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*Roundtable discussion on domestic policies and measures
in the energy supply sector*

“MITIGATION EFFECTS IN ITALY OF THE DOMESTIC IMPLEMENTATION OF THE DIRECTIVE EC/96/92 ON ELECTRIC MARKETS”

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THE NATIONAL CONTEXT AND THE ELECTRIC SECTOR

Main 1998 data:

- TPES: 180 Mtoe (+2,6% of 1997) of which 63,3 Mtoe in the electricity generation.
- CO₂ emission: 422 MtCO₂ (400 Mt in 1990) of which 140 MtCO₂ from the electricity generation.

Presently Italy imports over 80% of its total primary energy supply because of:

- Limited endogenous fossil sources
- Abandonment of the nuclear source

This has always involved a great attention to:

- Energy efficiency
- Use of the renewable sources.

Because of this Italy has today a specific CO₂ emissions from the energy system among the lowest in the developed countries both with reference to the GDP and to the population.

As a matter of fact, with reference to 1998 data, Italy has:

- 0,42 kgCO₂/USD'90;
- 7,9 tCO₂/inhabitant.

Such factors make very binding the attainment of the international commitments of Kyoto (6,5% reduction of greenhouse gas emissions i.e. some 100 Mt CO₂ eq., with a net cost of about 25.000 Gliras). Nevertheless several actions have been prepared by Government to achieve the target.

The electric sector has been characterised since 1962 (year in which has been issued the law n. 1643 of nationalisation of ENEL) by the presence of ENEL monopoly that operated as vertically integrated enterprise.

Near ENEL operated Municipalities (in generation and distribution phases) and several IPP (only in generation phase) with minor shares. As a matter of fact ENEL holds about:

- 78% of generation capacity;
- 90% of transmission assets;
- 93% of distribution assets.

Last year the electricity requested on the grid was about 279 TWh (+2,9% with respect to 1997) of which imports represent more than 15%.

The net electricity production was almost 247 TWh of which:

- thermo 79,4%
- hydro 18,9%
- geo 1,6%
- solar and wind 0,1%

HISTORY OF MAIN PAST AND PRESENT DOMESTIC MITIGATION POLICIES AND MEASURES

In the past different legislative measures have been introduced to stimulate the use of renewable sources and energy saving:

1. The law n. 308/82 that assigned in capital account a grant up to 30% of the investments;
2. The law n. 10/91 that assigned in capital account a grant up to 50% of the investments;
3. The legislative provision CIP n.6/92 that ensured the buy-back of the electricity produced by renewable and assimilated sources (tar, industrial wastes, process gas, and cogeneration) at fixed prices for a period of 8 years.

All the above measures are not longer into force.

The contributions in capital account were not very effective because of:

- The transitory characteristic of the contributions
- The complex administrative management to grant the contributions.

On the contrary, the legislative provision CIP 6/92 have determined a strong increase of the renewable sources due to:

- Suitable remuneration of the investments through clear definition of electricity prices for each type of technology
- Access to the incentives from all the operators
- Simple mechanism (remuneration of the kWh produced)
- Certain financial flow (and therefore bank-financing) through the obligation of the acquisition by ENEL of the electricity produced
- Certainty for the administration of the success of the mechanism (no electricity produced no contributions).

By means of CIP 6/92, by 31/12/98, have been admitted to the energy production some 8300 MW of new plants (more that 4000 MW already completed) of which:

- 2900 MW from renewable sources (about 3,5 Mt CO₂ reduction at program completion expected by 2006).
- 5400 MW from assimilated sources.

Markets liberalisation. An increase in the efficiency is expected as a consequence of energy markets liberalisation. In particular:

- The electric sector has been liberalised (even if the reform needs several secondary legislative acts that will be completed in the next years)
- The activities for liberalising the natural gas sector have been already started (the preliminary issue of the legislative decree that will bring into force the EU directive 98/30 is expected by end of 1999).

Voluntary agreements among operators, central and local Administrations:

- In the last November has been stipulated the “Pact for the Energy and the Environment” that engages operators and administrations to undersign voluntary agreements finalised essentially to the Kyoto commitments. Government relays on voluntary agreements to reach a great part (over 70%) of the CO₂ reduction fixed by CIPE deliberation of 19/09/1999.
- A check on 2002 is foreseen in order to take the necessary action if the mechanism will not perform properly.
- CIPE deliberation fixed the following reduction targets in the electric sector (Mt CO₂ with respect to 1990 emissions):

| CIPE reduction targets | 2002 | 2006 | 2008-2012 |
|--------------------------------------|------|-------|-----------|
| 1. Efficiency increase in generation | 4/5 | 10/12 | 20/23 |
| 2. Renewable sources production | 4/5 | 7/9 | 18/20 |
| Total | 8/10 | 17/21 | 38/43 |

Carbon tax. This tax (art. 8 of law n. 448/98) has been introduced last december and takes into account:

1. both the content of carbon and the energetic content of fuels for transport, domestic heating and industrial sector;
2. the content of carbon for electricity generation sector (in this case the tax is not proportional to the content of carbon because the main target is to decrease the use of coal and oil in this sector).

This tax will determine a fuel switching from coal and oil to gas with an expected CO₂ reduction of 10-12 Mt by 2005 of which 5-6 Mt in the electricity generation.

Moreover part of tax incomes will be employed to finance realisations in the field of energy efficiency and renewable sources.

