

## EU Environmental Targets: Forza Italia!

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Over the last fifteen years Italy has not been able to decouple its economic growth from GHG emissions, a necessary condition to meet the Kyoto target. Even the deployment of renewable sources (RES) has been slow. Besides a miracle, Italy will not be able to meet 2020 EU environmental targets.

According to the EC proposal by 2020, Italy should achieve a 14% reduction of GHG emissions with respect to year 2005 and a 17% share of renewable energy in final energy consumption. These targets are really challenging.

To reach the Kyoto target, Italy should first move to an absolute decoupling stage, then stabilise GHG emissions on a long term horizon.

Over the past Italy has realized a reduction of both energy intensity and carbon intensity of energy uses: between 1990 and 2006 total primary energy consumption per unit of GDP has decreased by 4% and GHG emissions per unit of gross inland consumption has decreased by 8%. However, these improvements have not been enough to compensate for the total emissions increase driven by economic growth: in the same period gross domestic product at 1995 prices raised by 26%. Overall, GHG emissions of the energy system have grown by 12% over the same period. The emissions' growth has been largely driven by the energy industry, whose GHG emissions increased by 18% between 1990 and 2006, moving from 135 MtCO<sub>2</sub>eq to 159 MtCO<sub>2</sub>eq.

The energy industry represents the largest emitter among energy users and covers electricity generation, the use of fossil fuels for petroleum refining and the production of coke and smokeless fuels (in Italy mainly delivered to the power sector). The rapid GHG emissions' increase is explained by two elements.

The first one is the growth of energy consumption for electricity generation. The increased use of fuels that are less carbon intensive, mainly switching fuel from oil to natural gas, has not been sufficient to compensate for the greatest growth of total fuels consumption. As a consequence, despite a 5.5% decrease of GHG emissions per unit of energy consumed, emissions from power generation have grown by 13% since 1990, reaching 134 MtCO<sub>2</sub>eq in 2006.

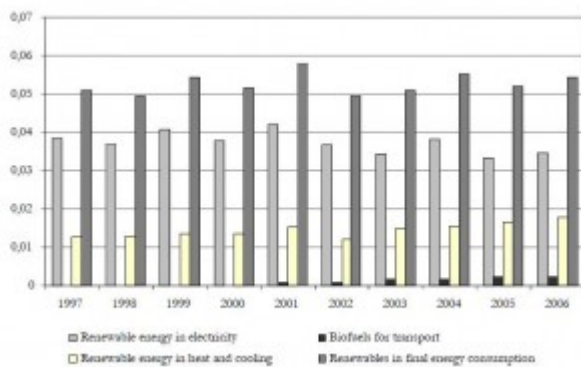
The second element is the really bad performance of the other activities included in the energy industry and in particular petroleum refining. For this activity the statistics show rapid increases of energy consumptions (+13%) and GHG emissions (+62%), and a consequent growth of its carbon intensity (+36%).

Another sizable emitter with a very bad performance is transport, the largest source of carbon dioxide among final users in Italy for the past 16 years<sup>11</sup>. GHG emissions from transport include emissions from aviation, railways, road transport and shipping. Road transport is by far the largest contributor to transport emissions. Here again the increase has been driven by the rapid expansion of this sector over the period. In fact, from 1990 to 2006 energy consumption for transports grew by almost 33%. Given the small improvements in the energy carbon intensity (-6,7%), in 2006 emissions reached 128.6 MtCO<sub>2</sub>eq, 24% higher than the 1990 level.

The only energy sector that has decreased its emissions since 1990 is the manufacturing industry: from 1990 to 2006 its GHG emissions have fallen by 9.4%, moving from 90.69 MtCO<sub>2</sub>eq to 82.1 MtCO<sub>2</sub>eq. The decrease resulted from switching fuel from liquid (petroleum and derived) to gaseous fuels and from changes in the structure of Italian industry (de-industrialisation, de-materialisation) during the last decade.

To sum up, total Italian GHG emissions increased from 509 MtCO<sub>2</sub>eq in 1990 to 580 MtCO<sub>2</sub>eq in 2005 and are now supposed to decrease down to 500 MtCO<sub>2</sub>eq in 2020.

As regards renewables, their share on gross final energy consumption was 5,2% in 2005. As shown by figure below, despite the numerous incentives schemes, this percentage has remained relatively stable over the last ten years.



