

“Preparing for Implementation of the Kyoto Protocol”

Commission Communication to the Council and the Parliament

1. Introduction

The Framework Convention on Climate Change (UNFCCC) was adopted in 1992 and subsequently signed and ratified by some 160 Parties, including the Community and its Member States. In December 1997 in Kyoto, the Parties agreed upon a Protocol, which is now open for ratification. This Communication outlines how to prepare for implementation of the obligations of the Kyoto Protocol in the EU.

It serves as the Commission's input to the Cologne Summit, in accordance with the conclusions of the European Council at Vienna in December 1998, which stated: "Climate change is one of the most challenging environmental problems for the next decades. Work on common and co-ordinated policies and measures within the Community should be intensified with a view to domestic action providing the main means of meeting the Kyoto commitments. The European Council welcomes the Buenos Aires Plan of Action and underlines the importance of its implementation for an early ratification of the Kyoto Protocol. A comprehensive EU strategy on climate policy should be considered by the Cologne European Council on the basis of a report by the Commission."

The EU has always been very ambitious in the climate change negotiations. Ambition, however, has to be complemented by concrete action and tangible results. When assessing the current situation, the conclusions are not very positive. Emissions are again on an upward track. Therefore, more needs to be done in order to curb this trend and for the EU to stand a chance of meeting its commitment. This requires more action and more efforts on all fronts and at all levels. Politicians will have to face difficult decisions which may affect our economy and society, but they must be made. Citizens will be affected by such policy decisions and must be made aware of the importance and urgency of the matter.

The EU cannot shy away now that we have reached the phase of giving meaning to the words. In order to continue to show leadership, it should start considering what needs to be done in order for the Community and the Member States to be able to implement the Kyoto Protocol as soon as possible. Thus, the EU will enhance its credibility in the international negotiations and give a strong signal to other Parties to do the same. The conditions laid down in the Kyoto Protocol for its entry into force will ensure that EU competitiveness is not unduly hampered.

"Preparing for implementation" means to bring our own house in order and involves taking the necessary action for enabling the full application of the Kyoto provisions. Key elements in such a preparation are compliance questions in a broad political and practical perspective. The political dimension deals with how the EC and its Member States can reach the 8% reduction of greenhouse gas emissions in the commitment period 2008-2012 compared to 1990 levels and be on track for further reductions after 2012. The practical dimension deals with how to establish a comprehensive monitoring system to accompany and follow up the implementation process.

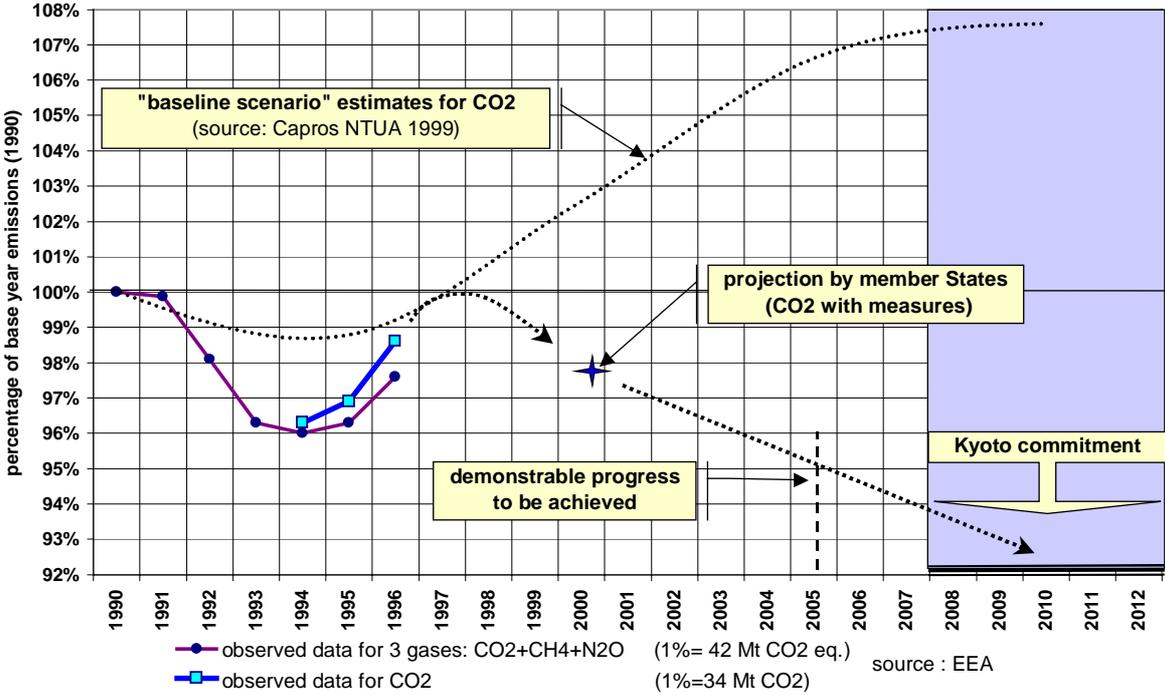
A sound preparation will facilitate implementation of the Kyoto Protocol. To this end, a better view is needed on how we comply and which are the exact requirements we have to comply with, particularly as regards the Kyoto mechanisms. These issues will become clearer through implementation of the Buenos Aires Plan of Action at the 5th Conference of the Parties (COP5) in November 1999 and which is intended to come to an end at COP6 planned for November 2000.

