



Intelligent Energy  Europe

EIE/04/085/S07.38569

REALISE-Forum

**Renewable energy and liberalisation in selected
electricity markets-Forum**

Intelligent Energy-Europe (EIE)

Country Report from Italy

on production of electricity from renewable energy
sources and relevant support schemes

Updated to 2006

Claudio Andrea Casale

CESI RICERCA S.p.A.

CESI RICERCA

Milan, October 2006

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1. Introduction

This report has been drawn up to summarise the outcome of the Italian consultation desk that CESI (and then, since 1st January 2006, CESI RICERCA) has been running under Work Package 3 of the REALISE-Forum project. In particular, this is the latest version of the report, which updates and supersedes the former version submitted at the end of 2005.

The aim is to describe Italy' s situation and developments up to late 2006 with regard to production of electricity from renewable energy sources (hereinafter mentioned as RES-E) and the schemes aimed at promoting the deployment of growing generating capacity from these sources.

In this connection, account has also been taken of the relationship between the latest developments of RES-E support policy and the wider picture of Italy' s electricity market, which has been undergoing a steady process of liberalisation over the last seven years, following the guidelines provided by the European Union' s Directives (firstly 96/92/EC and subsequently 2003/54/EC) concerning common rules for the internal market in electricity.

To give the reader a full picture of Italy' s electricity sector, this report first provides the latest official statistics on production and consumption of electrical energy in Italy during the year 2005, which were published by Terna (the Italian company that has taken over from GRTN the role of Transmission System Operator since 1st November 2005) in August 2006.

Information is then provided on the progress of ongoing RES-E support mechanisms and also on a number of new legislative measures affecting RES-E deployment that were issued in Italy in late 2005 and the first half of 2006.

Furthermore, a major part of this report has been devoted to information and lessons that could be drawn from the experience and opinions of all kinds of Italian stakeholders concerned with RES-E (electricity producers from RES-E and electricity producers at large, RES-E plant and equipment manufacturers, grid operators, electricity distributors and traders, financing institutions, public authorities, research institutes, consumer and environment protection association etc.).

This part of the report has benefited from the surveys, interviews and discussions with Italian stakeholders that CESI, and subsequently CESI RICERCA, carried out in 2005 and 2006.

The 2005 enquiries were carried out in two phases: the first phase consisted in the submission of a questionnaire to about 300 stakeholders and the processing of their answers (82 stakeholders responded) with the valuable help of APER (Italian Association of RES-E Producers), while the second phase saw the organisation of a hearing with a smaller number of stakeholders to discuss the results obtained by the questionnaire survey. This process provided a picture of the positions of the

various actors and their opinions on today' s chances and setbacks relating to RES-E plant deployment, as well as their perceived solutions to overcome the major problems.

The monitoring of the RES-E sector was pursued in 2006. Among others, an additional enquiry was carried out as a follow-up of the more comprehensive survey that was performed in 2005. This further enquiry was focused on fewer interviews with the most representative RES-E stakeholders, both to gather their views on the recent developments of the legislative framework and to get further insights into the general setting and prospects of Italy' s RES-E sector.

As required by the project' s aims, in performing all these surveys and following evaluations special stress was laid on the degree of consensus of the various actors (actor cohesion) about some major issues, such as the effectiveness of national RES-E support schemes with regard to a number of key market aspects, the willingness to change these support schemes in the short term, the kinds of change that should be given priority and the reasons underlying such changes.

Last but not least, the enquiries also aimed at getting an overview of stakeholders' viewpoints as regards the possibility to attain the national indicative target set by the European Union' s Directive 2001/77/EC on the promotion of RES-E, and the need and feasibility of some EU-wide harmonised framework of national RES-E support schemes as is mentioned in Article 4 of the same Directive.

The layout and contents of the various sections of this report follow, as far as possible, the guidelines that were laid down by the expert team of the REALISE-Forum project with a view to getting similar, and therefore comparable, inputs from all the national consultation desks.

2. State-of-the-art of Italy's Electricity System and RES-E Production

This chapter provides some up-to-date statistics on production and consumption of electrical energy in Italy during the year 2005, as well as generating capacity figures as of the end of 2005, drawn from the annual report on "Statistical Data on Electrical Energy in Italy for the Year 2005" published by Terna S.p.A. in August 2006 [1].

The updated figures of the main economic indicators and energy consumption in Italy are shown in Table 1.

Table 1

Year	2004	2005	2005-2004 (%)
Mid-year resident population (thousand inhabitants)	58 151	58 607	+0,8
Gross domestic product (million euro 2000)	1 230 006	1 229 568	-0,04
Gross domestic energy consumption (Mtoe)	196,8	198,7	+1,0
End-use energy consumption (Mtoe)	181,1	183,1	+1,1
Energy used for electricity production (Mtoe)	70,7	70,6	-0,1
in % of gross domestic energy consumption	35,9	35,5	-1,1
Gross domestic electricity consumption (GWh)	348 956	352 826	+1,1

Gross domestic electricity consumption is given by gross domestic electricity production plus the balance of international electricity trade (imported minus exported electrical energy). It is worth recalling here that, among others, this is the reference quantity assumed for checking the attainment of national RES-E targets by EU Directive 2001/77/EC. In Italy, gross domestic electricity consumption rose by 1,1% in 2005, reaching nearly 353 TWh.

It is well-known that Italy is not rich in domestic resources of coal, oil and natural gas, and depends heavily on imported fossil fuels. This trend has been going on since several decades ago and has gradually become more and more serious as a consequence of growing energy consumption. For instance, according to the Report on Energy and the Environment 2004 [2] published by ENEA (Italian National Agency for New Technology, Energy and the Environment), about 84,6% of fossil fuels had to be imported in 2003. This trend has obviously been increasing also Italy' s foreign energy bill, in spite of the benefits ensuing from the strengthening of euro against dollar, and the need to save energy and exploit more all domestic sources, particularly the renewable ones, has therefore been felt as more and more urgent.

Table 2 below provides more detailed statistics of the electricity sector alone, still taken from the aforementioned Terna report [1].

Table 2

Year	2004 (GWh)	2005 (GWh)	2005-2004 (%)
Gross domestic production	303 321,2	303 671,9	+0,1
hydropower plants (including pumped storage)	49 908,0	42 926,9	-14,0
thermal plants (gas, oil, coal, biomass etc.)	246 125,3	253 073,1	+2,8
geothermal plants	5 437,3	5 324,5	-2,1
wind plants	1 846,5	2 343,4	+26,9
photovoltaic plants (large grid-connected only)	4,0	4,0	0,0
Auxiliary service consumption	13 298,5	13 064,0	-1,8
Net domestic production	290 022,6	290 607,9	+0,2
Pumping plant consumption	10 300,3	9 319,4	-9,5
Electricity production available for consumption	279 722,4	281 288,5	+0,6
Electricity import-export balance	45 634,9	49 154,5	+7,7
Electricity demand on the system	325 357,3	330 443,0	+1,6
Transmission and distribution losses	20 867,6	20 626,2	-1,2
End-use electricity consumption	304 489,7	309 816,8	+1,7
agriculture sector	5 184,8	5 364,4	+3,5
industry sector	153 155,3	153 726,8	+0,4
tertiary sector (including transportation)	79 557,4	83 793,0	+5,3
household sector	66 592,2	66 932,5	+0,5

The electricity demand on the system increased at nearly the same rate as the previous year (1,6% instead of 1,5%) and so did the end-use electricity consumption (1,7% instead of 1,6%). Per capita end-use consumption was on the whole 5286 kWh/year (1142 kWh/year in the household sector only).

Since overall domestic production remained nearly the same as in 2004, the moderate increase in electricity demand was supplied through more import.

The contribution pattern of the various sources to domestic production changed to a somewhat significant extent in comparison with 2004, as hydropower production (inclusive of generation from pumped-storage plants) in 2005 dropped by as much as 14% mainly because of less favourable weather conditions (it accounted for only 14,1 % of total gross domestic production in 2005). Since the gross production of pumped-storage plants was 6860,2 GWh in 2005 (down from 7100 GWh in 2004 and 7600 GWh in 2003), the gross production of naturally-supplied hydropower plants in the

same year (namely the really renewable share of hydropower production) can be put at 36066,7 GWh (see Table 4 for all data on renewable sources).

The drop in hydropower yield was offset mainly by an increase in thermal generation, which covered 83,3% of 2005 gross domestic production. Table 3 shows the contributions made by the various kinds of fuels to overall thermal production [1].

Table 3

Year	2004 (GWh)	2005 (GWh)	2005-2004 (%)
Solid fuels	45 518,4	43 606,3	-4,2
Natural gas	129 772,1	149 258,6	+15,0
Gas from refinery and other processes	5 382,0	5 836,9	+8,4
Oil products	47 252,7	35 846,3	-24,1
Other fuels	18 200,1	18 525,1	+1,8
Total gross thermal production	246 125,3	253 073,2	+2,8

It can be noticed from Table 3 that the use of natural gas continued its upward trend (+15% in 2005), while that of oil products was further reduced in 2005. Solid fuels (mostly coal and lignite) had a slightly lower role than in 2004.

As to 2005 contribution shares of the fuels in Table 3, natural gas accounted for as much as 59% of total gross thermal production and 49% of overall gross domestic production; solid fuels supplied about 17% of thermal production and 14% of overall production; oil products did not exceed about 14% of thermal and 12% of overall production (they had long been Italy' s mainstream fuel up to some years ago). The remainder of the thermal production figure given above came from refinery and process gases and other fuels, including biomass.

Power plants for combined production of electricity and heat (the so-called CHP plants) continued to play an outstanding role in 2005, too, as their gross electricity yield was 94 426,5 GWh, namely 37,3% of total gross thermal production (it was 33,8% in 2004).

Coming to gross production from renewable sources (RES-E) only, the 2005 results are shown in Table 4. This table has been based on data from the report [3] "Statistics on Renewable Sources in Italy in 2005" recently published by GSE (formerly GRTN, see Chapter 3 below).

As compared to the aforementioned Terna report [1], this report takes into account also photovoltaic roofs and other small PV plants not recorded by the Transmission System Operator (data source: ENEA). This means that, in respect of Table 2, the PV production in Table 4 has thus risen from 4 to 27,3 GWh in 2004 and from 4 to 31 GWh in 2005.

Table 4

Year	2004 (GWh)	2005 (GWh)	2005-2004 (%)
Hydropower plants without pumped-storage	42 744,4	36 066,7	-15,6
<i>of which from plants up to 10 MW capacity</i>	8 859,9	7 616,2	-14,0
Wind power plants	1 846,5	2 343,4	+26,9
Photovoltaic (PV) plants	27,3	31,0	+13,6
Geothermal power plants	5 437,3	5 324,5	-2,1
Biomass and waste fired plants, including biogas	5 637,2	6 154,8	+9,2
Total gross RES-E production	55 692,7	49 920,4	-10,4

It has to be remarked that, in 2005, total gross RES-E production dropped by 10,4% in respect of the former year 2004. This drop can be explained considering that most of Italy' s RES-E capacity consists of hydropower plants, which depend upon yearly rainfalls. However, the 2005 RES-E production stayed above the 2003 value of 47 971,3 GWh, also thanks to the new capacity of wind and biomass plants recently installed.

Referring to the year 2005, it can be calculated that total gross RES-E production corresponded to 16,4% of total gross domestic production, 15,1% of total electricity demand on the system, and 14,1% of Italy' s gross domestic electricity consumption (as already pointed out, the last parameter is the reference denominator set by Directive 2001/77/EC for calculating national RES-E target percentages).

The same percentages for 2004 were, respectively, 18,3%, 17,1% and 16,0%. Hence one could remark that 2005, too, saw the up-and-down trend of RES-E percentages already experienced in past years (see Figure 1 below).

This persisting trend, of course, goes to the prejudice of Italy' s pursuit of its target of 76TWh by 2010 (equalling 22% of a gross domestic consumption of 340 TWh) stated in the RES-E Directive. Even though more plentiful rainfalls can well occur in next years, along with the continuing build-up of new RES-E capacity from technologies other than large hydropower thanks to support policies, there seems to be some ground for the pessimistic outlooks most Italian RES-E stakeholders set out in last year' s survey about the chances of attaining the Directive' s target by 2010, all the more so because gross domestic electricity consumption has by now already exceed the 340 TWh figure assumed by Italy in the Directive.

This situation however looks better if imported RES-E (certified as such by a Guarantee of Origin) is also taken into account in calculating the national percentage. In fact the Directive seems to leave this

way-out open, as it does not state explicitly that the contribution to gross domestic electricity consumption must come from domestically produced RES-E only. If certified imports are included, according to data available from the recent GSE report mentioned above [3], Italy' s overall RES-E percentage in respect of gross domestic electricity consumption would rise from 16% to 26% in 2004, and from 14,1% to 17,3% in 2005.

In this connection, for the convenience of the reader, Figure 1 provides a histogram drawn from the GSE annual report [3]. It depicts the trend of RES-E percentages in the last few years, with and without RES-E imports.

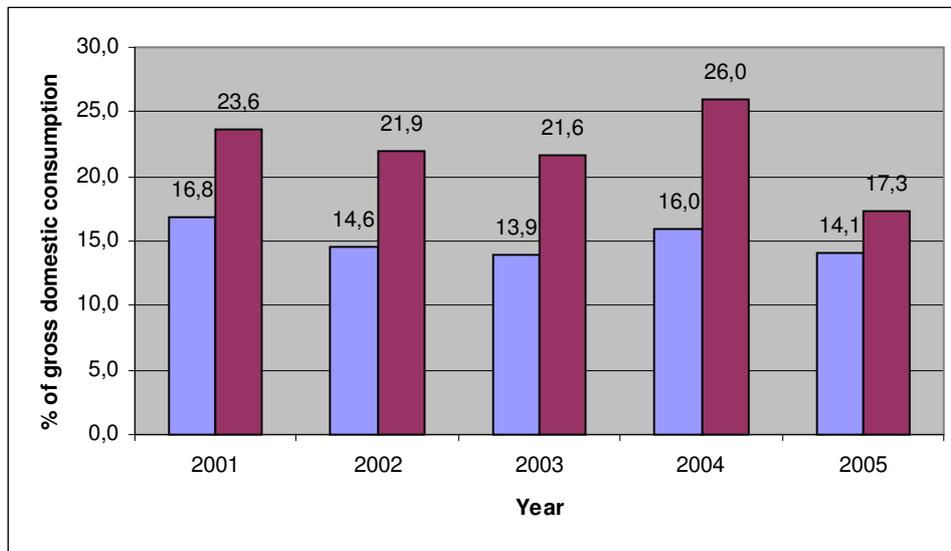


Figure 1 - Percentages of gross domestic RES-E production (blue) and overall RES-E input inclusive of certified RES-E imports (red) from 2001 to 2005.

Table 5 provides an updated splitting of Italy' s generating capacity as of 31st December 2005. It has been based on data from the Terna report mentioned above [1] which, as already said about energy production, underestimates new renewable technologies as it does not take into account e.g. the capacity of photovoltaic roofs and other small PV plants not recorded by the Transmission System Operator. Also a number of minor wind power plants may have been neglected.

As can also be inferred from the average capacities available under peak-load conditions, the overall capacity figures given in Table 5 are to be taken with some care. In fact, the rather wide gap between average available capacities and rated capacities cannot only be explained with operating reasons such as maintenance stoppages, peak-load service or unsteadiness of some sources. This holds especially for thermal power plants, some of which were actually kept out of order for most of the time as they were obsolete and uneconomical.

Table 5

Domestic generating capacity as of 31st December 2005	Gross capacity (MW)	Net capacity (MW)	2005 average available capacity at peak load (MW)
Hydropower plants (incl. pumped storage)	21 342,8	20 992,8	13 700
Thermal power plants	64 645,6	62 164,7	41 600
Geothermal power plants	711,0	670,8	600
Wind and PV plants	1 646,1	1 642,1	400
Total domestic generating capacity	88 345,4	85 470,3	56 300

From 2004 onwards, however, thanks to more careful planning of system operation and electricity flows from abroad, the setbacks that occurred in 2003 (including a country-wide black-out) were fully avoided. Even under maximum peak-load conditions in summer and winter, the actual reserve of generating capacity available at that moment remained adequate.

In 2005, the highest peak loads in the national system were experienced on 28th June, with 54163 MW, and 20th December, with 55015 MW. Even higher peaks have already been experienced in 2006, namely 55539 MW on 25th January (due to very cold weather) and 55619 MW on 27th June (the highest load ever, during a heat-wave). Such increasing peaks clearly enhance the need for more reliable on-line generating capacity and/or more high-voltage lines for electricity imports.

The Italian Transmission System Operator, however, has been complaining of the current layout of the national transmission grid, which is far from being optimal in respect of the location of generating plants and load centres. This problem, which has often been the consequence of delayed construction of new high-voltage lines because of opposition by local people, has brought about bottlenecks at some points of the grid. Such bottlenecks are, in turn, causing technical problems (difficulty in connecting new generating plants in some areas, including areas with renewable resources) as well as distortions in the free trade of electricity (hindrances to competition among producers and setting of different wholesale energy prices from one zone of the country to another at the electricity exchange).

