

Autorità per l'energia elettrica e il gas

PRESS RELEASE

Electricity: boom of small distributed generation, more than 74 thousand plants

In one year only, the number has more than doubled - 95% of which is made up by PV plants

Milan, 16 December 2010 – In Italy, the number of small power plants has now exceeded 74 thousand units. Of these, more than 95% are photovoltaic units, with a particularly high increase over the last few years. Just consider that in 2009, small and very small PV plants grew 123% to 71 thousand from 32 thousand the previous year.

As for *capacity* and total *produced power*, hydropower generation still prevails followed – in order of importance – by small gas co-generators, biofuel fired plants, wind power plants, PV plants and geothermal plants (see details in Table 1).

The Regulatory Authority's Report also shows that power production from small generators with a capacity of less than 10 MVA) ⁽¹⁾ grew in the period from 2008 to 2009, mainly owing to the higher availability of energy produced from water and, to a lesser degree, from PV and wind power plants; the incidence of biomass, biogas and bioliquid fired plants also grew – while production from small thermal power plants was reported to be slightly on the decline.

Plant Numbers

The Report shows that today Italy has 74,348 power generating plants with a capacity of less than 10 MVA, of which as many as 71,258, or 95%, are PV plants, whose growth was extremely high between 2008 and 2009 (+ 123%) as a result of a particularly favourable incentive scheme. By contrast, there was a much lower number of hydropower plants (1958), thermal power plants (999) and wind power plants (130).

Electric Utility Capacity (Maximum Capacity)

Overall gross electric utility capacity also increased ⁽²⁾ to 7,509 MW in 2009, i.e. plus 13% over the previous year, chiefly for the incidence of wind power plants, thermal power plants (mainly fuelled by biomass and biogas) and hydropower plants – followed by PV plants.

Production

Gross production ⁽³⁾ reached 22.9 TWh, with a 6.2% increase from the 2008 level. Nearly 15% of gross production (3.3 TWh) derived from nearly 73 thousand very small plants (of up to 1 MW for a total installed capacity of 1,748 MW). Therefore, the electricity produced from distributed generation sensibly departs from the characteristic mix of the total installed generating plants at national level: more specifically, the majority of electricity produced by these small and very small

⁽¹⁾ In particular, the Report covers:

- **Distributed Generation (DG)** defined as the total number of generating plants with a nominal capacity of less than 10 MVA;
- **Small Generation (SG)** defined as the total number of power generating plants or co-generating plants with a generation capacity not exceeding 1 MW (this is a subset of DG);
- **Micro-Generation (MG)** defined as the total number of power generating plants or co-generating plants with a generation capacity of less than 50 kW (this is a subset of DG and SG).

⁽²⁾ A generating plant's overall gross useful power (measured on the terminal of the plant power generators) is the maximum power obtainable for a sufficiently long time of operation, supposing that all plant components are fully efficient and in optimum conditions (of capacity and power drop in case of hydropower plant and of fuel and cooling water availability in case of thermal power plants).

⁽³⁾ By gross production is meant the quantity of electrical power produced and measured at power generator terminals.

capacity plants (65.7%) is of renewable origin, and water in particular for more than 45% of the total.

Interventions on Distribution Networks

The Report further suggests that the further dissemination of small power plants will necessarily require interventions on distribution networks in order to retain a high level of safety, security and reliability within the system.

The Authority has already introduced a number of measures to foster the dissemination of small plants. Recently, by resolution ARG/elt 39/10, the Authority has also started a process for selecting pilot projects for medium voltage smart grids: the evolution of these systems towards an active type of management is indeed essential in order to extend active management to low voltage systems in the future.

In accordance with a sample survey, which the Authority requested from the Energy Department of the Milan Polytechnic, as of today's date, low voltage (LV) networks have a fairly good capacity to support distributed generation. However, in order to retain a high level of system safety, security and reliability given the significant growth of small plants, further developments and interventions will be needed, including those for smart grids. These include, for instance, the promotion of pilot projects aimed to test, measure and assess, *inter alia*, new Quality-of-Service control systems, the *behaviour* of networks in the presence of a high number of small generating plants and an available quantity of produced energy in excess of demand, through advanced two-way communication systems.

The Report (compiled pursuant to law no. 239/04 of 23 August 2004) was approved by resolution ARG/elt 223/10 and published on website www.autorita.energia.it,

Table 1

	Number of Plants	Gross Maximum Capacity (MW)	Gross Production (MWh)	Net Production (MWh)	
				Locally Consumed	Fed to the network
Hydropower plants	1,958	2,664	10,385,249	446,037	9,785,388
<i>Biomass, biogas and bioliquids</i>	321	553	2,514,359	197,254	2,208,777
<i>Solid urban waste</i>	41	172	635,966	129,026	456,799
<i>Non-renewable energy sources</i>	618	2,364	7,475,586	4,861,962	2,364,248
<i>Hybrid generation</i>	19	83	309,197	163,437	135,673
Total thermal power generation	999	3,173	10,935,108	5,351,678	5,165,497
Geothermal power plants	3	24	165,905	0	155,800
Wind power plants	130	506	774,299	0	766,553
Photovoltaic power plants	71,258	1,143	676,481	246,836	429,577
TOTAL	74,348	7,509	22,937,042	6,044,551	16,302,815