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RECENT DEVELOPMENTS IN THE ENVIRONMENTAL DEBATE BEFORE AND AFTER THE KYOTO PROTOCOL: A SURVEY

by

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ABSTRACT

The paper presents a short *excursus* of the debate on the environment protection which, over the last thirty years, through a bumpy road has led to the Kyoto Protocol in December 1997.
Along with the cornerstones of the long and lively debate, the paper tries to resume the similar continuous progresses which have been realised both on the focus and the use of the devices to pursue the protection of environment. If in the early Seventies policy-makers were mainly oriented in cleaning up existing pollution, the continuing improvement in awareness has gradually induced a pollution prevention and integration of the environmental concerns with the economic ones.
A clear test of this last point may be detected in the actual behaviour of policy-makers in almost all OECD countries which tend to use more and more environmental related taxes (eco-taxes) and to bring environmental charges under the fiscal framework ("green tax reform").

JEL classification: Q28, H21

Key words: environment, Kyoto Protocol, eco-taxation

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NON TECHNICAL ABSTRACT

The paper presents a short *excursus*, based on international and official sources, of the debate on environment protection, which has been held at international level from the first world meeting (Stockholm, June 1972) to the Kyoto Protocol (December 1997), a milestone of the efforts to pursue the goal and to promote a reasonable use of natural resources.
Over this period, the dialogue has progressively involved more countries and a larger audience. Today it is a consensus issue thanks to the long and bumpy path that economists and politicians have accomplished, even if still persists a large discrepancy between commitments and actions. Despite the awareness that the Kyoto targets on the emissions of greenhouse gases represent only a small step towards the adequate levels of them in the atmosphere, only few countries (a very small percentage in terms of CO_2 emissions) have, up to now, ratified the Protocol.
In line with the evolution of the debate, the paper detects similar continuous progresses in the approach and in the use of instruments to pursue the environmental protection.
Starting from a mere curative approach (the first interventions were mainly oriented in cleaning up existing pollution), economists and policy-makers gradually shifted to a preventive attitude and, above all, towards interventions oriented at modifying the production process or the consumers and/or producers way of behaving. This change implied a modification and a substantial broadening of the range of policy instruments. If in the early Seventies the more used instruments were the regulatory ones, over the last thirty years, they were gradually integrated with education campaigns, a strengthened co-operation within the international community and, more recently, with the use of economic instruments, whose multiple possibilities (fees, prices and subsides, taxes, and so on) allow a better integration between economic and environmental policy. Almost everyone is in fact convinced that a sustainable development is possible only in an environmental friendly context. Consequently, in the Nineties, as typical evidence of this integration, almost all OECD countries have introduced environmental related taxes (eco-taxes) and, more recently, have brought environmental charges under the fiscal framework («green tax reform»).
Albeit some theoretical and empirical studies have cast doubts on the validity of eco-taxation, and in particular as regards the hypothesis of double-dividend, there is on the matter an overall positive judgement, at least in that eco-taxation helps relieve part of the burden of other direct taxes (income tax and social contribution) while assuring the same amount of tax revenue.
In Italy, the «greening» of the tax system is quite recent as the first official, explicit mention of the eco-taxation issues dates back only to May 1997 (DPEF

for the years 1998-2000) and, subsequently, to the Law No. 448/1998. On the Italian case, the paper focuses the attention on two specific points: the intervention policy on greenhouse gases emissions (which are directly linked with the Kyoto Protocol) and on waste treatment and disposal. This second topic, albeit not directly connected to the Treaty, is considered for two specific aspects. First, the constant growth of waste produced is often attributed to inefficient production systems or non-optimal use of materials and therefore the promotion of clean technologies, life-cycle analyses to deal better with recycling, recovery and reuse policies, is generally regarded as one of the easiest way to protect the environment. Second, fiscality on waste collection and treatment should prove much more effective in mitigating pressures factors hampering environment as it is applied by local authorities (Municipalities) which are closer to people and more aware for their needs.

RECENTI SVILUPPI DEL DIBATTITO AMBIENTALE PRIMA E DOPO KYOTO: UNA RASSEGNA

SINTESI

Il lavoro si inserisce nell'ampio dibattito sulle tematiche ambientali e l'utilizzo delle risorse naturali. Esso offre un *excursus* delle tappe fondamentali che hanno segnato il cammino della comunità internazionale, negli ultimi trenta anni, dalla prima conferenza a livello mondiale (Stoccolma, 1972) al Protocollo di Kyoto (dicembre 1997).
Seguendo tale cammino, il lavoro cerca di individuare i progressi compiuti nelle logiche (curativa e preventiva) e nell'uso degli strumenti (dalla regolamentazione agli strumenti economici) utilizzati in materia ambientale. In particolare ravvisa negli interventi di tassazione ecologica, adottati abbastanza diffusamente nell'ambito dei paesi OCSE dalla fine degli anni novanta, uno strumento "privilegiato" per perseguire la difesa dell'ambiente, garantendo, allo stesso tempo, uno sviluppo sostenibile.

Classificazione JEL: Q28, H21

Parole chiave: ambiente, Protocollo di Kyoto, eco-tassazione

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INTRODUCTION

The debate on environmental problems, despite its fundamental importance, has been progressively gaining strength and world-wide relevance only over the last few decades. It was in fact at the beginning of the Seventies, after some very serious accidents[1], that the problems related to the natural resources management and to the pollution control induced a joint political intervention both at European and world level. Before that date, environmental policies were applied only in few countries, on specific topics and with limited instruments and were indeed subject to big contrasts.

As was stated by the 1972 Stockholm Conference, which was the first meeting at world level specifically devoted to this matter, «the protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world»[2]. Few months later, in Paris, the European Council, noting that economic growth has to produce «a higher level and a better quality of life», asked the European Institutions to adopt a common policy on environment protection[3]. Two years later, the OECD member countries, hit by the first oil shock, created the International Energy Agency[4].

Admittedly, from the very beginning *homo sapiens* has been modifying through his activity, even though unawarely, his own habitat, often with dreadful results (e.g. the fabulous Fertile Crescent of Babylon, where agriculture emerged over ten millennia ago, was turned into the wastes of Iraq). Nowadays, however, the greater awareness of the limited availability of natural resources and of the dangers produced by an uncontrolled misuse of the planet's natural means, promotes the search for new instruments, which - through major economic efficiency and environmental effectiveness - may assure a reduced use of resources, thereby saving precious means.

Everybody is in fact convinced that human beings are the main source for concerns on a sustainable development and that the top priority of any Government action must be fighting poverty while assuring a healthy life in accordance with nature. Unlike what used to happen in the past, today it is assumed that the environmental preservation may not only be consistent with this aim, but may even reinforce it, constituting «an integral part of the development process which cannot be considered in isolation from it»[5]. Such a view represents, therefore, a considerable stimulus to improve the integration of economic and environmental policies.

Since the Seventies - when environmental policies were still in embryo - the OECD and the European Commission have been carrying out an environmental policy directly looking at reducing the pollution burden, thus ensuring sustainable development. The continuous evolution of the debate and the increasing number of countries involved, led in January 1991 the Environment Ministers of the OECD member countries to constitute the Group on Environmental Performance in order to «review systematically the environmental performance of individual countries in meeting policy objectives and international commitments»[6].

Despite this and many other collective commitments and a relatively continuous policy dialogue in order to integrate economic and environmental decision-making, progresses, as mentioned in the recent Malmö Declaration, «are very limited and the safeguard and management of the heritage of wildlife and its habitat are greatly imperilled by many adverse factors»[7].

At the beginning of the 21st century, despite the great advances accomplished in the course of the previous one, it is more than ever clear that, notwithstanding human progress and new technologies, we are entirely dependent on ecological foundations which, anyhow, our economy is gradually eroding. If technological innovations have, in many cases, allowed - and will even in future, permit - to surmount local constraints, the actual environmental limits represent, however, a world problem.

The present paper addresses the topic as follows. In the first section, based on International and Governmental sources, it draws a short *excursus* of the history of the debate on the environmental problems, recalling the main landmarks on the road to the Kyoto Protocol agreed in December 1997, which represents a cornerstone of the efforts to protect environment. It will, then, try to identify the progresses experienced both on focus and on the use of devices to pursue the environmental protection, with special attention to the more recent fiscal ones. In the last section it will describe shortly how the environmental problem is felt in Italy and what the country is trying to do on the matter. The attention will be focused in particular to the more recent fiscal measures adopted in terms of waste policy.

1. THE ROAD TO THE KYOTO PROTOCOL

Over the last thirty years the dialogue on environmental problems has progressively involved more countries and, above all, a larger audience: today, in fact, the debate is not only lively but, we may say, is a consensus issue as every actor of the economic life - from industrialists to policy-makers, from individual citizens to the scientific community - has interest in it. According to the results of surveys conducted in Europe and United States at the end of the Nineties, over 70% of the asked people are in favour of a «green fiscal reform»[8].

Such a result is, however, the beneficial effect of a long and bumpy path that economists and politicians have accomplished in order to further a continuous dialogue aimed at promoting sustainable development and at building a better environment.

