The Italian Position in the Energy and Climate Change Negotiations

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review of economic conditions in Italy

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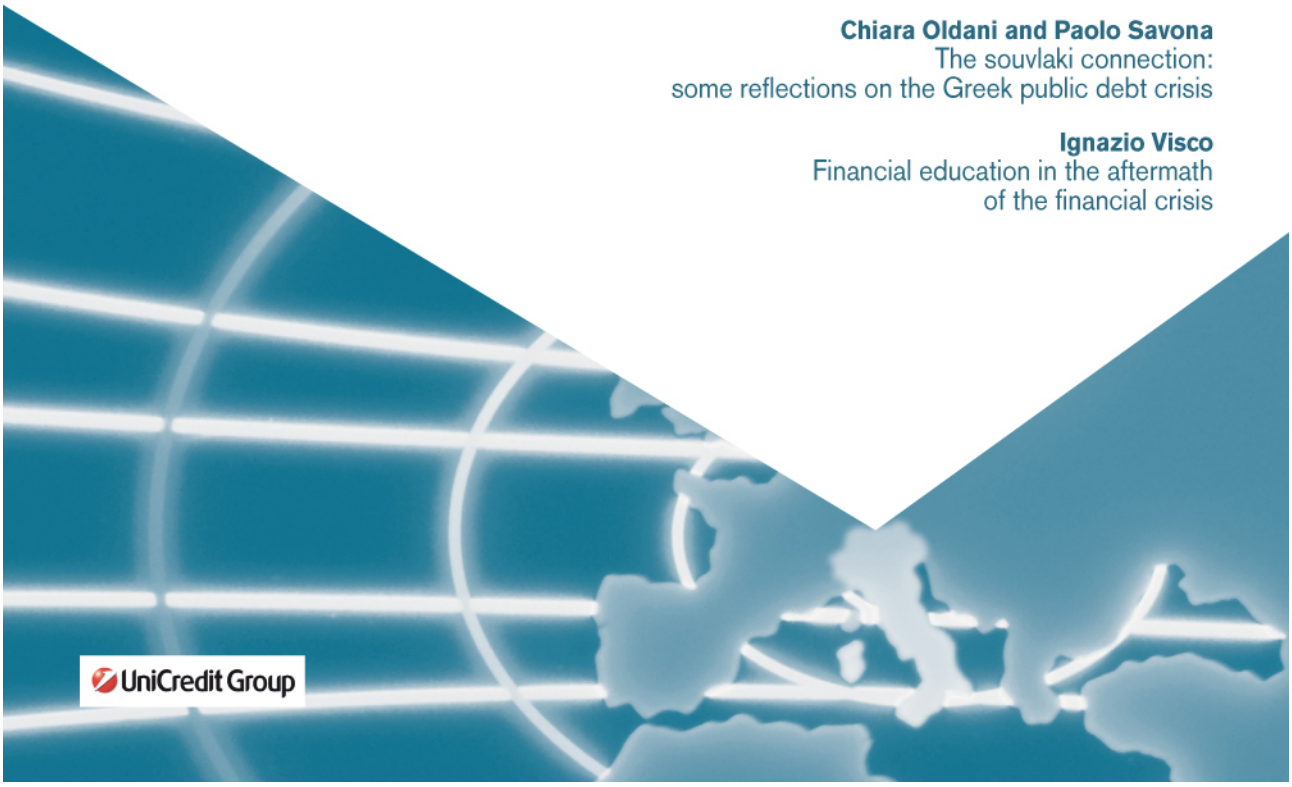

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FOCUS

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Translations by Daniel Dichter and Roger Meservey

The Italian position in the energy and climate change negotiations

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Climate change, security and cost of energy supplies and the competitiveness of firms and economies have been focal points of the general political and economic policy debate in recent years. This article examines the choices in this field made at global level with the Kyoto Protocol and in Europe with the more recent "20-20-20" package from the standpoints of the Italian national interests and the negotiating stance adopted by our Government in European and international forums. The European negotiations on renewable energy sources, the reduction of emissions in the sectors with and without emissions trading schemes, automobile emissions, the auctioning of emission rights, and the identification of industries exposed to the risk of delocalization (carbon leakage) *are described in detail and the reasons for Italy's positions set forth. The principle guiding Italian negotiators has been to balance the various policy aims, in an effort to ensure that the necessary action against climate change does not have excessive repercussions on growth and employment. The principle is all the more valid in the global talks on the regime that will succeed the Kyoto Protocol when it expires on 1 January 2013. Without a credible global agreement entailing an equivalent commitment, or sectoral agreements, instruments will be needed to prevent Europe's climate commitment from producing an unfair competitive disadvantage, with potentially serious social and economic consequences but no appreciable environmental advantage.*

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1. The origins of climate policy

The debate over the reality of climate change and its causes forms part of a broader debate on the human impact on the environment dating at least as far back, institutionally, as the UN Conference on the Human Environment in Stockholm in 1972. Stockholm spawned a series of analyses and policy measures: the creation at the conference itself of the UN Environment Programme, the Brundtland Report adopted by the UN in 1987,[1] which defined "sustainable development" as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs", and the Rio Conference of 1992, which set out Agenda 21.

In 1988 UNEP and the World Metereological Organization (WMO) created the Intergovernmental Panel on Climate Change (IPCC), whose purpose is to evaluate the impact of human action on climate change: "The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation."[2]

The Intergovernmental Panel's first report in 1990 created the conditions for the adoption, at Rio De Janeiro in 1992, of the UN Framework Convention on Climate Change.[3] It is worth quoting the first few paragraphs of the introduction, which in practice have underpinned the IPCC's work in these two decades:

"We are certain of the following:

"There is a natural greenhouse effect which already keeps the Earth warmer than it would otherwise be;

[1] World Commission on Environment and Development (1987), *Our Common Future* (Brundtland Report), Oxford and New York: Oxford University Press. On-line at http://www.un-documents.net/wced-ocf.htm.
[2] IPCC (1998), "Principles Governing IPCC Work." Vienna, 1-3 October. On-line at: http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf.
[3] IPCC (1990), "First Assessment Report." On-line at: http://www.ipcc.ch/publications_and_data/ publications_and_data_reports.htm.

"Emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases: carbon dioxide, methane, chlorofluorocarbons (CFCs) and nitrous oxide. These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth's surface. The main greenhouse gas, water vapour, will increase in response to global warming and further enhance it."

Article 2 specifies the ultimate objective of the Convention as the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (mitigation). That "level should be achieved within a time-frame sufficient to allow ecosystems to *adapt* naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner" [emphasis added]. Mitigation, adaptation, food security, sustainable development are still, twenty years on, the key concepts on which the negotiations turn.

The best-known and probably most important result produced by the Convention is the Kyoto Protocol of 11 December 1997, which first set objectives for the reduction of greenhouse gas emissions for 37 industrial countries and for the European Community as a whole. The reduction – an average of 5 per cent with respect to 1990 – must be achieved in the period between 2008 and 2012. The *binding* nature of these objectives is certainly the distinctive feature of the agreement. Another highly significant feature, still today, is the principle of "common but differentiated responsibilities", under which most of the burden of emission reduction should be placed upon the developed countries, since the present stock of human-originated greenhouse gases in the atmosphere came essentially from activities in those countries starting with the industrial revolution.

The Kyoto Protocol accordingly expires at the end of 2012, and the discussion has long been under way on the proper design of the successor agreement for the "post-Kyoto" period. Certainly the most widely publicized phase in these talks was the Conference of the Parties (COP-15) in Copenhagen in December 2009.

The successor gathering (COP-16) is in Cancun, Mexico, in December 2010.

2. Global policies, local policies

Why is the UN the negotiating forum on climate change?

The standard answer is that climate change is a global problem, caused by greenhouse gases that move through the atmosphere, without regard for national boundaries. Any solution that is not global will not be effective. Yet while the gases do circulate freely, their emissions are highly concentrated both geographically and sectorally.

Geographically, China and the United States alone account for over 40 per cent of emissions of carbon dioxide, the most common greenhouse gas. India accounts for 5.2 per cent, the European Union 14.7 per cent, Russia 5.5 per cent (*Table 1*, in the *Appendix*). So a plan involving even just the top seven emitting countries, the so-called E-7 (considering the EU, improperly, as a country) would cover over 73 per cent of CO_2 emissions – a critical mass that would contribute significantly to resolving the problem.

The Bush Administration sought to bring the "major emitters" together in an informal discussion forum, separate from the UN, precisely in view of this concentration. With the Obama Administration this was transformed into the "Major Economies Forum" grouping the largest 17 economies in terms of GDP, which account for over 80 per cent of emissions.[4] This effort could ultimately mean turning to a negotiating forum, such as the G20, that has nothing to do with the United Nations.

It is clear that national or regional policies, however ambitious, can never, as such, have a significant impact on the process. Important though it is, for instance, the European Union's pledge to cut emissions by 20 per cent from their 1990 levels, adopted politically in

[4] Australia, Brazil, Canada, China, EU, France, Germany, India, Indonesia, Italy, Japan, South Korea, Mexico, Russia, South Africa, United Kingdom, United States.

2007 and formally in 2009, will have limited effects on a global scale, because the EU does not count for even 15 per cent of total emissions. Accordingly, we can describe the EU's position over these three years as an effort, through the imposition of very ambitious emission reduction targets, to assume the leadership of the global climate change negotiations. Unfortunately, this attempt has been unsuccessful, to judge by the Union's relative lack of bargaining power at Copenhagen.