2. The Kyoto objective

In October 1990, the first Joint Energy Environment Council proposed to stabilise CO₂ emissions in the EC as a whole by the year 2000 on 1990 levels. The Climate Convention calls for a similar effort from Annex I Parties. The Community is expected to come close to or indeed return in 2000 to the 1990 level of energy related CO₂ emissions. This positive development is due to factors such as the economic restructuring in the new German Länder, fuel switching to natural gas in the Member States and the UK in particular, moderate economic growth rates in the 1990s, and policies in the energy and industrial sectors.

The stabilisation of emissions at 1990 level, however, is unlikely to be a permanent achievement in the absence of rapid and sustained policy response. Observed data indicate that since 1994 CO₂ emissions are increasing again. This applies for the EC as a whole as well as for most of the Member States (see Annex 1). Unchecked, this trend means that the requirement of Article 3(2) of the Kyoto Protocol to show “demonstrable progress” by 2005 and the EU commitment of -8 % will not be met.

graph 1
Greenhouse gases emissions for the EU - 1990-2012
 (observed and projected data)



N.B.: As greenhouse gas emissions are linked to economic activity, the projections for emissions in coming years are very sensitive to economic growth. Also, technological progress could develop differently than foreseen, adding to the intrinsic uncertainty with regard to future emissions.

Reversing this trend will necessitate a reinforcement of policy efforts. The Member States have made emission projections for the coming years incorporating planned measures (see Graph 1). However, these measures still need to be adopted. Adopting and implementing them will undoubtedly require strong political will, both for the Member States and the Community. Moreover, a timelag of several years may exist between the political decision concerning a specific measure and the actual emission reduction.

All sectors will have to contribute since greenhouse gas emissions result from almost every economic activity, particularly in the fields of energy, transport, industry, agriculture and households. Without additional policy measures, EU total greenhouse gas emissions are expected to increase by some 6 % in 2010 from 1990 levels. Comparing these “business as usual” estimates¹ to the EU Kyoto target implies an almost double reduction effort of – 14% (around 600 Mt of CO₂ equivalent). This amount can become significantly higher in the case of a long period of high economic growth combined with historically low energy prices².

There are marked differences between relevant economic sectors³. The transport sector is expected to increase its CO₂ emissions by 22% in 2000 and 39% in 2010 from the 1990 level; the gradual implementation of the ACEA agreement, however, will reduce those estimates with several percentage points. Industrial CO₂ emissions, on the contrary, are projected to decrease by 15% between 1990 and 2010. CO₂ emissions from households and the tertiary sector are projected to remain stable over the next years. Despite strongly growing electricity and heat demand, CO₂ emissions in the power and heat producing sector might remain at the 1990 emission level until 2010. However, after 2010, changes in the power generation structure (like retirement of nuclear power plants) may cause CO₂ emissions to rise again.

Since 1994, greenhouse gas emissions within the EU are increasing again. Despite the fact that CO₂ emissions in the EU may be at 1990 levels by the year 2000, a reinforcement of measures will be necessary to generate a persistent downward trend towards the Kyoto commitment. Action must be taken in all sectors and at all levels if the EU is to comply with its commitment.

3. Policies and Measures and Integration

The implementation of policies and measures takes place primarily at the national level. For that purpose the Member States have developed and are revising in view of implementation of the Kyoto Protocol their national climate change strategies, as described in their National Communications to the UNFCCC.

However, Member States have made it clear that additional action at Community level is vital for them not only to meet their Kyoto commitments but also to respect the EU burden-sharing agreement of June 1998⁴. For that reason the Council has requested the Commission on several occasions to report on progress on common and co-ordinated policies and measures. Therefore, this Communication concentrates on proposals for policies and measures at Community level, while national implementation measures will be the subject of an EEA report on the basis of Member States’ national communications.