The milestones of this route - whose starting point may be detected in the Declaration of the United Nations Conference on the Human Environment, (Stockholm in 1972) and the arrival in the Kyoto Protocol (December 1997) and the subsequent Conferences of the Parties which have to elaborate the guidelines for the implementation of it - may be identified in:

a) The Vienna Convention (1985) on the protection of the ozone layer;
b) The Montreal Protocol (1987) on substances that deplete the ozone layer;
c) The United Nations Framework Convention on Climate Change (New York, May 1992);
d) The Agenda 21 adopted by the Plenary Assembly of the UN in Rio the Janeiro (June 1992);
e) The Barbados Declaration on sustainable development of Small Islands Dveloping States (May 1994);
f) The Nairobi Declaration, defining the role and mandate of the United Nations Program on Environment (February 1997).

Although scientists had suggested, as early as in 1960, that human activity was damaging the environment, only at the beginning of the Seventies the issue fascinated a wider attention. The shifts in attitudes occurred throughout the 1950s and 1960s became, in fact, apparent in the agendas of the intergovernmental conferences at high level (UN and Council of Paris) held in those years. In particular, at the United Nations Conference on the Human Environment in Stockholm (1972), it was acknowledged that «through ignorance or indifference we can do massive and irreversible harm to the earthy environments» and that «man must use knowledge to build, in collaboration with nature, a better environment»[9].

Even if as mere statements of principle, the final declaration stressed that «man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat», «that the natural resources of the earth, including the air, water, land, flora and fauna...must be safeguarded for the benefit of present and future generations»[10] and that «the non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion»[11]. Furthermore, it was clearly mentioned an advice against the discharge of toxic substances in quantities exceeding the capacity of the environment to absorb them «in order to ensure that serious or irreversible damage is not inflicted upon ecosystems»[12]. The Declaration, in the end, invited explicitly the «international organisations to play a co-ordinated, efficient and dynamic role for the protection and the improvement of the environment»[13].

Although the international debate was launched and despite a more conscious campaign on the part of OECD and the European Commission, the actions continued to be, however, fundamentally unilateral up to 1985, when The Vienna Convention for the protection of the ozone layer was signed.

Once more the text agreed appeared unexceptional, but for the first time - and this was an important precedent - twenty nations concurred, at least in principle, to tackle a global environmental problem before its negative effects were felt. On the other hand, the limit of the Convention was that it did not impose any obligation upon nations and just stated their engagement to «take appropriate measures...», without any specification of the measures themselves[14].

After two years of research and exchange of information, in September 1987, a larger assembly (twenty-seven countries) signed, in Montreal, a landmark Protocol on specific measures to be taken[15]. This Protocol, in fact, committed every signatory country to reduce, by 1999, its use of compounds that deplete ozone in the stratosphere (the chlorofluorocarbons - CFCs) by 50% of their level in use in 1986. Successively, advances led to a substantial amendment of the Protocol. Three years later, in London, it was remarkably widened and strengthened: a larger number of countries (more than eighty) agreed upon the changes; it was established that the production and consumption of many CFCs had not only to be cut, but were to be phased out by the year 2000; and it was set the introduction of new controls on other ozone-depleting substances. Since then, the amended Montreal Protocol is the legal linchpin of the international rules for the protection of the ozone layer[16].

Newly discovered scientific evidence sparked the economic and political debate. The awareness that environment and development questions needed a balanced and integrated approach strongly increased until it achieved a clear

statement in the United Nations Framework Convention on Climate Change, in the Rio Declaration and in The Agenda 21 (Environment and Development Agenda for the 21st century), all three documents adopted in 1992.

In the first one - the United Nations Framework Convention on Climate Change (signed in New York in May 1992) - special attention was devoted, for the first time, to the needs of developing countries. Noting that the largest share of the greenhouse emissions originates in the developed countries - but conscious that the ones originating in developing countries are expected to grow consistently - and stressing that these emissions are largely responsible for the adverse climate change (that is, «a change of climate which is attributable directly or indirectly to human activity that alters the composition of the global atmosphere»[17]), the Convention stated, as its ultimate objective, the achievement of «stabilisation of greenhouse gas concentrations in the atmosphere...» at a non-dangerous level. Even more, «such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change ... and to enable economic development to proceed in a sustainable manner».[18]

Considering the global nature of the problem, it stated as well that all Parties should concur to meet this goal in accordance with their specific development priorities. In fact the Convention, although recalling the sovereign right of each country to exploit its own resources, affirmed that, on the one hand, the developed country Parties and other countries included in Annex I had to take «the lead in modifying longer-term trends in anthropogenic emissions through the implementation of specific measures in order to limit the emission of greenhouse gases» and to protect and enhance their greenhouse gas sinks and reservoirs[19]. On the other hand, the developing country Parties, where the first and dominant priorities are economic and social development and poverty eradication, were committed to the same goals in accordance with their capabilities and with the financial support, including the transfer of technology, of the developed country Parties[20].

One month later, facing with the same topics, the United Nations Conference on Environment and Development met in Rio de Janeiro (June 1992), where it proclaimed the so-called Rio Declaration and adopted the Agenda 21, a programme of action for the 21st century, which marked the beginning of a new global partnership.

The advances on the debate arose, in fact, the need of a higher level of co-operation among countries, which was clearly stressed in the Rio Declaration: «all States and all people shall co-operate in the essential task... to meet the needs of the majority of the people of the world»[21]; «environmental

issues are best handled with the participation of all concerned citizens, at the relevant level...»[22]. Furthermore, it enounced that this larger co-operation, among the other problems, should bring the «national authorities... to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluters should, in principle, bear the cost of pollution, ...without distorting international trade and investment»[23].

Agenda 21, a dynamic programme pointing out today′s pressing problems, aims at preparing the world for the challenges of the 21st century. The objectives are large and their fulfilment requires both a broader participation (Governments, international and regional organisations, non-governmental organisations) and substantial flows of new and additional financial resources to developing countries. Reflecting the moment in history in which this programme was prepared (the opening for some Central-Eastern European countries of a process of transformation towards a market economy), a special attention was given «to the particular circumstances facing the economies in transition and to the unprecedented challenges their are facing in transforming their economies»[24].

At this moment, there was an evident intensification of conferences and intergovernmental meetings reaffirming the principle of general commitments to sustainable development. Among their large number, in order to the problems tackled, the Declaration of Barbados (May 1994) and the Nairobi Declaration (February 1997) are worth to be mentioned.

The first one was particularly remarkable as far as it afforded the problems of small developing countries. It, in fact, affirmed that «while small islands developing states are among those that contribute least to global climate change... they are among those that would suffer most from the adverse effects of such phenomena» and therefore they are among those that need particular assistance to be able «to cope effectively, creatively and in a sustainable manner with the environmental changes»[25].

The Nairobi Declaration, endorsed by the United Nations General Assembly in New York in June 1997, underlined the continuing relevance of the UNEP (The United Nations Environment Programme)[26] and confirmed its role as an «authoritative advocate for the global environment». In defining the future role and mandate of this agency, the Declaration pointed out, in particular, the commitment to «analyse the state of global environment ..., to provide policy advice ..., to catalyse and promote international co-operation and action ..., to advance the implementation of agreed international norms and policies ... and to serve as an effective link between the scientific community and policy-makers»[27].

All the above steps gradually prepared, in conjunction with the monitoring Conferences of the Parties to the Convention on Climate Change, the so-called Kyoto Protocol[28], which - in December 1997 - illustrated to the world the close links between environment and economic policy. Its main results were the setting of relative long-term targets (assigned amounts) for all industrial countries, in aggregate and individually, for future emissions of greenhouse gases (GHGs) responsible of climate change and the request to each Party of demonstrable progress in achieving its commitments by 2005.

TAB. 1 - Party quantified emission limitation or reduction commitment (percentage of base year or period)(1)

Australia	108	Lithuania*	92
Austria	92	Luxembourg	92
Belgium	92	Monaco	92
Bulgaria*	92	The Netherlands	92
Canada	94	New Zealand	92
Croatia*	95	Norway	101
Czech Republic*	92	Poland*	94
Denmark	92	Portugal	92
Estonia*	92	Romania*	92
European Community	**92**	Russian Federation*	100
Finland	92	Slovakia*	92
France	92	Slovenia*	92
Germany	92	Spain	92
Greece	92	Sweden	92
Hungary*	94	Switzerland	92
Iceland	110	Ukraine*	100
Ireland	92	United Kingdom of Great Britain	
Italy	**92**	and Ireland	92
Japan	94	United States of America	93
Latvia*	92	**All above Countries**	95

(1)**Annex b of Kyoto Protocol**.
* Countries that are undergoing the process of transition to a market economy.

The aggregate target (on average, little more than a 5% reduction of the 1990 emissions in the period 2008-2012, which would mean, according to some estimates, a reduction of 25-30% compared to business as usual projections) implied a certain burden sharing through differentiation for the various Annex I partners[29], which includes both the relatively wealthy countries that were members of OECD in 1992, and countries with economies in transition,

that is the Russian Federation and several other Central and Eastern European Countries. The different targets may be grouped in three categories:

- stabilisation target: Russian Federation and Ukraine;
- reduction target: most of the Annex I countries, among which EU and its Member States (-8), United States (-7) and Japan (-6);
- increasing target: Norway (+1), Australia (+8), and Iceland (+10).