Sectorally, the data on the major economies supplied by the OECD and the International Energy Agency in 2007 show an enormous concentration of emissions in electricity generation and heating, while industry and transport have smaller and more or less equal shares (*Table 2*). This concentration, together with the recognized difficulty in devising globally agreed solutions for climate change, has persuaded some observers that a new negotiating strategy is needed. That is, the approach must be by sector, not by country. Emissions-reduction accords should involve only a few energy-intensive industries, such as cement, steel and electricity generation.[5]

3. Kyoto and Europe

When it signed the Kyoto Protocol, the European Union had fifteen member states; the commitment was to cut emissions by 8 per cent from their 1990 level by 2012. This collective engagement was then "translated" into legally binding quotas for member states (Table 3), based on the "triptych approach".[6] This consists in a series of hypotheses and scenarios of emission reduction in three major sectors – electricity generation, energy-intensive export industries, and the rest of the economy – that can achieve the national targets. As the

[5] For more on this approach, see R. Baron, B. Buchner and J. Ellis (2009), "Sectoral Approaches and the Carbon Market" (IEA/OECD).
[6] G.J.M.Phylipsen, J.W. Bode, K. Blok, H. Merkus and B. Metz (1998), "A Triptych sectoral approach to burden differentiation: GHG emissions in the European bubble – Negotiating Targets", *Energy Policy* 26/12.

authors see it, these objectives should consider the reduction potential of each sector (and, aggregating them, of each country) and also the capacity to finance the investment required. Known as "burden sharing," this problem is far from having been resolved. Not even the so-called "20-20-20" package can be considered truly satisfactory, either as to emissions or as to renewable sources.

In 2000 the European Commission launched a programme to devise an overall policy to reduce emissions within the Union. The main pillar of this European Climate Change Programme is an Emission Trading Scheme (ETS), instituted by Directive 2003/87/EC, designed to "promote reductions of greenhouse gas emissions" in energy-intensive industries and electricity generation, which together account for 50 per cent of all European greenhouse gas emissions, "in a cost-effective and economically efficient manner" (*Article 1*). Under the Scheme, firms can comply with their reduction obligations either by installing more efficient technology or by purchasing emission allowances from firms that are in surplus. Firms violating the limits set in the national allocation plans will be subject to substantial fines (€100 per tonne of carbon dioxide).

The ETS also allows for the possibility, as Kyoto provides, of investing in emission reduction in countries that are not subject to the reduction requirement and using the resulting credits towards one's own obligations. This "clean development mechanism" is intended to foster the transfer of "clean" technology to developing and emerging countries.[7]

Other policies promoted by the European Climate Change Programme, from the outset, involve energy efficiency of buildings (70 per cent of the energy consumed by European households goes for heating and another 14 per cent for hot water) and of automobiles as well as renewable energy sources (a directive set national targets for the production of electricity from renewable sources by 2010).

[7] There is also provision for *joint implementation* of reductions in countries subject to the obligation.

In October 2005 the Programme's second phase was launched, with more ambitious reduction targets for the transport sector. The first objective was to include aviation in the ETS starting in 2013, the second to introduce binding reduction targets for automobile makers. The regulation on cars was proposed in December 2007; in view of its importance in cutting emissions in the non-ETS sector, and obviously given the importance of motor vehicles to Italian manufacturing generally, Italy immediately considered this as an integral part of the "20-20-20" package.

4. The "20-20-20" package

With two communications issued 7 January 2007,[8] the Commission started the talks towards a new phase in EU energy and climate policy, much more ambitious in its objectives and scope. Both energy and climate policies are needed to attain the overall objective of holding global warming to 2 degrees C. by comparison with the pre-industrial age.

The main components of energy policy are:

- security of supplies;
- enhanced functioning of the market and better regulation;
- improving energy efficiency;
- greater use of renewable energy sources;
- investment in new technology, including carbon capture and storage.

On climate, the main points are:

- reduction of greenhouse gas emissions, in part through energy policy (renewable sources, efficiency, capture and storage);
- reinforcing ETS;
- greater stress on the contribution of the transport sector;
- significant investment in R&D, as in the energy sector.

[8] European Commission Communication (2007), "An energy policy for Europe" COM (2007) 1; "Limiting global climate change to 2 degrees Celsius: The way ahead for 2020 and beyond" COM (2007) 2.

Perhaps the most significant innovation of these communications is the call for binding, and highly ambitious, numerical objectives not only for emissions but also for renewable energy, including biofuels, and subjecting them to the deadline of 2020. The Commission calls for cutting greenhouse gas emissions by 20 per cent from their 1990 level; and if a global accord, to go into effect with the lapse of Kyoto, is reached, raising this to 30 per cent. The reduction should come both in ETS and in non-ETS sectors, such as construction and transport. The Commission further calls for raising the share of total energy from renewable sources to 20 per cent, with binding national targets, including a specific target of 10 per cent for biofuels. These three numerical objectives clearly characterized the overall plan, which has become known simply as the "20-20-20" package.

Finally, there is also a fourth "20" – the increase in energy efficiency, but the target here is merely recommended. The discussions now under way on the possibility or necessity of making it binding should be concluded by February 2011 at a special European Council on energy. Here too, it is worth noting, the problem of burden sharing will not be readily resolved. First of all, just devising a single, shared, measurable definition of efficiency is no easy matter. And second, account has to be taken of past efforts and accomplishments. For instance, Italy has a highly efficient generating system and low energy intensity of GDP. Objectives that ignored these facts would carry very high marginal costs.

The Commission's proposal was adopted by the Council on 8 March 2007.[9] The heads of state and government accepted both the general proposals and the numerical targets, asking the Commission to draft legislation to implement them. This initiated the pre-negotiation phase, during which governments generally try to influence the legislation before it is presented.

[9] http://registere.consilium.europa.eu/pdf/en/07/st07/st07224-re01.en07.pdf.

5. Determining Italy's position and coordinating the negotiating stance

The strategic importance of the energy-climate package was self-evident from the start; equally self-evident was that if Italy was to have some impact on the negotiations, there would have to be a single position, strict coordination between all the relevant ministries: environment, economic development, economy and finance, research, infrastructures, transport, all closely involved with the package and its implementation; and also, of course, the foreign ministry. Different sensibilities on key issues could have resulted in divergent positions in Brussels, damaging if not completely vitiating Italy's influence.

Accordingly, in January 2007 the Department for European Affairs in the Prime Minister's Office, started a coordination process. As a "neutral," the Department was well placed to help forge a united Italian position, maintained more effectively in the various negotiating forums. The climate-energy package was the first instance of effective, continuing use of the Interministerial Committee for European Affairs (CIACE), whose Secretariat is in fact under the Department.

In hindsight, this was a good choice, for two reasons. First, many of the Italian negotiating proposals produced by coordination were in fact adopted in the final version of the draft legislation. And second, possibly less evident to the public, that coordination exercise, which continues today in relation to the implementation of the package, helped to create a climate of trust, cooperation and information exchange among ministries and their representatives. This constituted a highly significant change with respect to Italy's traditional conduct in negotiations.

In addition to cooperation among ministries, let us mention the good, cooperative relations with the other stakeholders that were forged during the negotiations, and that continue today. Dialogue with corporate experts, in fact, is important in determining the national interest. In some cases that dialogue was indispensable to quantify the impact of the proposed European legislation on Italian

firms. In others, the firms themselves provided invaluable analysis based on data in the public domain.

6. The package

The Commission presented its final proposals behind schedule, on 23 January 2008 instead of September 2007, reflecting the pressures to which it was subject as well as the complexity of the task. The package contained the following:

- Proposal for a European Parliament and Council Directive amending Directive 2003/87/EC to improve and extend the Community's emission trading scheme;
- Proposal for a European Parliament and Council Decision on the actions of Member States to reduce greenhouse gas emissions in sectors not covered by the ETS directive;
- Proposal for a European Parliament and Council Directive on the geological storage of carbon dioxide and amending Council Directives 85/337/EEC and 96/61/EC and Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and Regulation 1013/2006/EC;
- Proposal for a European Parliament and Council Directive on promoting the use of energy from renewal sources.

In December 2007 a proposal for a regulation for the reduction of automobile emissions was also presented.[10]

The first four proposals form what has come to be called the "energy-climate package." However, in view of the substantial incidence of transport in overall emissions, and given the obvious importance of motor vehicles in Italian manufacturing, Italy considered the provision on automobiles as an integral part of the package and made it clear that failure to reach an agreement on cars would jeopardize the entire agreement.

[10] European Parliament and Council Regulation setting emission performance requirements for new cars as part of the integrated Community approach to reduce CO_2 emissions by light vehicles.

7. The position on renewables

The period between the European Council in March 2007 and the Commission's presentation of its legislative proposals in January 2008 was one of intense "pre-negotiation" by all the member states to get their special national characteristics taken into account. One of the first problems Italy faced was the national renewable energy target. Italy presented a position paper to the Commission in September. Burden sharing of the overall objective of 20 per cent was fraught with difficulty. There are major differences between countries in incentive programmes for renewables and in authorization procedures, which in Italy involve local intervention by a number of different administrative levels (the recent approval of Guidelines should mitigate this problem[11]). Further, incentives are financed through electricity customers' bills, which means that in Italy, where the average cost of electricity is about 30 per cent above the European average, an increase in production from renewables can have a significant effect on that cost.

In addition, renewable energy output depends heavily, other factors given, on the features of the territory. The number of hours of sunshine or wind obviously has a direct impact on the output of solar and wind plants. Thus the same technology will produce different yields depending on where it is installed. For biofuels, a sharp rise in demand could have adverse effects in terms of competition with food production or, in the case of imports, the sustainable use of forests. Finally, the NIMBY (Not In My Backyard) syndrome can never be neglected.