At the Cardiff and Vienna summits, Heads of State highlighted the area of climate change as the most obvious example for the need for integration of environmental concerns in other

¹ Baseline scenario for energy related CO₂ estimates (NTUA, Feb. 1999) is based on the following annual growth rates: population 0.2%, GDP 2.5%, carbon intensity - 0.3%.

² After correction for inflation oil prices excluding tax are today at the level of the 1960s.

³ EEA 1999 State of the Environment Report

⁴ i.a. Council conclusions of 17.6.98

policy areas. Indeed, a large part of the possible emission reductions will have to be achieved through measures regarding energy, transport, agriculture, industry, etc. It is important to insist on an integrated approach and to responsabilise the respective decision-makers. To date, however, important decisions have been pending, particularly in the energy and transport sector, as well as on taxation. This situation will have to be remedied if the EC wants to achieve its Kyoto commitments.

3.1 Progress on Common and Co-ordinated Measures

The Commission has already developed a wide range of policy initiatives, many of which correspond to the priorities identified by the Council⁵. In Annex 3 a comprehensive account of progress to date is made. On some of the common and co-ordinated policies and measures, the Commission has made specific proposals but is confronted with deadlock in the Council (e.g. energy products tax). On other proposals, the Council provided resources that are substantially less than required for a proper implementation of specific programmes (e.g. SAVE II and ALTENER II).

To remedy that disappointing record, the co-ordination between different Council formations will have to improve substantially. Two complementary solutions can be envisaged to remedy this situation:

- the Integration Process, launched in Cardiff and to be taken further at the Helsinki Summit, is improving the integration of the environment in sectoral policies such as on energy, transport, agriculture, industry and consumer policy; the Integration Process should continue to pay particular attention to the climate problem.
- the exchange of information and the monitoring of policies and measures implemented and/or planned, both at national and Community level, as part of the amended Monitoring Decision⁶ needs to be improved (see section 4).

Sections 3.2 and 3.3 deal with integration from a policy instrument perspective. At the sectoral level, the following key elements should be highlighted:

- **Energy:** The Community's commitment to limit greenhouse gas emissions cannot be achieved by continuing "business as usual" without making changes in energy policy and taking measures for internalising the external costs of energy production and consumption⁷. The Commission proposed a range of complementary actions focussing at Community level such as
 - promoting energy efficiency and saving- increasing the share of production and use of cleaner energy sources: the Commission has advocated to double the share of renewables up to 12% of the EU energy mix by 2010⁸;
 - reducing the environmental impact of the production and use of energy sources.Annex 3 further highlights specific initiatives the Commission has undertaken in this regard.

⁵ Council conclusions of 23.3.98, OJ - 17.6.98

⁶ Council Decision 1999/296/EC, OJ L 117 of 5.5.1999, p. 35

⁷ As indicated in the Commission Communication on "Strengthening environmental integration within Community energy policy", COM(98)571final

⁸ COM(97)599 "Energy for the future: renewable sources of energy - White Paper for a Community strategy and action plan"

- **Transport:** The Commission has indicated that current mobility patterns need to be changed and has formulated a policy strategy to halve the growth in emissions⁹. Progress has been made with the environmental agreement with ACEA¹⁰ but the improved fuel efficiency of cars is being diluted by rising transport demand. On freight transport, the Commission has proposed new rules for rail transport which aim at revitalising this mode. Moreover, significant progress has recently been achieved on fair and efficient pricing in transport with the agreement on a new Directive on charges and taxes for Heavy Goods Vehicles. Proposals for combined transport¹¹ following the Communication on intermodal freight transport¹² have also been made.
- **Industry:** There is potential within Industry to reduce greenhouse gas emissions. Progress in increasing energy efficiency has already been made for example through voluntary initiatives. Other interesting tools providing incentives for businesses towards the achievement of the Kyoto target are the further promotion of EMAS and the use of energy labelling schemes. The integration of environmental aspects into European and international standardisation and the implementation by industry of eco-efficiency strategies should provide additional incentives.
- **Households:** Households play a big role in reducing CO₂ emissions. Substantial energy savings can be made by using, for example, energy efficient products, energy labelling and consumer information. Energy savings in buildings can offer a significant reduction of CO₂ emissions.
- **Agriculture:** Several priorities have been already identified¹³. As regards methane emissions, attention should be focussed on the waste (manure) management and development of new technologies. In order to address the N₂O issue, efforts should be taken to reduce nitrogen use and improve crop management, as well as manure management. Those issues have to be put in the context of Agenda 2000, which provides Member States and regions with a necessary instrument to achieve an improved integration of the environment. It is therefore important that Member States actively use the environmental protection possibilities now open to them in respect of the agricultural or rural provisions of Agenda 2000.
- **Land-use change and forestry:** The present Communication does not address the issues related to greenhouse gas removals by sinks resulting from direct human-induced land-use change and forestry activities. No consistent proposals could be made in this context before