TAB. 2 - Greenhouse gases emissions(*) in EU and Kyoto targets

	Emissions 1990	**Emissions actual changes**	**Kyoto targets**	
	m.ton CO_2 equivalent	1990-98 percentage	%(**)	m.ton CO_2 equivalent
Luxembourg	14	-58.4	-28	10
Germany	1,201	-15.8	-21	949
Denmark	72	8.7	-21	57
Austria	74	4.1	-13	64
Great Britain	775	-9.5	-12.5	678
Belgium	139	6.5	-7.5	129
Italy	**542**	**4.6**	**-6.5**	**506**
The Netherlands	208	8.1	-6	196
Finland	73	5.8	0	73
France	637	1.0	0	637
Sweden	69	0.7	4	72
Ireland	57	19.1	13	64
Spain	301	19.4	15	347
Greece	104	15.0	25	130
Portugal	69	17.8	27	87
Total	**4,334**	**-2.5**	**-8**	**3,998**

(*) $CO_2+CH_4+N_2O$.
(**) Percentage change with respect to 1990 levels.
Source: European Commission, Eurostat.

The commitment for the EU was set by the Protocol to an overall reduction of 8%, but even within this area, in June 1998, through a system of «burden sharing» taking into account the different situations of each country, there have been established different targets for each individual country on the basis of its own energetical, technological and economical capacity.

Along with the targets, the Protocol established also three new collaborative implementation mechanisms or «flexibility mechanisms», that is joint implementation or project level crediting, emission trading and the clean development mechanism. It left, however, many technical aspects of these mechanisms undefined and allowed, through the trading mechanism, the

bargaining over the atmospheric space to be polluted at the cost of the Third World countries.

In particular, the joint implementation mechanism[30] permits transfers of project-based emission reductions units among Parties with emissions objectives under the Protocol, thus giving each Party the possibility to achieve the target in co-operation with other Parties (principle on which is based the burden sharing of the EU agreement).

The emission trading mechanism[31] establishes on which basis the Annex I Parties may transfer part of their assigned amount to other Annex I Parties with the aim of improving the overall flexibility and economic efficiency. This mechanism allows Parties facing high costs in achieving emission reductions at domestic level to purchase them from other countries which have obtained them at a lower cost. However, there are potential pitfalls unless this system is strictly regulated: eventually significant surplus in pollution «rights» the so-called «hot air» of one country, due to an economic collapse, might be sold to the highest bidder among the OECD countries with emission obligations, thus jeopardising the real emission reductions.

The clean development mechanism[32], a parallel of the joint implementation one, allows emission reductions projects located in non Annex I Parties to generate certified emission reductions to be used by Annex I Parties in order to meet their emission objectives. Through it, it would be possible to create commercial opportunities for private sector entities and to redirect international capital flows to climate-friendly investments. It was, actually, to the trading mechanism that, for example, the United States referred to when, as it did at the end of 2000 in The Hague, asked for an unlimited use of the marked-based mechanisms.

Even if the Kyoto Protocol represented - and still represents - a consistent step forward of the international efforts to respond to climate change, one of its limits was that emerging or developing countries, such as China or India, which, according to forecasts, will become in future the greater producers of GHGs, are not subdued to any commitment and are not legally bound to cut the GHGs emissions.[33] This implies that the effort of the countries included in Annex I, which through the Kyoto Protocol are asked to implement these commitments, might be partially or totally invalidated by the less developed countries' attitudes.

What is more, even if most of Annex I countries recognises that the achievement of these targets would represent only a small step towards the adequate levels of GHGs in the atmosphere, in times of economic slowdown, these countries see the difficulty of going on with reductions as the resources to

deal with become steadily scarcer. As, recently, admitted by the World Bank, the objectives were, indeed, set without giving sufficient attention to the practicalities of implementation and to competing pressures[34] in different countries.

The long list of meetings devoted to the promotion of a reasonable use of natural resources may induce to think that this is an endless process. Furthermore, the fact that environmental policy has become, throughout the last decades, increasingly relevant does not imply that the different ways in which it is pursued receive a general consensus.

The Kyoto Protocol - as any other major economic transformation - entails some challenges whose consequences may be, at least in part, the cause of difficulties many national governments find in ratifying it. The «alarming discrepancy between commitments and action» stressed at the Malmö meeting of Spring 2000[35] could be interpreted as an invitation to the signatory parties of the Kyoto Protocol. Four years after the agreement, despite the need, according to the article 25 of the same Protocol, that «not less than 55 Parties to the Convention which account in total for at least 55% of total carbon dioxide emissions for 1990... deposit their instruments of ratification, acceptance, approval or accession», 46 countries[36] (including only two Annex I countries - Romania and Czech Republic - and therefore representing a very small percentage of CO_2 emissions) have yet done so, since there continues to be much uncertainty about the potential effectiveness of the Protocol. And last but not least, the most concerns regarding its effectiveness are related to this high threshold for its entry into force.

TAB. 3 - Emission Percentages of Parties or Group of Parties

Party / Group of Parties	% of Annex I emissions in 1990
EU	24.2
CEITs (without Russia)	7.4
Russia	17.4
USA	36.1
Japan	8.5
Canada	3.3
Others	3.1

Source: H.E. OTT and S. OBERTHÜR, (1999).

If for years there have been doubts about the seriousness of climate change, nowadays new evidence confirms that man's actions substantially contributed to the global warming up. According to recent evaluations of the Scientific

Intergovernmental Panel on Climate Change, by 2100 the earth's temperature will be on average 6 degrees higher and for the polar regions the increase will be even more pronounced (8 degrees); the Arctic ice cap has already thinned by 42% and 27% of the world's coral reefs have been lost. The effects of this warming up and environmental degradation may be detected in some of the recent extreme weather events, natural disasters and disruption to food production[37]. In that sense, the targets of the Kyoto treaty could represent a good way for doing something to stop the process or at least to slow it.

But, despite this awareness, The Hague climate Summit, in November 2000, which had to finalise the rules for the implementation of the Protocol, collapsed. Not only Governments could not find an agreement for real reductions in polluting GHGs emissions, but they could not even find a common decision on one of the higher loopholes which divide EU and US (with just 5% of the world's population, the US use more than one third of the world's transport energy and release about one quarter of the world's GHGs), that is the problem of emission credits and, in particular, whether to let countries count the carbon absorbed by their forests (carbon sinks) against GHGs emissions.

Besides, another serious blow to the Treaty was dealt, in March 2001, when the US President Bush announced that US would withdraw from it, claming that it would harm the domestic economy. This decision left much more unlikely the potential realisation of the Kyoto's target, thus increasing the probability of a complete failure. However, in Bonn (July 16-27, 2001) and, later on, in Marrakech (29 October 9 November 2001), negotiators of 167 nations succeeded in finding a compromise agreement aimed at rescuing the Kyoto Protocol. This compromise (the «Kyoto-Bonn-Marrakech» agreement), which leaves the US - the biggest world polluter - as the only partner not to accept it, carries binding consequences: its non-compliance will carry ineligibility to participate to the flexible mechanisms. Furthemore, even if it has water-down the Kyoto Protocol (the industrialised countries will not cut their GHGs emissions by the 5.2% below 1990 levels as foreseen[38]) it did not erased its real importance, that is the establishment of an international architecture that might lead to further reductions in the future[39].

At European level, the greater awareness of the importance of the environmental problem and the bigger concern on the part of the citizens brought the European Commission to adopt, at the end of January 2001, the Sixth Environment Action Programme[40]. This programme has some innovative characteristics: it is no more a mere list of regulations, but it tries to involve business and consumers to achieve more environmentally friendly forms of productions and consumption; it involves the States affected by the enlargement of the Union; it limits the

plan of action only to a small number of priorities (climate change, nature and biodiversity, natural resources and waste, human health), and sets general objectives instead of quantified targets; and last, but not least, it relates to a period of ten years on the basis that the effects of new environmental regulations are very slow to make themselves felt. Furthermore, after the US withdrawal, the EU is attempting to assume an international leadership role in the process. A witness of this effort may be found in the package of measures proposed just prior to the Marrakech conference, which will be open not only to the actual 15 EU member states, but as well to the European Economic Area, to the Central-Eastern European countries that are candidate to join the EU and through reciprocal agreements, to non-EU countries that are parties to the Kyoto Protocol.

2. DEVELOPMENTS IN THE USE OF ECONOMIC INSTRUMENTS

In line with the evolution of the debate on environmental protection, similar continuous progresses have been experienced, in the course of the last thirty years, both on the focus and the use (number of applications, variety of instruments) of devices to pursue this goal.

In a very concise way, we can summarise this process (from a purely curative approach to a preventive and integrated one) in three steps. At the beginning, economic instruments were used only in very few instances and policies were mainly oriented on cleaning up existing pollution. The instruments which were principally used were the regulatory ones, that is, standards, licensing, zoning, and so on. This first step was therefore characterised by the so-called «command and control» approach.

In a second step, policy-makers tried to modify the production process in order to minimise the generated pollution and to ensure a sustainable development of natural resources. This shift was accompanied by a gradual enlargement of the types of instruments. The above mentioned command and control approach was associated with voluntary agreements and the interventions were integrated with education campaigns, strengthened co-operation within the international community and with the use of economic instruments such as charges, financial incentives, subsidies, etc.

Only in the third step, after the Rio Conference in 1992, policies focused on a real pollution prevention and integration of environmental concerns with the economic ones. Therefore, the interventions tended to promote a more consciousness of the industry in the preservation of the environment («Environ-

mental Management and Audit Scheme»[41]) and to identify the best options for adaptation. Thus, domestic and international environmental issues have gradually become common subjects of the economic debate, by receiving high priority in the attention of public opinion, governments and enterprises.