This highly concise and inevitably imprecise list is enough to give an idea of the scale and type of problems. The first objective was

[11] Guidelines for the proceedings referred to in Article 12 of Legislative Decree 387 of 29 December 2003 for the authorization of the construction and operation of plants for the production of electricity from renewable sources and technical guidelines for the plants themselves.

accordingly to determine the theoretical maximum potential output of renewable energy in Italy given the characteristics of the country. "Theoretical" entailed the hypothesis of no administrative/bureaucratic obstacles, no NIMBY resistance, and no effect on the cost of electricity. The Italian government's position paper "Energy: Issues and challenges for Europe and for Italy" (2007) estimated that theoretical maximum in 2020 at about three times the estimated output in 2005 – a rise from 6.71 to 20.97 MTOE (million tons of oil equivalent); the potential electricity output was estimated as more than doubling, from 4.29 to 8.96 MTOE, including a more than 10-fold increase in wind power and a 300-fold increase in photovoltaic power (*Table 4*).

The potential from geothermal, solar and biomass was estimated at 11.40 MTOE, with substantial increments in new-generation geothermal (fourfold), thermal solar (36-fold), and biomass (fivefold). Overall, the increment in this sector was projected at over fivefold, compared with the 2005 output of 2.12 MTOE. For biofuels, finally, the paper estimated a possible doubling of national output, which would have Italy still far below the binding objective of satisfying 10 per cent of the overall fuel requirement by biofuels. So imports would be necessary.

Overall, considering the scenario's preliminary estimates for consumption and efficiency in 2020, Italy's production of renewable energy would come to about 15 per cent of the total. In terms of final domestic consumption, which is the relevant factor for the objective, Italy would be at 14 and not 20 per cent.

The position that Italy presented to the Commission, therefore, was that the national objectives should be calculated on the basis of national potential. Full realization of potential – the actual dissemination of renewable technologies – depends on a set of political, institutional, economic and technological factors. Setting national objectives above the potential, it was argued, would create a risk of unsustainable policies, in terms of higher energy costs, but would not make attainment of the objective any more credible. There would be a risk of failure in the overall aim of increasing renewables.

However, the Commission – at a meeting at the Italian seat of

government attended by the energy commissioner Andris Piebalgs and the environment commissioner Stavros Dimas – made it clear that adopting the standard of potential would shift too much of the burden onto the new members, which lacked the resources. The intention was therefore to proceed in another manner. Eventually a "mixed" standard was adopted. The EU was 11 percentage points away from the 20 per cent objective. The data put the overall level at 8.5 per cent in 2005. So the Commission proposed to require a 5.5-point increase in any case, while allotting the rest of the improvement according to per capita GDP, reflecting investment capacity.

This would assign Italy an objective surpassing its potential, which subsequent calculations put at 17 per cent. It was therefore necessary to find some mechanism for flexibility that the European institutions would agree to and that would make it possible to go beyond potential. The mechanism devised – proposed by Italy alone and included in the final text of the Directive – was provision for trading in renewable energy not only within the EU but also with non-members. This would make it easier to attain the objectives while permitting development and adoption of the new technologies where the potential is greatest, thus where their use is most cost-effective. Italy's natural partners, geographically, are the Balkan countries for hydroelectric power and North Africa for solar power. The first planning document mentioned joint projects with Montenegro, Albania and Tunisia, but also with Switzerland.[12]

The spread of renewables in non-EU countries will have significant effects towards the reduction objective and will make its attainment more sustainable. According to the 2010 Renewable Energy Action Plan template, Italy should make substantial use of the mechanisms of cooperation provided for in the Directive. Italy has the largest estimated "deficit" in domestic electricity generation from renewables. In 2020 Italy expects to import 1.1 MTOE in various forms (electricity

[12] http://www.sviluppoeconomico.gov.it/pdf_upload/documenti/allegatodoc_prev2.pdf.

imports, joint projects with other EU countries and with non-EU countries, statistical transfers). To this end, by virtue of the possibility of green certificates for energy produced abroad, a memorandum of understanding is being drafted with Poland for cooperation on renewable energy projects. Another agreement (now being revised) is already in course of implementation with Albania, and one with Serbia. Italy already imports electricity from Switzerland.

Other significant points in the Italian position paper concerned incentives, bureaucracy and biofuels. The Member States have widely divergent incentive programmes, both in type and in amount. The two main incentives used in Italy are "green certificates" and feed-in tariffs (called in Italy "conto energia"). The certificates constitute a market mechanism that allocates to energy producers a certificate for each renewable megawatt. Combined with a minimum requirement for output from renewables, the mechanism is based on the balance between supply and demand for the certificates. Demand comes from conventional energy producers who are subject to a minimum renewable energy requirement. Supply comes from renewable energy producers, who are entitled to certificates attesting to their output. The system constitutes a market mechanism because price depends on free bargaining between producers. The certificates are used in Italy to incentivate all renewables except solar power. They have been especially successful in prompting the massive growth of wind farms.

Feed-in tariffs generally serve as an incentive for photovoltaic production. They offer a fixed feed-in tariff for electricity transmitted to the grid for the entire investment period. This approach has been highly successful in Germany and also in Italy. However, there has been a widespread lowering of the feed-in incentive tariff in recent years, owing both to technological advances and to the economic crisis. The sharpest cuts have been in Spain, Germany and France. Italy too, after protracted negotiations between central and regional governments, has reached agreement on incentive reform.

Italy's negotiating point was that national differences in incentive systems or levels could distort the dissemination of technology, possibly fostering installation of solar plants in areas where the potential benefits

are limited. Harmonization of incentives, differentiated by technology and taking account of its degree of maturity, would be preferable, preventing market distortions. As a second-best solution, Italy suggested harmonization of principles, i.e. of the way the incentives work. Unfortunately, these proposals were not adopted. The situation remained basically unchanged, with firms free to shop around among the incentive systems. Some countries, Germany among them, had fiercely opposed the harmonization of incentive systems, contending that national systems could create and support a national renewable energy technology industry (and in effect they did).

Finally, considering its difficult situation, in this matter, Italy suggested simplifying authorization procedures and reducing the related bureaucratic costs. It is clear that an increase in renewables on the scale required by the Directive must be associated with streamlined administrative procedures and requires full cooperation with regional and local authorities. This point was fully incorporated in the Commission's proposal.

On biofuels, it soon became clear that a binding 10 per cent objective for all member states presented not only technical but serious political difficulties. As the EU does not have sufficient biofuel production potential to reach the objective, at least unrefined biofuel would have to be imported. So Italy, together with other countries, successfully lobbied for stringent standards of sustainability – social and economic as well as environmental – for the imported biofuels. The concern was that land might be taken out of food crop production in favour of biofuels, driving up the prices of food commodities in the poorest countries. In addition, investment should go mainly to second-generation biofuels, which intrinsically carry less risk of competition with food crops.

Italy has now presented its own Action Plan for attaining its assigned 17 per cent target. The main numerical targets are given in *Table 5*. A full assessment of the Plan is beyond the scope of this article, but we would like to point out one essential aspect. The Plan relies partly on non-EU imports to achieve the objective. Yet it is obvious that where there is an overall EU shortage, the competition to exploit third-country potential will be fierce. For instance, we can look

at the German Desertec initiative: it is business-driven, to be sure, but strongly backed by the government for its potential contribution to attaining the objectives assigned to Germany. This concept is developed further in the government's *Energiekonzept* scenarios, intended to map out the diffusion of renewables in Germany up to 2050.[13] France's Action Plan on renewables counts explicitly on the Mediterranean Solar Plan, a broader and more directly government-sponsored programme, to import renewable energy for resale to countries that need it to satisfy the requirement.

It is therefore obvious that Italy's efforts to conclude bilateral agreements in this field are strategic, even going beyond the spheres of business and technology. The agreements represent a significant opportunity for concrete economic cooperation, as in the field of energy governance. In fact, to exploit those countries' energy potential for purposes of compliance with the European directive, a clear regulatory framework of incentives and certification needs to be instituted. Obviously, too, action designed solely to gain advantage with no practical benefit for the local territory could never win the agreement of local governments. This was most evident in the course of the talks, first in Cairo and then in Brussels, on the Mediterranean Solar Plan governance paper and strategy paper.

8. The ETS directive

One critical point for Italy in the directive approved in 2003, was the burden sharing of the EU emission reduction target. The triptych approach failed to "capture" the distinctive features of Italian industry, in particular the low level of emissions in relation to output, which suggests that energy efficiency is already fairly well advanced. Essentially, the provision was asking Italy to cut emissions by more than the technological potential would allow, which could have meant

[13] BMWi (2010), "Energieszenarien für ein Energiekonzept der Bundesregierung," at http://www.bmwi.de/BMWi/Navigation/Service/publikationen,did=356294.html.

a loss of competitiveness, in that Italian firms would sustain greater compliance costs. Failure to achieve the reductions laid down in the National Allocation Plans we recall would have brought heavy fines, on the order of €100 per excess tonne of CO_2.

At its approval, the directive covered 12,000 plants installed at some 5,000 European firms in energy-intensive industries: production of basic materials such as iron, steel, paper, glass, cement, bricks, and coke as well as electricity generation, of course, and oil refining. This counted for about half of Europe's CO_2 emissions. At the start of each year, each plant was to be given a certain number of one-tonne emission certificates. The total volume of certificates issued was to reflect the plant's reduction objective. If the firm intended to produce more emissions than that, it would have to buy additional certificates in the market. If its performance was better and it did not have to use all its certificates, it could sell the excess, thus lowering the cost of the investment needed for emissions-sparing production processes.

