity			Maximum capacity		Average annual gross energy capability			Total
		no.	Prime movers MW	Generators MVA	Gross MW	Net MW	from natural inflows GWh	from pumpings		
								contributory GWh	voluntary GWh	
reservoir plants	122	8,943.8	10,050.4	8,508.6	8,418.4	10,310.6	109.9	3,447.9	13,868.5	
<i>of which pure and mixed pumped-storage</i>	15	5,378.4	6,096.9	5,147.1	5,098.2	2,787.5	34.3	3,447.9	6,269.7	
pondage plants	135	4,036.4	4,453.7	3,600.9	3,546.2	11,458.3	40.0	-	11,498.3	
run-of-river plants	2,723	4,773.0	5,712.1	4,404.0	4,295.0	19,484.2	11.0	-	19,495.2	
Northern Italy	2,980	17,753.3	20,216.2	16,513.6	16,259.5	41,253.1	160.8	3,447.9	44,861.9	
reservoir plants	9	302.6	372.7	256.4	252.4	464.0	3.1	-	467.1	
pondage plants	43	919.8	1,102.2	765.0	754.0	2,002.5	5.6	-	2,008.1	
run-of-river plants	411	555.0	678.9	506.3	495.9	1,899.4	-	-	1,899.4	
Central Italy	463	1,777.5	2,153.8	1,527.8	1,502.3	4,365.9	8.7	-	4,374.6	
reservoir plants	46	3,702.1	4,173.9	3,361.1	3,320.3	2,015.2	14.0	2,368.4	4,397.7	
<i>of which pure and mixed pumped-storage</i>	7	2,777.1	3,134.3	2,522.0	2,493.6	429.6	1.0	2,368.4	2,799.0	
pondage plants	28	828.4	974.9	736.0	725.6	1,493.2	0.2	-	1,493.4	
run-of-river plants	183	454.6	561.5	421.8	412.3	1,608.5	-	-	1,608.5	
Southern mainland & island	257	4,985.1	5,710.4	4,518.9	4,458.2	5,116.9	14.2	2,368.4	7,499.6	
reservoir plants	177	12,948.5	14,597.0	12,126.1	11,991.1	12,789.9	127.0	5,816.4	18,733.3	
<i>of which pure and mixed pumped-storage</i>	22	8,155.5	9,231.1	7,669.1	7,591.8	3,217.1	35.3	5,816.4	9,068.7	
pondage plants	206	5,784.7	6,530.9	5,102.0	5,025.7	14,954.0	45.8	-	14,999.7	
run-of-river plants	3,317	5,782.7	6,952.5	5,332.1	5,203.3	22,992.1	11.0	-	23,003.0	
ITALY	3,700	24,515.8	28,080.4	22,560.3	22,220.0	50,735.9	183.7	5,816.4	56,736.0	

Nominal and gross maximum capacity and average annual gross energy capability of hydro plants in Italy at 31 December 2015

By gross maximum capacity class of plant

Table 9

	Plants	Nominal capacity		Gross maximum capacity		Average annual gross energy capability GWh
		Prime movers	Generators	Of each Class	Cumulated	
	no.	MW	MVA	MW	MW	
gross maximum capacity class						
over 200 MW	17	8,829.0	9,914.8	8,251.6	8,251.6	10,752.7
from over 100 to 200	25	3,846.2	4,132.6	3,441.7	11,693.2	8,010.9
" 50 " 100	29	2,200.4	2,545.5	1,964.3	13,657.6	5,979.7
" 30 " 50	63	2,696.0	3,141.4	2,475.7	16,133.3	8,173.8
" 20 " 30	54	1,512.0	1,782.9	1,370.2	17,503.5	4,884.3
" 10 " 20	122	1,899.5	2,284.3	1,758.7	19,262.1	6,147.7
" 5 " 10	145	1,116.6	1,331.8	1,035.2	20,297.3	3,709.0
" 1 " 5	709	1,647.7	2,014.7	1,540.1	21,837.4	5,966.7
up to 1	2,536	768.5	932.5	722.8	22,560.3	3,111.2
Total	3,700	24,515.8	28,080.4	22,560.3		56,736.0

The "hydro plants" are classified, according to the filling period of the reservoir, in three categories: reservoir plants, pondage plants and run-of-river plants.