The Framework Convention fixed some guiding principles to achieve its important objective. Among the most important we may mention:

- the principle of intergenerational equity, which implies the protection of the ecosystem for the present and future generations;
- the principle of common but differentiated responsibilities, which implies that each State gives a differentiated answer to the global threats according to its capabilities;
- the precautionary principle, according to which countries should take care to prevent or minimise the cause of environmental degradation with precautionary measures «even if there is no scientific evidence to prove a causal link between causes and effects»[42];
- the principle of sustainable development and compatibility with the world trade rules, on whose basis countries should co-operate to promote a sustainable economic growth without imposing discrimination or restriction on international trade.

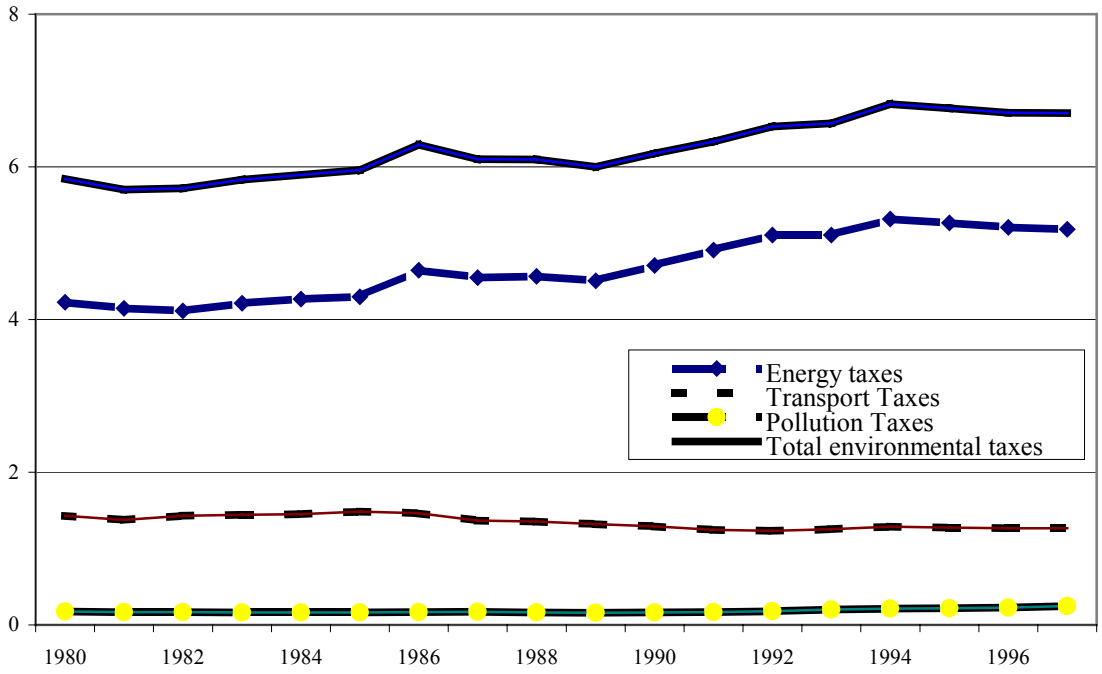
As regards the policy instruments, the range - which today turns out to be very large - has been broadening through the last decades. The initial use of standards, voluntary agreements and educational campaigns has been integrated, over the years, with economic instruments (especially in energy and transport), which through their multiple possibilities - e.g. fees, taxes, levies, charges, transferable permits, prices and subsidies -, offer a considerable promise for improving the integration between economic and environmental policies.

Even on this point we can detect a sort of progressiveness that leads to the envisaged «green tax reforms» of the more recent period. In fact, although many problems still prevent the widespread implementation of environmental taxes, they are nowadays considered one of the most attractive environmental policy instruments, as they seem able to modify the behaviour of producers and consumers in ways that are beneficial to the environment.

While in the Seventies, in order to protect the environment, user charges and subsidies were generally utilised, now other types of charges (e.g. emission charges) and more differentiated economic instruments have become widely implemented. Over the last decade, there has been a dramatic increase in the use of environmental agreements, even if most of them do not have the implementation procedures required to assess their environmental effectiveness.

In almost all OECD countries, in order to promote a reasonable use of natural resources, there has been a growing tendency to use a mix of instruments. If the regulatory tools (standards, licensing, etc.) are still commonly used along with the societal ones (education, information and training), one present typical feature is environmentally related taxes[43], in short eco-taxes (e.g. taxes on energy, CO_2, sulphur, fertilisers, pesticides, etc.), as they are increasingly seen as efficient and effective instruments of environmental policy. In more and more countries, environmental charges, and in particular incentive charges, are brought under the fiscal framework («green tax reform»).

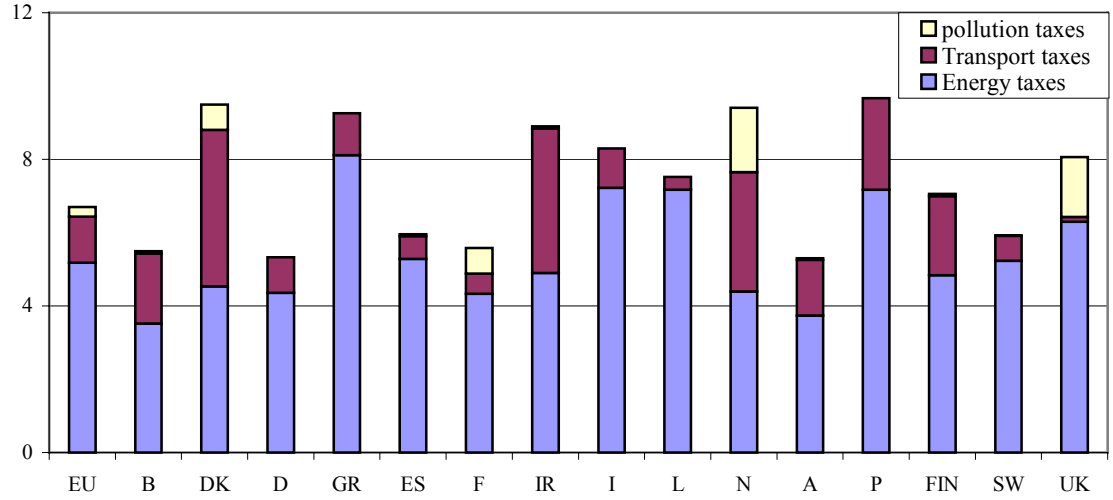
Graph 1. Environmental taxes in European Union
(as a pecentage of total taxes and social contributions, 1980-1997)



Source: EEA (1999)

Despite the consideration that green taxes are still less than 7% (5.84% in 1980 and 6.71% in 1997) of total EU tax revenue (including energy ones)[44], and mainly in force in Nordic countries, a growing number of countries is introducing the use of eco-taxation and/or is envisaging «green tax reforms».

Graph 2. Environmental taxes in European Union countries (1997)
(percentage of total revenue)



Source: EEA (1999)

According to the European Environment Agency, the growth of environmental taxes, between 1980 and 1997, was bigger than the increase of other taxes and social contributions, even if it has to be underlined that specific taxes on polluting activities and products are, up to now, very small and have not changed very much in the period. Furthermore at the end of the Nineties the use of environmental taxes accelerated and the share of them on total tax revenue increased in ten out of the 15 Member States. Many EU countries introduced taxes on environmentally harmful products and activities or refined existing tax schemes, aiming at an improvement of environmental effectiveness.

TAB. 4 - Share of environmental taxes in total tax revenue of EU member countries

Country	1990	1997
Austria	4.11	5.30
Belgium	4.35	5.49
Denmark	6.91	9.49
Finland	4.79	7.06
France	5.94	5.57
Germany	5.07	5.33
Greece	6.50	9.25
Ireland	10.77	8.91
Italy	**8.69**	**8.30**
Luxembourg	7.05	7.52
The Netherlands	5.51	9.42
Portugal	11.17	9.67
Spain	4.60	5.97
Sweden	6.04	5.92
United Kingdom	7.38	8.05
EU	**6.17**	**6.71**

Source: European Environment Agency (2000).

Albeit it is not easy to define the actual value of environmental taxation, as very often it is used in conjunction with other policy instruments or as a supplement of other «command-and-control» policy measures already in place, the overall judgement is positive. In particular, environmental taxes help the implementation of the «polluter pays» and the «user pays» principles, and, to some extent, they represent an additional instrument to reach the Kyoto targets as they respond to the well established and accepted principle of costs internalisation and, through it, to the creation of «fair and efficient prices».
In general terms, the environmental taxes may be assessed as to:

- send correct price signals to producers and consumers about environmental resources scarcity;
- be particularly efficient in internalising the external costs, that is in including directly the cost of environmental services and of damages in the price of the product, of the service and of the activity which cause them, thus contributing to applying the principle that «the polluter should bear the cost of pollution ... without distorting international trade and investment»[45];
- promote the technological improvements that are considered necessary to enhance environmental conditions in the long-run and, hence, also for future generations;
- integrate environmental requirements into sector policies (according to the so-called «Cardiff Process»[46]);
- focus on fixed and material factors - such as energy, water and land - as tax bases in the present context of the increasing mobility of production and commerce;
- raise revenues for environmental purposes.

As to this last point, environmental taxation increases public revenues, and, more importantly, it contributes, on the one hand, to raise a common perception across public opinion about environmental risks, thereby inducing behaviour's changes; on the other hand, it promotes dynamic efficiency by imposing to the economic agents the choice between to bear the cost stemming from eco-taxation or to change technology[47].