⁹ Communication on Transport and CO₂ –Developing a Community Approach – COM(98) 204 final – 31.03.98

The Common Transport Policy – Sustainable Mobility/ Perspectives for the Future – COM(98) 716 final – 21.12.1998

ACEA is the organization representing the European car industry: It is estimated that the achievement of ACEA's CO₂ emission target for all new cars sold in the EU together with accompanying measures could contribute about 15% of the total emission reductions required from the EU under the Kyoto Protocol.

¹¹ Proposal for a Council Directive amending Council Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between Member States (COM (98) 414 final)

¹² COM(97) 243 final

¹³ COM(98) 353 final "Towards an EU Post-Kyoto Strategy"

the Intergovernmental Panel on Climate Change (IPCC) Special Report on Land-use, Land-use Change and Forestry is issued (mid 2000). However, as stressed in its Communication on a Forestry Strategy for the EU¹⁴, the Commission believes this matter is of prime importance for the EU, in particular as regards forestry activities, and continues to participate in the ongoing discussions in this field.

- **Structural Funds:** The package of the Structural Funds regulations and financial envelope were agreed upon at the Berlin summit. With respect to the regulations environmental requirements have been integrated to a large extent. Protection and improvement of the environment have been included in the objectives and tasks of the Structural Funds. Integration aspects – enlarged partnership, prior environmental evaluation, conformity with environmental legislation and policy – have been reinforced. Instruments like the differentiation of the assistance rate on the basis of environmental interest have also been reinforced. With respect to the financial envelope € 195 billion have been attributed to the Structural Funds and € 18 billion to the Cohesion Fund. That will also help the Union comply with its international commitments such as those concerning climate change taken at Kyoto.¹⁵
- The Fourth **Research and Technology Development (RTD)** Framework Programme (1994-1998) already included several Specific Programmes designed to either increase the knowledge of natural and social processes related to climate change and/or to develop technologies through which anthropogenic GHG emissions can be reduced. The Fifth Framework Programme covering the period 1998-2002 intends to further intensify those research efforts. The table in Annex 4 gives an overview of RTD activities related to climate change under the Fourth and Fifth RTD Framework Programmes.

Finally, technological innovation will be of crucial importance, particularly in view of even more substantial emission reductions that will be needed in the longer term to avoid dangerous climate change. As regards industrial installations, for example, technological progress will be taken into account by means of regular reviews of the reference documents describing the Best Available Techniques (BAT) in the context of the IPPC Directive.

The Integration Process towards Cologne and Helsinki has to bring about more significant coherence amongst different Council formations. This should allow Member States to complement their national action with emission reductions resulting from common and co-ordinated policies and measures. There is an urgent need for decisions on proposals in the fields of energy and transport.

3.2 Fiscal Incentives

Fiscal policy is a very pertinent tool for integration and as such the ECOFIN Council has a key role to play in the adoption of measures aiming at lowering greenhouse gas emissions.

¹⁴ COM(98)649 final

¹⁵ draft guidance for programmes in the period 2000-06

Energy taxation is one of the most important of all common and co-ordinated policies and measures. The Commission has done its work. During the 1990s, 3 distinct proposals have been made to the Council. The Commission has moved from a Proposal for a CO₂/energy tax with high rates of taxation and a high degree of harmonisation, to a more pragmatic approach for an energy products tax that foresees the extension of the existing system of excise duties and a gradual increase in levels of taxation. This Proposal is even more important given current and forecast low energy prices.

The Proposal for an energy products tax would allow Member States to tax aircraft fuel for domestic flights and for intra-Community flights by bilateral agreement of the Member States concerned. In an international context, the Commission is committed to the taxation of aircraft fuel “as soon as the international legal situation allows the Community to levy such a tax on all carriers including those from third countries.”¹⁶ However, the potential for using other economic instruments, such as differentiated on-route charging, should also be carefully considered.