The "filling period" of a reservoir is the time necessary for providing the reservoir with a volume of water equivalent to its useful capacity (see definition on page 30), with the average annual flow of the water course(s) which runs into it, excluding possible pumping flows.

On the basis of the respective "filling periods", the reservoirs are classified as follows:

- seasonal "regulation reservoirs": those with a filling period of or exceeding 400 hours;
- weekly or daily "modulation pondage reservoirs": those with a filling period of less than 400 hours and more than 2 hours.

The three categories of plants are therefore defined as follows:

- reservoir plants: those with a reservoir classified as "seasonal regulation reservoir";
 - pondage plants: those with a reservoir classified as "modulation pondage reservoir";
 - run-of-river plants: those with no reservoir or a reservoir with a filling period of 2 hours or less.
- When two or more plants, linked in series and situated at a short distance from one another and without appreciable intermediate inflows, are connected to the same reservoirs, they are classified in the category defined by the filling period of these reservoirs.

Thermal plants

Nominal and maximum capacity of thermal plants in Italy at 31 December (1)

Table 10

	Plants		Units	
	no.	no.	no.	no.
	2014	2015	2014	2015
producers	3,716	3,951	4,787	5,010
<i>of which: geothermal</i>	34	34	36	36
<i>variation 2015/2014</i>		6.3%		4.7%
autoproducers	745	991	1,040	1,351
<i>variation 2015/2014</i>		33.0%		29.9%
ITALY	4,461	4,942	5,827	6,361
<i>variation 2015/2014</i>		10.8%		9.2%

(1) Capacity of thermal plants stoked with renewable sources (Bioenergy) is included. For the detail on plants from renewable sources, see Table 13.

A "thermal power unit" consists of: a steam generator, a thermal prime mover, an electrical generator, thermal-cycle equipment, main and auxiliary services. In the present publication, the term "unit" has, for reasons of simplicity, been adopted to indicate also thermal power sets, consisting only of: a thermal prime mover and an electrical generator (for example, internal-combustion engines, gas turbines, geothermal power sets).

The "nominal capacity" of the prime movers or of the electrical generators of a set, of a unit, of a power plant or of a group of power plants, is the sum of the maximum capacities in continuous-operating conditions, according to the accepted standards, of each of the machines considered of the same category. The nominal capacity is a gross value.

Nominal capacity				Maximum capacity			
Prime movers		Generators		Gross		Net	
MW	MW	MVA	MVA	MW	MW	MW	MW
2014	2015	2014	2015	2014	2015	2014	2015
72,704.5	65,316.1	88,984.2	80,267.3	71,653.5	64,085.2	68,417.2	61,569.8
918.1	918.1	1,075.1	1,075.1	821.0	821.0	768.0	768.0
	-10.2%		-9.8%		-10.6%		-10.0%
4,266.5	5,470.6	5,332.5	6,654.2	4,133.0	5,332.4	3,954.8	5,136.3
	28.2%		24.8%		29.0%		29.9%
76,971.0	70,786.7	94,316.7	86,921.4	75,786.5	69,417.6	72,372.0	66,706.1
	-8.0%		-7.8%		-8.4%		-7.8%

The "maximum capacity" of a set, of a unit, of a power plant or of a group of thermal power plants is the maximum power which could be produced continuously throughout a prolonged period of operation, on the assumption that all the parts of the plant are entirely in efficient condition and that there is adequate availability of fuel and of cooling water. The value for maximum capacity is gross if measured at the terminals of the electrical generators of the plants; it is net if measured at the plant busbars.