The positive judgement of eco-taxation is assessed also in the light of its close relationship with the sector policy (transport, agriculture, energy, etc.) and of the multiple benefits stemming from the environmental taxes. As far as they aim at pursuing different goals according to the familiar idea of the «double dividend» - promotion of employment, of technological progress, of capital stock accumulation, of economic growth -, environmental taxes provide incentives to further reduce pollution and augment revenues.

This last goal - whose validity, however, is greatly debated among politicians and academics - is even more valuable in that increased revenues can contribute either to stimulate investments in favour of the environment or to broaden fiscal reforms, encompassing measures such as a reduction in labour taxes and/or in social contributions. On this aspect some progresses have already been accomplished and further more are forecasted in the next years as there is a radical shift away from taxing «goods» (like labour) towards taxing «bads» (like environmental damages). Environmental taxes help, actually, to relieve part of the burden of other direct taxes (such as income tax and social contributions) while assuring the same amount of total tax revenue.

Albeit the overall positive evaluation of eco-taxation, some side problems exist. Over the last decade, many theoretical and empirical studies have cast doubts on the validity of a revenue neutral environmental taxation both as regards the hypothesis of double dividend and as regards the interactions with the pre-existing taxes[48]. Other problems stem from the principles on which eco-taxation relies: equity, neutrality, invariance of the general tax burden.

As far as equity is concerned, many studies at European level show the potential risk of regressive effects of such a taxation when it is levied on consumption: a tax for pollution control or on domestic combustibles, would concentrate on the weakest social classes as far as their quota of consumption expenditure over their total income is higher than that of the richest ones.

This regressive problem may be overcome by a more comprehensive restructuring of tax/subsidies schemes according to wider «green reforms», encompassing, for example, progressive tax rates on increasing consumption. This may explain the efforts on which Governments are engaged to reduce or re-focus subsidies and tax exemptions (some of them can generate unexpected or unwanted environmental side-effects causing an increase in consumption) in a number of economic sectors[49]. In many cases the process of decreasing or removing such subsidies shifting to taxes, would bring a twin benefits: less public spending and increased employment thanks to the shift from taxes on labour to the eco-ones.

Another much debated aspect of eco-taxation concerns its neutrality and in particular the macroeconomic negative effects it might produce. For example, just to mention a recent problem, rising energy prices (as the one experienced in 2000) produce a similar effect on indirect taxation (e.g. carbon tax and excise duties) and consequently generate an inflationary impact.

TAB. 5 -Tax Shifts in European Countries

Country	Tax Shift		Revenue Shifted
	From	To	% of total tax revenue and/or tax revenue
Sweden 1990	Personal Income (reduction of labour taxes of around 4.3 percentage units)[1]	Environmental and energy taxes including CO_2 tax and SO_2 tax	1.9 (revenue from environmental and energy taxes 18 bill. SKr; 2 bill. EUR)
Belgium 1993	Social Security Fund[2]	Energy Tax	n.a
Denmark 1993, 1995 and 1998[3]	Personal Income, Employers' Social Security Contributions, Investment Incentives	Various (electricity, water, waste, cars), CO_2 and SO_2	2.5 (2.4 bill DKr; 340 mill. EUR in 2000)
The Netherlands 1996	Personal Income, Corporate Profits, Employers' Social Security Contributions	Energy and CO_2 (Regulatory Tax on Energy)	0.8 (2.2 bill. HFL; 1 bill. EUR in 1998
Finland 1997	Personal Income, Employers' Social Security Contributions	CO_2 and Landfill	0.5
Italy 1999	Reduction of Employment Charges	CO_2	0.2[4]
Germany 1999 and 2000	Social Security Contributions paid by employers and employees	Energy (mineral oils, natural gas and electricity)	n.a a reduction by 0.8 percentage point[5] (8.4 bill. DM; 4.3 bill. EUR in 1999) a further reduction of 0.2 percentage point is estimated for 2000[6]
France 1999[7]	Reduction of the tax wedge on labour	TGAP (General Tax on Polluting Activities)	n.a
Switzerland 1999/2000	Reduction of contributions to the medical health insurance	Tax on VOC and tax on light fuel oil (sulphur tax)	n.a 100 mill. SF; 62 mill. EUR in 1999/2000 increasing to 230 mill. SF; 142 mil EUR in 2003
United Kingdom 2001	Employers' Social Security Contributions (NIC) a 0.3% reduction in employers social security contributions	Climate Change Levy (levied on business use of energy) - to be introduced in April 2001	n.a 1 bill. UKL; 1.6 bill. EUR (est. for 2001/2002)
United Kingdom 2002	Reduction in Employers' Social Security Contributions (NICs)	Aggregates tax - to be introduced in April 2002	n.a 380 mill. UKL; 609 mill. EUR in 2002 (est.)

Source: Speck S. and Ekins P., (2000).

[1] The whole reform reduced the revenues generated by taxes levied on households and corporations to 21.3% of GDP in 1991 compared with 25.3% in 1998.
[2] A 1.5% reduction in employers' social security contributions was the result of this programme.
[3] The reform in 1993 primarily concerned households; the reform in 1995 concerned industries and the latest reform in 1998 concerned both hoyuseholds and industries.
[4] The reduction of 0.2% is based on total tax revenue of around 339 billion EUR in 1995 – the estimated tax revenue of the CO_2 tax is around 1.12 billion EUR in 1999 and 60% of the revenue is earmarked for the reduction.
[5] The 0.8 percentage reduction refers to social security contributions which will be reduced from 20.3% to 19.5%.
[6] The 0.2 percentage reduction refers to social security contributions, which will be reduced from 19.5% to 19.3%.
[7] The French Government started to restructure the system of environmental taxes and charges in 1999 by establishing the TGAP as an umbrella for a whole range of environmental taxes and charges covering air pollution charges, waste taxes and water charges. The revenue of this tax is used for reduction of the tax wedge on labour and for offset enterprises which implement the new legislation of the 35 hours work per week.

In order to neutralise such distortions, there is an urgent need to harmonise the measures which should be taken, at least within regions - such as EU - where economic interdependence prevails[50]. Such symmetric responses are required in order to avoid aside unbiased decision-making on allocation of input, unfair competition, and so on[51]. If there have been lots of documents prepared by the Commission on the matter[52], the effective realisation of the process is, however, far to be completed.

TAB. 6 - VAT rates in EU Member States (selected products and services in %) in 2000

Country	VAT standard rate	Water Supplies	Collection of waste, etc.	Passenger transport	Natural gas	Electricity
Austria	20	10	10	10	20	20
Belgium	21	6	21	6	21	21
Denmark	25	25	25	Exempt	25	25
Finland	25	22	22	8	25	25
France	19.6	5.5	20.6	5.5	20.6	20.6
Germany	16	7	16	16-7	16	16
Greece	18	8	8	8	8	8
Ireland	21	Exempt	Exempt–21	Exempt	12.5	12.5
Italy	20	10	4	10	10	10
Luxembourg	15	3	3	3-0	6	6
The Netherlands	17.5	6	17.5	6	17.5	17.5
Portugal	17	5	Exempt–5	5	17	5
Spain	16	7	7	16-7	16	16
Sweden	25	25	25	12	25	25
United Kingdom	17.5	0	0-17.5	0	5	5

Source: EC, (2000).

One more aspect that makes difficult the introduction of eco-taxes, at least at EU level, is the fact that, as any other fiscal measure, they have to receive the unanimity vote. This may explain why, though the EU Commission already proposed in 1992 the introduction of a mandatory EU-wide CO_2 energy tax, the use of eco-taxes has detected some progresses only in some Member States, but very few in EU as a group.

3. THE ITALIAN EXPERIENCE

It is worth analysing more deeply the Italian case as far as the country is the custodian of an exceptional heritage of landscape, monuments and biodiversity.

Despite such rich endowment, Italian Constitution, differently from other European countries, addresses the environmental matter in quite a vague and loose way; it limits itself to state: «Italian Republic protects the landscape and

the historical and artistic endowment of the Country» (art.9) and «...cares for health as a fundamental right of every inhabitant and interest of the community» (art.32). So, there is no Constitutional principle including a specific obligation on the part of citizens, nor an explicit tight responsibility of public authorities to protect the national environment.

Furthermore, the Ministry of Environment was established only in 1986 and so it is only from a very short period that there is a co-ordination of the information and actions pursued at local level. A witness of the beneficial effects of this co-ordinated action may be detected in the progresses made in terms of protected areas (the number of protected area grew from 445 in 1993 - when was published the first official list - corresponding to 6.8% of the total surface to 669 equalising about 10% of national surface, in 2000[53]) and in the first concrete step of an Italian climate policy with the approval by the CIPE (Interministerial Committee for Economic Planning), in 1994, of the National Plan for the containment of CO_2 emissions[54].

The contradiction between the richness of the endowment and the attention given to it, reflects the sort of inconsistency the country is experiencing also nowadays. On the one side, Italian environment is overstressed by quite a few factors such as tourism, the «criminal» deforestation (namely the large areas of forests burnt every year) and the heavy noise and air pollution induced by transport, traffic and in particular road traffic. Some figures, that may outline such point, are those coming from the transport sector, which accounts for 28% of CO_2 nation-wide emissions. For example, in 1997, the CO_2 emissions of the various transport modes (road, rail, and plane) amounted to about 109 m. tonnes, with an increase by 14% over the 1990 figures. From road transports alone - which accounted for 64.6% of total transport of goods and 92.1% of total internal passenger traffic - the growth rate in the same period was 13% in spite of the fleet renewal rate, which the Government promoted in 1997, by adopting car-scrapping measures (which may be considered environmental related interventions)[55].