For the sake of completeness, a diagram from the aforementioned Terna report [1] showing the growth of Italy' s installed capacities since 1963 has also been set in hereunder as Figure 2.

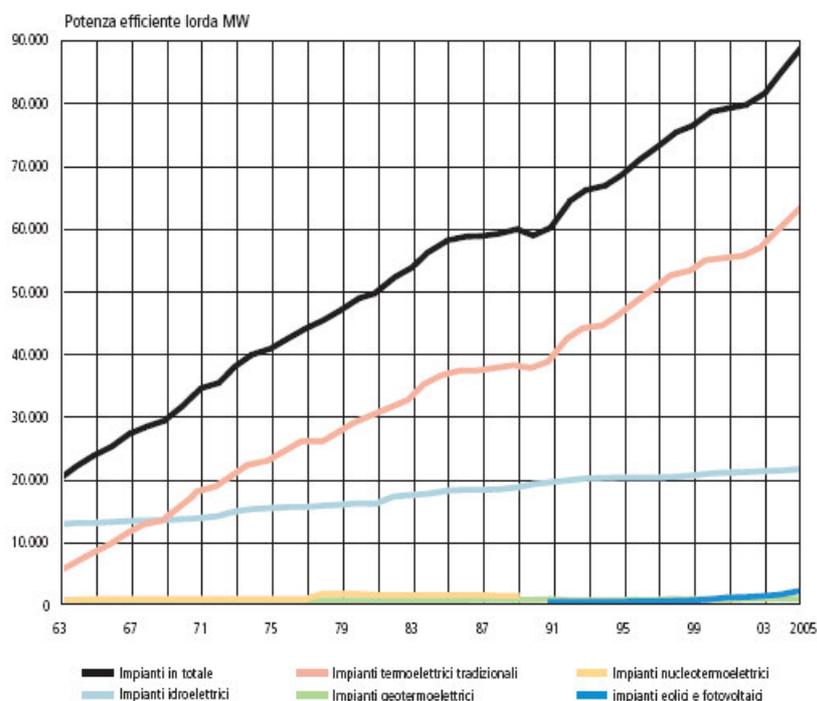


Figure 2 - Growth, from 1963 to 2005, of overall capacity (black), thermal capacity (pink), hydropower capacity (light blue), nuclear capacity (yellow, stopped after the 1987 referendum), geothermal capacity (green) and wind+PV capacity (blue).

As previously done in Table 4 with RES-E energy production, Table 6 below provides the end-2004 and end-2005 situations of gross generating capacities of plants exploiting really renewable sources only (true RES-E plants, namely leaving out the capacity of pumped-storage hydro plants etc.). In this case, too, statistics have been drawn from the GSE annual report mentioned above [3], to include also small-sized plants, such as PV roofs etc.

Table 6

Year	2004 (MW)	2005 (MW)	2005-2004 (%)
Hydropower plants without pumped-storage	17 055,6	17 325,8	+1,6
<i>of which from plants up to 10 MW capacity</i>	<i>2 364,5</i>	<i>2 405,5</i>	<i>+1,7</i>
Wind power plants	1 131,5	1 638,9	+44,8
Photovoltaic (PV) plants	31,0	34,0	+9,7
Geothermal power plants	681,0	711,0	+4,4
Biomass and waste fired plants, including biogas	1 191,7	1 199,8	+0,7
Total domestic gross RES-E capacity	20 090,9	20 909,5	+4,1

However, as regards PV and wind capacity data in Table 6, it is worth adding that some, even slightly higher figures have been found in the literature of these sectors.

For instance, statistics available from the PVPS Implementing Agreement of the IEA (International Energy Agency) [4] put Italy' s overall photovoltaic plant capacity at about 37,5 MW as of the end of 2005, including both grid-connected and stand-alone plants. Likewise, the IEA Wind Implementing Agreement [5] reported an overall wind plant capacity of 1717 MW in Italy at the end of 2005.

3. Actors Involved in the National Electricity Market

The current structure of the electricity market in Italy has been shaped by Legislative Decree No. 79 of 16th March 1999, which was issued to transpose European Union' s Directive 96/92/EC, but actually brought about a thorough restructuring of the domestic electricity sector.

This sector had, since 1963, been controlled by the state board Enel, a so-called "vertically integrated undertaking" which was concerned with production, import, transmission, distribution and sale of electrical power. In 1992 Enel was turned into a joint-stock company, but was still fully owned by the state and, through the whole 1990' s, it went on producing more than 70% of the country' s electricity (and distributing even more), while the rest was produced by municipality-owned companies or by private producers who used it mainly for their own needs (self-producers).

The first signal of the government' s willingness to liberalise the electricity market was the establishment of the Regulatory Authority for Electricity and Gas in 1995, but it was not until 1999 that the aforementioned Decree 79/99 (also known as Bersani Decree) actually changed the situation both on the offer and the demand side.

Enel was turned into a holding company controlling several subsidiaries working in different fields, both inside and outside the core electricity business (a company was also created to deal with renewable energy plants other than large hydropower). The stock of Enel was partly sold out by the Ministry of Treasury to the public (initially 35%, now about 70% of the shares are held by a large number of private people and bodies). No Italian company was allowed to hold more than 50% of produced or imported electrical energy and the Enel company concerned with production (Enel Produzione) was therefore obliged to hand over 15 000 MW of its generating capacity to three newly-established companies. Production was fully liberalised and an independent Transmission System Operator (then GRTN) was set up, together with the Electricity Market Operator (GME). The property of the transmission grid remained however with Terna, a company of the Enel group, while the operations of the system were under the control of GRTN (since November 2005 these functions, too, have been vested in Terna, see below).

On the demand side, the new Decree 79/99 created two main categories of customers, depending on whether or not their consumption exceeded a given threshold, namely "eligible customers" (clienti idonei), who were free to purchase electricity from a supplier of their choice, and "captive customers" (clienti vincolati), who were not allowed to do the same. Since 1st July 2004 all customers but household customers are eligible and all customers will become eligible from 1st July 2007 onwards.

The restructuring process of the Italian electricity market has been under way for some years now with many an adjustment and development as regards both market rules and main operators. A fully settled

framework should hopefully be arrived at shortly. To provide a 2006 snapshot, a list of the main actors is provided hereunder.

- The **Ministry of Economic Development** (Ministero dello Sviluppo Economico - MSE), up to May 2006 named Ministry of Production Activities (MAP) and formerly also Ministry of Industry, Trade and Handicraft (MICA), is the ministry in charge of all energy matters within the Italian Government. The electricity sector, too, comes within its supervision. Particularly, this ministry has been in charge of negotiations relating to Directive 2001/77/EC on promotion of RES-E, sets the relevant targets and designs the measures for implementing this Directive in Italy (Legislative Decree No. 387 of 29th December 2003 transposing Directive 2001/77/EC was actually laid down by MAP).
- The **Ministry of the Environment and Territory** (Ministero dell' Ambiente edella Tutela del Territorio - MATT) watches over all implications of energy production to the environment. With this in mind, it is asked for advice by MAP on many decisions, and several Decrees are issued by MAP in agreement with, and with the signature of, MATT. Particularly, MATT is the Italian ministry in charge of managing the obligations and mechanisms related to the Kyoto Protocol, namely the National Allocation Plan of CO₂ emissions, Emission Trading, Clean Development Mechanism, Joint Implementation.
- The **Regulatory Authority for Electricity and Gas** (Autorità per l' EnergiaElettrica e il Gas - AEEG) was set up in 1995 and has been operating since 1997. It is an independent body, with ample autonomy from the Government, and is entrusted with regulating and supervising tasks covering the whole sector of electricity and gas, with the main aim of ensuring competition and efficiency as well as service quality all over the country. Its regulating powers include e.g. the setting of tariffs for selling electricity to captive consumers, the checking of service quality, conditions for access to networks etc. At present, it has also taken on the management of White Certificates relating to end-use efficiency obligations.
- **GSE - Gestore dei Servizi Elettrici** is, from 1st October 2006 onwards, the new corporate style of GRTN S.p.A. (formerly Gestore della Rete di Trasmissione Nazionale and then, since 1st November 2005, Gestore del Sistema Elettrico). The new name has been chosen to stress better the mission this company has being carrying on since it handed over the role of Transmission System Operator to Terna S.p.A. (1st November 2005).

In the RES-E field, GRTN/GSE has been assigned the task of managing all the relevant support schemes, in brief:

- the old, but still ongoing scheme of CIP 6/92 feed-in tariffs, by purchasing all produced energy and then selling it out on the electricity market;

- the current major scheme of Quota/Tradable Green Certificates, by granting the IAFR qualification entitling plants to get TGC, issuing TGC to these plants for their production, and checking for compliance of electricity producers/importers with their RES-E quota obligations;
- the new feed-in tariffs for PV plants, with same role as for CIP 6/92;
- the Guarantee of Origin to be granted to RES-E plants in accordance with Directive 2001/77/EC and Decree No. 387/2003;
- the recognition of requirements for qualification of CHP plants;
- the issuing of international certificates of RECS (Renewable Energy Certificate System) as a member of the relevant Association of Issuing Bodies.

GRTN/GSE is at the head of a holding comprising the AU (Acquirente Unico), namely the Single Buyer that buys and supplies power to captive electricity customers, and the GME (Gestore del Mercato Elettrico), the Electricity Market Operator that manages the "electricity exchange" (see below).

- **TERNA - Rete Elettrica Nazionale**, which had formerly been a company of the Enel group, was sold out to the public for the largest part in 2004. Its majority shareholder is however a state body (Cassa Depositi e Prestiti with 29,99%). Since 1st November 2005, this company (which already owned the 380 kV and 220 kV transmission grids and also the 150-130 kV networks with transmission functions) has become Italy' s Transmission System Operator as already said above.
- **GME - Gestore del Mercato Elettrico** is the Electricity Market Operator, which was provided for by Decree 79/99 to run the economic aspects of the newly liberalised electricity market in a transparent and equitable way. GME manages the so-called "electricity exchange" where producers and purchasers meet every day and trade energy. GME also sees to the trading of Green Certificates and White Certificates.
- **AU - Acquirente Unico** is the Single Buyer that has been set up to buy electricity at the best possible rates and sell it to distribution companies according to tariffs set by the Regulatory Authority (AEEG), in order to guarantee continuity of supply and fair treatment to captive customers. Since 1st January 2004, the Single Buyer has been vested with direct responsibility for guaranteeing supply to captive customers.
- **Enel** is now a holding company controlling a good number of subsidiary companies, which are currently grouped in four divisions named: "Generation and Energy Management", "Italy Market", "Italy Infrastructures and Networks", "International". Gas supply has, to some extent, become part of the business in addition to electricity. Enel has lately become more active internationally, also buying a few power stations (including a nuclear plant) located in Eastern Europe.

- **Electricity producers** comprise a small number of large companies which hold most of the market. Mention should be made of Enel Produzione of the Enel group, which is still by far the largest producer on the market, followed by Edipower, Endesa Italia and Tirreno Power, which have taken over the generating activity and assets Enel had to give up pursuant to Decree 79/99. Other major producers are Edison (a company of very long standing on the Italian market), Enipower (belonging to the big Italian oil and gas group ENI) and some municipality-owned companies such as AEM Milano, AEM Torino, ASM Brescia, ACEA. A few foreign electricity companies (Endesa of Spain, EdF of France etc.) have entered the Italian market also as shareholders of some of the aforementioned companies.
- **Electricity distribution and sale** has its main operator in Enel Distribuzione, currently the distribution company of the Enel group, which has remained in charge of most distribution networks as well as of energy sales to captive customers. Several other local municipality-owned companies, too, have continued operating in distribution (AEM Distribuzione Energia Elettrica - Milano, AEM Torino Distribuzione, ACEA Distribuzione etc.) and have also been given by Decree 79/99 the chance to make agreements with Enel to take over its distribution job and assets wherever their local role is prevailing. As to energy trade to wholesale dealers and eligible customers, this can take place at the electricity exchange run by GME.
- **Assoelettrica** is a National Association of Electricity Enterprises bringing together almost 170 firms among whom are producers, wholesale purchasers and self-producers. Member companies operate in the free market and handle about 90% of the electrical energy generated in Italy.
- **Production of electricity from renewable sources (RES-E)** is carried out by some big producers from among those already mentioned above, namely Enel Produzione, Edison, AEM Milano, AEM Torino, etc. who mostly run substantial hydropower capacities and, as in the case of Enel Produzione, also Italy' s whole geothermal capacity. EnelProduzione and Edison have also deployed a good number of wind plants. In addition, there are currently a growing number of small producers mainly from small hydropower, wind, biomass, waste and biogas plant. Photovoltaic production, which had long been at a standstill, has now taken up new momentum thanks to recent legislative measures setting special feed-in tariffs for PV (see in the following sections).
- **APER** (Associazione Produttori Energia da fonti Rinnovabili) is Italy' s major Association of RES-E Producers, gathering about 250 of the above-mentioned firms involved in RES-E production. APER is a non-profit organisation whose aim is to promote RES-E production and safeguard the interests of RES-E undertakers. Among its members there are many small companies but also some big industrial groups, for a total RES-E capacity of over 2 000 MW from 400 plants, using all kinds of renewable source and yielding about 7 000 GWh/year.

- **ENEA** (Ente Nazionale per le Nuove Tecnologie, l' Energia d' Ambiente) is the Italian National Agency for New Technologies, Energy and the Environment, a state-owned undertaking operating in the fields of energy, the environment and new technologies to support competitiveness and sustainable development. ENEA is mainly called upon to: promote and carry out basic and applied research and innovation technology activities, also through prototypes and product industrialisation; disseminate and transfer technologies, encouraging their use in productive and social sectors; provide high-tech services, studies, tests and evaluations to both public and private bodies and enterprises.
- **CESI** (Centro Elettrotecnico Sperimentale Italiano Giacinto Motta) has, since 1956, been a market leader in testing and certification of electromechanical equipment and in electrical power system studies. Its current main shareholders are the Enel group (25,92%) and Terna (24,36%); among minor shareholders there are electricity producers and leading European industrial groups. In 2000 CESI took over Enel's former R&D activities on generation, transmission, distribution, and end-uses of electrical energy, environmental issues and renewable energy sources. After CESI RICERCA was established on 1st January 2006, CESI has remained in charge of more market-oriented work on electrical equipment and power system studies. CESI has also been managing the voluntary brand "100% energia verde" granted to RES-E producer and consumers.
- **CESI RICERCA** was established from CESI on 1st January 2006 as a new, separate company entrusted with all the research activities to be carried out in the interest of the national electricity system under contract to the Italian Government. In August 2006, 51% of the stock of CESI RICERCA was bought by ENEA, the Italian National Agency for New Technologies, Energy and the Environment, while the rest is still held by CESI. Along with other EU-funded projects, REALISE-Forum, too, has become the responsibility of CESI RICERCA.

4. Major RES-E Support Instruments

This chapter provides information on past and ongoing RES-E support mechanisms, including a number of new legislative measures affecting RES-E deployment that were issued in Italy in late 2005 and the first half of 2006. Up-to-date statistical data are also provided as far as application of the major instruments is concerned.

4.1 Some Hints at Past RES-E Policy

Going back to the past, it was Law 308 of 29th February 1982 that first allowed independent production of RES-E, albeit by plants not exceeding 3 MW unit capacity, in a time when Enel, then the state electricity board, held monopoly of electricity production, with the only exception of municipality companies and self-producers. This law also granted capital cost subsidies up to 30% of investment to RES-E projects.

On 9th January 1991, another forward step was taken with the issuing of two Laws, Law 9 and Law 10. Law 9, among others, allowed independent producers to generate electricity from their own plants of whatever size for their internal use or for selling it to Enel. Law 10 stated that RES-E production was in the public interest and the relevant plants should be regarded as urgent as far as permitting procedures were concerned. Law 10/91 also granted contributions up to 30-40% of plant capital cost, but this provision turned out quite ineffective for a number of reasons.

4.2 The CIP 6/92 Feed-in Tariff Scheme

On 29th April 1992, to comply with Law 9/91, CIP (the Inter-ministerial Committee for Prices) issued its Provision No. 6, which dramatically changed the incentive policy for RES-E production, as it established premium prices to be paid for the whole energy produced by RES-E plants connected to the national grid. These feed-in tariffs were to be updated every year and were different for the various sources, as the price paid for each kWh was composed of two items:

- the avoided cost, granted for the whole plant lifetime as a reward for avoiding production from conventional sources, which depended, among others, on the parameter CT (Thermal Cost), namely the average fuel cost of each kWh from thermal power stations;
- the incentive, granted over the first 8 years of plant operation only, which was aimed to help bear the extra-cost of setting up a RES-E plant instead of a conventional one.

The funding of CIP 6/92 incentives was assured by an additional charge set for this purpose on the unit cost of electricity sold to end-users.