The critique – which would inspire some of the amendments to the package – was directed not only at the distortions introduced by burden sharing and the resulting National Allocation Plans but also, indeed chiefly, at the fact that the certificates were to be allocated by the member states free of charge based on past emissions. The combination of this "grandfathering" provision with the degree of discretion allowed member state governments and their intention to protect certain industries against excessive costs and loss of competitiveness resulted, in some countries, in overallocation.

Accordingly, in the 2008 package reforming the ETS directive, the Commission proposed dropping both the sharing out of the objective burden among member states and the free allocation of emission certificates. The new overall reduction objective (21 per cent for ETS sectors between 2005 and 2020, starting in 2013) no longer took national characteristics or sectoral differences into account. The ETS perimeter was extended to include aluminium, chemicals and – the first application to transport – aviation. Save for the smallest firms, for which simpler procedures were available – a point on which Italy had insisted – all firms were required to attain the overall objective, and

would have to buy enough certificates for their needs at auction.

Like the original directive, the proposed amendment simply postulates that the market mechanism is the most efficient way to reduce greenhouse gas emissions. For this to be so, the price of carbon dioxide emissions must obviously be high enough to constitute a significant cost for manufacturers. The problems mentioned, plus others, however, produced a collapse in CO_2 prices, which at the start of 2008 hit a low of €0.01 a tonne. Grandfathering and overallocation thus to be avoided, and a significant charge had to be made for emission certificates. The Commission's impact assessment found that the entire reform package, including more ambitious reduction objectives and the certificate auction, would result in an average CO_2 price of €30 a tonne from 2013 to 2020.

This should guarantee that the rule will perform better, but the problem of industrial competitiveness still had to be solved. As national targets were dropped, the problem of internal market distortions deriving from the previous system was resolved. But introducing the 20 per cent objective altered the terms of the question. This was a much more ambitious objective than that of the Kyoto Protocol; even more important, it was unilateral. It was not derived from international negotiations on world climate management after 2013 and indeed did not take them into account. Whatever emissions reduction objective the other countries adopted, from the standpoint both of level and of constrictiveness, the European Union, its member states and its firms would be subject to the binding 20 per cent target.

The increase in costs that would be sustained to achieve this objective thus became a significant factor in the competitiveness of European industry. The impact on competitiveness, in fact, was at the centre of Italy's position on the issue.

9. Carbon leakage

Differing commitments on emissions reduction could result in so-called "carbon leakage". That is, firms subject to stringent emissions constraints likely to cause substantial cost increases could decide to

transfer production to countries with less stringent limits. CO_2 emissions would thus "leak" from the more to the less virtuous countries. And the relocation of productive activities would also have social repercussions (owing to the impact on jobs), economic consequences (altering the productive structure of the countries involved and thus the international division of labour), and geopolitical effects (increased dependence on external supply of some essential products such as those of the energy-intensive sectors).

Italy is particularly interested in the problem of carbon leakage owing to its still substantial manufacturing base. Although the relative importance of manufacturing is diminishing, as it is throughout Europe, is still the third-highest in manufacturing's percentage of value added behind Germany and Poland (*Table 6.1*) and second only to Germany in total manufacturing value added (*Table 6.2*).

To see whether carbon leakage would damage Italy significantly in terms of output and employment, it was necessary first to examine Eurostat's data on the energy intensity of the manufacturing sub-sectors accounting for the greatest numbers of jobs. It turned out that the energy-intensive and very energy-intensive sectors "captured" about 50 per cent of all manufacturing jobs in Italy in 2005 (*Table 7*). Energy intensity does not automatically become carbon leakage: one must also consider each sector's emissions intensity, and thus the potential cost increases of more severe restrictions.

In addition, the analysis of Italy alone would be merely indicative, identifying the industries potentially exposed to the problem. The actual determination of the industries at risk of carbon leakage was to be performed at European level under the new approach laid down in the ETS directive, which set European and no longer national reduction objectives. The Commission proposed exempting firms in the sectors most exposed to carbon leakage from having to buy emission permits at auction. Excluding inefficient firms from the benefits of this, though, would require examination of the characteristics of production processes, benchmarking emissions efficiency, and assigning free permits only to firms that were within 10 per cent of the benchmark.

Italy agreed to exempt only the more efficient firms, in part because Italy's low emissions intensity with respect to GDP is an indicator that Italian firms are among the most efficient in Europe. It still remained to set the standards for deeming an industry to be at risk of carbon leakage. The Commission proposed two variables: the cost increase due to applying the directive (gauged by the forecast price of CO_2) and the relative exposure to international competition (gauged by trade flows). The results would be supplemented by a qualitative assessment based, for instance, on the characteristics of the market.

The problem was setting the leakage risk thresholds. The Commission's original position was quite restrictive, for fear of compromising the environmental integrity of the measure. Italy maintained that proper consideration needed to be taken of all the risk factors, not just the environmental ones. Simulations of the sectoral impacts of various thresholds were run, and Italy based its proposals on these results (*Table 8*).

Italy succeeded in winning the inclusion of practically all the country's major energy-intensive industries except brick-making. A sector was to be deemed at risk of carbon leakage if the sum of the direct and indirect extra costs of application would result in an overall increase in production costs of more than 5 per cent of gross value added and if total imports plus exports (by value) exceeded 10 per cent of total sales. And as the negotiations neared their conclusion, thanks to Italy's contribution in December 2008 the European Council established that regardless of these standards, if a sector had either an exposure to competition or a cost increase of more than 30 per cent it would be deemed at risk, even if the other parameter was below its established threshold. This meant the inclusion, in the subsequent negotiations under the comitology procedures in 2009, of such sectors as cement production, subject to low cost increase but strong international competition. Electricity generation remained outside, on the assumption that it would pass the cost increase from auction purchases through to prices and that in any case the price of electricity should incorporate that of CO_2.

Italy tried but failed to obtain the gradual phasing in of auctions in electricity generation, citing evidence of relatively little pass-through and above all the much higher cost of electricity in Italy than in the rest of Europe. Italy argued that the immediate application of the auction mechanism, with no period of transition, could have resulted in a further increase in prices and a loss of competitiveness for energy-intensive firms.

However, at Germany's proposal a provision was included allowing member states to derogate from the rules against state aid and compensate energy-intensive industries in order to attenuate the impact of higher electricity costs (indirect carbon leakage) – even though, Italy noted, this could create distortions owing to the differing financial capacity of different governments. In Italy's view, the gradual introduction of the emission auctions was preferable. The problem apparently looming in December 2008 was soon overshadowed by the outbreak of the recession and the aggravation of budget deficits. The Commission, in fact, has yet to present a concrete proposal on indirect carbon leakage.

10. The regulation on emission rights auctions

On 3 June 2009, two days before the publication of the "new" ETS directive in the *Official Gazette* of the European Union, the Commission began a consultation on the organization and conduct of emission rights auctions.[14] The consultation lasted two months and marked the beginning of negotiations that ended on 14 July 2010 with the Climate Change Committee's approval of a draft regulation. Under the comitology rules, this was scrutinized for three months by the Council and the Parliament. As we write, the formal adoption of the regulation, without amendments, is expected at the end of October.

[14] See http://ec.europa.eu/environment/climat/emission/auctioning_en.htm for a summary of the responses to the consultation.

As noted, auctions will begin in 2013, progressively supplanting the no-cost allocations. Considering that the electricity industry will begin with 100 per cent of its emissions rights at auction immediately, that the ten members joining the EU at the latest enlargement will be excepted, and that a part of the rights will be allocated free of charge under the rules on carbon leakage and benchmarking, expectations are that about a billion rights a year will be auctioned, or half the total.

Even with all the exceptions, at the current CO_2 price of €15 a tonne, this means government budget revenues totalling €15 billion a year. Governments are accordingly taking a great interest in this question, all the more so given the need to end the deficits and reduce the debt created by the crisis and recession. In Italy, in view of the strong interest expressed above all by the ministries for economy and finance, economic development, and environment, the Interministerial Committee for European Affairs instituted a working group during the phase of response to the European consultation. The group held a long series of coordination meetings and produced two position papers, enabling Italy to play a leading role throughout the negotiations.

The first question, raised already during the ETS negotiations, was who would have title to the auction proceeds and what would be done with the funds. Traditionally, national budget sovereignty is a most delicate theme. But while it was decided almost immediately that the proceeds would go to the member states and not the Union, the destination of the funds was the subject of discussions protracted for months. The Commission favoured assigning the proceeds to measures against climate change, but the national governments, in consideration of sovereign powers, opposed any sort of earmarking. Owing in part to pressure from the European Parliament, also in favour of earmarks, one of the classic compromises of European politics was reached. The final text of the directive reads: "Member States shall determine the use of revenues generated from the auctioning of allowances. At least 50% of the revenues generated from the auctioning of allowances referred to in paragraph 2, including all revenues from the auctioning referred to in paragraph 2, points (b)

and (c), or the equivalent in financial value of these revenues, *should* be used for one or more of the following: […]."[15] What got the talks unblocked was the use of "should"[16] – governments were assured there would be no automatic allocation, while the Parliament and the Commission could count on substantial political pressure on those governments to allocate a significant part to "green" projects.