On the other side, Italian environmental policy is still marked by considerable shortcomings, difficulties and uncertainties. The official attitude towards environment is featured by formal commitments together with a substantial lack of practical implementation (or, at the best, with interventions of marginal relevance and/or of only local operativeness). Some economic measures (tariffs on water discharge, tax on urban waste collection, tax on non-biodegradable plastic shoppers, price differentiation in favour of unleaded gasoline) in force in Italy may be described, by and large, as environmental. But, although Italian authorities encouraged, since the early Nineties, the introduction, at EC level, of

an environmental policy using economic and fiscal instruments, ecological taxation, in Italy, is still in its infancy and the country is still far from a genuine «green tax system».

One of the key guidelines of the present Italian environmental policy has been driven by the Kyoto Protocol, notably in the compliance of its recommendations on emissions cutting. Italy should cut its 1990 emissions by 6.5% in the commitment period 2008-2012, that is slightly less than the average of the European countries. According to a study published by Confindustria[56], however, the Kyoto commitments would result in Italy higher than in Germany, France and United Kingdom if the abatement is referred to the level of emissions that would be expected in the absence of any action (baseline or «business-as-usual» level).

TAB. 7 - The EU-15 performance

(percentage)

Country	Reduction target 2008-12 versus 1990	1990-98	Requested cuts
Italy	-6.5	+4.6	10.6
Belgium	-7.5	+6.5	13.0
Denmark	-21.0	+8.7	27.3
Germany	-21.0	-15.8	6.2
Greece	+25.0	+15.0	None
France	0	+1.0	0.9
Ireland	+13.0	+19.1	5.1
Luxembourg	-28.0	-58.4	None
The Netherlands	-6.0	+8.1	13.1
Austria	-13.0	+4.1	16.4
Portugal	+27.0	+17.8	None
Finland	0	+5.8	5.4
Sweden	+4.0	+0.7	None
United Kingdom	-12.5	-9.5	3.3
UE-15	-8.0	-2.5	5.6

Source: Eurostat.

Considering the required efforts, the Kyoto abatement goal has given rise to a lively debate in the country because of the disproportion between such requirement (and its related costs, also in terms of economic development) and the level of efficiency prevailing in the domestic sector. It is in fact well known that Italy is one of the most energy-efficient countries in Europe and, even, in the world, thanks to the energy policy carried out after the 1973 oil crisis and, especially, after the 1987 national decision to abandon atomic energy and

dismantle the existing nuclear plants. In particular, Kyoto requirement is very demanding if it is considered from a more general perspective: in fact, Italy is less efficient in terms of total gases emissions producing the greenhouse effect. This circumstance is mainly due to the above mentioned absence of a domestic nuclear sector (well operating in some other major industrial countries), as well as to the higher gases emissions prevailing in the electric sector[57]. As far as it refers to this last sector, at the end of 1998, operators and local administrations stipulated a Pact for Energy and the Environment that engages them to undersign voluntary agreements finalised essentially to the Kyoto commitments (Government relies on voluntary agreements to realise the greater part of the CO_2 reduction). As an essential clause of this Pact, in 2003 there will be a check in order to take the necessary actions if the mechanism will not perform properly[58].

The prior mentioned figures of the transport sector give evidence both of the persistent historical (generalised) growing trend of CO_2 despite the Kyoto commitments and the higher efforts required with respect to the nominal 6.5% reduction target.

Even if Italy - together with most other countries - has not yet ratified the Protocol, in line with the position of all other EC member States it is well determined to meet its own commitment. Furthermore, if the discussion on policies and measures to achieve these targets led, already in late 1998, to the approval by the CIPE of the National Plan for the reduction of GHGs emissions[59], in the country there is a growing common concern on the relevance of environmental issues and natural resources preservation, especially against pollution. The critical situation, particularly in terms of GHGs emissions, stimulates the public opinion and policy-makers and induces some positive trends in ecological policy. Beside the recent institution, operated by ANPA (National Agency for the Protection of the Environment), of a database on products Life Cycle assessment (I-Lca)[60], there emerges, notably, the «greening» of the Italian tax system and, accordingly, the broader emphasis on eco-taxation.

This tendency may be observed mainly over the past three years. More in detail, the eco-taxation issues were explicitly addressed, for the first time, by one of the most relevant Italian governmental policy documents, that is the Economic and Financial Planning Document (DPEF) for the years 1998-2000 (approved in May 1997) and, subsequently, by Law No. 448/1998.

In particular, on that occasion, Italy introduced a mechanism of taxation of polluting emissions with the double goal of reducing the volume of the negative

emissions (as stated by the Kyoto Protocol) and freeing resources to finance social measures and/or to reduce social contribution on labour costs.
Evidence on this brand-new tendency is in that:

- Italy is implementing a mix between «command-and-control» instruments and eco-taxation, with a growing focus on the latter, much in line with the updated approach to environmental protection (i.e. the «environmentally-friendship approach»);
- Italy is exploring new tax bases aimed at reducing the pressures on its environment, and an eligible one is tourism. In this field, we should remind the «transversality» nature of the fiscal design: revenues accruing from tourism taxation are supposed to contribute in restoring the Italian major historical cities (such as Rome, Palermo, Florence, Venice, Bari, Naples) and in financing all the sectors relating to tourism facilities (e.g. hotel), in order to improve their quality and competitiveness. Hence, the new orientation in tourism taxation exhibits a close link with the general notion and principle of urban sustainability, as stated by the «Charter of Cities» (the Aalborg Charter)[61]. Furthermore, it represents a good example of linking taxation and sector policy.
  Obviously enough, while choosing such measures some trade-off may arise. So, for example, a trade-off between costs (in terms of lower revenues stemming from the balance of payments) and benefits (in terms of enhancing domestic environment and preservation of natural resources).
- Italy has, recently, introduced (joining the «club» of those few European countries that in the Nineties had already introduced a CO_2 energy tax[62]) the carbon tax, whose basis is consumption (Lire 1000 - some 0,50 € - per ton) of carbon, coke, etc., regardless of their different CO_2 emissions. This tax takes into account on the one side, both the content of carbon and the energetic content of fuels for transport, domestic heating and industrial sector; on the other side, the content for electricity generation sector, but it is not proportionate to the content of carbon as its main target is decreasing the use of coal and oil in this sector.

Once again, this instrument is aimed at pursuing, at the same time, some relevant extra-fiscal goals in line with the rationale of modern environment taxation. On the one side, part of the tax incomes will be employed to finance realisations that could foster energy efficiency and promote renewable resources. On the other side, in accordance with what has been observed by many economists (that is the twin benefits which may be realised by the so-called green tax), through this measure Italian policy-makers are trying to exploit mainly the «employment double dividend», financing R&D programmes in the environmental area, and promoting technological innovation of small- and medium-sized enterprises, that are the core of the domestic economy.

While the largest share of the expected revenue (about 60%) is used for the reduction of social contributions, about 30% will be targeted on compensation measures and the remaining for the interventions improving environmental efficiency of energy use.

We have, however, to notice that, recently, worried by the inflationary impact of the awful oil price increase, the first stage of this reform has been postponed and the Italian Government has offered relief (through a reduction on some excises) to lorry hauliers. This measure may be regarded as an attempt to devise a close link between eco-taxation and sector policy in accordance with the agreements on climate changes and, in particular, in line with the above mentioned «Cardiff Process».

We should stress that the Italian law which introduced the carbon tax (Law No. 448/1998, art.8) is one of the cornerstones of the country's eco-fiscality. Limiting ourselves to focusing on CO_2 question, the norm addresses the main following aspects.

1) Re-modulation of the prevailing excise duty tax rates on mineral oils, according to their carbon content, on the basis of periodical fiscal manoeuvres;
2) Returning and redistributing eco-tax revenues in accordance with the modern idea of transverse nature of environmental initiatives: reduction of social contributions in labour market and financing environmental policies through subsidies, so decreasing the opportunity-costs of cleaner energy and technologies (the so-called eco-bonus).

Relating to this last matter, it is worth pointing out that the overall outcome would be an invariance of the Italian general tax burden, thus in line with one of the familiar principles of eco-taxation.

We should also stress the relevance of environmental taxation in redistributing tasks and responsibilities among different levels of fiscal federalism (State/Regions/Municipalities). That is, there emerges a growing emphasis on the action of local authorities in complying with the environmental defence. These ones, indeed, are closer to people and territories, hence more aware about their needs and risks. It follows that local fiscality should prove to be quite effective in mitigating pressure factors hampering environment. This is in particular evident, for example, in term of waste treatment and disposal.

Although not directly connected with the Kyoto Protocol, the constant growth of waste produced by modern consumer society (the urban production grew at annual rate of 3.1% between 1996 and 1999), mainly due to sociological

changes such as income improvements, the inefficient production systems and the non-optimal use of materials, is generally regarded as one of the easiest way to intervene to protect the environment.