These pretty high incentives raised a striking surge of interest among private investors, who submitted a large number of projects. The actual deployment of plants suffered some delays mainly ensuing from lengthy permitting procedures. Subsequently, the availability of CIP 6/92 incentives was restricted by a Decree issued by the Ministry of Industry on 24th February 1997 only to plants already on stream at that date or, in any case, included in the relevant lists before 30th June 1995. As a result, only 3 819 MW of RES-E plants from the various sources were entitled to CIP 6/92 benefits.

It must also be pointed out that about 6 000 MW of so-called “RES-E assimilated” plants (e.g. CHP plants, even burning fossil fuels, provided they were above a given threshold of efficiency) also obtained CIP 6/92 incentives, thus diverting a substantial part of funding from really renewable sources. This was blamed by RES-E investors, who saw this large amount of “assimilated” capacity as the main cause of the subsequent restrictions to CIP 6/92 availability.

After quite some start-up inertia often due to permitting procedures, the deployment of entitled CIP 6/92 plants took place at a quick pace in the last five-six years, at least for sources close to competitiveness. A typical example of this was the development of wind power plants in Southern Italy. Since the last CIP 6/92 plants entered in operation in 2005, the payment of CIP 6/92 incentives should end in 2013. Therefore, the instrument of CIP 6/92 feed-in tariffs is still playing a noteworthy part today, as on-line CIP 6/92 capacity getting incentives is currently at its peak and will then go down gradually. In 2005, about 5 800 MW of plants still benefited from CIP 6/92 feed-in prices.

The CIP 6/92 tariffs, along with other lower premium tariffs such as those granted by AEEG Provisions 81/99 and 108/97, are different for the various technologies and are updated every year. The body in charge of fixing their values (Cassa Conguaglio per il Settore Elettrico) has just published the preliminary CIP 6/92 rates for the 2006 production. To give a feeling of their highest possible levels, the preliminary 2006 rates for the first 8 years of operation (i.e. inclusive of incentives), in the most favourable case of RES-E plants providing their full energy to the network, are now given hereunder:

- hydropower plants with a reservoir, and run-of-river plants above 3 MW: from 20,87 €cent/kWh (peak hours) to 6,07 €cent/kWh (off-peak hours);
- run-of-river hydropower plants up to 3 MW: 12,35 €cent/kWh;
- wind and geothermal plants: 14,94 €cent/kWh;
- PV, biomass and waste plants: 20,61 €cent/kWh.

It could be noticed that these figures are slightly higher than those of 2005, among others because of the rise in prices of fossil fuels, which go into the calculation of the basic "avoided cost" component of CIP 6/92 tariffs.

As said in the previous chapter, after purchasing CIP 6/92 energy, GRTN (now GSE) has to sell it out. Since 2005, GRTN/GSE has been offering CIP 6/92 energy directly on the free market. Depending on the positive or negative difference between the average wholesale market price and a reference price (fixed at 5 ¢cent/kWh for 2005), RES-E producers may get an additional income or have to pay a compensation in proportion to their CIP 6/92 entitled capacity.

The CIP 6/92 tariffs can also affect the selling prices of the Tradable Green Certificates (TGC) issued to entitled RES-E plants, over their first 8 years of operation, under the Quota/TGC scheme, namely the major scheme currently available in Italy to all renewable sources. The reader can find a description of this mechanism in the following section.

4.3 The RES-E Quota and Tradable Green Certificate Scheme

Legislative Decree 79 of 16th March 1999 restructuring the electricity market, besides granting RES-E the right of priority in generating plant dispatching, set up a new RES-E support scheme which is based on a mandatory RES-E quota and Tradable Green Certificates. This scheme was regulated in detail by the following Decree of the Minister of Industry of 11th November 1999 and, as reported in the next section, further adjusted by another, very recent Decree issued by MAP on 24th October 2005 (the latter Decree has repealed the former one). This scheme is to be intended as the major support instrument currently available to RES-E investors entering the market in Italy (as said in the preceding section, the availability of CIP 6/92 for new projects expired long ago).

Since 2001, the RES-E quota obligation has been laid on operators who, in the reference year, have produced or imported electricity from non-renewable sources exceeding 100 GWh/year (electricity from CHP plants, auxiliary service consumption and exports of energy are excluded from this computation). These operators must feed into the Italian grid, within the end of the subsequent year, an amount of RES-E equalling at least 2 % of this non-renewable electricity. For non-renewable energy referring to the period 2004 to 2006, this mandatory percentage has then been raised by 0,35% a year by Legislative Decree 387 of 29th December 2003 transposing RES-E Directive 2001/77/EC.

Compliance with this obligation must be shown by presenting GRTN/GSE (body in charge of managing all Italian RES-E support schemes) with a corresponding number of Tradable Green Certificates (TGC) within March of the following year. These TGC are granted by GRTN/GSE to qualified RES-E plants, but only over the first 8 years of plant operation. One TGC now corresponds to 50 MWh of RES-E (formerly 100 MWh). Only new or re-powered plants that have gone into operation after 1st April 1999 are entitled to get TGC, provided they have applied to GRTN/GSE for the relevant IAFR qualification (IAFR = Impianto A Fonti Rinnovabili).

Obligated operators can either hand in TGC from their own RES-E plants, or buy TGC from other RES-E producers on the TGC market run by GME (the Electricity Market Operator). They are also allowed to feed imported RES-E into the Italian grid, but it must be certified and come from a country which has reciprocal rules on the matter. The market price of TGC should thus result from the demand by obliged subjects versus the supply by IAFR-qualified producers. RES-E producers thus get the income from TGC sale in addition to the sale of energy on the free electricity market.

It has however to be remembered that, to avoid double benefit, TGC that would have been due to RES-E plants already getting CIP 6/92 feed-in tariffs are retained by GRTN/GSE, which must sell them at a price fixed every year according to legislation, namely on the basis of the difference between the average CIP 6/92 tariff paid for RES-E only, and the average price at which GRTN/GSE has sold the same energy on the market (the up-to-date reference for TGC regulations is now the Decree of 24th October 2005). Since the number of these TGC is still pretty large, IAFR-qualified RES-E producers currently have to sell their own TGC at a price close to, but obviously not greater than, the price fixed for GRTN/GSE' s certificates.

As compared to TGC schemes running in some other countries, the Italian TGC scheme could therefore be defined as a "mixed-type" one, because the TGC price is not left to the mere interplay between offer and demand, but is controlled in a way that gives some more guarantees of income to RES-E investors. Actually, the price of GRTN/GSE' s TGC is fixed, albeit for one year only, at a pretty high value, which depends on several factors such as the current CIP 6/92 feed-in tariffs, the mix of renewable sources that go to make up the CIP 6/92 subsidised plants, and the prices of fossil fuels, which in turn influence the avoided cost component of the CIP 6/92 tariffs (see above).

However, this situation is temporary and is going to change somehow in the coming years as CIP 6/92 incentives gradually expire, thus bringing about a steady decrease in the number of GRTN/GSE' s available TGC. In this connection, some additional guarantee to RES-E investors against possible less favourable developments in the future has been provided by the recent Decree of 24th October 2005 (see in the next section).

At the time of writing, GRTN/GSE has just published the 2006 issue of its Annual Report on Renewable Energy Promotion [6] which strikes the balance between the RES-E obligations for 2005 and the numbers of TGC submitted to show compliance.

Suffice it to recall here, for the convenience of the reader, that the RES-E Quota for 2005 was 2,35% of the 2004 produced/imported amount of non-renewable electricity liable to the obligation, and each TGC now equals a production of 50 MWh (Law No. 239 of 23rd August 2004) and is valid for the year of issue plus two further years (Article 20, Item 7, of Decree No. 387 of 29th December 2003). The selling price of GRTN/GSE' s own TGC was fixed at 10,982€cent/kWh for the 2005 RES-E production.

Table 7 provides an update of the development of TGC demand and offer on the Italian market over the whole lifetime of the Quota/TGC scheme, from 2002 to 2005.

Table 7

Year	2002	2003	2004	2005
TGC Demand (TWh)	3,23	3,47	3,82	4,30
TGC Offer (TWh)	3,23	3,47	3,82	4,30
of which: IAFR plant TGC	0,89	1,49	2,89	4,27
GRTN/GSE TGC	2,34	1,98	0,93	0,03
Number of TGC issued to IAFR plants	9 144 (100 MWh)	14 814 (100 MWh)	59 972 (50 MWh)	88 200 (50 MWh)
Price of GRTN/GSE' s TGC (€cent/kWh)	8,418	8,240	9,739	10,982

Continuing the trend of previous years, the TGC share from IAFR-qualified plants grew further in 2005 as well, up to exceeding the total 2005 demand. Actually, the 2005 total energy production from these plants was 4,41 TWh, corresponding to 88200 TGC being claimed. Some of these TGC were apparently not sold on the 2005 market, as it is now possible to keep them in hold for another two years (see above). GRTN/GSE therefore contributed a small TGC share in 2005 as well.

As to the role of the various technologies, the aforementioned 88200 TGC were mainly granted to hydropower plants (over 38%), wind plants (nearly 33%) and geothermal plants (nearly 13%). Biomass, biogas and waste plants together totalled nearly 16%. Photovoltaic plants got only a very little share, due to the small unit size of most installations.

As for the 2006 RES-E obligation, the Quota is to rise to 2,70% of liable non-renewable electricity produced or imported in 2005 according to Decree No. 387 of 29th December 2003 (in 2007, it is to rise further to 3,05% of 2006 liable electricity).

The GSE report [6] has estimated that this 2006 obligation should make for a TGC demand equalling about 6 TWh. Of that, 5,5 TWh should come from IAFR-qualified producers, and the remaining 0,5 TWh from GSE.

The 2006 price of GSE' s own TGC has not, as yet, been fixed (it is usually published late in the reference year).

To provide a full overview of the present situation, it should be added that, in addition to the income from selling TGC, RES-E producers are currently given the following chances of selling energy in accordance with Legislative Decree 387 of 29th December 2003 and Law 239 of 23rd August 2004:

- Energy from a programmable RES-E plant (e.g. hydropower plant with a reservoir or biomass plant) rated at least at 10 MVA can take part in the free market run by GME, thus getting an average income of about 6 c€/kWh.
- Energy from a non-programmable RES-E plant (e.g. run-of-river hydropower plant or wind plant), or from any plant rated below 10 MVA, has to be bought by the operator of the relevant network at a price set by the AEEG (Regulatory Authority), which has so far been 4-5 c€/kWh.
- Energy from RES-E plants not exceeding 20 kW capacity can be fed into the network only on a net metering basis, up to the balance with consumption in the same period (see the next section).
- Generating plants not exceeding 1 MW capacity (whatever be the technology) are entitled to fixed energy selling prices of 9,5 ¢cent/kWh for the first 500 MWh/year, 8,0 ¢cent/kWh for the additional 500 MWh/year etc. according to AEEG Provision No. 34 of 23rd February 2005.

Conversely, among setbacks, it should be pointed out that Decree 387/2003 also included special provisions for solar energy, biomass plants faster permitting procedures, clearer grid-connection rules etc., but most of these provisions needed further implementing actions which have been taken with quite some delay or are still awaited now. These issues will often be resumed in the following discussions with RES-E stakeholders as major hindrances.

Moreover, it should be recalled that Decree 387/2003 defined RES in accordance with RES-E Directive 2001/77/EC, but it also entitled some non-biodegradable fraction of waste to get TGC. Law 239/2004 further enlarged the availability of TGC, making them available to electricity produced from hydrogen and however by fuel cells, as well as by CHP plants used for district heating (a Decree regulating these aspects was issued on 24th October 2005, see in the following section).

4.4 Very Recent Legislative Measures Affecting RES-E Deployment

Some noteworthy legislative measures affecting RES-E deployment were taken in Italy in late 2005 and the first half of 2006. These measures are worth a few words of description as they have somehow trimmed the framework RES-E stakeholders have to face, as compared to the situation described above.

- Two Ministerial Decrees were issued on 24th October 2005 on Tradable Green Certificates (TGC). These Decrees were already mentioned in the foregoing, but it is worth providing some more details here, too.

One of these Decrees, in particular, repealed and replaced the Decree of 11th November 1999 giving the regulations for running the Quota/TGC system. Most rules remained the same as in the former Decree (see the main Country Report), but RES-E investors have also been granted some additional guarantees. Particularly, GRTN/GSE would now be obliged to buy all expiring and still unsold TGC from IAFR-qualified RES-E producers whenever the TGC offer were to exceed demand as a result of failure in updating the national RES-E Quota percentage in accordance with the national RES-E target.

The second Decree, on its part, set out detailed regulations about the granting of TGC also to electricity produced from hydrogen, fuel cells and CHP plants used for district heating, according to Article 1, Item 71, of Law No. 239 of 23rd August 2004.

- Two Provisions were issued by AEEG (the Regulatory Authority for Electricity and Gas) to comply with as many requirements of Decree No. 387 of 29th December 2003. Both Provisions are among those implementing measures that should have been issued within a short time (3 to 6 months) after the aforementioned Decree, but actually suffered heavy delays, thus raising quite some concerns and discontent among RES-E investors (some of these measures are still awaited now, as also discussed in the following).

AEEG Provision No. 281 of 19th December 2005 sets out the conditions for connecting generating plants of whatever kind to electrical networks over 1 kV in voltage, whose operators are subject to third party connection obligation (namely both transmission and distribution system operators). This Provision therefore meets the requirements of Article 14 of Decree No. 387 of 29th December 2003, which called upon the AEEG to issue a set of clear and comprehensive rules on the technical and cost-sharing aspects of the connection of RES-E plants to the networks. Beforehand, grid-connection had long been blamed by RES-E investors as a serious setback to the start-up of plants due to lengthy procedures ensuing from the lack of generally-agreed conditions that took into account also the peculiar issues of RES-E plants. Provision No. 281 also deals with specific aspects of RES-E plants. For instance, it binds network operators to allow RES-E producers to build their connecting facilities (lines etc.) on their own, if they ask for that (of course, the design must be approved by the network operator and must not impair the proper functioning of the network). Among others, compensations are to be paid by network operators if they are responsible for undue delays in the completion of connection facilities.

AEEG Provision No. 28th of 10th February 2006, which was called for by Article 6 of Decree 387/2003, sets out the rules governing the energy exchange on the spot between the network and RES-E plants not exceeding 20 kW. In other words, the energy produced over the year by these small plants, generally connected to low-voltage networks, can be detracted from the energy their owners draw from the distribution network in the same period, as far as it equals the energy

consumed (net metering). Any production exceeding this top is not paid for by the distribution company. Paid production therefore comes to get a price that is equal to the tariff at which energy is sold to consumers (roughly speaking, from 8-9,5 €cent/kWh to 15-17 €cent/kWh).

- A new Ministerial Decree was issued on 6th February 2006 to modify the former Decree of 28th July 2005, which had established feed-in tariffs available for energy produced by photovoltaic plants from 1 kW to 1000 kW in capacity over their first 20 years of operation.

The Decree of 28th July 2005 was issued as another implementing measure of Decree No. 387 of 29th December 2003, where Article 7 provided for a special deal with solar plants. The comeback of feed-in tariffs was decided in consideration of the special needs of photovoltaic generation, which could hardly benefit from the Quota/TGC scheme owing to the small size of most plants and the high investment cost of the technology. These tariffs cannot however be added to other benefits such as e.g. TGC or capital cost subsidies. A ceiling of 100 MW funded capacity was also set to admitted projects (300 MW was set as a target for 2015).

A striking surge of bids followed this Decree and the related AEEG Provision 188/05 of 14th September 2005, so that the top capacity of 100 MW was actually reached already in late 2005. This prompted the Ministry of Production Activities (now Ministry of Economic Development) to issue another Decree on 6th February 2006 trimming the legislation to the new framework that had come up. AEEG, on its part, issued Provision 40/06 of 24th February 2006 to modify its previous implementing Provision 188/05 accordingly.

The new Decree has now raised the ceiling of admitted project up to 500 MW, to be reached gradually in a few years. The long-term target has also been increased to 1000 MW by 2015.

The PV feed-in tariffs are now as follows, depending on plant size category:

- plants from 1 kW to 20 kW, with on-the-spot exchange: 44,5 €cent/kWh;
- plants from 1 kW to 20 kW, without on-the-spot exchange: 46,0 €cent/kWh;
- plants above 20 kW and up to 50 kW: 46,0 €cent/kWh;
- plants above 50 kW and up to 1000 kW: 49,0 €cent/kWh.

The first two lines are different because owners of PV plants up to 20 kW peak capacity can choose either way, i.e. making an energy exchange contract with the network operator (see above), or feed their whole production into the network like larger plants. In the former case, their income would be the sum of the avoided energy purchase price and the feed-in tariff (granted only for the energy that has been exchanged). In the latter case, their income would be the sum of the wholesale energy selling price plus the feed-in tariff. To realise the full benefit a PV plant can get in this case, it should also be recalled (see wholesale electricity prices in the preceding section)

that grid-connected plants not exceeding 1 MW capacity are entitled to special, fixed energy selling prices.

It should also be pointed out that, unlike the preceding ones, the feed-in tariff indicated for the last category, namely for plants between 50 and 1000 kW, is to be intended only as the top value that can be reached, because in this case feed-in tariffs are assigned by auction to the best bidders.