Situation of thermal plants in Italy in 2015

Table 11

	Plants	Units	Type of unit
	no.	no.	
Situation at 31/12/2014	4,461	5,827	
Plants commissioned in 2015	535	621	
Piemonte	47	47	Power and heat generation
		4	Power generation only
Valle d'Aosta	5	6	Power and heat generation
Lombardia	113	106	Power and heat generation
		18	Power generation only
Trentino Alto Adige	36	29	Power and heat generation
		10	Power generation only
Veneto	55	54	Power and heat generation
		8	Power generation only
Friuli Venezia Giulia	28	32	Power and heat generation
		5	Power generation only
Liguria	3	3	Power and heat generation
Emilia Romagna	95	91	Power and heat generation
		20	Power generation only
Toscana	35	32	Power and heat generation
		10	Power generation only
Umbria	19	22	Power and heat generation
		2	Power generation only
Marche	11	13	Power and heat generation
		2	Power generation only
Lazio	21	17	Power and heat generation
		9	Power generation only
Abruzzi	5	3	Power and heat generation
		2	Power generation only
Molise	1	1	Power and heat generation
Campania	18	17	Power and heat generation
		1	Power generation only
Puglia	20	20	Power and heat generation
		1	Power generation only
Basilicata	3	3	Power and heat generation
Calabria	7	13	Power and heat generation
Sicilia	8	12	Power and heat generation
		2	Power generation only
Sardegna	5	6	Power and heat generation
Existing modified or decommissioned plants in 2015	-54	-87	
Situation at 31/12/2015	4,942	6,361	

Nominal capacity		Maximum capacity	
Prime movers kW	Generators kVA	Gross kW	Net kW
76,971,014	94,316,700	75,786,535	72,371,951
346,552	410,672	333,969	320,937
16,571	20,042	15,414	14,403
505	575	495	434
7,763	9,386	7,758	7,552
55,532	66,476	54,016	52,005
3,597	4,017	3,200	3,123
6,517	7,761	6,328	6,105
641	744	623	615
32,055	39,293	30,838	29,675
753	922	738	714
13,566	15,416	13,071	12,706
2,087	2,354	2,079	1,966
3,328	3,709	3,232	3,198
31,062	36,635	29,744	29,011
2,067	2,469	2,000	1,954
42,297	47,662	39,224	38,090
2,648	2,937	2,589	2,483
11,690	14,036	11,470	9,286
128	135	124	124
3,159	3,895	3,084	3,005
302	319	259	255
7,162	8,533	6,970	6,773
51,448	60,175	50,425	49,066
6,648	7,942	6,594	6,391
1,044	1,167	1,044	872
70	70	70	68
5,943	7,123	5,782	5,567
999	1,110	999	850
12,225	14,094	11,795	11,388
30	38	30	28
362	405	340	330
1,828	2,179	1,821	1,633
7,596	9,238	7,420	7,192
12,180	16,690	11,736	11,626
2,749	3,125	2,657	2,449
-6,530,872	-7,805,930	-6,702,903	-5,986,809
70,786,694	86,921,442	69,417,601	66,706,079

Nominal and maximum capacity of thermal plants in Italy at 31 December 2015

By type of plant and gross maximum capacity
class of units

Table 12

	Producers				
	Units	Nominal capacity		Maximum capacity	
		no.	Prime movers MW	Generators MVA	Gross MW
A) Plants for power generation only					
internal combustion	1,525	1,070.0	1,324.6	1,040.7	998.2
-up to 25	1,525	1,070.0	1,324.6	1,040.7	998.2
-over 25 up to 50	-	-	-	-	-
gas turbine	56	2,197.8	2,477.8	2,053.7	2,033.8
-up to 25	39	136.9	154.9	128.9	127.6
-over 25 up to 50	1	44.4	52.5	44.3	43.1
-over 50 up to 100	7	607.2	730.4	607.2	602.0
-over 100 up to 200	7	849.2	980.0	823.2	815.1
-over 200 up to 500	2	560.0	560.0	450.0	446.0
steam condensing	111	13,592.4	15,708.1	13,459.9	12,270.5
-up to 25	63	499.4	602.7	472.4	422.6
-over 25 up to 50	6	226.0	325.8	226.0	201.8
-over 50 up to 100	6	430.0	540.7	430.0	394.0
-over 100 up to 200	11	1,747.0	1,999.0	1,734.5	1,597.7
-over 200 up to 500	17	5,470.0	6,250.0	5,377.0	4,814.5
-over 500	8	5,220.0	5,990.0	5,220.0	4,839.8
combined cylce	62	23,089.5	30,185.7	22,610.2	22,145.2
-up to 25	7	39.7	48.5	38.0	36.1
-over 25 up to 50	7	289.3	371.7	288.7	281.4
-over 50 up to 100	3	178.0	231.2	178.0	172.3
-over 100 up to 200	1	115.5	144.6	115.5	113.0
-over 200 up to 500	32	12,803.7	17,735.9	12,449.5	12,186.2
-over 500	12	9,663.3	11,653.8	9,540.4	9,356.2
turbo expander sets	53	72.2	88.5	71.7	69.8
-up to 25	53	72.2	88.5	71.7	69.8
repowered plants	3	2,244.4	2,570.0	2,244.4	2,154.6
-over 200 up to 500	1	434.4	510.0	434.4	398.6
-over 500	2	1,810.0	2,060.0	1,810.0	1,756.0
plants not classified elsewhere	8	165.3	201.7	163.7	156.6
-up to 25	6	51.3	61.7	49.7	48.3
-over 25 up to 50	1	42.0	50.0	42.0	39.9
-over 50 up to 100	1	72.0	90.0	72.0	68.4
Total A	1,818	42,431.5	52,556.4	41,644.2	39,828.7