TAB. 8 - Waste Production in EU Countries (1997)

Area	Production (thousands tonnes)	Percentage of area	Production per capita (kg)	Average EU=100	Percentage recycled	
					Paper	Glass
Austria	4,110	2.17	510	100.59	65.0	88.0
Belgium	5,028	2.66	496	97.73	38.0(*)	75.0
Denmark	2,864	1.51	545	107.53	50.0	70.0
Finland	2,100	1.11	410	80.91	57.0(**)	62.0
France	34,700	18.35	596	117.43	41.0	52.0
Germany	43,486	22.99	531	104.78	70.0	79.0
Greece	3,000	1.59	287	56.52	29.0	26.0
Ireland	1,325	.70	366	72.24	12.0	38.0
Italy	**26,605**	**14.07**	**462**	**91.12**	**31.0**	**34.0**
Luxembourg	193	.10	467	92.13	n.a	n.a
The Netherlands	8,726	4.61	563	111.03	62.0	82.0
Portugal	3,500	1.85	353	69.55	40.0	44.0
Spain	15,307	8.09	390	76.90	42.0	37.0
Sweden	3,200	1.69	362	71.38	62.0	76.0
United Kingdom	35,000	18.50	596	117.56	40.0	26.0
TOTAL EU	**189,144**	**100.00**	**507**	**100.00**	**48.7**	**53.0**

Source: EEA, Eurostat.

(*) 1996.
(**) 1995.

Local institutional bodies are, indeed, requested to adopt the appropriate instruments in order to promote the development of clean technologies, life-cycle analyses to deal better with recycling, recovery and reuse policies, voluntary agreements, consumer information and awareness raising.

The Legislative Decree 22/97, the so-called Decreto Ronchi, introduced some dispositions to orient the waste management system towards a recovery approach. In particular it fixed medium term targets for the separated collection[63], whose first step has been reached only by 7 Regions almost all in the North part of Italy.

TAB. 9 - Total and separate collection of urban waste in Italy (1999)

	Total collection		Separate collection		
	(abs. value in tonnes)	(%)	(abs. value in tonnes)	(%)	(% total collection in the area)
Piemonte	2,006,853	7.1	300,116	8.1	15.0
Aosta	62,614	0.2	7,680	0.2	12.3
Lombardia	4,279,974	15.1	1,422,981	38.4	33.2
Trentino Alto Adige	508,272	1.8	97,087	2.6	19.1
Veneto	211,2601	7.4	503,888	13.6	23.9
Friuli Venezia Giulia	572,480	2.0	91,772	2.5	16.0
Liguria	898,758	3.2	85,302	2.3	9.5
Emilia Romagna	2,413,949	8.5	460,629	12.4	19.1
Total North	**12,855,502**	**45.3**	**2,969,455**	**80.1**	**23.1**
Toscana	2,105,665	7.4	353,673	9.5	16.8
Umbria	422,108	1.5	42,552	1.1	10.1
Marche	761,011	2.7	56,029	1.5	7.4
Lazio	2,779,686	9.8	95,151	2.6	3.4
Total Centre	**6,068,470**	**21.4**	**547,404**	**14.8**	**9.0**
Abruzzo	608,995	2.1	26,264	0.7	4.3
Molise	113,930	0.4	2,235	0.1	2.0
Campania	2,561,546	9.0	26,953	0.7	1.1
Puglia	1,802,608	6.4	66,758	1.8	3.7
Basilicata	2188,822	0.8	4,919	0.1	2.2
Calabria	821,129	2.9	5,561	0.1	0.7
Sicilia	2,552,727	9.0	48,453	1.3	1.9
Sardegna	760,186	2.7	9,561	0.3	1.3
Total South and Islands	**9,439,942**	**33.3**	**190,705**	**5.1**	**2.0**
Total national	**28,363,914**	**100.0**	**3,707,564**	**100.0**	**13.1**

Source: ANPA, ONR (2001).

Available data[64] display, indeed, as usual, a remarkable dualism across the Country. Even in dealing with waste collection, in the North, public awareness and practices are more advanced than in the Southern areas. Mostly in the North, cities have project underway concerning separate waste collection, recycling, production of energy from incineration, and the like[65]. Furthermore, as stated in the Report of the Ministry of Environment[66], only 30 Provinces (11 in Lombardy, 2 in Piedmont, 1 in Liguria, 1 in Venetia, 1 in Latium, 9 in Sicily and 5 in Emilia-Romagna) have lunched initiatives regarding waste management

specifically (Osservatori Provinciali sui Rifiuti -Waste Provincial Observatories) with the aim of ensuring, under this point of view, a better city plan.

In line with the European tendency, however, a relevant general re-orientation in waste-policy principles is emerging, according to which urban waste disposal should no longer be paid for by tax, but rather by charges, proportional to the quantity of waste (LD 22/97, art. No. 49).

This is important in that it applies the «polluter pays» principle and should greatly encourage separate waste collection[67]. In addition, it should be able to influence market choice, since consumers will be prompt to select products which are reusable, recyclable, recoverable, less polluting and which will be less costly to dispose of.

TAB. 10 - Final destination of urban waste in Europe (1997)

Country	Incineration	Dump	other
	percentage		
Austria	16.3	55.0	28.6
Belgium	30.3	54.9	14.8
Denmark	56.2	22.5	21.4
Finland	2.4	71.4	26.2
France	48.8	50.1	1.1
Germany	26.3	70.0	3.7
Greece	0	92.8	7.2
Ireland	0	92.4	7.6
Italy	5.2	88.9	5.9
Luxembourg	57.8	38.1	4.1
The Netherlands	26	34.0	40.0
Portugal	0	88.0	12.0
United Kingdom	4.4	83.2	12.4
Spain	40.6	37.5	21.9
Sweden	12.5	70.0	17.5

Source:calculations Proaqua-Irs on OECD data.

However, LD 22 relies on very sound principles and does not include instruments which allow it to be implemented. One of its limits is that the law does not ensure the productive reuse of recovered materials and in a number of towns, waste collected separately ends up jointly in landfills A part some specific measures (e.g., to stimulate a market for recycled paper, Regions have to ensure that 40% of the paper used in public offices is recycled paper), at present, tax levy remains the main concrete instrument, both in domestic and non-domestic waste management.

The bulk of the tax design is local taxation on waste disposal levied by Municipalities, that is TARSU (Tassa sui Rifiuti Solidi Urbani)[68]. The tax basis, until 1998, was the occupied area, the districts served and it was differentiated according to categories of use. The determination of the amount to be paid was related to a *normal* (rather than *effective*) production of waste that was expected according to the area dimension (typically, the home size)[69].

A new regime of taxing waste collection was introduced in January 1999 according to the LD 22. The new tax consists of two components: a fixed quota - depending on the waste disposal costs - and a variable one, which is proportional to the amount of waste produced (accordingly, some 40-50% of the waste management costs would be directly related to the amount of waste produced by the household). However, the difficulties faced by Municipalities in adopting the criteria stated by the Decree have prevented its application, and TARSU, up to now - is still in force.

Such difficulties are one of several aspects of the unsatisfactory procedures and schedules of Italian Public Administration in adequating environmental policy to the sovra-national directives. Another relevant example of such inadequacy, specifically in the industrial waste sector, involves reuse and recycling, which is terribly bureaucratic: there is much in the way of paperwork, forms, registers of the material coming in and going out, declarations, and the like, with associated administrative and managerial costs[70]. The complex mechanism adopted, the continuously changing rules and the growing costs, disincentive the implementation of more updated schemes in dealing with environmental action.

This bureaucratic complexity (and its related costs) is one of the main barriers in «entering» a modern domestic environmental policy and a genuine «green tax» system. Nevertheless, some progresses have been accomplished.

In July 1999 the Senate approved the framework law on the subject of environment accountability of State, Regions and Local Institutions[71]. It states that starting from 2004 State, Regions, Provinces and Municipalities (with more that 100,000 inhabitants) have to approve at the same time as the DPEF and the budget, all documents concerning environment accountability, that is documents concerning environmental sustainability.

One further evidence of the greater awareness for the preservation of the environment, lies in the Budget Law (2001).[72] It officially admits that the ecological behaviour of producers has to be rewarded. Consequently, it introduces, for the next three years, some «eco-incentives» in the form of de-taxation of investments for about 300 billions lire (about 155 millions euro)

and some subsidies for final user who connects himself to a «teleheating» net fed with geothermic energy. At the same time, it specifically states

- the taxable revenue of small- and medium-sized enterprises will be curtailed in relation to the ecological investments operated starting from 2001;
- no less than 10% of the revenue coming from UMTS licenses (the new cellular communications technology due to be rolled out starting from January 2002) should be devoted to the prevention and the reduction of the electromagnetic pollution;
- it supports the programmes of R&D on the topics; it creates a fund, available through the Ministry of Environment, (150 billions lire, that is 77.5 millions euro, for 2001, 2002 and 2003) for interventions to incentivate the promotion and progress of a sustainable development.

TAB. 11 - Application fields for pollution control instruments

Instrument	Field of application
Rules	Absolute prohibition, all sectors
Insurance	Accidental pollution
Objective responsibility	Accidental and routine damaging events
Taxation	Routine emissions control
	Water
	Waste
	Air
Pollution rights	Routine control of environmental quality
	Air
Surety	Waste
Incentives	Short period
Voluntary Agreements	
Eco-label	Marketing
Eco-audit	Industry management
Voluntary agreements	Production control

Source: Cellerino R., (1988).

TAB. 12 - Italian Fiscal Revenues

	1987	1991	1995	1999	1987	1991	1995	1999
	(billions lire)				(percentage)			
Total fiscal revenues	228,094	347,658	471,000	620,032	100.0	100.0	100.0	100.0
Direct Taxes	131,113	206,019	266,283	352,068	57.5	59.3	56.5	56.8
Environmental taxes:	**25,489**	**46,603**	**53,749**	**53,454**	**11.2**	**13.4**	**11.4**	**8.6**
energy taxes	22,490	41,182	51,738	52,148	9.9	11.8	11.0	8.4
car taxes	2,999	5,421	2,011	1,306	1.3	1.6	0.4	0.2

Source: Ambiente Italia (2001).