- Legislative Decree No. 152 of 3rd April 2006, while providing a number of general rules on environmental matters, also included a couple of major, rather unexpected decisions bearing upon RES-E investors.

Article 267, under Item 4 d) states that Article 20, Item 5 of Decree No. 387 of 29th December 2003 must be changed to extend the TGC availability term from 8 years to 12 years since the start of plant operation. This extension has obviously been most welcome to RES-E plant investors, who looked forward a reduction of their financial risks prior to any other change, as turned out clearly during the survey performed by the REALISE-Forum Consultation Desk (see the following chapters). It is now under discussion whether this extension should apply to all plants entitled to TGC, or only to plants that have entered in operation since the date of the Decree, but it is no doubt a major development.

The same Article 267, under Item 4 c), also states that TGC assigned to electricity produced from hydrogen, fuel cells and CHP plants used for district heating (according to Article 1, Item 71, of Law No. 239 of 23rd August 2004), can be handed in to comply with the RES-E Quota obligation only after all TGC assigned to "true" RES-E producers have been filed (in this respect, reference is made to the definition of renewable sources given in Article 2 of Decree No. 387 of 29th December 2003 as well as in the RES-E Directive). From RES-E investors' standpoint, this provision has taken away the threat of competition by TGC assigned to other, non-strictly-renewable technologies such as the plants mentioned above and those burning non-biodegradable waste (allowed TGC by Article 17 of Decree No. 387 of 29th December 2003, see next paragraph).

- The Ministerial Decree of 6th May 2006 has specified the kinds of waste and RDF (Refuse Derived Fuel) admitted to get TGC in accordance with Article 17 of Decree No. 387 of 29th December 2003. As already stressed in the main Country Report, Article 17 also entitles non-biodegradable waste to get TGC, even though this material has not been listed among renewable sources under Article 2 of the same Decree. Now, the Decree of 6th May 2006 has brought some clarity into a subject that could have taken unpredictable turns, if the kinds of waste admissible to electricity production and relevant TGC had not been specified in detail. In principle, the new Decree now distinguishes two main categories of waste, in accordance with the relevant EU rules: the waste that can be used for electricity production and get TGC, and the waste that must first be intended for other ways of processing.

4.5 Complementary Aspects Bearing upon RES-E Deployment

To complete the picture, it should be recalled that capital cost subsidies have, for some years now, been made available to selected RES-E projects by local governments, typically those of some Regions. Subsidies are mostly in the range of 15-30% of investment.

It should also be added that, pursuant to Decree No. 387 of 29th December 2003, a Guarantee of Origin can also be issued by GRTN/GSE to all RES-E producing plants upon request, in accordance with Directive 2001/77/EC, but this Guarantee is only intended to testify the origin of electricity and has nothing to do with the TGC that must be submitted to fulfil the national RES-E Quota obligation. Other voluntary-based systems for RES-E certification are available in Italy, particularly the international scheme RECS (Renewable Energy Certificate System) and the Italian brand "100% energia verde".

The RES-E support instruments described in this chapter may have to face some competition by other tools ensuing from other areas. Mention should be made of the White Certificates scheme set up by two Decrees issued by MAP and MATT on 20th July 2004, which bind electricity and gas distribution companies to implement technologies for efficient end-use at their customers' premises. White Certificates are issued by GME after checks and approval by the Regulatory Authority AEEG and can be traded like the TGC described above.

In addition, following the Kyoto Protocol and EU Directive 2003/87/EC on Emission Trading, the Italian PNA (National Allocation Plan) has assigned greenhouse gas emission allowances for 2005-2007 also to thermal power stations above 20 MW in thermal capacity. Compliance will have to be shown by submitting CER (Certificates of Emission Reduction) owned by the plant or bought on the market or Credits obtained from projects developed within the framework of the Joint Implementation or the Clean Development Mechanism.

5. National Position in the Debate on EU Directive 2001/77/EC

In 1998, the Council of Ministers for the Environment of the European Union fixed the reduction targets that should be achieved for greenhouse gas emissions in the various Member States, in order to attain the Union's overall objective of 8% reduction in respect of 1990 emissions that was set in the Kyoto Protocol of 10th December 1997. As a result, Italy bound itself to reduce emissions by 6,5%, in respect of 1990 levels, by 2008-2012. Italy subsequently ratified the Kyoto Protocol in June 2002.

With a view to establishing the ground for achieving its 6,5% reduction goal, the Italian Government, and more specifically the Inter-ministerial Committee for Economic Planning (Comitato Interministeriale per la Programmazione Economica – CIPE), issued the ‘Guidelines of the National Policies and Measures for Reducing Greenhouse Gas Emissions’ (Resolution 137 of 19th November 1998). According to these Guidelines, a 6,5% reduction in respect of 1990 emissions would be equal to about 103 million tonnes of CO₂ equivalent. The CIPE Guidelines also asked the Ministry of Industry to submit a White Paper for promoting the deployment of renewable energy plant, both for RES-E and thermal energy.

The White Paper for the Exploitation of Renewable Energy Sources was drafted by ENEA with the help of other qualified organisations and was approved by CIPE in August 1999. In particular, this White Paper estimated a total target of avoided emissions of up to 24 Mt/year of CO₂ to be reached through exploitation of renewable energy sources by 2008-2012 (18 Mt/year reduction should be obtained from RES-E and 6 Mt/year from ‘green’ heat production).

An extract of the RES-E targets set by the White Paper is provided in Table 8.

Table 8

Year	2006		2008-2010	
	MW	TWh	MW	TWh
Hydropower plant >10 MW	14 500	34,8	15 000	36,0
Hydropower plant <10 MW	2 600	9,6	3 000	11,1
Geothermal plant	700	5,1	800	5,9
Wind plant	1 400	2,8	2 500	5,0
Solar PV plant	100	0,1	300	0,3
Biomass, biogas and waste	1 300	7,3	3 100	17,8
Total	20 600	59,7	24 700	76,1

In Table 8, estimates of total needed RES-E plant capacities (existing plus new ones) have also been indicated. On the whole, the RES-E domestic production target for 2008-2012 turned out to be about 76 TWh/year.

This 76 TWh figure was kept as reference also when defining the indicative targets set in the Annex to RES-E Directive 2001/77/EC. In fact, the table of this Annex set as target for Italy to increase RES-E contribution to gross electricity consumption (see definition and value in Chapter 2) from 16% in 1997 to 25% in 2010. Nevertheless, in a footnote to the same table, Italy stated that *"22% would be a realistic figure, on the assumption that in 2010 gross national electricity consumption will be 340 TWh. When taking into account the reference value set in this Annex, Italy has assumed that gross national electricity production from renewable energy sources will attain up to 76 TWh in 2010. This figure includes the contribution of the non-biodegradable fraction of municipal and industrial waste used in compliance with Community legislation on waste management"*.

As said above, the Directive has been transposed into Italy' s legislation by Decree 387 of 29th December 2003 and the 22% target has, for the moment, been indicated by the Ministry of Production Activities in its reports to the European Commission.

It should be noted that Decree No. 387 of 29th December 2003 was issued with only 2 months delay in respect of the Directive' s deadline. But it should also be underlined once again that several provisions of this Decree wanted further implementing actions, most of which have been taken with quite some delay in 2005 (e.g. the PV feed-in tariffs, the new Decree on TGC etc.) or are still awaited at present (such as the updating of RES-E quotas beyond 2006, biomass-specific measures, streamlining of permitting procedures etc.). These delays have been raising complaints among RES-E producers.

6. State of Completion of Liberalisation Efforts

The liberalisation process that has taken place in the Italian electricity market since the entry into force of Decree 79/99 has already been described in Chapter 4.

As of late 2006, it can be stated that a liberalised market is actually working, with a number of somewhat big producers and a few hundreds of smaller producers, particularly concerned with RES-E. What has sometimes been blamed by some actors, including the Authority for Guarantee of Competition and Market (Autorità Garante della Concorrenza e del Mercato - AGCM), is the presence of a producer (Enel Produzione) which is still much larger in size than its main competitors.

Another distorting factor comes from the bottlenecks that have been coming up in the national transmission grid (see Chapter 2). These bottlenecks can hamper the connection of new generating plants in some areas, including areas with renewable energy resources, as is currently the case of wind plants in several Regions where the TSO has set upper capacity limits and other restraining conditions. Moreover, grid bottlenecks are also bringing about the setting of different wholesale energy prices from one zone of the country to another at the electricity exchange, thus discriminating RES-E producers depending on their location.

Only households are currently captive customers in Italy, while other customers have gradually become all "eligible", according to the definition given by Directive 96/92/EC and Directive 2003/54/EC (which in 2003 repealed the former one). In spite of this, many eligible customers do not actually take advantage of their possibility to choose their supplier. As already said in Chapter 3, from 1st July 2007 onwards all Italian customers will be entitled to this choice, according to Law No. 239 of 23rd August 2004.

7. Role of Green Power in National Energy Policy

Going back to the attitude of Italy as far as the RES-E goals of Directive 2001/77/EC are concerned (see Chapter 5), it should be avowed that the situation is not fully encouraging.

Since Italy' s domestic RES-E production has been, in the last few years, steadily in the range of 48-55 TWh/year, reaching a top of 55,7 TWh in 2004, and considering that the hydropower potential has almost been wholly exploited especially with regard to large plant sites, a considerable effort should be required to develop new renewable sources in the next few years if the target of 76 TWh/year is to be reached by 2010 through domestically-produced RES-E only.

Furthermore, it should be remembered that 76 TWh/year is a 22% contribution only under the assumption that the 2010 gross electricity consumption will be about 340 TWh, as stated by Italy in the Annex to the above Directive (see Chapter 5). In fact, this quantity was exceeded already in 2004, when Italy' s gross consumption was nearly 349TWh (353 TWh in 2005). It could therefore be inferred that it would not be so easy for Italy to achieve a 22% contribution percentage through domestic RES-E production only.

This feeling was also shared by most of the RES-E stakeholders who answered the questionnaire sent out by CESI and APER within the framework of the REALISE-Forum project, as part of the first phase of activity of the Italian consultation desk. Only few stakeholders felt Italy is likely to achieve fully its 2010 RES-E target set by Directive 2001/77/EC.

A good percentage of them (55%), however, stated that this target could be achieved partly. The discussion at the subsequent hearing pointed out that this prevailing opinion stemmed, in all likelihood, from the fact that some sources, such as small hydropower and wind, have been going on at a brisk pace, whilst others, such as biomass and solar energy, have long been behind schedule for the lack of more suitable policy. Many RES-E producers, both in the questionnaire and at the meeting, complained of severe hindrances to plant construction ensuing from permitting, grid connection and public acceptance issues that are still to be settled.

The potential role of RES-E as a contribution to national electricity consumption has however been coming up at debates all over the country and has also been borne in mind in electrical energy scenario studies recently carried out e.g. by CESI and CESI RICERCA. On the other hand, the technical limits of RES-E potential that are likely to emerge later on as the best available resources have been exploited, must also be considered even now.

As already said in the part on RES-E production of Chapter 2, a possible way-out, as far as attainment of Italy' s RES-E target is concerned, seems to be given by the fact that Directive 2001/77/EC set targets as percentages of contribution to gross domestic consumption, rather than to domestic RES-E production. This can be understood as possibility to use also imported RES-E to cover part of the

required contribution, of course on condition that this RES-E is suitably certified by a Guarantee of Origin released in accordance with the same Directive 2001/77/EC.

Figure 1 of Chapter 2 has already shown a histogram based on data from the 2005 annual report on RES-E production published by GSE [3]. It depicts the trend of RES-E percentages in the last few years, with and without RES-E imports. It would turn out that, in principle, the 22% RES-E target could be achieved even now: for instance, in 2004 the RES-E percentage inclusive of imports would rise to as much as 26% from 16% without imports.

On the basis of the same figure it has already been remarked in Chapter 2 how RES-E production has been varying considerably from one year to another, without a consistent upward trend, mainly as a consequence of annual variations in weather conditions (most of Italy' s RES-E production comes from hydropower plants).

Decree No. 387 of 29th December 2003 confirmed the role of the existing Quota/TGC scheme as major instrument to boost production of electricity from renewable sources. Some additional boost to renewable energy could in principle come from the end-use efficiency targets and the relevant scheme of White Certificates (see last section of Chapter 4). Of the two Decrees issued on this subject on 20th July 2004, however, only the Decree concerning gas distribution companies included renewable energy sources (not only for electricity production) among the technologies that can be adopted to attain the efficiency targets in energy end-use.

Another point which deserves being considered very briefly are the implications the Kyoto Protocol could have as a further booster of RES-E plant deployment. As already said in Sections 4 and 5, Italy ratified the Kyoto Protocol in June 2002 and has therefore taken on the commitment to reduce greenhouse gas (GHG) emissions by 6,5 % in respect of 1990 levels, in the period 2008-2012.

In 2005, the Italian PNA (National Allocation Plan) was approved by the European Union. Greenhouse gas emission permits and relevant emission allowances for 2005-2007 were also assigned to thermal power stations above 20 MW in thermal capacity. According to reactions and first results, it would seem that the Italian electricity sector has not, as yet, been imposed too heavy a burden.

It should however be pointed out that, in 2005, the level of GHG emissions in Italy was still 8% greater than its 1990 level and still seems to be bound upwards, thus making the achievement of Italy' s Kyoto target of -6,5% in respect of 1990 rather difficult, as it would entail a reduction of nearly 15% of 1990 emissions in 5-6 years. It may therefore happen that the electricity sector will be asked to make a stronger contribution to this reduction in the future. If so, a further boost to RES-E plant deployment could ensue as one of the feasible ways to help achieve the Kyoto target.

On the other hand, it should be remembered that the option of building nuclear power stations in Italy again (nuclear power was ruled out by a referendum in 1987), although it has sometimes been resumed by some energy stakeholders and political parties, is still questioned and looks in any case rather

remote, also considering the long time that would be needed to build new nuclear plants of suitable technology. In the short term, the only contribution of nuclear electricity could be made through electricity imports from foreign nuclear plants, some of which could even be owned by Italian producers (the largest share of electricity imported by Italy is already coming from French nuclear power plants).

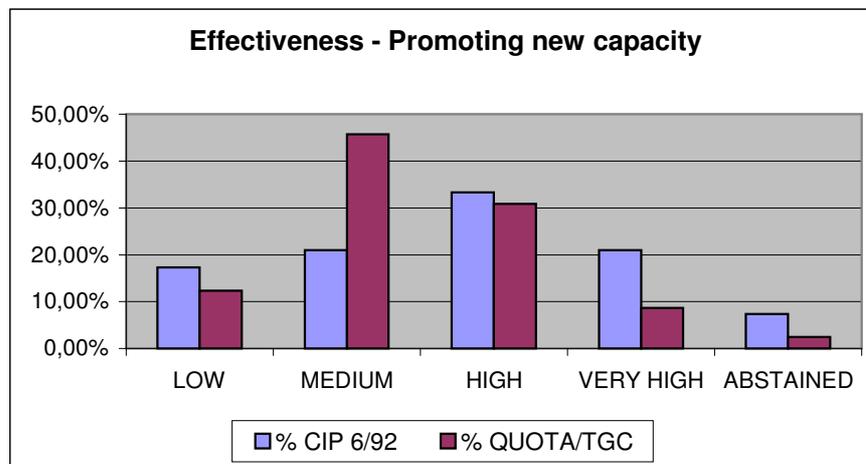
8. Perceptions on Features and Performances of Different Support Schemes

A meaningful overview of the perceptions of Italian RES-E stakeholders as far as different support schemes are concerned, can be drawn from the results of the questionnaire that was sent out within the framework of the Italian Consultation Desk of the REALISE-Forum project in July 2005.

A total of 82 questionnaires were returned. About half of the respondents were RES-E producers, mostly small-sized companies, using all kinds of source. The rest however comprised all kinds of other stakeholders such as electricity producers at large, RES-E plant and equipment manufacturers, grid operators, electricity distributors and traders, financing institutions, public authorities, research institutes, consumer and environment protection association.