NEW REGULATION AND TARGETS IN THE ELECTRIC SECTOR

On February 19th 1999 the Council of the Ministers has definitively approved the legislative decree n. 79/99 which enforced in Italy the EU Directive EC/96/92 and has liberalised the electric sector. The general architecture of the sector is based on the institution of two parallel markets:

- The captive market formed by captive customers that will acquire the electricity at tariffs established by the Authority for electricity and gas (the single buyer will provide the energy supply for this market);
- The free market formed by the eligible customers that will acquire the electricity at prices fixed by the market (by means of bilateral contracts or in the “pool”);

and three main subjects that will regulate the whole sector:

1. The national transmission network operator (an independent body);
2. The single buyer (for the captive customers);
3. The market operator (that will manage the wholesale electric market).

The opening of the market is greater than the minimum foreseen by the U.E. directive: it is established in 30% at 1999, 35% at 2000 and 40% at 2002.

The legislative decree of electric sector liberalisation will allow to achieve important goals of energetic and environmental politics as:

- The reduction of the electricity prices;
- A greater quality and efficiency of the service;
- A greater safety of the energy supplies;
- An increase in the technological development;
- The protection of the environment.

Particularly, the protection of the environment is safeguarded through different measures among which:

- The increase of the efficiency in all the phases of the sector;
- The increase of the use of renewable sources.

An evaluation of possible mitigation effect is 20-25 Mt CO₂ reduction by 2006 (by efficiency increase in thermo-electric generation, distribution and final use of electricity, utilisation of flexibility mechanisms).

THE EFFICIENCY INCREASE

Production phase. The liberalisation of the market means the abolition of monopoly positions. This is obtained imposing that starting from 1/1/2003:

- No subject will be able to produce or to import, directly or indirectly, more than 50% of the total electric energy produced and imported in Italy
- ENEL S.p.A. must sell not less than 15.000 MW of its generation park capacity (presently about 59.000 MW).

In this way it will be possible to assure the presence on the market of several operators of comparable capacity. The consequent competition will result in an increase of the efficiency in the phase of generation of the electricity obtained:

- With the modernisation and the repowering of the existing old plants
- With the construction of new plants with high efficiency (such as combined cycles).

It is to be noted that these interventions will determine a fuel switching from coal and oil to gas, with a further reduction of CO₂ emissions.

Transmission phase. The management of the national transmission network is entrusted to a stock company constituted by ENEL and owned by the State.

This society is not the owner of the network assets but has the responsibility of:

- Energy dispatching
- Managing the energy flows and the relevant ancillary services on the national transmission network
- Development and maintenance of the national transmission network.

These activities must be carried out in an efficient and not discriminatory way according to the inputs of Ministry of Industry and the Authority for electricity and gas.

The above will result in a reduction in the transmission losses.

Distribution phase. The new concessions of distribution will be assigned on the basis of competitions to be announced at least 5 years in advance with reference to each concession expiration.

The concessions shall contain provisions to increase the energy efficiency of final uses of energy (DSM). Targets quantification (a possible figure may be 1000 GWh/year by 2003, some 0,6 MtCO₂) will be established by decree of the Minister of Industry, with the concurring opinion of the Minister of the Environment.

In order to rationalise and increase the efficiency of electricity distribution, only one distribution concession for municipal area shall be issued; for this purpose, in the Municipalities where are present several enterprises of distribution service, it is stimulated their aggregation by means of market mechanisms.

Also in this case the competition will push toward a greater efficiency and a reduction in the distribution losses.

THE INCREASE OF THE USE OF THE RENEWABLE SOURCES

The legislative decree recognises the importance of the renewable sources for the satisfaction of the energetic requirement in the maximum respect of the environment. For this purpose:

- The transmission network operator must assure the precedence in the dispatching of the plants fed by renewable sources and after of the CHP plants (cogeneration will be defined by Authority for electricity and gas on the basis of minimum efficiency requirement)
- Starting from January 1st, 2002 it is established the obligation to introduce in the electric network a quota of electricity produced by renewable sources, by all the subjects that produce or import electric energy from conventional sources
- Cogeneration (CHP) plants are excluded by the aforesaid obligation
- The above quota is initially established in 2% of the energy that exceeds the quantity of 100 GWh/year and must be assured exclusively through:

- 1.new plants;
- 2.repowered plants (with regard to the increased capacity);
- 3.refurbishment of plants older than 10 years (provided that the main equipment are replaced);
- 4.reactivation of plants not in use at least from 5 years.

The 2% obligation is satisfied through:

- 1.direct production of the necessary quantity of “green electricity”;
- 2.acquisition on the market of green certificates issued by the transmission network operator towards the subjects that own the plants admitted to the satisfaction of the obligations and sold by the same subjects;
- 3.mix of the previous alternatives.

A compensation on 3-years basis is foreseen for the “green electricity” to cover possible lack of production.

The 2% quota will permit:

1. to produce some billion kWh/year of new electricity from renewable sources;
2. to save some 3 Mt/year of CO₂ by 2002;
3. to push the national production of renewable sources over 20%.

If the obligation should not be suitable to meet Kyoto commitments, after 2002 it is foreseen the possibility to increase the 2% quota by joint decision of Minister of Industry, and Minister of the Environment.

In this way the price of the green certificates will be established by market mechanisms. Italian Government thinks that this will be the best way to grant the financing of renewable sources in a liberalised market.

In addition to the above the legislative decree n.79/99 foresees that:

- CIPE (Interministerial Committee for Economic Planning), on proposal of the Minister of Industry, will establish the distribution among the regions of the financial resources to be assigned as incentives in capital account for the promotion of the use of renewable sources (this measure will permit to develop also the renewable source that, at present, are not competitive);
- the initiatives shall be admitted to the contributions through tendering procedures established by the regions;
- the new hydroelectric concessions will be awarded on the base of a competition mechanism that takes into account the increase of the generated electricity or the installed capacity.

Also the above measures will determine an increase in the use of renewable sources.