Autoproducers					ITALY				
Units	Nominal capacity		Maximum capacity		Units	Nominal capacity		Maximum capacity	
	Prime movers	Generators	Gross	Net		Prime movers	Generators	Gross	Net
no.	MW	MVA	MW	MW	no.	MW	MVA	MW	MW
110	201.2	245.2	196.2	189.7	1,635	1,271.1	1,569.8	1,237.0	1,187.9
109	166.2	202.5	162.1	155.9	1,634	1,236.1	1,527.1	1,202.8	1,154.1
1	35.0	42.7	34.2	33.8	1	35.0	42.7	34.2	33.8
9	70.7	92.6	70.7	69.1	65	2,268.5	2,570.4	2,124.3	2,102.9
8	38.7	45.1	38.7	37.9	47	175.7	200.0	167.6	165.5
1	32.0	47.5	32.0	31.2	2	76.4	100.0	76.3	74.3
-	-	-	-	-	7	607.2	730.4	607.2	602.0
-	-	-	-	-	7	849.2	980.0	823.2	815.1
-	-	-	-	-	2	560.0	560.0	450.0	446.0
6	20.0	24.6	19.1	16.2	117	13,612.5	15,732.6	13,479.0	12,286.7
6	20.0	24.6	19.1	16.2	69	519.5	627.2	491.5	438.9
-	-	-	-	-	6	226.0	325.8	226.0	201.8
-	-	-	-	-	6	430.0	540.7	430.0	394.0
-	-	-	-	-	11	1,747.0	1,999.0	1,734.5	1,597.7
-	-	-	-	-	17	5,470.0	6,250.0	5,377.0	4,814.5
-	-	-	-	-	8	5,220.0	5,990.0	5,220.0	4,839.8
-	-	-	-	-	62	23,089.5	30,185.7	22,610.2	22,145.2
-	-	-	-	-	7	39.7	48.5	38.0	36.1
-	-	-	-	-	7	289.3	371.7	288.7	281.4
-	-	-	-	-	3	178.0	231.2	178.0	172.3
-	-	-	-	-	1	115.5	144.6	115.5	113.0
-	-	-	-	-	32	12,803.7	17,735.9	12,449.5	12,186.2
-	-	-	-	-	12	9,663.3	11,653.8	9,540.4	9,356.2
16	101.6	136.7	92.4	89.4	69	173.8	225.2	164.1	159.2
16	101.6	136.7	92.4	89.4	69	173.8	225.2	164.1	159.2
-	-	-	-	-	3	2,244.4	2,570.0	2,244.4	2,154.6
-	-	-	-	-	1	434.4	510.0	434.4	398.6
-	-	-	-	-	2	1,810.0	2,060.0	1,810.0	1,756.0
3	6.1	7.5	5.3	5.2	11	171.4	209.1	169.0	161.8
3	6.1	7.5	5.3	5.2	9	57.4	69.1	55.0	53.5
-	-	-	-	-	1	42.0	50.0	42.0	39.9
-	-	-	-	-	1	72.0	90.0	72.0	68.4
144	399.6	506.5	383.7	369.6	1,962	42,831.1	53,063.0	42,027.9	40,198.3