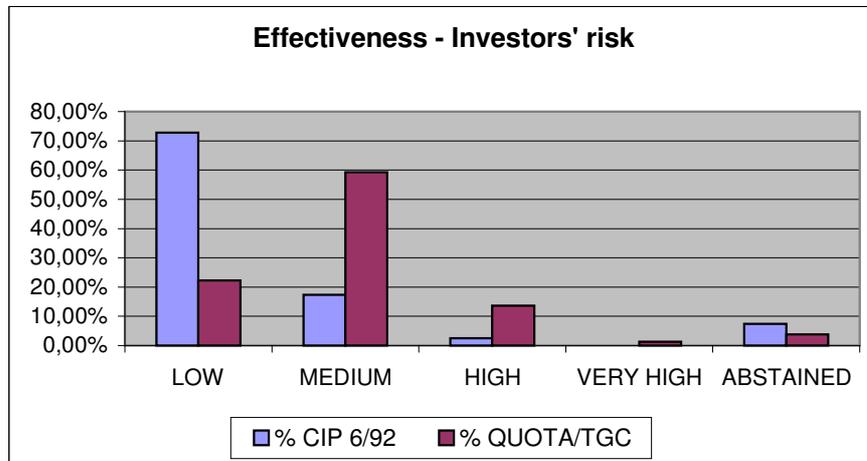
The first question asked to state the degree of effectiveness perceived of the old CIP 6/92 feed-in tariff scheme and the current Quota/TGC scheme, respectively, as regards a number of aspects, which are mentioned hereunder together with the summary of, and comments on, the relevant answers.

a) Promoting the deployment of new RES-E capacity



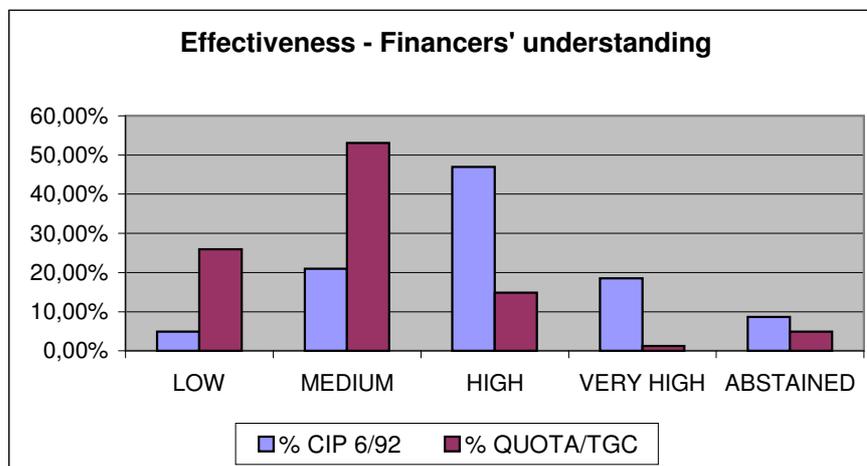
Even though the ranking was rather widely scattered, both systems got a fairly good average rating. However, the CIP 6/92 feed-in scheme was placed better than the Quota/TGC one.

b) Risk incurred by investors



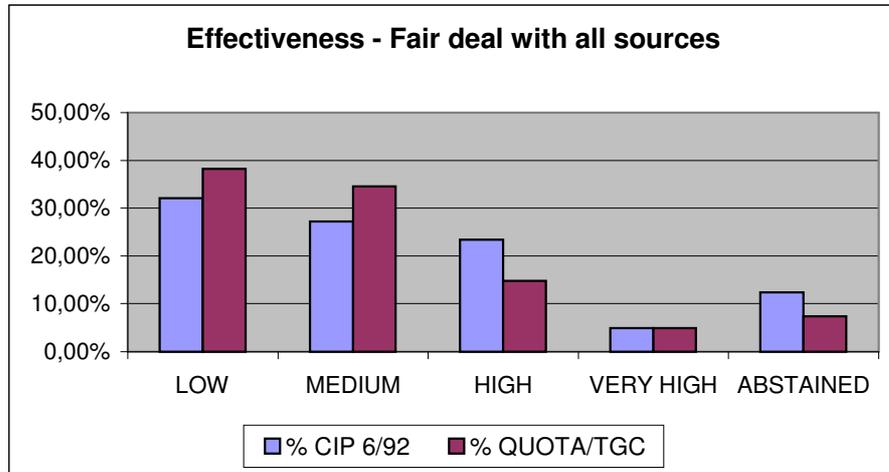
Neither scheme was felt as very risky. Nevertheless, the risk of the CIP 6/92 feed-in scheme was mostly deemed low, whereas the risk of the Quota/TGC scheme was perceived to be somewhat higher.

c) Degree of understanding and acceptance by financing institutions



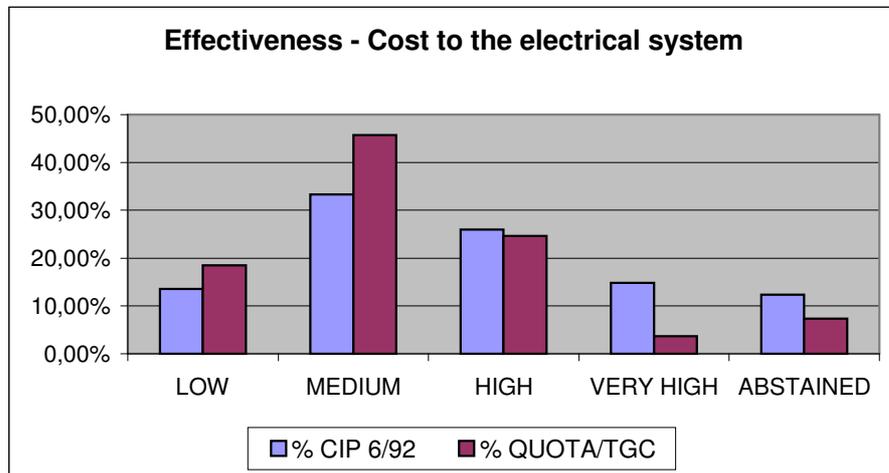
On average, it was felt that financing institutions had, at least up to that time, understood and accepted the CIP 6/92 feed-in scheme much better than the Quota/TGC one.

d) Fair deal with all the various energy sources



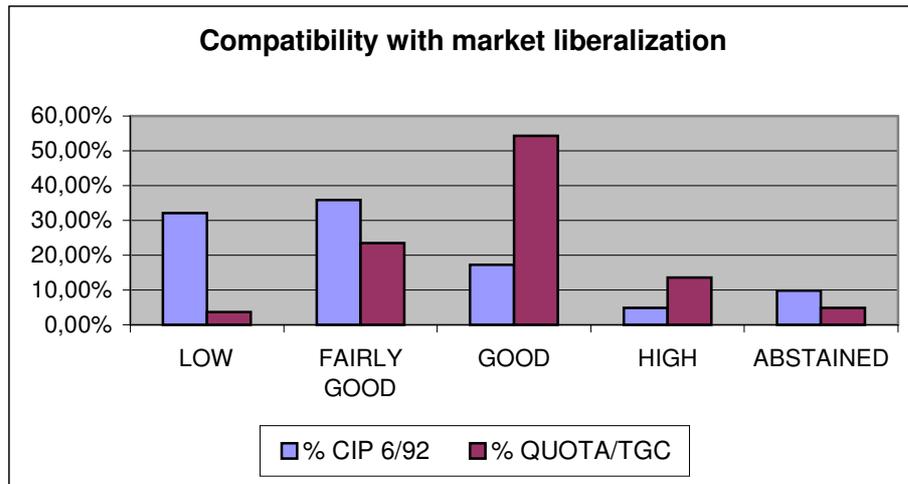
The capability of giving all sources a fair deal was mostly judged medium or low for both mechanisms.

e) Cost to be borne by the whole electricity system as a consequence of the scheme



On average, this cost was deemed medium to high for both mechanisms, but somewhat higher for the CIP 6/92 feed-in scheme. There were also noteworthy differences in opinion between stakeholders groups on this subject (see also Chapter 9).

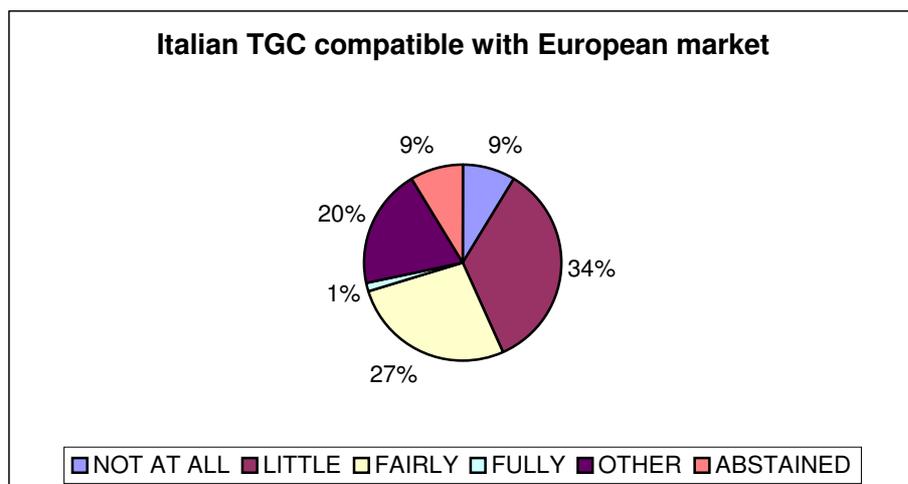
f) Degree of compatibility with the recent liberalisation of the electricity market



The Quota/TGC scheme was perceived as well compatible with the liberalised market, much better than the CIP 6/92 feed-in mechanism.

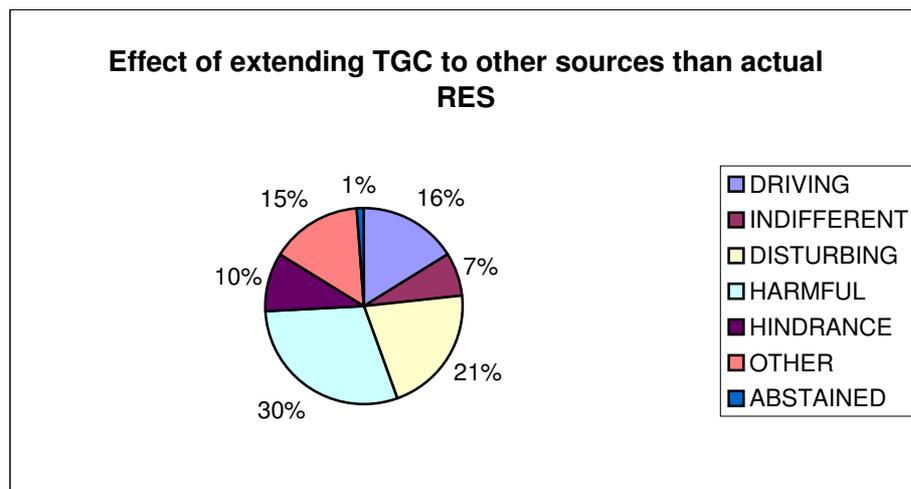
Focusing on the currently available Quota/TGC scheme only, the questionnaire then put a number of additional questions, which provided interesting insights. For the sake of brevity only a few results are summarised in the following.

A question whether the Italian Quota/TGC scheme is compatible with the trade of Green Certificates on the European market was answered as follows:

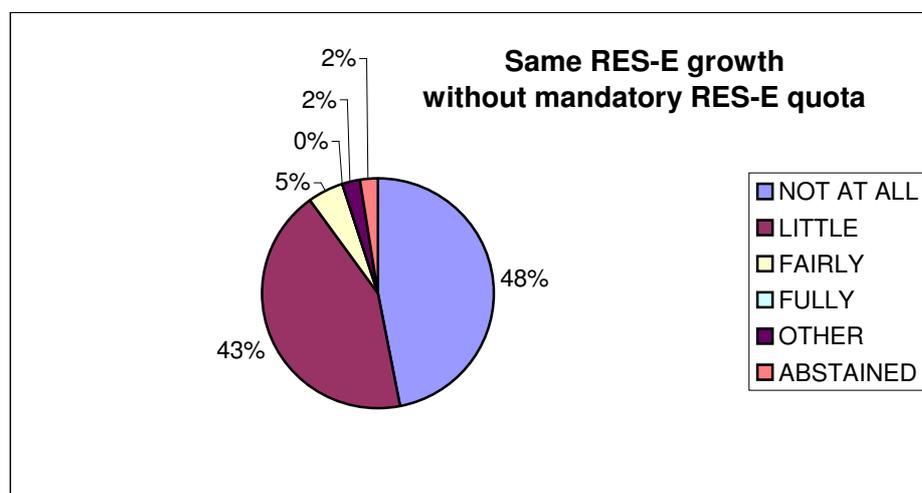


In the opinion of most stakeholders, the compatibility of the Italian TGC with the European market is rather poor. The main reason can be found in some requirements of the Italian scheme, such as reciprocal treatment and obligation to feed the relevant electrical energy into the Italian grid, which make it rather stiff and unfit for international TGC trade.

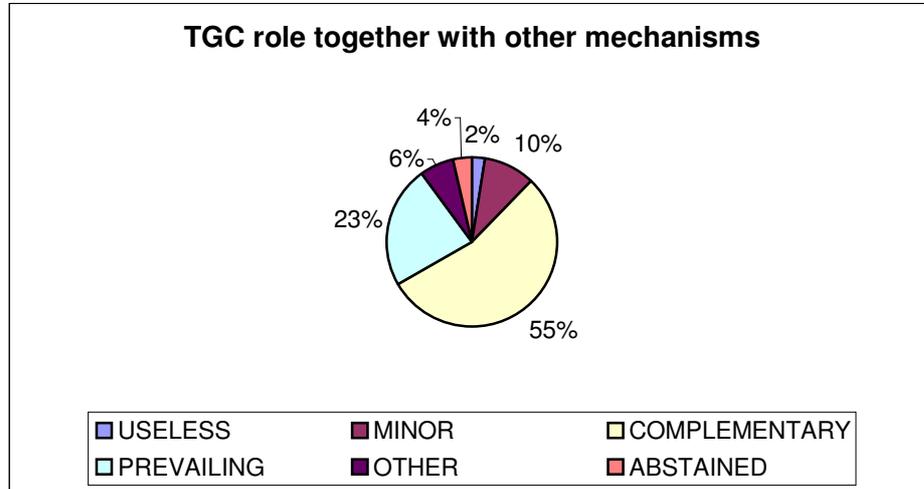
Likewise, the recent extension of TGC to other, non-strictly-renewable energy forms such as electricity from non-biodegradable waste, hydrogen, fuel-cells and CHP plants for district heating (Decree 387/2003 and Law 239/2004) was definitely seen with very little favour, as shown below.



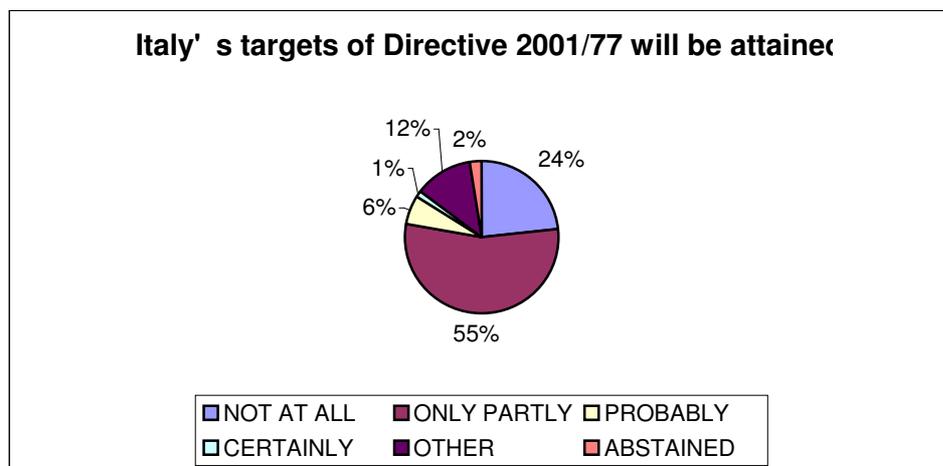
On the other hand, there was a widely shared-opinion (see below) that voluntary-based labelling systems alone could not allow the same or an equivalent deployment of RES-E plants in Italy; hence the absolute need for a mandatory RES-E quota.



In the opinion of most stakeholders, the Quota/TGC scheme in question will still play a complementary or even prevailing role in boosting RES-E even after other mechanisms such White Certificates and Emission Trading have come into force.



As already said in Chapter 7, only few stakeholders felt that the current support system would allow Italy to attain fully its 2010 RES-E target set by the EU Directive 2001/77/EC (22% or even 25% of gross electricity consumption from RES-E). A good percentage (55%), however, stated that this target can be achieved only in part, in other words that some sources could attain their targets set in the Italian White Paper (see Chapter 5) while others could not. Nearly 25% of respondents, however, said the target will not be attained at all (all answering stakeholders clearly referred to RES-E produced in Italy only).



9. Various Actors' Positions on the Support Schemes in Use

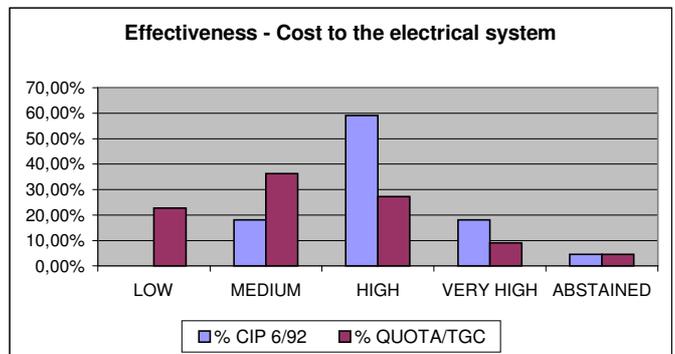
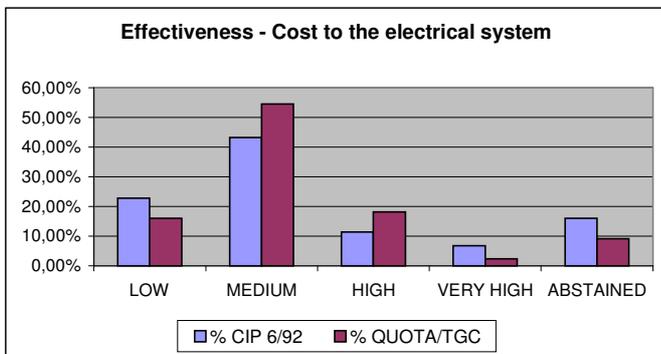
The questionnaire results were processed considering answers both as a whole and in respect of different stakeholder groups. For the sake of simplicity, two main stakeholder groups were considered as the most significant: the group of RES-E Producers and Plant Manufacturers, namely those having a direct, strong interest in RES-E deployment, and the group that was called the Outside World, including all the other stakeholders, more or less neutral towards RES-E.