Emission permits for 2013-2020 are assigned to member states by a set of standards; 88 per cent are assigned according to emissions in 2005-2007; 10 per cent go to the poorer members in consideration of their lower per capita GDP and their accordingly greater prospects for growth and hence higher emissions (this gave Italy an additional 2 per cent of permits). Finally, the last 2 per cent were given to the nine new members that in 2005 had achieved a 20 per cent reduction in greenhouse gas emissions with respect to 1990 (essentially, those in eastern Europe).

The key question in the talks was the choice between a harmonized, centralized auction and a coordinated system based on various platforms. From the outset Italy backed the central system that the Commission proposed, allowing for better control of liquidity and minimizing price volatility, the two problems that had plagued the first two phases of ETS (2005-08 and 2008-12). As the Italian position paper sent to the Commission on 25 November 2009 had noted, "A centralised

[15] Reduce greenhouse gas emissions, adapt to the impacts of climate change and fund research and development and demonstration projects for reducing emissions and for adaptation to climate change, develop renewable energies to meet the commitment of the Community to using 20% renewable energies by 2020, help meet the commitment of the Community to increase energy efficiency by 20% by 2020, environmentally safe capture and geological storage of CO2, contribute to the Global Energy Efficiency and Renewable Energy Fund and to the Adaptation Fund as made operational by the Poznan Conference on Climate Change (COP 14 and COP/MOP 4), measures to avoid deforestation and increase afforestation and reforestation in developing countries that have ratified the international agreement on climate change, to transfer technologies and to facilitate adaptation to the adverse effects of climate change in these countries, and to address social aspects such as the potential impact of higher electricity prices on lower and middle income households.

[16] Curiously, the Italian version of the directive inaccurately reads "è usato" [shall be used] instead of "dovrebbe essere usato" [should be used].

system seems to be the most efficient since it would i) create a truly European market; ii) guarantee the formation of a unique price for a homogenous good; iii) minimize arbitrage-seeking efforts that might arise if multiple auctions were to take place in different Member States; iv) avoid the duplication of fixed costs for setting up different auction platforms; v) guarantee the access of all ETS operators to the allowances."[17]

In the response to the consultation many firms, especially in the electricity industry (the one most directly affected by the first phase of application of the auction system) favoured the central system. Most governments concurred as well, but the United Kingdom, Spain, Poland and Germany were against it from the start, though not all for the same reasons, and formed a blocking minority.[18]

A compromise had to be found that would not undermine the integrity of the centralized system but would address the four governments' concerns. The only possibility, though many countries including Italy were against it, was an opt-out clause, albeit subject to quite stringent constraints, such as the requirement that national auction platforms had to be approved by the Climate Change Committee, consistency of local rules with the Regulation on auctions, and close coordination between national and central platforms – for example, such that the central calendar has preference over national ones.

The second crucial point in the Italian position was its special attention to SMEs. The ETS directive itself already called for adequate protection for these firms, but the fear of excessive "financialization" of the system, which would penalize small businesses, led the

[17] "Italian position on EU Emission Allowances Auctions (ETS)", 25 November 2009.
[18] To be precise, under comitology the blocking minority typical of voting in the Council does not block the adoption of the legislative proposal. In the event of a lack of a majority or of a vote against in committee, the Commission must in any case submit a proposal to the Council and the Parliament, which can be rejected only by a qualified majority. However, the Commission always seeks the broadest possible agreement on a decision that is ultimately its own, possibly with the assistance of a committee (here, the Climate Change Committee). This explains the concessions that the final text made to the various member states.

government to ask to simplify the system by using spot rather than futures auctions. And in order to minimize access barriers and costs for SMEs, Italy asked that they be allowed to participate on a pooled basis, possibly through trade associations. Both these requests were granted, and in commenting on the approval of the Regulation the Commission specifically mentioned the need for simplicity in explaining the choice of the spot auction technique. It was also made clear that the allowances would not be treated as financial products.[19]

Finally, Italy supported the request of European electricity companies to move up to 2011-12 the auction of the allowances for 2013, to satisfy a forward hedging requirement estimated at 1.2-1.4 billion certificates by the end of that year.[20] In addition to averting excessive pressure on electricity prices, the early auctioning of part of the allowances provided for in the final version of the regulation enabled Italy to use a part of the proceeds to solve its problem of insufficient "new entrant reserves" up to 2013.

Many of the other, more technical aspects of the regulation are probably not relevant here. But we should like to underscore one essential point from the political standpoint. Namely, that the great complexity of the matter, perhaps not fully explicated in our account here, required extremely close cooperation, much more than normal, between the Commission and the member state governments. This cooperation produced a balanced result that overcame most of the members' concerns. We can only hope that this serves as an example for other, equally complicated questions.

11. The non-ETS sectors

The EU splits the overall objective of cutting greenhouse gas emissions by 20 per cent with respect to 1990 into two macro-sectors:

[19] http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/10/338&type=HTMI.
[20] See the website of Eurelectric, the sectoral trade association, at: http://www2.eurelectric.org/content/Default.asp?PageID=959.

ETS and non-ETS. The ETS sectors are to cut emissions by 21 per cent and the non-ETS by 10 per cent with respect to 2005 (for the sake of homogeneous data for all member states). The sum comes to 14 per cent, which is equivalent to 20 per cent vis-à-vis 1990.

National plans and targets have been dropped for the ETS sectors, but this was impossible for the non-ETS, owing to their diversity and the consequent difficulty of devising harmonized policies for all sectors (with some major exceptions). The main non-ETS sectors are transport, buildings, services, non-energy-intensive manufacturing, agriculture, and waste treatment. The non-ETS sectors overall account for about half of all European greenhouse gas emissions.

Here again, therefore, the problem of burden sharing for the EU objective of 10 per cent arose. From the start Italy argued that the burden should be shared according to a country's real potential for reduction. Objectives should be set by standards of cost effectiveness, which means taking country characteristics into account. Italy proposed the standard of per capita emissions, which was unfortunately rejected in favour of per capita GDP. Italy stressed that this would not properly share the burden, as it measured only a country's ability to pay, not its potential emission reduction. The idea of a linear combination of the two indicators, which would have at least partially incorporated the principle of potential and thus attenuated the distortions, was also rejected (*Table 9*). As with the objective on renewables, the standard adopted will avoid placing a greater burden on the new members, which in fact are entitled to increases rather than reductions of non-ETS emissions. Countries like Italy are required to make greater than potential reductions, entailing greater costs.

The other important question was intermediate objectives. While Italy succeeded in making them merely indicative on renewables, on emissions the Commission proposed to make them binding. Our main, unheeded objection was that binding targets would force measures with immediate effect, regardless of long-run efficacy, and encourage the purchase of emission rights internationally even where there was no real risk of not achieving the final objective. Further, the system of

constant annual reductions took no account of sectoral differences or possible changes in weather or economic conditions and was accordingly unrealistic. At least we did obtain somewhat greater flexibility, the possibility of deferring attainment of the objectives by a year and of "exchanging" overfulfilments with other countries.

12. Reduction of automobile emissions

The overall reduction commitment necessarily implies a significant cut in motor vehicle emissions. Road transport is the second greatest source of greenhouse gas emissions in the European Union and is the prime exception to the non-harmonized approach to non-ETS emissions. European automakers had already underwritten a voluntary pledge to cut emissions below 140 grams per vehicle/kilometer by 2008. Observing that most producers had failed to honour this pledge, the Commission launched a consultation with stakeholders for an "integrated approach," i.e. a combination of competitiveness and industrial policy with environmental considerations, as the EU Competitiveness Council underscored in its conclusions of May 2007[21]:

"23. [The Council] SUPPORTS an integrated approach as proposed by the Commission, for reducing CO2 emissions from motor vehicles; UNDERLINES that all the players must make their contribution to reducing emissions harmful to the climate and UNDERLINES the opportunity for a regulatory framework which is cost-effective, ensures affordable mobility and contributes to preserving the global competitiveness of the automotive industry;

"24. CALLS ON the Commission to configure the planned framework for attaining the target for average CO2 emissions from the fleet

[21] http://www.consilium.europa.eu/App/NewsRoom/loadDocument.aspx?id=353&lang=EN&directory=en/intm/&fileName=94184.pdf.
The documentation on CARS 21 is at:
http://ec.europa.eu/enterprise/sectors/automotive/competitiveness-cars21/cars21/.

of new cars sold in the EU on the basis of a thorough impact assessment in a way that is as neutral as possible from the point of view of competition, and which is socially equitable and sustainable. It should be framed in such a way as to ensure that all manufacturers continue efforts to make their whole vehicle production more environmentally friendly in a cost-effective way; […]

"26. CALLS on the Commission, in concert with the Member States and the stakeholders, to implement the measures identified in the CARS 21 Communication in order to give predictability and planning certainty to the automotive industry, which is necessary because of its long lead times".

These three conclusions – especially no. 24 – are representative of the discussion carried on for nearly two years. For instance, competitive neutrality meant making sure that any given manufacturer's characteristics did not constitute an advantage in attaining the objectives. Social sustainability implied avoiding excessive cost increases for smaller cars: many emissions-reduction technologies, in fact, have high fixed costs, which would have proportionally greater incidence on less costly cars and could therefore penalize the mobility of lower-income persons, as well as distorting competition when – as is the case – manufacturers specialize in different market segments.

On 19 December 2007 the Commission presented a proposal for a regulation setting binding emission reduction targets for cars, differentiated by manufacturer. The proposal embodied the Competitiveness Council's recommendation only in part. It requires manufacturers to comply with an average European ceiling of 130 grams of CO_2 per kilometer by 2012, while also citing "complementary" measures with demonstrated impact on fuel consumption and hence on emissions (such as tyre pressure, air conditioning, speed control devices) that could bring emissions down to 120 g/km.