#### Share of RES in final energy consumption

Source: IEFE on Ministry of Economic Development database

The target of 17% in 2020 is therefore really challenging: almost all the Italian final energy demand supply is still supplied by non renewable sources, particularly for heat and cooling uses and for transport.

Let's discuss now the medium term trends of the Italian GHG emissions and renewable energy consumptions.

The analysis is grounded on the Business As Usual (BAU) or baseline scenario constructed by the EC through the PRIMES model<sup>15,16</sup>. The baseline scenario does not assume that targets, as set out in the Directives, will necessarily be met and simulates current trends on the ground of actual policies. Numerical values of CO<sub>2</sub> emissions with respect to the Kyoto target or renewables' share are outcomes of the model; they reflect implemented policies rather than targets.

The BAU scenario estimated by the EC needs to be updated to take into account new policies recently adopted by the Italian Government. We should consider, in particular:

- the adoption of the Italian energy efficiency action plan on July 2007<sup>17</sup>, which sets new measures applied to final energy consumptions to deliver higher energy savings. According to the plan, the national energy savings target is equal to a global reduction of 10,864 ktoe during the period 2008-2016;
- the update, from January 2008, of the Italian "Renewable Obligation" for electricity producers in the context of the green certificates market and the introduction of new support schemes to some specific renewable technologies<sup>18</sup>;
- the governmental decision to start a programme for the deployment of nuclear power plants;
- the new plan for the investment on new national power lines and on international interconnectors to develop net imports of electricity.

The abovementioned measures, if actually implemented, would imply:

- a reduction of gross final energy demand with respect to the EC BAU scenario at 2020, from 162.631 ktoe to 151.764;
- an increase of 5 percentage points of the RES with respect to the baseline, up to 14.100 ktoe;

- a 10% share of nuclear power in fuel inputs to thermal power generation by 2020, which implies an amount of about 6.500 ktoe of nuclear energy sources in gross inland consumption;
- a 30% increase of net imports of electricity with respect to the current value of 4.227 ktoe, up to 5.500 ktoe.

	2005	2020 EC-BAU scenario	2020 Alternative scenario	Change % 2005- AS 2020
Gross inland consumption (ktoe)	186,766	221,171	210,304	12.6%
of which:				
Solids	16,477	20,743	16,713	-14.2%
Oil	83,169	88,312	71,338	1.3%
Natural gas	70,651	88,874	71,618	6.5%
Nuclear	0	0	6,300	100%
Net imports of electricity	4,227	3,857	5,500	6.5%
Renewable energy	12,243	19,185	20,076	64.0%
GHG emissions (total) (MtCO <sub>2</sub> eq. eq.)	586.0	649.6	552.1	-4.8%
GHG emissions (average) (MtCO <sub>2</sub> eq. eq.)	486.1	548.4	450.9	-6.1%
GHG emissions (other sectors) (MtCO <sub>2</sub> eq. eq.)	99.9	101.2	101.2	-1.3%
Renewable energy consumption (ktoe)	7,301	13,417	14,090	93.1%
Gross Final Energy Consumption (ktoe)	134,080	162,631	151,764	13.2%
Share of RES in Gross Final Energy Consumption (target)	5.4%	8.2%	9.3%	70.6%

### GHG emissions and renewable energy consumptions in the Alternative Scenario

Source: Iefe and “European Energy and Transport. Trends To 2030- Update 2007”, 8 April 2008, Directorate

The table above, in the column called alternative scenario, summarises the results of these new policies and measures on Italian emissions and renewables targets by 2020.

In the alternative scenario, where new energy policies are introduced, GHG emissions are lower than in the baseline. Indeed, the growth of renewable energy, together with increased energy savings, implies a greater share of renewable sources in gross final consumption.

With respect to the EC targets, the alternative scenario has:

- a GHG emissions’ reduction of 4.8% from 2005 to 2020, with a gap of 9.2 percentage points with respect to the EC Green Package target;
- a 9.3% share of renewable sources in gross final consumption by 2020, which implies a gap of 7.7% from EC Green Package target.

Therefore, despite the most recent energy policy, Italy will not be able to meet EU environmental targets. The gap between the results and EC policy targets show the challenges policy makers will be facing in the years to come as well as the need to go one step further for the target to be met.