With reference to the issues reported on in Chapter 8 above, a good, sometimes striking, similarity in the trends of answers was found between the two groups as far as several questions were concerned. In fewer cases some noteworthy discrepancy was noticed.

The first case of discrepancy was noticed with regard to the question about the cost the whole electricity system has to bear due to the CIP 6/92 feed-in tariff scheme as compared to the Quota/TGC scheme (see above in Chapter 8). The Outside World group judged the CIP 6/92 scheme far more severely.

RES-E Producers and Manufacturers

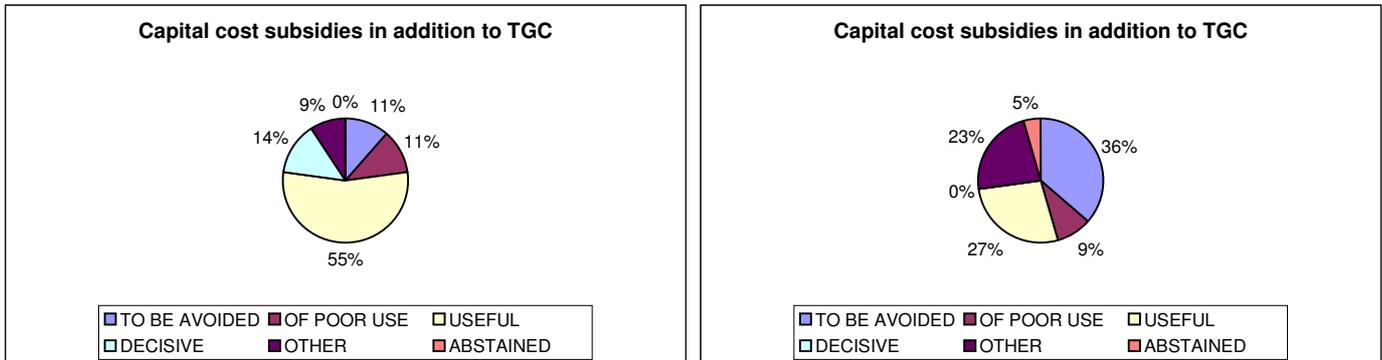
Outside World



Another case of discrepancy was linked with a question about the usefulness of capital cost subsidies (such as those currently available from some Regions) to promote the setting-up of competitive RES-E plant, in addition to the Quota/TGC mechanism. As can be seen below, RES-E Producers and Manufacturers had (as could be expected) a much better opinion of these subsidies (nearly 70% useful, 22% not) than the Outside World (27% useful, 45% not, 23% other various views).

RES-E Producers and Manufacturers

Outside World



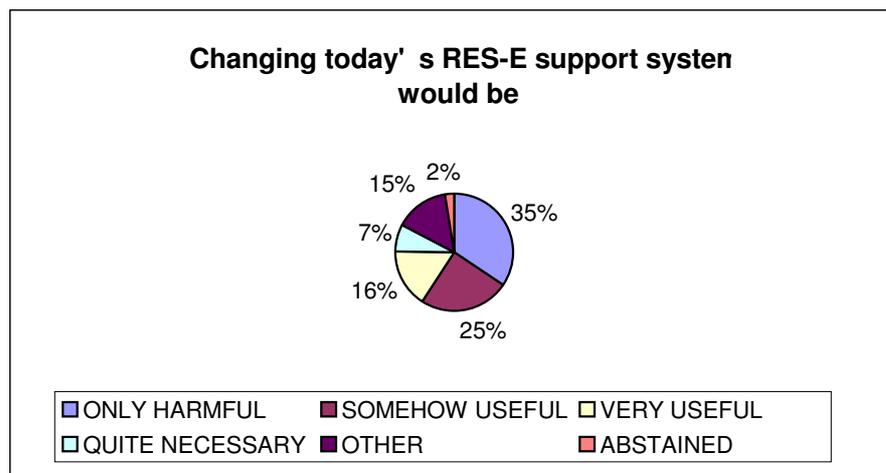
The two groups also showed attitudes that seemed somewhat different with regard to the chances for Italy to attain the target of the RES-E Directive (see above in Chapter 8). Indeed, the Outside World looked more pessimist than the RES-E people. But these people gave a good number of free answers in which they complained of permitting, acceptance and grid-connection issues that were seen as heavy hindrances to the growth of RES-E production. If this is taken into account, the attitudes of both groups get much closer than they seemed at first sight.

Noteworthy discrepancies also came up when answering other questions on topics that will be dealt with in the following chapters. They will be highlighted wherever appropriate.

10. National Willingness to Change the Current Support Schemes

The Italian questionnaire first asked how a possible change in Italy' s current Quota/TGC scheme in the next 5 years would affect the deployment of RES-E plants (the newly-issued PV feed-in tariffs were not yet in force at that time).

The results (see below) showed a sharp splitting between those in favour of some change whatever (48%) and those openly against (35%). What is more, a remarkably similar splitting between the two attitudes was noticed within each stakeholder group.



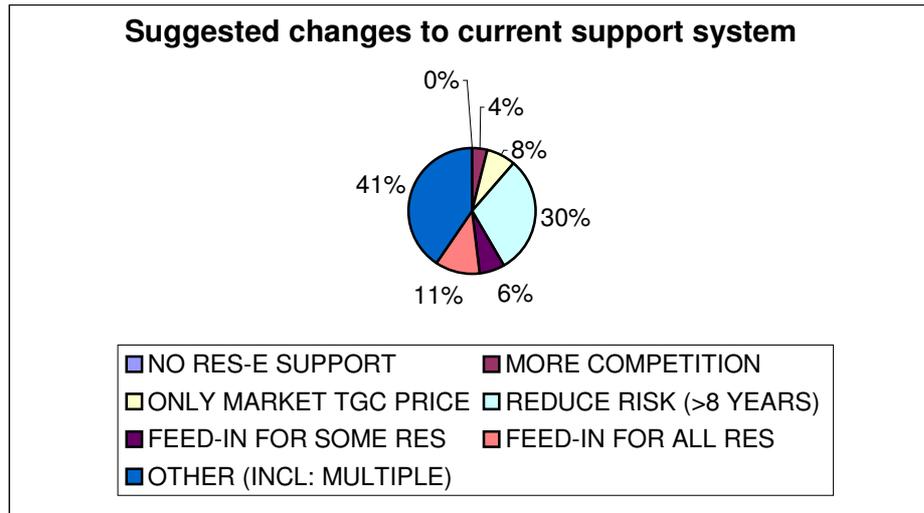
After that, the questionnaire asked stakeholders which change, out of a given list, they would prefer if they, however, had to change today' s Quota /TGC scheme in the next five years. Proposed changes were as follows:

- Cancel any RES-E support mechanism;
- Stir up more competition among all sources and plants;
- Let TGC price be set by market only;
- Reduce risks to investors e.g. by making TGC available beyond the 8-year term;
- Restore feed-in tariffs only for less competitive sources;
- Restore feed-in tariffs for all RES-E (different rates for the various sources);
- Other suggestions (open statement).

No one chose the option of taking away RES-E support at all. There was a prevailing trend towards reducing risks to investors by extending TGC availability beyond the 8-year term. Only fewer people

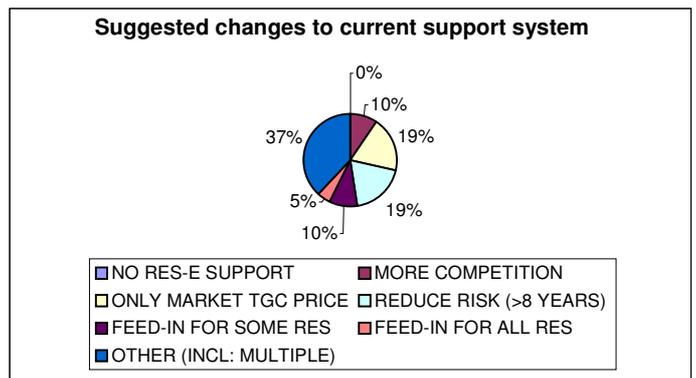
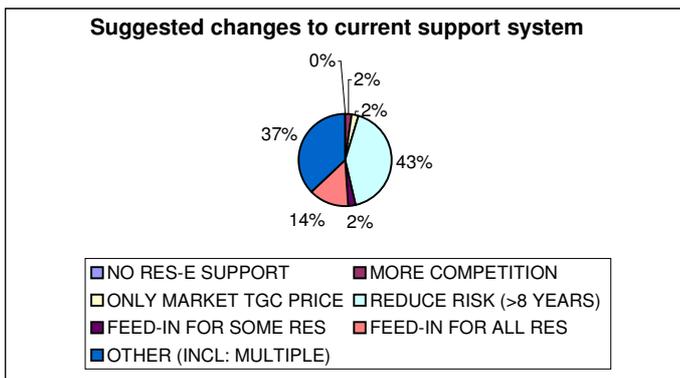
were in favour of going back to feed-in tariffs. Some difference was noticed between the two main stakeholder groups. Particularly, those of the Outside World gave more importance to competition and market-based TGC prices and would rather grant feed-in tariffs to less mature RES-E technologies only, than to all RES-E.

Diagrams showing the general results as well as the results within each stakeholder group are reported hereunder.



RES-E Producers and Manufacturers

Outside World



In this connection, it should be underlined that the subsequent issuing of the Decree of 28th July 2005 providing for feed-in tariffs over 20 years to support PV plants was welcomed and judged very positively by all stakeholders at the hearing held in mid-November 2005 as a further step of the Italian consultation desk of the REALISE-Forum project.

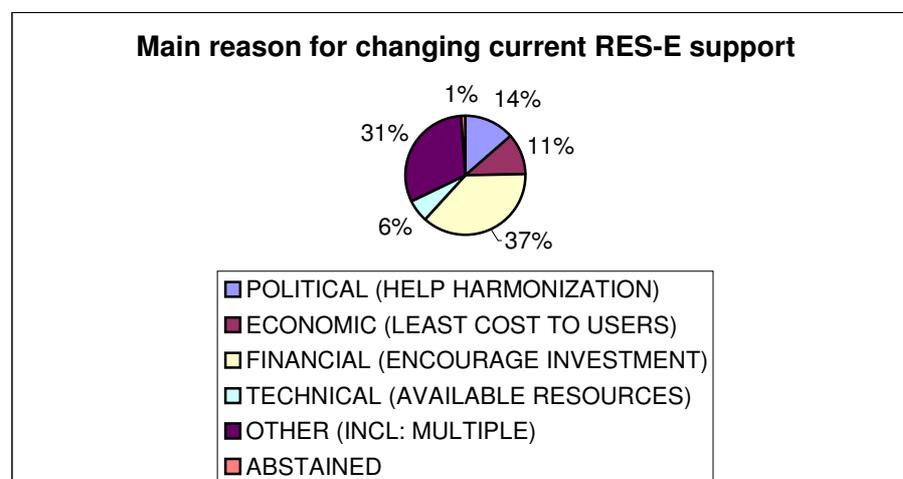
11. Reasons for Changing the Current Support Schemes

After the questions reported in Chapter 10 above, the Italian questionnaire also asked stakeholders how they would define the main reason for changing today' s major scheme of Quota/TGC. Choice was proposed among the following definitions:

- Political: e.g. to adjust Italy' s policy to other countries' to facilitate EU-wide harmonisation;
- Economic: e.g. to minimise the electricity price to users by avoiding or reducing the cost of TGC and/or RES-E production;
- Financial: e.g. to encourage undertakers and banks towards RES-E investments;
- Technical: e.g. to bring RES-E quotas and TGC terms more in line with availability of exploitable resources;
- Other suggestions (open statement).

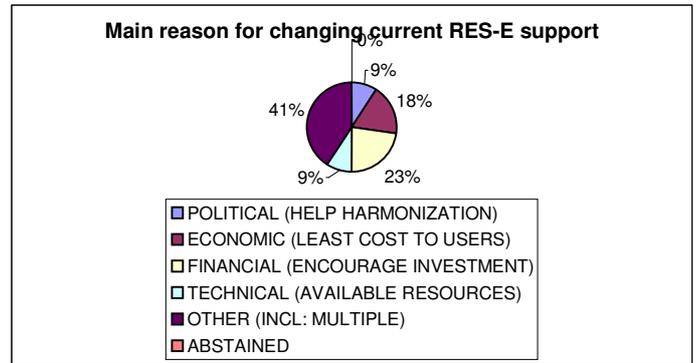
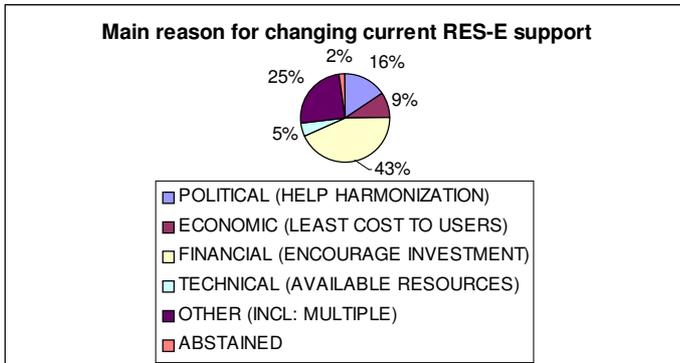
As a result, financial reasons came first, both explicitly and among free or multiple answers (these were all classed under "Other"). There were however some different trends between the two main stakeholder groups, as RES-E Producers and Manufacturers stressed more financial and, to a lesser extent, political and economic reasons, while those of the Outside World gave relatively more weight to economic and technical reasons.

Diagrams showing the general results as well as the results within each stakeholder group are reported hereunder.



RES-E Producers and Manufacturers

Outside World



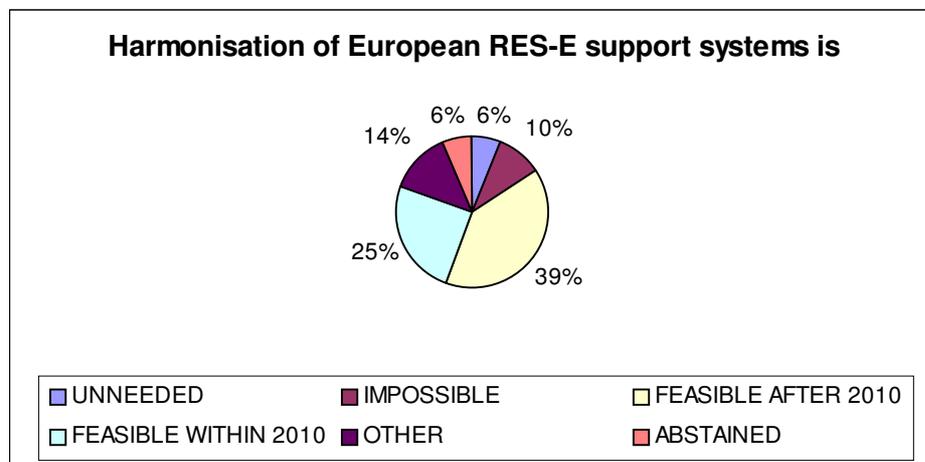
There might be some surprise in remarking that technical reasons (for example the need to bring RES-E quotas and TGC terms more in line with actually exploitable resources in Italy) came last.

The discussion at the national hearing led to the conclusion that this minor rating of technical reasons can be justified by the relatively short time-span that was assumed in the questionnaire for the possible change, which should occur within the next 5 years. It was felt that technical reasons, typically ensuing from depletion of exploitable resources, would, in all likelihood, become more prominent only later on.