The regulation differentiates manufacturers' objectives, basing burden sharing on vehicle weight and making attainment of the

objective less burdensome as the average weight of the cars sold increases.[22] Compliance with these limits was to be ensured by severe sanctions to be phased in, reaching a fine of €95 per g/km over the target in 2015. The sanction was to be applied to all the vehicles sold by a maker, not just those failing to reach the objective. Independent car makers producing fewer than 10,000 cars a year would be exempted, in the sense that they could negotiate specific targets of their own.

This approach, which favoured producers of heavier cars, was objectively harmful to FIAT, whose fleet was lighter than average with lower emissions. The marginal cost of further reductions, per gram, would have been greater for the manufacturers that began from lower emission levels. But it was clear from the outset that the Commission had no intention of abandoning this standard, so it was necessary to find other components of the regulation making it less problematic for our motor vehicle industry. The key was to reach an agreement among the four main car-making countries: Italy, Germany, France and Britain. After months of talks, an agreement was concluded on modulated sanctions, the phasing-in of the regulation, the possibility of counting "eco-innovations" and "supercredits", and a better specification of the special rules for small producers, the previous version of which had excluded Ferrari and Maserati. The Commission and the Parliament, less sensitive to the needs of the industry, were then "forced" to accept the content of the agreement, as the four countries formed a blocking minority, threatening the outright failure of the talks.

[22] For more details, see Institute for European Environmental Policy (2007), "Possible regulatory approaches to reducing CO2 emissions from cars – Final Report and Technical notes," the study on which the Commission's own proposal was based; and European Commission (2007), "Proposal from the Commission to the European Parliament and Council for a Regulation to reduce CO2 emissions from passenger cars – Impact Assessment." For the entire documentation, available online, see: http://ec.europa.eu/environment/air/transport/co2/co2_home.htm.

The system of sanctions that was adopted derives from an Italian idea. A "corridor" above each producer's objective is established between 2012 and 2019, with sanctions reduced to €5 for an overshoot of 1 gram, €15 for 2 grams and €25 for 3 grams; the full sanction of €95 applies to any additional grams of CO_2 emissions. This provides an added incentive to attain the objective while not excessively penalizing manufacturers that come reasonably close. Further incentives for innovation are the "supercredit" (via multipliers) for cars with emissions below 50 g/km and the possibility of counting up to 7 grams of CO_2 (against the average for the entire product line) for reductions through eco-innovations.

The regulation will be phased in, applying to 65 per cent of the cars produced in 2012, 75 per cent in 2013, 80 per cent in 2014 and 100 per cent in 2015. There is also a long-term target of 95 g/km by 2020. The procedures for meeting this requirement (including the burden-sharing curve) will be laid down following a review conducted by the Commission before the end of 2012.

Our experience with the negotiations on cars proved invaluable when the Commission announced its intention to propose a similar regulation on light commercial vehicles (vans). Italy took the initiative in writing a joint letter to the environmental commissioner signed by the permanent representatives of Italy, France, and Germany. The letter was sent even before the Commission presented its proposal and resulted in substantive modifications.

13. Drawing the balance: Rubik's cube

European climate and energy policy has three strategic objectives: controlling climate change, making energy supplies more secure, and reducing energy costs. The challenge is to attain all three objectives at once – that is, to make sure that the tools for achieving one do not undo the others. We might liken the situation to the famous "Rubik's cube" of the 1980s: it is easy enough to solve any one face of the cube, but this does not bring the overall solution. The right strategy is to solve all six faces simultaneously.

A classic example is the Italian electricity generation system. In the past two decades Italy has invested heavily in its modernization, converting many plants to natural gas. This has reduced emissions (natural gas produces less CO_2 than other fossil fuels, such as coal) and improved efficiency (in 2008, according to the International Energy Agency, Italy had the most efficient generating system in the world). But the other side of the coin is higher electricity costs, about 30 per cent above the EU average, owing to the fact that gas prices track oil prices. And energy security has decreased, since we depend almost entirely on three countries for primary energy: Algeria, Libya and Russia.

In the negotiations for the 20-20-20 package, Italy aimed at achieving a balance among the three components of the European strategy, seeking to reconcile environmental and industrial needs, as in the effort to prevent differing emissions-reduction requirements from resulting in competitive distortions (carbon leakage). This meant making any additional reduction commitment explicitly conditional on clear, comparable and verifiable targets by third countries.

At the same time we insisted on elements of flexibility where choices were not determined by cost-effectiveness. One such area was trade in renewables; another was the non-ETS sectors, or the possibility under the Kyoto Protocol of making and counting "green" investment in other countries.

Italy's negotiating strategy during the two years between the first communications and the European Council of December 2008 that brought out the final agreement,[23] and in the years following as the package is implemented, has brought positive results. It has restored balance, offsetting some features that threatened serious harm to the country.

Space considerations prevent us from going into many other matters. At least two, however, warrant mention. The key to achieving

[23] Council of the European Union, "Energy/Climate Change: Elements of the Final Compromise", 11 December 2008.
http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/104672.pdf.

the ambitious objectives that we have set ourselves in Europe – and that we hope will also be adopted at global level – is technology. In Italy and in other European countries with comparable characteristics, part of the debate turned on the possible industrial spillovers – and the Commission now sees "green" development as one fundamental aspect of European economic growth. Technological progress on renewables, for instance, has already lowered their costs sharply, if not enough to make them fully competitive with fossil fuels. But significant advances in such still highly uncertain areas as carbon capture and storage require huge high-risk investments that might not pay off.

In addition to the package, the Commission also presented its Strategic Energy Technology Action Plan, with a roadmap for all energy technologies. Part of the ETS "new entrant reserves" (300 million credits) will be sold to fund innovative projects in renewable energy and capture and storage. But there is a clear disproportion between the efforts necessary and the European financial resources allocated to the new technologies. The risk, which must be averted in order not to jeopardize policy effectiveness and attainment of the objectives, is the "renationalization" first of technology policies and then of energy policies.

Finally, we must mention the world talks on climate change – the fundamental backdrop to European policies in this field. Hopes for a "global and comprehensive agreement" any time soon have faded considerably following the Copenhagen conference. In one of her first interviews since succeeding Yvo De Boer at the head of the UNFCCC in May 2010, Christiana Figueres said: "I don't believe that we will ever have a final agreement on climate... in my lifetime. [...] Building the regime is going to require an effort, a sustained effort of those who will be here, over the next 20 to 30 to 40 years. [...] We have to understand that this is an incremental process, this is a gradual process and that whatever we do is not going to be enough, we still have to hold the bar very high".[24]

[24] Richard Ingham (2010) "No quick fix on warming, says new UN climate chief", Agence France Presse, (AFP), 9 June 2010.

We are accordingly very unlikely to see any significant results in Cancun in 2010, or possibly in South Africa in 2011 either. The fundamental issue for the global climate change talks, namely the sharing of sovereign powers, has not yet been faced seriously in political terms, and some countries, such as China and, in a different way, the United States, still consider it simply unthinkable to cede or share their sovereignty on so vital a matter.

People are consequently beginning to wonder whether it may not be a good idea to find another way of controlling climate change. The UN-based approach is questioned because it requires unanimity, and as we saw at Copenhagen just a handful of countries can prevent the adoption of a declaration. A possible alternative might be a bottom-up approach aiming for agreements not between countries but between industries at global level.[25] This would represent a radical change with very significant geopolitical consequences, and is well worth studying.[26]

[25] For a review, see Noriko Fujiwara (2010) "The merit of sectoral approaches in transitioning towards a global carbon market", CEPS Special Report.
[26] See Gwin Prins et al. (2010), The Hartwell Paper, LSE. Available online at http://www.lse.ac.uk/collections/mackinderProgramme/theHartwellPaper/Default.htm.

Appendix

The Italian position in the energy and climate change negotiations

TABLE 1. CO_2 Emissions, 2006

	millions of tonnes	% of total		millions of tonnes	% of world total
			EU countries		
China	6103.49	21.1%	Germany	880.25	3.0%
United States	5975.10	20.7%	United Kingdom	557.86	1.9%
EU-27	**4265.58**	**14.7%**	Italy	488.04	1.7%
Russia	1577.69	5.5%	France	408.69	1.4%
India	1510.35	5.2%	Spain	359.63	1.2%
Japan	1273.60	4.4%	Poland	330.52	1.1%
Canada	560.39	1.9%			
E-7	**21266.20**	**73.5%**			
South Korea	475.25	1.6%			
Mexico	436.15	1.5%			
South Africa	414.65	1.4%	Iran	466.98	1.6%
Australia	390.44	1.3%	Saudi Arabia	381.56	1.3%
Brazil	352.52	1.2%	Ukraine	344.53	1.2%
Indonesia	333.48	1.2%	Turkey	273.71	0.9%
13 Major Economies *	**23668.69**	**81.8%**			
World total	**28928.26**				

Source: United Nations, http://unstats.un.org/unsd/ENVIRONMENT/air_co2_emissionshtm. See also http://unfaccc.int/ghg_data/ghg_data_non_unfccc/items/3170.php.

*E-7 plus S.Korea, Mexico, South Africa, Australia, Brazil, Indonesia.