Experience has shown, especially with the phasing out of leaded petrol, how effective a small tax differentiation can be in contributing to environmental objectives. On the basis of this successful experience, the Proposal for an energy products tax provides the Member States with much greater scope for tax differentiation for environmental reasons. Tax differentiation (above the Community minima) could be made in accordance with the carbon content of different fuels.

Tax differentiation could also be considered, albeit to a limited extent, in the context of VAT. Community provisions for VAT already allow Member States to apply reduced rates of VAT to certain goods and services, including the “supply, construction; renovation and alteration of housing provided as part of social policy”.¹⁷ The possible application of reduced rates of VAT for insulating products supplied in the context of this provision would be a concrete example of a measure that would be positive for reducing energy consumption.

The Proposal for an energy products tax provides for Member States to allow partial exemptions for companies that make investments in improving energy efficiency. They can bring forward in time investment in equipment that will save energy over an extended period. Similar tax breaks could also be applied for direct taxes. However, tax breaks are primarily for the Member States to determine, within the margins defined by the guidelines for the use of state aid for environmental purposes. A review of those guidelines is due to be undertaken in 1999.

The Commission urges the Council to adopt its Proposal for a Directive on an energy product tax. Member States should develop fiscal incentives within the flexibility offered by the Internal Market and Competition rules. A review of the guidelines for the use of state aid in relation to environmental protection is due to be undertaken in 1999.

3.3 Environmental Agreements

¹⁶ Report from the Commission to the Council and the European Parliament on excise duty reductions and exemptions COM(96)549 final of 14.11.96 (§2.14, p. 11)

¹⁷ Council Directive 77/388/EEC – 6th Directive V.A.T. Annex H, category 9

The Commission takes a positive view on the use of effective environmental agreements at industry level¹⁸. They could play an important role as part of the policy package that will be required to realise the “demonstrable progress” by 2005 and could constitute a means for industry to make its contribution. There is indeed scope for reducing greenhouse gas emissions through voluntary business initiatives instead of legislation, and in ways that may be cost-effective and tailor-made to specific situations. Environmental agreements can be conceived at national as well as Community level. In many cases, the national level may be the more appropriate one and they should be encouraged in as far as they respect Community rules on competition and the internal market.

At Community level, useful experience is being gained in particular through the ACEA commitment on CO₂ emission reductions from new passenger cars. This has shown that the approach to EU wide agreements is a demanding task both from the viewpoint of the public authorities as much as for the industry involved. In view of drawing on this and other experiences, the Commission could draw up procedural guidelines on environmental agreements in 1999.

Central elements when deciding whether to promote environmental agreements are the specific advantages compared to alternative legislative measures and economic instruments, the definition of quantified objectives, the sector coverage, the involvement of stakeholders, the independent monitoring of progress, the inclusion of non-compliance provisions, and compatibility with existing instruments and legislation. A particular issue to address is how to involve the Council and Parliament, and in general on how to assure a maximum transparency in the negotiation process.

The objective of the environmental agreements may concern the products of a certain industry as well as the production process and it must go substantially beyond “business as usual” developments. The question is often raised whether the objective has to be fixed in relative or in absolute terms¹⁹. In the former case the emissions performance is targeted per output or production unit (e.g. energy input per unit of product output). An absolute target would be expressed in tons of CO₂ equivalent and has the merit of being compatible both with the commitment undertaken by the Community under the Kyoto Protocol and with the Kyoto Mechanisms (see section 5) or domestic emission trading.

Several industries have made clear their interest in a possible EU wide negotiated agreement. The preliminary discussions with them and other interested European associations will be pursued. Other industrial associations that are interested in environmental agreements are invited to come forward with proposals for concrete targets before the end of 1999, in order to evaluate the proposals and possibly conclude such agreements before the end of the year 2000. It is important to conclude possible agreements as soon as possible in view of assessing by the year 2005 the progress made in emission reductions as a contribution to overall “demonstrable progress” by that time.

¹⁸ COM(96)561 Communication from the Commission to the Council and the European Parliament on Environmental Agreements

¹⁹ see also COM (96)561, point 20

Interested industrial associations can demonstrate their genuine interest in future environmental agreements by indicating the nature of their commitment before the end of 1999, in view of concluding such agreements before 31.12.2000.

3.4 Prepare policy action on the halogenated gases covered by the Kyoto Protocol

The Kyoto Protocol incorporates 3 groups of industrial halogenated gases, namely hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6). They are man-made and very powerful greenhouse gases²⁰. In addition, SF6 and most PFCs have extremely long atmospheric lifetimes, resulting in their essentially irreversible accumulation in the atmosphere. Expressed in CO₂ equivalent, they represent 1 to 2% of 1995 greenhouse gas emissions in the EU. However, they are expected to increase substantially in the coming years if no measures are taken.