12. Actors' Perceptions on the Future of EU Support Schemes

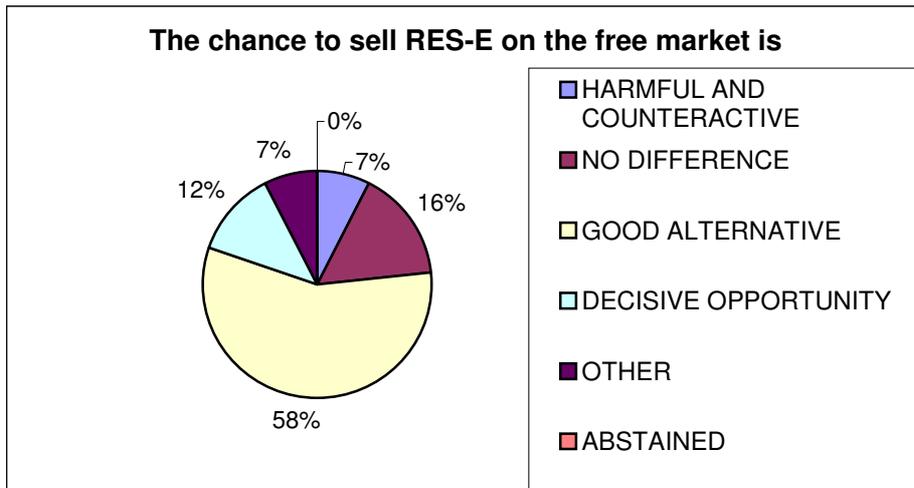
The Italian questionnaire definitely asked stakeholders to speak their mind about the usefulness and feasibility of some harmonisation of national RES-E support schemes throughout the European Union in accordance with the principles of the Union' s liberalised electricity market (the possibility of a proposal for a Community framework for RES-E support schemes was envisaged by RES-E Directive 2001/77/EC in Article 4).

Specifically, a few different judgements were put forth by stakeholders when asked to complete the sentence "Harmonisation of European RES-E support systems is...?...." as shown in the diagram here below.

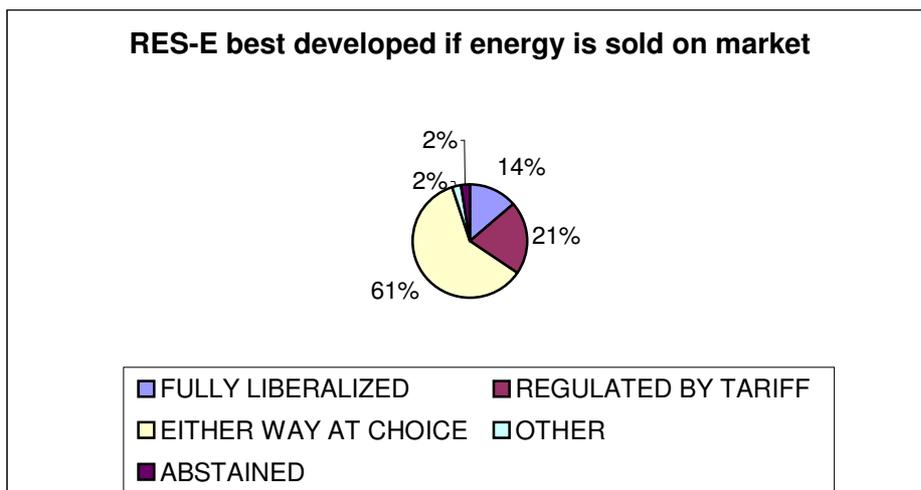


Rather few stakeholders said harmonisation was unneeded or impossible, but a good share of them (nearly 40%) felt that it could be done only after 2010. Particularly, RES-E Producers and Manufacturers turned out to be a little more pessimist than the other stakeholders (the so-called Outside World). As a general conclusion, the need for some harmonisation was confirmed, but how and when to do it still seems to remain an open question.

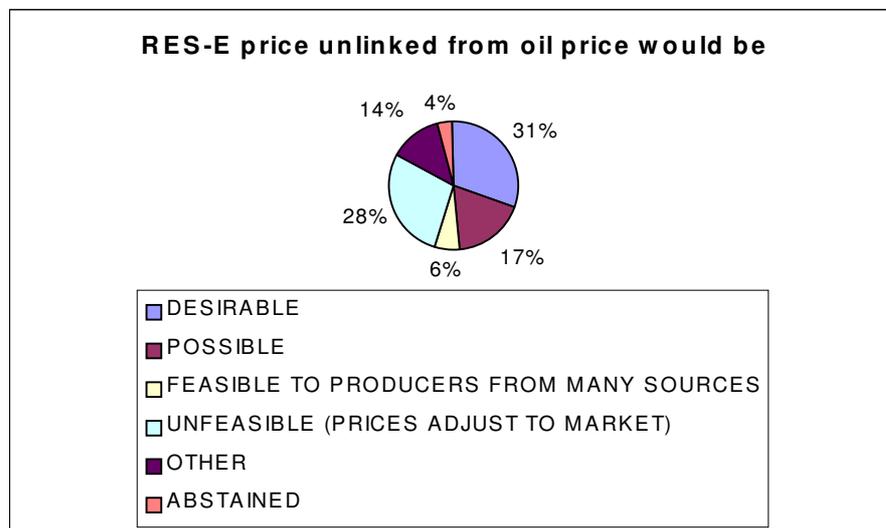
Italian RES-E stakeholders were also asked about their views and desires about future developments of the electricity market at large. Most stakeholders, regardless of their role, saw market liberalisation with favour and judged the chance to sell RES-E on the free market (see below) as a good alternative or even a decisive opportunity for RES-E development.



On the other hand, when asked whether a fully liberalised framework, with energy prices set only by the market, should be preferred to a regulated framework, with energy prices set by tariffs, as an effective way for developing RES-E plants, the largest share of stakeholders (see below) were in favour of a mixed framework, where either way can be chosen by producers. The same trend was remarked within both stakeholder groups, thus confirming that guarantees provided by some regulations are still felt necessary by most.



Lastly, a rather unusual question was put forward, whether in a market framework with offer largely exceeding demand, the offering price of RES-E could be unlinked from oil price and become another reference price as opposed to unsteady fossil fuel prices. Answers are shown below.



This possible prospect seems to have puzzled respondents to quite some extent, as a prevailing position could not be found. "Desirable" and "Unfeasible" were the most widely chosen answers, giving the impression that RES-E stakeholders had not yet given many thoughts to this possible development (something like this had already happened e.g. in Italy, where for some years the energy supplied by plants getting CIP 6/92 feed-in tariffs was sold by GRTN at a price independent from the free market price).

13. Barriers to Further Expansion of RES-E in Italy

As already said in Chapters 7 and 8, achieving the RES-E target of Directive 2001/77/EC, even the lower target of 22%, through domestic production of RES-E, would mean making an effort to develop all renewable sources other than large hydropower plants.

As a matter of fact, hydropower plants have so far provided by far the most part of RES-E in Italy, but cannot be developed much further because of difficulty in finding new exploitable sites and more and more people becoming opposed to new large plants in the Alps area. Conversely, the other renewable sources have so far reached different degrees of deployment: small hydropower and wind technology have recently gone ahead at a fairly brisk pace, whilst others, such as biomass and solar energy, have long been behind schedule for lack of a policy more suitable for their peculiar characteristics and problems.

The current support scheme with a RES-E quota and Tradable Green Certificates has, on the whole, been working in a fairly satisfactory way up to now, but has also proved to be rather suitable for the more mature sources. This was also recognised by Decree No. 387 of 29th December 2003 transposing the RES-E Directive into national legislation. This Decree, while confirming the Quota/TGC scheme, which had already been in force for two years at that time, also provided for a good number of new legislative measures to be taken, among many others, with reference to biomass and PV.

These measures were to be implemented within terms of 2 to 6 months of the Decree' s issuing date, but actually suffered heavy delays, like the Decree establishing the special PV feed-in tariffs (issued on 28th July 2005 only), or are even still pending today, as is happening with the special measures concerning the assessment, collection and use of biomass, sewage gas and biogas (involving also the Ministry for Agriculture and Forestry).

Other measures provided for by Decree 387/2003 were implemented even later, such as, for instance, the market rules for RES-E (Decree of 20th April 2005), the updating of the TGC scheme (Decree of 24th October 2005), AEEG Provisions on grid-connection, on-the-spot exchange etc. (see Section 4.4 on more recent legislative measures).

Decree 387/2003 also provided for another Decree setting the new RES-E Quotas for 2007-2009 and 2010-2012, and also called for other major implementing provisions, such as those streamlining plant permitting procedures (permits should now be granted by a single authority, the Region or a deputy local authority, within 180 days of application, in accordance with national guidelines to be issued) or those enforcing the National Observatory on renewable sources. These provisions are still awaited at the time of writing this report.

RES-E producers have long been complaining of these delays in implementing the principles of Decree 387/2003, which are also a likely consequence of the fact that maybe too many different state

and local authorities have been involved in the process. These delays are however seen as strong barriers to plant deployment, especially by small-sized investors, who cannot afford facing too many uncertainties and ensuing additional, unforeseeable costs.

This aspect came sharply into view especially during the 2005 wider consultations with Italian stakeholders. When asked what kind of change they would however like best if the current Quota/TGC system were to be changed, the largest share of stakeholders stated that this change should first be aimed at reducing investors' risk e.g. by extending the availability of TGC beyond the first 8 years of plant lifetime.

In principle, one could say that the current Quota/TGC system is seen with favour by most stakeholders, as rather few actors stated they would prefer to go back to feed-in tariffs as the major support scheme. But the need for RES-E investors to have more certain perspectives about their income also in the medium and long term came up as a key issue both in the 2005 questionnaire and at the subsequent hearing.

The current, seemingly very good, selling price of TGC was not seen as a guarantee by itself. Investors felt that much more important than a high price of today's TGC, would it be to have a good compromise between the price and the availability of a profitable TGC trade over a sufficiently long time-span. Among others, small RES-E producers also expressed their fear that the TGC demand could shrink considerably in the future if some of today's big TGC purchasers (typically very large producers from non-renewable sources) were to become able to deploy a larger number of new or re-powered RES-E plants of their own in the next few years, thus becoming even competitors in the sale of TGC. Hence the importance was stressed that the RES-E quota be at least updated further for a sufficient number of years after 2006.

Lastly, the absence of a well-defined penalty on market actors not complying with the RES-E obligation was also raised as an issue by RES-E stakeholders. Decree 387/2003 stated that penalties would be the task of the Regulatory Authority. No noteworthy failure to comply with the obligation has occurred yet, but settling this aspect, too, more clearly would make for a more certain framework.

Later on, as the best exploitable resources are depleted, some technical barriers arising from lack of plant sites are likely to add to regulatory and commercial issues. Unavailability of new sites could stem from actual lack of resources as well as from environmental problems. The latter have already come up, for instance, with wind power plants in some Regions, e.g. Sardinia and Sicily, owing to fears of heavy visual impact on the landscape. Such difficulties can bring about a reduction of the exploitable RES-E potential or, at least, cause an increase in production costs as a consequence of higher compensations being paid to local people to get their agreement.

14. A Further Survey of Attitudes of Italian RES-E Stakeholders

This chapter provides insights and information that go to supplement those contained in Chapters 5 to 13 specially with regard to views and experiences of Italian RES-E stakeholders. In fact, after completing the 2005 version of this Country Report, CESI RICERCA has pursued the monitoring of the RES-E sector in Italy in 2006 as well.

To keep up-to-date with the latest developments and monitor stakeholders' reactions, especially those of RES-E undertakers, CESI RICERCA at first took advantage of events that could bring together the widest possible range of actors, to listen to their discussions and exchange views with them on major issues.

In this respect, mention could be made e.g. of the workshop "Renewables in 2005: Health Conditions of the Sector, Developments and Prospects Analysed by APER" which was organised by APER, the Italian Association of RES-E Producers, in Milan on 11th April 2006. The event was attended not only by RES-E investors, but also by representatives of AEEG, GRTN, Terna, ENEA, Assoelettrica etc.. The event not only reviewed the 2005 progress of RES-E technology applications in Italy, but made it possible to get a timely feeling of what had recently been going on in Italy' s RES-E world.

Another chance was offered by the workshop "The Wind Energy Potential of North and Central Italy" organised within the framework of the SolarExpo fair in Vicenza on 27th April 2006. This event, too, gathered a good number of representatives of the main RES-E actors in Italy, and led to discussions that involved not only technical subjects, but also economic, financial and permitting matters. These issues turned out once again as the most pressing ones to RES-E investors.

In spring 2006 the political elections also brought about a change in the political party coalition holding the Government, and gave rise to expectations and queries as to the new turns the national RES-E support policy might take from then onwards. Hints at a possible shift to a system fully based on feed-in tariffs were set forth in some talks involving members of the new Government in charge since May 2006, but it is however too early, even at the time of writing this report, to take this option into consideration as a certain forthcoming development.

In summer 2006 CESI RICERCA arranged interviews with some stakeholders playing major roles to take a snapshot of their latest views and impressions. To this end, a number of questions were worked out by CESI RICERCA in a document to be submitted to experts for written answers. The questions touched on a number of aspects that had come up more recently or seemed to have not been developed enough in the previous questionnaire survey of 2005 and the following national hearing (see the preceding Chapters).

Two major stakeholders were the target of the latest interviews: APER, Italy' s major association of RES-E producers, which is a typical representative of those investors who have a strong interest in developing renewable sources, and GRTN (since 1st October 2006, GSE), which is the body in charge of running all RES-E support schemes and can therefore be taken as an authoritative sample of independent operator.

This splitting also corresponds to the two stakeholder groups that were previously identified when presenting the results of the 2005 survey in the main Country Report, namely RES-E Producers and Manufacturers, on the one hand, having a direct interest in RES-E deployment, and the so-called Outside World, on the other, namely public agencies, research institutions etc. who should be more or less neutral.

The answers given by experts from the two organisations mentioned above have been reported hereunder after each question to allow comparison. Both questions and answers were originally written in Italian.

Question 1

On the occasion of the REALISE-Forum survey in 2005, a good share of answers to the questionnaire stressed that reducing financial risk to investors is the issue that should be tackled first if any change were to be made to the current RES-E support system (many were definitely against any change whatever). Fewer answers were even in favour of feed-in tariffs, albeit for disadvantaged sources only. After the more recent legislative provisions, can we now say that we have moved far enough in this direction?

According to GRTN, the modifications that occurred in late 2005 and early 2006 as far as RES-E support regulations are concerned lead, on the one hand, to think that it is very hard to change a support system in such a way that its conditions are made less rewarding than before. On the other hand, however, the latest provisions do not seem to be definitive and further new developments can be expected. There is no doubt that the functioning of the TGC market needs to be assessed more clearly. In this connection it can already be stated that experience has shown that the current TGC scheme, where all renewable sources compete on the same level, makes for the development of more mature technologies, but is not very helpful to those technologies that are still more expensive than others.

According to APER, the more recent provisions have substantially reduced the market risks related to the trading of TGC, but are still very far from bringing in a support system similar to the former CIP 6/92 feed-in tariffs: some major requirements typical of a feed-in scheme are still lacking, such as different prices trimmed to the various sources, and certainty of conditions for energy purchase in the long term.

Question 2

After taking steps such as the setting-up of feed-in tariffs for PV plants, the guarantee that GRTN shall purchase all unsold TGC from IAFR-qualified RES-E producers at a fixed price whenever the TGC offer were to exceed demand as a result of failure in updating the national RES-E Quota (Art. 5/9 of Ministerial Decree of 24th October 2005), the extension of TGC availability from 8 to 12 years of plant operation etc., could we think that the Italian RES-E support system has by now come back to a concept actually based on feed-in tariffs rather than market-based principles?

GRTN acknowledges that the provisions in favour of photovoltaic plants and the other provisions affecting TGC availability and trade could be understood as a step in this direction. Nevertheless, it is necessary to wait and evaluate any further legislative measures that may be taken in the near future prior to drawing conclusions.

APER, too, agrees that the obligation for GRTN to buy in all unsold TGC, and the extension of the TGC term to 12 years, have somehow contributed to altering the substance of the TGC scheme; the TGC price has been getting closer and closer to a regulated price independent of the interplay between offer and demand which takes place on the free market.

Question 3

Even though with considerable delays, part of the implementing measures required by Decree No. 387 of 29th December 2003 (transposing Directive 2001/77/EC) have now come into force. They have concerned e.g. the rules for purchasing RES-E from the various kinds and sizes of plant, for managing the TGC mechanism, for exchanging energy from plants not exceeding 20 kW on the spot, for using waste etc. Which are the most critical aspects still waiting for their own implementing measures? What could be the reasons for such persisting delays in fully implementing Decree No. 387 ? Are there actual difficulties to carry that through ?

According to GRTN, the most critical among the still outstanding measures for implementing Decree No. 387 of 29th December 2003 is the adoption of a single permitting procedure for the construction of RES-E plants (as asked for by Article 12, which entrusts the governments of the various Regions with the responsibility for this procedure, in accordance with guidelines agreed at national level). Unfortunately, few Regions have, as yet, drawn up their own permitting procedures. At the same time, it is becoming more and more urgent to have Regional Energy Plans, some of which are still lacking, defined all over Italy.

APER stresses that a number of very critical implementing measures required by Decree No. 387 of 29th December 2003 have not yet been issued by legislators: in addition to the still pending approval of

national guidelines for applying regional permitting procedures as per Article 12 (see above), APER also points out:

- the need to update the mandatory RES-E Quota for the periods 2007-2009 and 2010-2012 as required by Article 4, Item 1;
- the still awaited sharing of national RES-E targets among the Regions, in compliance with requirements of Article 10;
- the actually ineffective National Observatory on renewable sources provided for in Article 16, with special reference to the failure to identify measures for safeguarding the production of biomass plants whose CIP 6/92 agreements have expired (Article 16, Item 1 g)).