Nominal and maximum capacity of thermal plants in Italy at 31 December 2015

By type of plant and gross maximum capacity
class of units

Cont. Table 12

	Producers				
	Units	Nominal capacity		Maximum capacity	
		Prime movers	Generators	Gross	Net
	n.	MW	MVA	MW	MW
B) Power and heat generating plants					
internal combustion	2,870	2,046.5	2,510.1	1,990.8	1,906.5
-up to 25	2,868	1,975.7	2,424.0	1,921.0	1,839.8
-over 25 up to 50	2	70.8	86.1	69.8	66.8
gas turbine	68	425.9	520.3	405.0	396.6
-up to 25	64	180.2	223.6	173.2	169.3
-over 25 up to 50	3	118.7	144.3	104.9	102.3
-over 100 up to 200	1	127.0	152.5	127.0	125.0
combined cycle	109	17,914.9	21,674.7	17,677.3	17,241.3
-up to 25	40	183.0	218.6	175.6	166.8
-over 25 up to 50	7	323.9	411.2	307.7	296.7
-over 50 up to 100	12	851.8	1,089.0	821.3	795.7
-over 100 up to 200	18	2,884.8	3,427.2	2,805.6	2,729.9
-over 200 up to 500	27	9,546.8	11,609.6	9,518.5	9,293.3
-over 500	5	4,124.6	4,919.0	4,048.6	3,958.9
back-pressure steam	34	630.2	774.3	622.7	589.4
-up to 25	26	164.7	201.0	163.7	156.0
-over 25 up to 50	3	128.9	156.3	125.8	118.7
-over 50 up to 100	5	336.7	417.0	333.3	314.6
steam condensing with bleeding	75	949.0	1,156.4	924.3	839.3
-up to 25	66	542.7	668.3	522.3	473.6
-over 25 up to 50	5	156.8	196.1	152.5	137.5
-over 50 up to 100	4	249.5	292.0	249.5	228.1
-over 100 up to 200	-	-	-	-	-
Total B	3,156	21,966.5	26,635.7	21,620.0	20,973.1
Total plants (A + B)	4,974	64,398.0	79,192.2	63,264.2	60,801.8
geothermal plants	36	918.1	1,075.1	821.0	768.0
Overall plants	5,010	65,316.1	80,267.3	64,085.2	61,569.8

Autoproducers

Units	Nominal capacity		Maximum capacity	
	Prime movers	Generators	Gross	Net
	n.	MW	MVA	MW

ITALY

Units	Nominal capacity		Maximum capacity	
	Prime movers	Generators	Gross	Net
	n.	MW	MVA	MW

925	1,131.4	1,383.3	1,098.7	1,062.2	3,795	3,177.9	3,893.4	3,089.5	2,968.7
925	1,131.4	1,383.3	1,098.7	1,062.2	3,793	3,107.1	3,807.2	3,019.7	2,902.0
-	-	-	-	-	2	70.8	86.1	69.8	66.8
122	668.1	835.3	655.6	640.5	190	1,094.0	1,355.7	1,060.6	1,037.1
119	547.1	676.2	535.6	523.1	183	727.3	899.7	708.7	692.4
3	121.0	159.2	120.0	117.5	6	239.7	303.4	224.9	219.7
-	-	-	-	-	1	127.0	152.5	127.0	125.0
51	1,561.3	1,836.3	1,531.1	1,493.4	160	19,476.2	23,511.0	19,208.4	18,734.7
34	322.8	410.4	315.7	309.2	74	505.8	629.0	491.3	476.0
11	428.5	543.0	409.6	401.1	18	752.4	954.2	717.3	697.8
2	118.3	156.8	114.2	111.2	14	970.1	1,245.8	935.4	906.9
4	691.7	726.2	691.7	671.8	22	3,576.5	4,153.4	3,497.3	3,401.7
-	-	-	-	-	27	9,546.8	11,609.6	9,518.5	9,293.3
-	-	-	-	-	5	4,124.6	4,919.0	4,048.6	3,958.9
73	402.2	507.6	390.5	368.3	107	1,032.4	1,281.9	1,013.2	957.6
72	327.2	410.1	315.5	299.3	98	491.9	611.1	479.2	455.3
-	-	-	-	-	3	128.9	156.3	125.8	118.7
1	75.0	97.5	75.0	69.0	6	411.7	514.5	408.3	383.6
36	1,308.0	1,585.1	1,272.8	1,202.4	111	2,257.0	2,741.4	2,197.1	2,041.6
22	189.3	237.5	180.9	171.7	88	732.0	905.8	703.2	645.4
5	236.7	262.9	209.9	195.1	10	393.5	459.0	362.4	332.6
6	402.0	522.2	402.0	373.5	10	651.5	814.2	651.5	601.6
3	480.0	562.5	480.0	462.0	3	480.0	562.5	480.0	462.0
1,207	5,071.0	6,147.6	4,948.7	4,766.7	4,363	27,037.5	32,783.4	26,568.7	25,739.8
1,351	5,470.6	6,654.2	5,332.4	5,136.3	6,325	69,868.6	85,846.4	68,596.6	65,938.1
-	-	-	-	-	36	918.1	1,075.1	821.0	768.0
1,351	5,470.6	6,654.2	5,332.4	5,136.3	6,361	70,786.7	86,921.4	69,417.6	66,706.1