In 1990, 100% of the HFC emissions were produced as a by-product from HCFC-22, an ozone depleting substance. However, most of the EU HCFC-22 producers have already decided or installed incineration technology by which HFC emissions can be reduced by 99%. HFCs are also used as substitutes to ozone depleting substances and therefore their emissions have grown rapidly from 1990 as a result of the implementation of the Montreal Protocol.²¹ In view of this development, an EU framework covering all fields of production and use will have to be put into place.

PFCs are mainly emitted during the production of primary aluminium and are rapidly declining thanks to technological improvements and a decreasing trend of primary aluminium production in Europe²². However, because of their tremendous lifetime in the atmosphere, R&D should be directed towards substitutes in view of phasing out emissions of PFCs .

SF6 is the gas with the highest global warming potential. The primary use of SF6 is as a dielectric in electrical transmission and distribution systems. It is also used during the production of magnesium castings and in various other uses such as for training shoes, tyres, leak detection. Emissions are growing and are expected to continue to grow if no measures are taken. In 1995, it has been estimated that 14 Mtons CO₂ equivalent were emitted. A first obvious step could be to phase out its use in applications where alternatives exist, and to target R&D efforts in view of phasing out emissions.

HFCs, PFCs and SF6 are also emitted by the semiconductor industry, a sector whose emissions are expected to grow in the future. Collection of emissions data should be the primary aim in view of proposing a legal framework on these emissions.

Measures need to be taken concerning the halogenated gases in view of their high global warming potential, their long atmospheric lifetimes and the likely increase in emissions. However, improved data are necessary. The involved industries are invited to provide such

²⁰ Their Global Warming Potential (GWP) is much higher than for CO₂. Their lifetime can extend to 50.000 years compared to a 50-200 year lifetime for CO₂ and a 12-15 year lifetime for CH₄.

²¹ In 1995, HFCs accounted for 1% of EU greenhouse gas emissions. HFC emissions in 2010 from sources other than HCFC-22 production are expected to be 5 times 1995 emissions.

²² If in 1990, 11 Mtons of CO₂ equivalent of PFCs were emitted during that process, these emissions were reduced by at least 55% in 1997.

data concerning their emissions of HFCs, PCFs and SF6, in view of developing as soon as possible a framework for legislation or environmental agreements.

3.5. Starting with cost-effective abatement policy measures

An efficient climate policy will have to contain a multitude of measures covering all 6 gases. Key elements for the development of a successful package concern the reduction potential and the related abatement cost in different policy areas. Table 1 illustrates that domestic action within the Community could be sufficient to respect the Kyoto commitment of an estimated 600 million tons of CO₂ equivalent²³. Ongoing analysis of the abatement costs related to such policies and measures, although scarcely available, suggests that a third of this reduction potential would be achievable at low cost. It also shows that the distribution of those costs can vary significantly between economic activities and geographical regions.

²³ This is in line with the Communication EU Climate Change – The EU Approach for Kyoto (COM(97)481final), in which it was stated that a 15% emission reduction of CO₂ by 2010 was technically feasible and economically manageable.

Table 1 Reduction potential for annual greenhouse gas emissions in the EU (from baseline 2010 projections) and associated with average cost

(estimates based on currently available data)

Emission reduction in MT CO₂ equivalent

Sector/measures	Low cost (1)	Medium cost (2)	Sum
CO₂			
• Transport	80 (3)	70	150
• Tertiary and households (energy efficiency and insulation)	20	120	140
• Industry (direct energy uses)	5	45	50
• CHP (in industry and district heating)	12	45	57
• Renewables in power generation	20	90	110
• Fuel switching & efficiency in power generation	30	85	115
EU total CO₂	167	455	622
CH₄			
• Agriculture (improved manure management)	34	20	54
• Waste (landfill gas recovery/flaring)	23	60	83
• Energy (reduction gas leakage)	4	11	15
EU total CH₄	61	91	152
N₂O			
• Agriculture (reduce fertiliser application and improve manure management)	24	0*	24
• Industry (BAT installed in adipic and nitric acid production)	86	0*	86
• Energy (combustion)	8	0*	8
EU Total N₂O	118	0*	118
Halogenated gases :			
• HFC: -HCFC 22 production	9	0*	9
• HFC: - other	3	22	25
• PFC (4)		4	4
• SF ₆ (4)		7	7
EU Total halogenated gases	12	33	45
EU Total all greenhouse gases	358	579	937