TABLE 2. Major Economies, emissions by sector, 2007*

Electricity and heating	45.13%
Industry	19.80%
Transport	19.47%
Residential	6.26%
Other	9.33%

Source: Based on OECD and IEA data: CO2 Emissions from Fuel Combustion, IEA, Paris, 2009; Energy Balances of OECD Countries, IEA, Paris, 2009; Energy Balances of Non-OECD Countries, IEA, Paris, 2009; Main Economic Indicators, OECD, Paris, 2009.

*E-7 plus S.Korea, Mexico, South Africa, Australia, Brazil, Indonesia.

TABLE 3. Sharing of Kyoto targets within EU

EU-15		Member states with individual commitments	
Austria	-13%	Bulgaria	-8%
Belgium	-7.50%	Czech Republic	-8%
Denmark	-21%	Estonia	-8%
Finland	0%	Hungary	-6%
France	0%	Latvia	-8%
Germany	-21%	Lithuania	-8%
Greece	25%	Poland	-6%
Ireland	13%	Romania	-8%
Italy	-6.50%	Slovakia	-8%
Luxembourg	-28%	Slovenia	-8%
Netherlands	-6%		
Portugal	27%		
Spain	15%		
Sweden	4%		
United Kingdom	-12.50%		

TABLE 4. Estimated potential electricity generation from renewable sources

	State of implementation		Total potential energy available by 2020 31 december 2005	
	Power (MW)	**Energy (TWh)**	**Power (MW)**	**Energy (TWh)**
Hydro power plants > 10MW	14,920	28.50	16,000	30.72
Hydro power plants < 10MW	2,405	7.50	4,200	12.43
TOTAL HYDRO SOURCE	**17,325**	**36.00**	**20,200**	**43.15**
Wind plants on-shore	1,718	2.35	10,000	18.40
Wind plants off-shore	0	0.00	2,000	4.20
TOTAL WIND SOURCE	**1,718**	**2.35**	**12,000**	**22.60**
Building integrated PV plants	27	0.03	7,500	9.00
Power PV plants	7	0.01	1,000	1.20
Solar thermodynamic	0	0.00	1,000	3.00
TOTAL SOLAR SOURCE	**34**	**0.04**	**9,500**	**13.20**
Traditional geothermic	711	5.32	1,000	7.48
New generation geothermic	0	0.00	300	2.24
TOTAL GEOTHERMIC SOURCE	**711**	**5.32**	**1,300**	**9.73**
Plants using biomass coming from crops and other agro-industry waste	389	2.34	769	5.00
Plants using biodegradable part RSU	527	2.62	800	4.00
Plants using landfill gas. sewage treatment plant gas and biogas	285	1.20	492	3.20
Plants using dedicated energy crops	0	0.00	354	2.30
TOTAL BIOMASS. LANDFILL GAS AND BIOLOGICAL PURIFICATION	**1,201**	**6.16**	**2,415**	**14.50**
Wave and tidal energy	0	0.00	800	1.00
TOTAL WAVE AND TIDAL ENERGY	**0.00**	**0.00**	**800**	**1.00**
TOTAL	**20,989**	**49.87**	**46,215**	**104.18**
TOTAL PRIMARY ENERGY REPLACED	**4.29 MTOE**		**8.96 MTOE**	

Source: Governo Italiano (2007) *Energy: Issues and challenges for Europe and for Italy. Position paper of the Italian Government*.

TABLE 5. National action plan for renewables

	Gross final energy consumption and targets for renewables								
	2005			2008			2020		
	From renewable sources	Gross final consumption	Renewables/ consumption	From renewable sources	Gross final consumption	Renewables/ consumption	From renewable sources	Gross final consumption	Renewables/ consumption
	[MTOE]	[MTOE]	[%]	[MTOE]	[MTOE]	[%]	[MTOE]	[MTOE]	[%]
Electricity	4.846	29.749	16.29%	5.04	30.399	16.58%	9.112	31.448	28.97%
Heating	1.916	68.501	2.80%	3.238	58.534	5.53%	9.52	60.135	15.93%
Transport	0.179	42.976	0.42%	0.723	42.619	1.70%	2.53	39.63	6.38%
Imports	-	-	-	-	-	-	1.44	-	-
Total	6.941	141.226	4.91%	9.001	131.553	6.84%	22.306	131.214	17.00%
Transport for purposes of 10% oblig.	0.338	39	0.87%	0.918	37.670	2.44%	3.419	33.975	10.06%

Source: Ministro dello Sviluppo Economico (2010). Piano di azione nazionale per le energie rinnovabili – Sintesi.

TABLE 6.1. Manufacturing industry's share of value added

	EU-27	Germany	Spain	France	Italy	Poland	UK
1995	20.1	22.6	18.5	14.2	22.2	21.1	21.2
1996	19.7	22.2	18.5	13.7	21.8	19.9	20.6
1997	19.8	22.4	19.0	13.9	21.7	19.8	20.3
1998	19.7	22.7	19.0	14.0	21.7	19.3	19.4
1999	19.6	22.4	18.7	16.1	21.1	19.0	18.4
2000	19.5	22.9	18.6	16.0	21.0	18.5	17.4
2001	18.9	22.8	18.1	15.4	20.4	16.8	16.4
2002	18.3	22.4	17.3	14.7	19.9	16.5	15.3
2003	17.8	22.4	16.8	14.1	19.0	17.7	14.3
2004	17.5	22.6	16.3	13.6	18.8	19.1	13.6
2005	17.3	22.7	15.8	13.2	18.5	18.5	13.3
2006	17.2	23.3	15.5	12.6	18.7	18.8	12.8
2007	17.2	23.8	15.0	12.5	19.0	18.9	12.4
2008	16.6	22.7	14.5	11.9	18.1	18.7	11.6
2009	14.7	19.1	12.7	10.6	16.1	16.9	11.1

Source: Eurostat

TABLE 6.2. Manufacturing value added at base prices *(millions of euros)*

	EU-27	Germany	Spain	France	Italy	Poland	UK
2007	1,897.533	518,430	141,295	211,673	262,735	194,763	154,727
2008	1,851.457	504,220	144,239	208,122	255,501	208,366	150,300
2009	1,560.189	408,800	124,125	182,558	220,602	200,823	139,889

Source : Eurostat

TABLE 7. Main manufacturing sub-sectors (NACE 3) (more than 1% of manufacturing employment), Italy, 2005

	Number of enterprises (A)	Value added at factor cost (B)	Number of employees in FTE (C)	Purchases of energy products (in value)	Energy intensity (D/B) in %	Share of all mfg	Employ's share
Manufacture of basic iron and steel and of ferro-alloys	480	3614.30	41193	1317.90	36.46%	1.73%	1.21%
Manufacture of basic metals	3730	8968.80	121226	2180.30	24.31%	4.29%	3.56%
Manufacture of other non-metallic mineral products	26237	12237.10	190955	2571.00	21.01%	5.86%	5.60%
Treatment and coating of metals	5737	2175.00	38689	337.00	15.49%	1.04%	1.14%
Manufacture of plastic products	10964	7401.70	124609	947.30	12.80%	3.54%	3.66%
Manufacture of rubber and plastic products	12548	9687.30	164807	1116.80	11.53%	4.64%	4.84%
Manufacture of chemicals,chemical products and man-made fibres	5812	15666.90	180252	1748.60	11.16%	7.50%	5.29%
Manufacture of motor vehicles	98	2809.60	60795	305.20	10.86%	1.34%	1.78%
Manufacture of basic metals and fabricated metal products	100668	36989.40	606482	3847.30	10.40%	17.71%	17.80%
Manufacture of articles of concrete, plaster, cement	4650	3164.20	50511	313.30	9.90%	1.51%	1.48%
Forging, pressing, stamping and roll forming of metal; powder metallurgy	2566	2994.90	43628	290.50	9.70%	1.43%	1.28%
					Total	**50.60%**	**47.64%**

Source: Based on Eurostat data

TABLE 8. Assessment of risk of carbon leakage in EU-27 by industry PRODCOM classification. 2006

Product	Year	Total CO_2 cost/price ratio (year average)	(X+M)/ (P+M)
Cement clinker	2006	0.63	N/A
Quicklime	2006	0.49	0.02
Chlorine	2006	0.35	N/A
Grey portland cement	2006	0.31	0.04
Ammonium nitrate	2006	0.25	0.16
White portland cement	2006	0.23	0.19
Ammonia	2006	0.22	N/A
Ferro-silicon	2006	0.17	0.89
Primary Aluminium	2006	0.17	0.62
Silicon metal	2006	0.17	0.68
Chlorine	2006	0.16	N/A
Hot rolled coil (total)	2006	0.16	0.30
Alumina	2006	0.16	0.74
Primary Aluminium	2006	0.16	0.62
Slabs	2006	0.15	0.54
Hot dipped metallic coated	2006	0.13	0.18
Exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral materials and mixtures thereof	2006	0.13	0.07
Refractory cements; mortars; concretes and similar compositions (including refractory plastics, ramming mixes, gunning mixes) (excluding carbonaceous pastes)	2006	0.12	0.26
Pulp for newsprint TMP	2006	0.12	0.96
Paper for newsprint TMP	2006	0.09	0.23
Packaging virgin pulp unbleached kraftliner	2006	0.09	0.34
Ferro-silico-manganese	2006	0.09	0.82
Viscose	2006	0.09	0.38
Oxygen	2007	0.08	0.08
Pulp Sulphite	2006	0.08	0.30
Refractory ceramic constructional goods containing >50% of MgO, CaO or Cr2O3 including bricks, blocks and tiles excluding goods of siliceous fossil meals or earths, tubing and piping	2006	0.08	0.37
Acrylic	2006	0.08	0.18
Pulp CTMP	2006	0.08	0.46
Pulp Sulphate	2006	0.08	0.43