In the opinion of APER, these delays have not ensued from real difficulties met by legislators, but are rather to be attributed mostly to the lack of a clear energy policy that devotes enough attention to solving the key issues for developing renewable sources.

Question 4

The majority of those who answered the REALISE-Forum questionnaire doubted that Italy's RES-E target indicated in Directive 2001/77/EC could be fully attained. But the Directive (see the title of its Annex setting national targets) only specifies "Reference values for Member States' national indicative targets for the contribution of electricity produced from renewable energy sources to gross electricity consumption by 2010". In checking for Italy's compliance with its target, would it then be possible to take into account also imported RES-E (provided it is certified by a Guarantee of Origin), in addition to domestically produced RES-E, when calculating the RES-E percentage ?

GRTN confirms that this possible way-out is taken well into consideration by the Italian Ministry of Economic Development (this is the new name of the former Ministry of Production Activities, in charge of dealing with energy matters, including the RES-E Directive), provided that any possible "double counting" is avoided. The European Commission, too, seems to look with favour at the possible addition of imported RES-E as far as achievement of the national target is concerned, but clearly on condition that the country where this RES-E amount has been produced will not count the same energy for the benefit of its own target (double counting).

Likewise APER feels that, if imported RES-E is certified by earnestly applying the Guarantee of Origin in the country where it has been produced, there can be nothing against counting it for the purposes of Italy's national target. Of course, APER underlines that the same possibility must be acknowledged to any RES-E amount that is produced in Italy and exported abroad.

Question 5

Article 20, Item 3, of Decree No. 387 of 29th December 2005 allows producers and importers who are liable to the RES-E Quota obligation, to take into account also imported RES-E (provided it is certified by a Guarantee of Origin as could be in the case of RES-E imported from another EU Member State) to reduce the energy out of which the amount of their RES-E obligation is reckoned. Moreover, imported RES-E can get Italian TGC, too, albeit under given conditions (reciprocity). Are these options currently chosen by obliged operators to a significant extent? Are they seen as a major setback by Italian RES-E producers?

GRTN states that, generally speaking, the prevailing trend among Italian operators is to import electricity that can be qualified as RES-E with a view to using it for lowering their RES-E obligation and the relevant number of TGC to be submitted. As to the possibility that plants located in a foreign country where a similar support mechanism is in place can get Italian TGC under a reciprocity agreement, it seems that this case has so far occurred rather seldom. Actually, up to now, only one reciprocity agreement between the Italian Government and Albania has been recorded.

APER, on its part, has the feeling that the amounts of RES-E imported to reduce RES-E obligations have recently been diminishing, mainly as a consequence of stricter criteria being applied by GRTN to the procedure for acknowledging the Guarantees of Origin handed in by RES-E importers. In any case, a much more severe threat to Italian RES-E producers is arising from the failure to update the RES-E Quota percentages for the years following 2006 (see the complaints already set out by APER in its answer to Question 3).

Question 6

Besides strictly national support mechanisms such as the Quota/TGC scheme, the feed-in tariffs available to photovoltaic plants etc., do Italian RES-E producers currently take advantage, to a significant extent, of other opportunities to sell their RES-E production and/or related TGC on the domestic or foreign market?

GRTN feels that, up to now, the domestic market has been almost the only viable opportunity for Italian operators, as far as RES-E promotion is concerned.

Likewise, APER currently sees no noteworthy outlet for Italian RES-E producers other than the domestic market.

Question 7

The Communication from the European Commission "The Support of Electricity from Renewable Energy Sources", Brussels, 7th December 2005, ref. COM(2005) 627, was in favour of postponing the setting-up of an EU-wide, harmonised RES-E support framework (by the way, a prevailing number of Italian stakeholders answering the REALISE-Forum questionnaire in summer 2005 also shared the same views). Instead, the Commission proposed a process for co-ordination and optimisation of national systems. But what actions could, in practice, best help to pursue these aims ? Who should take on the task of starting them up ?

In the opinion of GRTN, a co-ordination process at the level of the European Union should, in principle, first aim at establishing a uniform framework of rules ensuring fair access of RES-E to the market and the electrical system. Action should therefore be taken with regard to aspects such as plant permitting procedures, grid-connection rules, electricity market participation, RES-E priority in generation plant dispatching. The definition of these rules has, of course, to take place through energy policy measures taken by individual Member State Governments.

In the opinion of APER, a process for co-ordinating RES-E support schemes at the European level first requires a careful analysis of the situation and developments within each EU Member State. Once the peculiarities of each national market have been set off, it will be possible to find out the weak and strong points of each support mechanism and hence assess its possible effectiveness in different countries. Such an analysis should of course be carried out by independent, scientifically qualified bodies, e.g. research institutions or investigation offices of national regulators, possibly in co-operation with sector industry association, which could help identify the main needs of the categories they represent.

15. Conclusive Remarks on Future RES-E Role and RES-E Stakeholders' Positions

The questionnaire and the following hearing and interviews carried out in the consultation process of REALISE-Forum, have allowed to identify some majority trend among Italian RES-E stakeholders on each of the issues that were discussed, even though some more or less scattered distribution of opinions was obviously remarked.

In several cases, the same answer distribution pattern was noticed in both the main stakeholder groups that were considered: the RES-E Producers and Manufacturers with a direct interest in RES-E deployment, on the one side, and the Outside World, namely those not having a direct interest in RES-E, on the other. In fewer cases some noteworthy discrepancy had to be recorded, but, on the whole, it can be stated that the cohesion among Italian stakeholders on the major issues has seemed to be, if not full, at least fairly good.

In this connection, it has first to be recorded that none of those interviewed declared to be definitely against supporting RES-E production. This means that the benefits of RES-E are generally recognised today, even by those who have no direct business with them, and everybody agrees in principle upon the usefulness of supporting somehow the exploitation of renewable sources in exchange for these benefits.

The current overall RES-E support system as it is at present, with the Quota/TGC scheme as major instrument but with the recent complement of some feed-in tariffs available for less mature technologies like photovoltaics, seems to be able to keep up the confidence of most investors and financial institutions. This has been demonstrated by the brisk deployment of some new RES-E technologies in the last few years, and by the very recent surge of new proposals of PV solar plants that followed the Decree on feed-in tariffs for this technology, which had long been at a standstill.

It has to be borne in mind, however, that the Italian Quota/TGC scheme has features that make it somewhat different from those running in other countries. It could be defined as a "mixed type" scheme, which is placed in between the two main concepts of feed-in tariffs, on the one side, and TGC, on the other. In fact, the TGC market price is not set by the free play of offer and demand only, but it is controlled in a way that gives investors more guarantees of a profitable income, at least in the short term.

Considering that, it could even be inferred that these mixed characteristics could, in principle, make a possible shift to a full feed-in system smoother than it would be in other countries with a fully market-based TGC scheme. Conversely, a shift to a more market-based TGC scheme without guarantees might be more difficult to envisage as it would, in all likelihood, meet quite some opposition, because of the more risky framework it would bring in.

Italian stakeholders, and particularly RES-E investors, have always given the top priority to stability of internal market conditions, even to the prejudice of other aspects such as international trade or European harmonisation of national support systems. Establishing a steady RES-E demand and reducing financial risks to investors have been confirmed as the first targets to be aimed at. Financial, economic and market issues have always been at the centre of the debate, while strategic aspects (e.g. the impact of RES-E on security of energy supply) or technical matters (e.g. actually available RES-E potentials) have not come up so frequently in discussion for the time being.

Summing up, there is enough ground to state that most Italian stakeholders would not be willing to change their current RES-E support scheme to a significant extent in order to facilitate harmonisation at the level of the European Union. Although few people see European-wide harmonisation of support schemes as definitely unneeded or infeasible, it seems that most stakeholders look at harmonisation as something that should and could happen, but most likely in a farther future, after 2010.

The compatibility of the current Quota/TGC scheme with the international TGC trade has generally been found rather poor, but Italian stakeholders would rather keep the current arrangement, possibly trimming it a little to reduce investors' risks further, than have it changed substantially.

RES-E trade with foreign countries is currently seen by Italian operators mainly as a way to reduce the amount of their RES-E obligation thanks to imports of certified RES-E from abroad (they are allowed to detract this energy from the electricity amount out of which the RES-E obligation is reckoned). Moreover, the addition of imported certified RES-E to domestic production when calculating the national RES-E contribution percentage is now seen as the only likely way for Italy to attain the national RES-E target set by Directive 2001/77/EC.

Actually, it has to be recognised that Italy' s domestic RES-E production has not been growing steadily in the last few years, as a consequence of ups and downs in the yield of large hydropower plants (by far the prevailing share of Italy' s RES-E capacity), which depend heavily upon weather conditions. When occurring, yearly drops in hydropower production have annulled the benefits of the recent growth of other renewable technologies spurred by RES-E support schemes.

In addition to that, many a complaint has also come up from RES-E stakeholders and sounds as an alert that the whole process of promoting RES-E in Italy is still far from being fully satisfactory and still needs some further measures to be taken without delay.

Complaints do not concern so much the current mechanisms, which are generally pretty well accepted: this has been shown, for instance, by the fact that a significant share of respondents to the questionnaire were against any change to the current system in the next 5 years. Many chose "only harmful" as their judgement on any possible change, others said a change would be only "somehow useful". Only a minority were convinced that some change would be quite useful.

Complaints have rather referred to the way Italy' s RES-E support policy has been implemented so far. RES-E stakeholders, especially investors, have often been complaining of persisting delays in issuing long-awaited implementing measures regarding e.g. the new grid-connection rules, the single national procedure for plant permitting, the fixing of RES-E Quotas for the years from 2007 onwards, the setting of regional RES-E targets and several other implementing measures required by Decree No. 387 of 29th December 2003 transposing the RES-E Directive 2001/77/EC. Some of these measures are still lacking at the time of writing this report. These delays have also been among the reasons why, in April 2006, the European Commission sent Italy a warning for failing to comply with the RES-E Directive.

Some of the above-mentioned aspects could also have a bearing on the envisaged EU-wide co-ordination process of national RES-E support systems. In more recent interviews, stakeholders set out similar points of view about what should be done in practice to favour co-ordination of support schemes at the European level. They said that it would, first of all, be helpful to undertake actions aimed at setting up more similar rules on key issues such as plant permitting procedures, market access, grid-connection codes, RES-E priority in dispatching etc. in the various EU Member States. Without previously bringing these aspects to more uniform conditions, other efforts for co-ordinating national RES-E support systems might be thwarted.

In conclusion, Italian RES-E stakeholders as a whole seem to be aware that the RES-E sector is still in a weaker position as compared to the main, conventional electricity industry, and call for more long-lasting certainties of the legislative, financial and regulatory framework to keep up the confidence of prospective investors (whose number is steadily on the rise) and deploy the full potential of national resources.

16. Main Reference Documents

- [1] Annual Report "Dati statistici sull' energia elettrica in Italia per l' anno 2005" published by Terna S.p.A. in August 2006 and available from the web site www.terna.it.
- [2] Report "Rapporto Energia e Ambiente 2004" published by ENEA in November 2004, available from the web site www.enea.it.
- [3] Annual Report "Statistiche sulle fonti rinnovabili in Italia - Anno 2005", published by GSE S.p.A. (formerly GRTN) in October 2006 and available from the web site www.gsel.it.
- [4] "Trends in Photovoltaic Applications. Survey Report of Selected IEA Countries between 1992 and 2005", report published by the PV Power Systems Implementing Agreement of the International Energy Agency (IEA) in September 2006 and also available from the web site www.iea-pvps.org.
- [5] "IEA Wind Energy Annual Report 2005", report published by the Implementing Agreement for Co-operation in the Research, Development and Deployment of Wind Energy Systems of the International Energy Agency (IEA) in June 2006 and also available from the web site www.ieawind.org.
- [6] Annual Report "Incentivazione delle fonti rinnovabili - Bollettino per l' anno 2005" published by GSE S.p.A. (formerly GRTN) in October 2006 and available from the web site www.gsel.it.
- [7] Legislative Decree No. 79 of 16th March 1999 "Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell' energia elettrica".
- [8] Decree of the Ministry of Industry, Trade and Handicraft (MICA) of 11th November 1999 "Direttive per l' attuazione delle norme in materia di energia elettrica da fonti rinnovabili di cui ai commi 1, 2 e 3 dell' articolo 11 del decreto legislativo 16 marzo 1999, n. 79".
- [9] Legislative Decree No. 387 of 29th December 2003 "Attuazione della direttiva 2001/77/CE relativa alla promozione dell' energia elettrica prodotta da fonti energetiche rinnovabili nel mercato interno dell' elettricit ".
- [10] Law No. 239 of 23rd August 2004 "Riordino del settore energetico, nonch  delega al Governo per il riassetto delle disposizioni vigenti in materia di energia".
- [11] Decree of the Ministry of Production Activities (MAP) of 28th July 2005 "Criteri per l' incentivazione della produzione di energia elettrica mediante conversionefotovoltaica della fonte solare".

- [12] Decree of the Ministry of Production Activities (MAP) of 24th October 2005 "Aggiornamento delle direttive per l' incentivazione dell' energia elettrica prodotta da fonti rinnovabili ai sensi dell' articolo 11, comma 5, del decreto legislativo 16 marzo 1999, n.79".
- [13] Decree of the Ministry of Production Activities (MAP) of 24th October 2005 "Direttive per la regolamentazione dell' emissione dei certificati verdi alle produzioni di energia di cui all' articolo 1, comma 71, della legge 23 agosto 2004, n. 239".
- [14] Provision of the Regulatory Authority for Electricity and Gas (AEEG) No. 34 of 23rd February 2005 "Modalità e condizioni economiche per il ritiro dell' energia elettrica di cui all' articolo 13, commi 3 e 4, del decreto legislativo 29 dicembre 2003, n. 387, e al comma 41 della legge 23 agosto 2004, n. 239" and relevant modifications by Provision No. 49 of 24th March 2005.
- [15] Provision of the Regulatory Authority for Electricity and Gas (AEEG) No. 281 of 19th December 2005 "Condizioni per l' erogazione del servizio di connessione alle reti elettriche con tensione nominale superiore ad 1 kV i cui gestori hanno obbligo di connessione di terzi".
- [16] Provision of the Regulatory Authority for Electricity and Gas (AEEG) No. 28 of 10th February 2006 "Condizioni tecnico economiche del servizio di scambio sul posto dell' energia elettrica prodotta da impianti alimentati da fonti rinnovabili di potenza nominale non superiore a 20 kW, ai sensi dell' articolo 6 del decreto legislativo 29 dicembre 2003, n. 387".
- [17] Decree of the Ministry of Production Activities (MAP) of 6th February 2006 modifying the former Decree of 28th July 2005 "Criteri per l' incentivazione della produzione di energia elettrica mediante conversione fotovoltaica della fonte solare".
- [18] Provision of the Regulatory Authority for Electricity and Gas (AEEG) No. 40 of 24th February 2006 "Modificazione e integrazione alla deliberazione dell' Autorità per l' energia elettrica e il gas 14 settembre 200, n. 188/05, in materia di modalità per l' erogazione delle tariffe incentivanti degli impianti fotovoltaici".
- [19] Legislative Decree No. 152 of 3rd April 2006 "Norme in materia ambientale".
- [20] Decree of the Ministry of Production Activities (MAP) of 6th May 2006 "Individuazione dei rifiuti e dei combustibili derivati dai rifiuti ammessi a beneficiare del regime giuridico riservato alle fonti rinnovabili".

17 Web Sites of Interest for RES-E Information

- [1] MSE, Ministero dello Sviluppo Economico (former MAP, Ministero delle Attività Produttive): www.attivitaproduttive.gov.it
 - [2] MATT, Ministero dell' Ambiente e della Tutela del Territorio: www.minambiente.it
 - [3] Parlamento Italiano (legislative acts): www.parlamento.it
 - [4] AEEG, Autorità per l' Energia Elettrica e il Gas: www.autorita.energia.it
 - [5] ENEA, Ente Nazionale per le Nuove Tecnologie, l' Energia e l' Ambiente: www.enea.it
 - [6] CESI, Centro Elettrotecnico Sperimentale Italiano: www.cesi.it
 - [7] CESI RICERCA: www.cesiricerca.it
 - [8] GSE - Gestore dei Servizi Elettrici (former GRTN): www.gsel.it
 - [9] GME - Gestore del Mercato Elettrico: www.gme.it
 - [10] TERNA - Rete Elettrica Nazionale: www.terna.it
 - [11] Assoelettrica: www.assoelettrica.it
 - [12] Enel S.p.A.: www.enel.it
 - [13] APER, Associazione dei Produttori da fonti Rinnovabili: www.aper.it
 - [14] ANEV, Associazione Nazionale Energia del Vento: www.anev.org
 - [15] ISES Italia (Italian Section of ISES): www.isesitalia.it
 - [16] Newsletter of ISES Italia "Ilsoleatrecentosessantagradi": www.ilsolea360gradi.it
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