Renewable energy sources

Gross maximum capacity of plants from renewable sources in Italy at 31 December

By source

Table 13

	Plants	Gross maximum capacity	Plants	Gross maximum capacity	Gross maximum capacity
	n.	kW	n.	kW	%
	2014		2015		2015/2014
Hydro	3,432	18,417,517	3,693	18,543,258	0.7%
0 - 1 MW	2,304	678,485	2,536	722,846	6.5%
1 - 10 MW	825	2,493,905	854	2,575,285	3.3%
> 10 MW	303	15,245,127	303	15,245,127	0.0%
Wind	1,847	8,703,077	2,734	9,161,944	5.3%
Photovoltaic (1)	648,196	18,594,377	687,759	18,900,790	1.6%
Geothermal	34	820,990	34	820,990	0.0%
Bioenergy (2)	2,482	4,043,636	2,647	4,056,537	0.3%
Electricity production only	1,087	2,037,614	1,063	2,016,695	-1.0%
Solid	131	806,996	134	807,759	0.1%
- municipal solid waste	42	465,991	38	459,214	-1.5%
- solid biomass	92	341,005	99	348,545	2.2%
Biogas	762	610,157	735	574,685	-5.8%
- from landfills	246	292,561	246	283,973	-2.9%
- from sludge	20	6,731	20	6,741	0.1%
- from manure	186	66,203	186	66,028	-0.3%
- from crops and agricultural waste	331	244,663	304	217,944	-10.9%
Bioliquids	200	620,460	200	634,250	2.2%
- raw vegetable oils	170	525,168	169	536,068	2.1%
- other bioliquids	31	95,292	34	98,182	3.0%
Cogeneration	1,406	2,006,022	1,595	2,039,842	1.7%
Solid	184	803,151	229	804,438	0.2%
- municipal solid waste	28	480,216	31	494,056	2.9%
- solid biomass	159	322,935	201	310,382	-3.9%
Biogas	919	795,927	1,066	831,265	4.4%
- from landfills	114	108,847	134	115,014	5.7%
- from sludge	54	37,176	58	37,651	1.3%
- from manure	235	137,110	307	150,943	10.1%
- from crops and agricultural waste	610	512,794	669	527,657	2.9%
Bioliquids	320	406,944	317	404,139	-0.7%
- raw vegetable oils	272	361,130	267	356,357	-1.3%
- other bioliquids	53	45,814	55	47,782	4.3%
Totale	655,991	50,579,597	696,867	51,483,519	1.8%

Further thermal plants mostly using conventional fuels, stoked with bioenergy too (see Table 19)

	2014		2015		2015/2014
Bioenergy (2)	5	2,144,500	4	1,749,500	-18.4%

(1) 2014 figure corrected following integration and alignment of the data relative to the photovoltaic sector present in TERNA's GAUDI system and in the GSE archives.

(2) Capacity of bioenergy plants is given for fuels which can be used.

Gross maximum capacity of plants from renewable sources in Italy at 31 December 2015

By source

Figure 6