4. CONCLUDING REMARKS

In the paper it has been emphasised how far has the environmental debate gone over the last thirty years and how has become generally admitted the importance of an international co-ordination of policies and measures. From the first attempts, generated by some very serious accidents, to the recent almost complete integration of economic and environmental problems, the path has been long and bumpy.

As the many mentioned meetings and, in particular, the recent debate on Kyoto Protocol commitments demonstrate, the route has been paved of rise and fall. The approval, at the end of 1997, of the Treaty which calls industrialised and former Soviet Union nations to trim, over the period 2008-2012, "overall emissions of their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases", induced a certain optimism, as it was considered a bright promise of real interventions to protect the world environment. Four years later, however, the difficulties that many governments have in ratifying the Protocol, not only sum up with many other problems undermining the human habitat (from a considerable deforestation to a growing pollution and over exploitation of world resources) but they are a sign of the persistent great disparity between intentions and actions.

Despite the difficulties, in any case, the dialogue continues and it gains strength because both economists and politicians are convinced that a sustainable development is possible only in an environmental friendly context. If for years there have been doubts about the seriousness of the threat of climate change, and, in particular, of the progressively warming up of the globe (it was one of the main culprits that led to the Kyoto Protocol) that an uncontrolled emission of greenhouse gases produces, nowadays there is a general awareness for this problem and for its irreversible consequences. Therefore it is more and more admitted the necessity of joint interventions to stop the process, or at least to loosen it. Even if not yet in a harmonised way, individual countries are making, thus, an increasing use of environmental taxes which are seen as the best tool to integrate economic and environmental policies and a proper help to achieve Kyoto targets.

Even if there is a large debate on the definition of environmental taxation, as often this instrument serves multiple purposes, starting from late-Nineties the use of environmental taxes accelerated. Generally they are considered the best way to send correct price signals to producers and consumers on the resources scarcity, to support a reasonable use of natural resources, promoting, at the same time, technological improvements. Furthermore they are supposed to

produce two kinds of benefits (double-dividend): improvement in the environment and improvement in economic efficiency.

On this last issue, however, the validity is particularly questioned. If a concrete evaluation is at the moment difficult, due to the scant data available, and many studies in the contemporary literature point out that the validity of double-dividend hypothesis cannot be settled as a general matter, it is as much evident (albeit there have been little empirical works on the topic) that some positive effects in employment occurs.

In Italy the situation is very similar to many other industrialised countries. The Kyoto Protocol has not been ratified, but there has been, in recent years some concrete progresses on ecological policy. As in the majority of other countries, the accommodation of different interests led, through the years, to a sort of stop and go interventions policy.

One reason that supports the choice of eco-taxation is its relevance in redistributing tasks and responsibilities among different level of fiscal federalism. Such a redistribution may prove effective in mitigating the remarkable dualism which affects every aspects (economic, social, cultural) of the Country life.

If the complexity of bureaucracy disincentives the implementation of more modern environmental policy, it is unquestionable the growing common concern on environmental issues and a tendency towards a genuine green tax system.

NOTES

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[54] Delibera CIPE, 25 February 1994, published in the Official Journal No. 64, 18 March 1994.

[55] The increasing pollution coming from traffic is, however a world-wide problem. Road traffic, which accounted for 58% of world-wide transportation carbon emissions in 1990, claimed 73% by 1997.

[56] Confindustria (2000).

[57] Italy has a particularly unbalanced energy situation as far as the use of fossil fuels is concerned. As a consequence, on the one hand, the system becomes more flexible than those characterised by large nuclear plants (obsolescence in 30 years, high cost of dismantling and decommissioning, land rehabilitation, waste treatment, etc.); on the other hand, the continued heavy use of non renewable resources has to be taken into account.

[58] CNEL (1998), Pact for Energy and the Environment, 26 November.

[59] Delibera CIPE, 19 November 1998 published in the Official Journal No. 33, 10 February 1999.

[60] This database aims to assess the necessary information on environment produced by a specific product from its beginning to its destruction in order to lead, at European level, to an Integrated Product Policy (IPP).

[61] The Charter of Cities pints, other than urban sustainability, promotion of local Agenda 21; employment on the environment field; targets for the production of renewable energy (8% of the national energy needs is going to be covered this way by 2005 and 15% by 2015); differentiated waste collection and disposal; sustainable urban mobility; territorial preservation (nature and history); sea and water safeguards; services renovation and promotion of eco-audit products; better public information and monitoring for the implementation of the Charter itself.

[62] Although the European Commission had already in 1991 proposed the introduction of a carbon tax, up to now only Belgium, Denmark, Finland, Norway, The Netherlands, Sweden and the United Kingdom have adopted it.

[63] The percentage of separated collection targets fixed by the Legislative Decree 22/97 are 15% of total waste collection by March 1999, 25% by March 2001 and 35% by March 2003.

[64] EEB, European Environment Bureau, (1996) and ANPA (Agenzia Nazionale per la Protezione dell'Ambiente), ONR (Osservatorio Nazionale sui Rifiuti) (2001).

[65] The same differences are observed at European level: separate collection of municipal waste ranges from about 5% in southern European countries to little less than 40% in The Netherlands.

[66] Ministero dell'Ambiente (2001).

[67] According to a study of Federambiente, in 1995 only 7% of urban waste was collected separately, and limited progress have been made since then. According to ANPA and ONR (2001), the separated collection increased from 9.42% in 1997 to 13.08% in 1999.

[68] Decree-Law 2 March 1989 No. 66, translated into Law, with modifications, 24 April 1989 No. 144 and successively amended with the LD 507/93.

[69] However, for Municipalities accounting for less than 35,000 inhabitants, the taxation could be figured out on the basis of the *effective* quantity of waste produced.

[70] The Budget Law 2002 introduces some easing of this bureaucratic mechanism at least for what concerns the registration of material coming in and out in the packaging industry.

[71] This proposal is still to be approved by the Camera, where it has been presented since November 1999 (act. No. 6251).

[72] Budget Law 2001, L. 23 December 2000 No. 388, published in the Official Journal No. 302, 29 December 2000.

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[53] Ministero dell'Ambiente (2001). It is worth noting, however, that there are many protected areas which are not included in the official list either because they have not asked for or because they are not completely protected from hunting activities.

[54] Delibera CIPE, 25 February 1994, published in the Official Journal No. 64, 18 March 1994.

[55] The increasing pollution coming from traffic is, however a world-wide problem. Road traffic, which accounted for 58% of world-wide transportation carbon emissions in 1990, claimed 73% by 1997.

[56] Confindustria, (2000).

[57] Italy has a particularly unbalanced energy situation as far as the use of fossil fuels is concerned. As a consequence, on the one hand, the system becomes more flexible than those characterised by large nuclear plants (obsolescence in 30 years, high cost of dismantling and decommissioning, land rehabilitation, waste treatment, etc.); on the other hand, the continued heavy use of non renewable resources has to be taken into account.

[58] CNEL, (1998), Pact for Energy and the Environment, 26 November.

[59] Delibera CIPE, 19 November 1998 published in the Official Journal No. 33, 10 February 1999.

[60] This database aims to assess the necessary information on environment produced by a specific product from its beginning to its destruction in order to lead, at European level, to an Integrated Product Policy (IPP).

[61] The Charter of Cities pints, other than urban sustainability, promotion of local Agenda 21; employment on the environment field; targets for the production of renewable energy (8% of the national energy needs is going to be covered this way by 2005 and 15% by 2015); differentiated waste collection and disposal; sustainable urban mobility; territorial preservation (nature and history); sea and water safeguards; services renovation and promotion of eco-audit products; better public information and monitoring for the implementation of the Charter itself.

[62] Although the European Commission had already in 1991 proposed the introduction of a carbon tax, up to now only Belgium, Denmark, Finland, Norway, The Netherlands, Sweden and the United Kingdom have adopted it.

[63] Thepercentage of separated collection targets fixed by the Legislative Decree 22/97 are 15% of total waste collection by March 1999, 25% by March 2001 and 35% by March 2003.

[64] EEB, European Environment Bureau, (1996) and ANPA (Agenzia Nazionale per la Protezione dell'Ambiente), ONR (Osservatorio Nazionale sui Rifiuti) (2001).

[65] The same differences are observed at European level: separate collection of municipal waste ranges from about 5% in southern European countries to little less than 40% in The Netherlands.

[66] Ministero dell'Ambiente, (2001).

[67] According to a study of Federambiente, in 1995 only 7% of urban waste was collected separately, and limited progress have been made since then. According to ANPA and ONR (2001), the separated collection increased from 9.42% in 1997 to 13.08% in 1999.

[68] Decree-Law 2 March 1989 No. 66, translated into Law, with modifications, 24 April 1989 No. 144 and successively amended with the LD 507/93.

[69] However, for Municipalities accounting for less than 35.000 inhabitants, the taxation could be figured out on the basis of the *effective* quantity of waste produced.

[70] The Budget Law 2002 introduces some easing of this bureaucratic mechanism at least for what concerns the registration of material coming in and out in the packaging industry.

[71] This proposal is still to be approved by the Camera, where it has been presented since November 1999 (act. No. 6251).

[72] Budget Law 2001, L. 23 December 2000 No. 388, published in the Official Journal No. 302, 29 December 2000.