- (1) Low cost: annualised cost of reduction under • 5 / ton of CO₂ equivalent (in current prices). The estimate indicates the average cost which would be incurred every year between 1990 and 2010 and is based on engineering and technological alternatives.
- (2) Medium cost: idem as footnote 1 for the range between • 5 and • 50 / ton of CO₂ equivalent (in current prices)
- (3) This figure includes ACEA agreement estimated at 60 Mt.
- (4) Very first estimates (to be further verified)
- 0* Means that at the margin there could be some reduction potential above the low cost threshold

Sources:

For CO₂: Capros (NTUA) 1999

For other gases: reports for the Commission from Ecofys, AEA, Coherence, March Consulting Group

Table 1 also shows that several policy options are available at low net economic cost, such as some specific measures in the transport sector, N₂O from industrial processes, manure management and fertiliser use, gas recovery from landfill of waste, reduction of gas leakage and power generation. A rational policy approach will have to start with those areas where measures exist with limited net economic costs.

While a technical potential exists for reaching the entire Kyoto commitment through domestic policies and measures, the economic costs of different measures vary considerably. Policy action should be reinforced without further delay in those areas where net economic costs are the lowest.

4. Monitoring is key in preparing for Implementation

4.1 Towards Ratification of the Kyoto Protocol

Both the European Community and the 15 Member States are Parties to the UNFCCC. Under the Kyoto Protocol, the Community has a quantified emission target of -8% and so have the individual Member States.

The notification of the EU burden-sharing agreement as provided under Article 4 of the Kyoto Protocol at the time of the ratification by the Community will give it a legally binding character for the purposes of the Protocol. As such it will be ensured that individual Member States are legally bound to their target as agreed under the burden-sharing instead of the official target of - 8% laid down in the Protocol. Therefore, it would be desirable for the Community and the Member States to ratify at the same time.

The Community would be responsible for reaching the overall target of -8%. However, non-compliance by one or more Member States will most likely have an impact on Community compliance overall. Given this “joint and several” responsibility, it would be logical for the burden-sharing agreement to be laid down in a legislative instrument at Community level. Such an instrument could specify the relations between Member States and between the Community and the Member States in case of non-compliance, including action before the European Court of Justice.

The Commission is responsible for preparing a proposal for ratification of the Protocol by the Community. In this context, Member States and the Commission could agree on a timetable and a target date for simultaneous ratification, taking into account the different national procedures for ratification of international agreements. Separate from the rules on non-

compliance under the Protocol, a Community compliance system could be established, including ex-ante and ex-post monitoring (see 4.2), and possible sanctions as well as possible remedies for non-compliance.

A strategy for ratification would involve a synchronised ratification by the Community, on the basis of a proposal from the Commission, and by the Member States as well as an internal compliance system.

4.2. The need for an accurate and timely monitoring of emissions

Pro-active monitoring is of crucial importance in view of obtaining timely information on whether the Community is approaching its commitment of -8%. To have a complete picture of the compliance situation in the Community, it is essential to have an overview of progress, both on national action as well as on common and co-ordinated policies and measures.

Decision 93/389/EEC on the Monitoring Mechanism has recently been amended²⁴ so as to strengthen the EC's existing monitoring mechanism and to cover all greenhouse gases not controlled by the Montreal Protocol. However, it does not yet cover the Kyoto mechanisms for which a further amendment will have to be considered after the implementation of the Buenos Aires Plan of Action. The amended Decision represents a renewed commitment by the Commission and the Member States for a pro-active monitoring.

Member States can also rely on existing Community regulations to integrate the climate dimension in their current policies. Particularly interesting in this perspective is the Integrated Prevention and Pollution Control (IPPC) Directive²⁵. It covers mostly large installations in a wide range of sectors (see Annex I of the Directive) including large combustion plants. These sectors account for about half of all greenhouse gas emissions sources. Installations covered by the Directive are subject to a permitting procedure in which limit values for relevant polluting emissions are set by competent authorities on the basis of the Best Available Techniques (BAT).

The information exchange on BAT between Member States and industry being organised by the Commission will result, for each sector, in the publication of reference documents describing the Best Available Techniques. Member States are required to take this information into account when determining permit conditions. The Directive also provides for an inventory of the principal emissions and responsible sources to be published every three years by the Commission on the basis of the data submitted by Member States. All this will allow for an improved knowledge of emission factors and energy consumption patterns. This will be helpful on the one hand for setting requirements for new installations taking into account the climate change concern and, on the other hand, for providing useful information in the context of environmental agreements and emissions trading.