continued

TABLE 8. Assessment of risk of carbon leakage in EU-27 by industry PRODCOM classification. 2006

continued

Product	Year	Total CO_2 cost/price ratio (year average)	(X+M)/ (P+M)
Polychlorure de vinyle, sans mélange, sous formes primaires	2006	0.08	0.15
Medium density fibreboard (MDF)	2006	0.07	0.14
Ferro-manganese	2006	0.07	0.51
Pulp for newsprint ground-wood	2006	0.07	0.27
Paper uncoated sulphite	2006	0.07	0.15
Ethylene	2006	0.07	N/A
Drinking glasses of toughened glass gathered (including cut or otherwise decorated) (excluding of lead crystal)	2006	0.07	0.37
Ferro-chromium	2006	0.06	0.81
Polyester	2006	0.06	0.48
Packaging RCF testliner	2006	0.06	0.08
Paper uncoated sulphate	2006	0.06	0.15
High Density Polyethylene - HDPE	2006	0.06	0.33
Low-Density Polyethylene - LDPE	2006	0.06	0.23
Sodium hydroxide	2006	0.05	0.05
Wire Rod	2006	0.05	0.21
Seamless hollow profiles and seamless tubes and pipes, of non-circular cross-section, hot or cold finished, of steel	2006	0.05	0.26
Seamless tubes and pipes, of circular cross-section, of steel other than stainless steel, hot finished, of an external diameter > 406.4 mm	2006	0.05	0.60
Seamless tubes and pipes, of circular cross-section, of steel other than stainless steel, hot finished, of an external diameter > 168.3 mm but < 406.4 mm	2006	0.05	0.86
Seamless tubes and pipes, of circular cross-section, of steel other than stainless steel, hot finished, of an external diameter < 168.3 mm	2006	0.05	0.42
Seamless tubes and pipes, of circular cross-section, of steel other than stainless steel, cold drawn or cold rolled (excl. precision tubes and pipes)	2006	0.05	0.37
Seamless precision tubes and pipes, of circular cross-section, of steel other than stainless steel, cold drawn or cold rolled	2006	0.05	0.21
Rebar	2006	0.05	0.16
Non-wired sheets of float glass and surface ground or polished glass, having a non reflecting layer	2006	0.04	0.04

continued

TABLE 8. Assessment of risk of carbon leakage in EU-27 by industry PRODCOM classification. 2006

continued

Product	Year	Total CO_2 cost/price ratio (year average)	(X+M)/ (P+M)
Ceramic pipes, conduits, guttering and pipe fittings: drain pipes and guttering with fittings	2006	0.04	0.17
Paper for newsprint RCF	2006	0.04	0.23
Nylon	2006	0.04	0.35
Particle Board of Wood	2006	0.04	0.10
Drinking glasses gathered by hand (including cut or otherwise decorated) (excluding of lead crystal, of toughened glass, of glass-ceramics)	2006	0.03	0.18
Refined unwrought lead (excluding lead powders or flakes)	2006	0.03	0.22
Open glass envelopes for electric lamps, cathode-ray tubes or the like	2006	0.03	0.35
Glass fibre threads cut into lengths of at least 3 mm but <= 50 mm (chopped strands)	2006	0.03	0.29
Packaging RCF cartonboard	2006	0.03	0.37
Glass fibre filaments (including rovings)	2006	0.03	0.38
Unwrought lead containing antimony (excluding lead powders or flakes)	2006	0.03	0.08
Glass cubes and other glass smallwares, for mosaic or similar decorative purposes excluding finished panels and other decorative motifs made from mosaic cubes	2006	0.03	0.32
Raw cane and beet sugar in solid form; not containing added flavouring or colouring matter	2006	0.03	0.53
Unwrought lead (excluding lead powders or flakes, unwrought lead containing antimony, refined)	2006	0.03	0.56
Table/kitchen glassware (excluding drinking), toughened glass	2006	0.03	0.73
White refined cane or beet sugar in a solid form (excluding white sugar)	2006	0.03	0.33
Ductile iron castings for transmission shafts, crankshafts, camshafts and cranks	2006	0.03	0.19
Paving blocks... of glass, for building or construction purposes, n.e.c.	2006	0.02	0.35
Tissue RCF	2006	0.02	0.08
Table/kitchen glassware with linear coefficient of expansion <=5x10-6/K, temperature range of 0 °C to 300 °C excluding of glass-ceramics, lead crystal/toughened glass, drinking glasses	2006	0.02	0.35

continued

TABLE 8. Assessment of risk of carbon leakage in EU-27 by industry PRODCOM classification. 2006

continued

Product	Year	Total CO_2 cost/price ratio (year average)	(X+M)/ (P+M)
Oriented Strand Board (OSB)	2006	0.02	0.22
Zinc metal	2006	0.02	0.21
Slivers; yarns and chopped strands of filaments of glass fibres (excluding glass fibre threads cut into lengths of at least 3 mm but <= 50 mm)	2006	0.02	0.23
Cut or otherwise decorated drinking glasses of lead crystal gathered mechanically	2006	0.02	0.11
Drinking glasses of lead crystal gathered mechanically (excluding cut or otherwise decorated)	2006	0.02	0.88
Plywood	2006	0.02	0.41
Articles of non-malleable cast-iron n.e.c.	2006	0.02	0.64
Nonwoven glass fibre webs; felts; mattresses and boards	2006	0.02	0.12
Other articles of glass fibre, of non-textile fibres, bulk, flocks, others	2006	0.02	0.11
Potassium chloride	2006	0.02	0.33
Refined unwrought lead (excluding lead powders or flakes)	2006	0.02	0.22
Glass fibre mats (including of glass wool)	2006	0.02	0.21
Tissue virgin pulp	2006	0.02	0.08
Signalling glassware and optical elements of glass, not optically worked	2006	0.01	0.41
Unwrought lead containing antimony (excluding lead powders or flakes)	2006	0.01	0.08
Stainless Cold Rolled	2006	0.01	0.33
Potassium sulphate	2006	0.01	0.04
Unwrought lead (excluding lead powders or flakes, unwrought lead containing antimony, refined)	2006	0.01	0.56
Unworked glass tubes (including tubes which have had fluorescent material added to them in the mass) (excluding tubes coated inside with fluorescent material)	2006	0.01	0.20
Glass electrical insulators (excluding insulating fittings (other than insulators) for electrical machinery; appliances or equipment)	2006	0.01	0.64
Other articles of glass fibre, pads, casings for insulating tubes or pipes	2006	0.01	0.07
Glass fibre voiles (including of glass wool)	2006	0.01	0.15
Glass fibre articles of textile fibres	2006	0.01	0.33

continued

TABLE 8. Assessment of risk of carbon leakage in EU-27 by industry PRODCOM classification. 2006

continued

Product	Year	Total CO_2 cost/price ratio (year average)	(X+M)/ (P+M)
Seamless tubes and pipes, of circular cross-section, of stainless steel	2006	0.01	0.24
Laboratory, hygienic or pharmaceutical glassware whether or not graduated	2006	0.01	0.16
Unwrought unalloyed refined copper (excluding rolled, extruded or forged sintered products)	2006	0.01	0.45
Extrusion Aluminium	2006	0.01	0.14
Glass smallware (including beads, imitation pearls/stones, ...)	2006	0.01	0.30
Recycled Aluminium	2006	0.01	0.06
Rolling Aluminium	2006	0.00	0.27
Table or kitchen glassware of lead crystal gathered by hand (excluding of glass-ceramics, of toughened glass, drinking glasses)	2006	0.00	0.37
Clock or watch glasses, glasses for spectacles, not optically worked	2006	0.00	0.36
Staple glass fibre articles	2006	0.00	0.77
Non-alloy unwrought nickel (excluding nickel powders and flakes	2006	0.00	0.71
Cut or otherwise decorated drinking glasses of lead crystal gathered by hand	2006	0.00	0.57
Nickel mattes, nickel oxide sinters and other intermediate products of nickel metallurgy (including impure nickel oxides, nickel speiss, impure ferro-nickel)	2006	0.00	0.67
Nickel powders and flakes (excluding nickel oxide sinters)	2006	0.00	0.30

Source: Based on European Commission data.

TABLE 9. National targets, non-ETS sector

	Target, based on		
Country	**Emissions per capita**	**GPD per capita**	**Combination (1) + (2)**
Austria	-13%	-16%	-14%
Belgium	-18%	-15%	-17%
Bulgaria	-1%	20%	9%
Cyprus	-17%	-5%	-11%
Czech Republic	-16%	9%	-4%
Denmark	-14%	-20%	-17%
Estonia	-18%	11%	-3%
Finland	-15%	-16%	-16%
France	-2%	-14%	-8%
Germany	-14%	-14%	-14%
Greece	-15%	-5%	-10%
Hungary	5%	10%	7%
Ireland	-20%	-20%	-20%
Italy	-7%	-13%	-10%
Latvia	20%	15%	18%
Lithuania	11%	15%	13%
Luxembourg	-20%	-20%	-20%
Malta	-18%	5%	-6%
Netherlands	-19%	-16%	-18%
Poland	-9%	14%	3%
Portugal	2%	1%	2%
Romania	10%	19%	14%
Slovakia	-1%	13%	6%
Slovenia	-7%	1%	-3%
Spain	-12%	-10%	-11%
Sweden	3%	-17%	-7%
United Kingdom	-13%	-16%	-14%

Source: Governo Italiano (2008), *Italian position on the energy and climate change package*.