The IPPC Directive, however, does not generally deal with diffuse emission sources such as the transport, tertiary, household and agriculture sectors. For those sectors, indicative targets could be formulated on the basis of the information offered in table 1. This could significantly facilitate the formulation of policy objectives for different Council formations, in particular for

²⁴ Council Decision 1999/296/EC, OJ L 117 of 5.5.1999, p. 35

²⁵ Directive 96/61/EC

the transport, agriculture and industrial sectors, as part of the Integration Process mentioned in section 3.1.

With respect to the international context, the EU could consider enhancing the capabilities to monitor the global environment. In particular, monitoring systems attuned to changes in carbon sources and sinks globally need to be further developed. Information technologies including networks of measurement sites and satellite observation systems represent indispensable sources of data, which can be exploited for the benefit of monitoring and verification of implementation of the obligations under the Kyoto Protocol. The well-developed European technical and scientific capabilities could provide a strong foundation for such an expanded monitoring role.

More efforts must be made to develop the Monitoring Mechanism as an integral part of a Community compliance system. The Member States can take the opportunity of the implementation of the IPPC Directive as of 30.10.99 to develop the climate dimension of their permitting policies.

5. Preparing for the implementation of the Kyoto Mechanisms

The rules and modalities for the Kyoto mechanisms are to be elaborated pursuant to the Buenos Aires Plan of Action. The EU has made submissions to the UNFCCC on each of the mechanisms. Without pre-empting the outcome of the international negotiations, this section addresses some important issues concerning the future use of the mechanisms in the Community.

5.1 The flexible mechanisms are new to EU environmental policy

The Kyoto Protocol contains a new set of economic instruments that allow for flexibility in the implementation of the emission reduction effort defined for each of the Annex B Parties. In the international negotiations they are called Kyoto Mechanisms and consist of International Emissions Trading (IET), Joint Implementation (JI), and the Clean Development Mechanism (CDM). The former relates to trading of assigned amounts (allowance trading), while the latter two refer to the transfer of emission reduction credits earned on the basis of emission abatement projects in other countries (credit trading).

The Kyoto Mechanisms are fundamentally different from the way the European Community and its Member States have organised their environmental policy over the last decades. Environment policy has been based on technical standards (such as Best Available Technology - BAT), regulatory emission limitations, and more recently on economic instruments such as taxes, charges, and environmental agreements. So far there is hardly any experience in the Community with instruments such as the Kyoto Mechanisms. The policy challenge ahead consists therefore of developing new flexible instruments within European environmental policy, without however undermining the important achievements of the past.

For those reasons, there is an urgent need for an informed debate on the instruments of emissions trading and the project mechanisms within the Community. First, lack of knowledge of their functioning may be at the basis of certain reservations about these mechanisms. Second, an improved understanding will facilitate the negotiation process that is going on

within the context of the UNFCCC. It will also help ensure that the elaboration of rules and guidelines of the Kyoto Mechanisms allow for the specificity of the EU.

5.2 Addressing the Community dimension in emissions trading

The Kyoto Protocol's International Emissions Trading (IET) will not come into operation before 2008. In the meantime, the best preparation for the Community and its Member States might be to develop their own emissions trading experience. The Commission Communication of June 1998 already launched the target date of 2005.

To facilitate this process, the Commission could organise in the year 2000 a wide consultation with all stakeholders, Member States, businesses, and NGOs, on the basis of a Green Paper setting out different policy options. This would be a timely moment as some private companies are already embarking upon pilot systems. Also some Member States are considering the creation of domestic trading schemes, and the Commission has already received pertinent questions in this respect. The Green Paper could also consider the suitability of a European emission trading pilot-phase, and under which conditions such a pilot-phase may be desirable. Such an option could indeed be pursued if two or more Member States were ready and willing to participate, without however constraining non-participating Member States.

An additional reason for a wide consultation and for considering pilot projects is that the ongoing negotiation in the context of the Buenos Aires Plan of Action is not likely to result in a high degree of detail concerning the rules and guidelines for international emissions trading. It will rather result in a framework within which the Parties to the Protocol will implement their international obligations through domestic law.

The Single Market and even closer economic integration with EMU run contrary to a widely diverging implementation of the Kyoto Mechanisms between the Member States. This is even more so within the context of an enlarged Community with 20 or more Member States, all of them Parties to the Kyoto Protocol. The Community should therefore adapt some of its traditional instruments in view of safeguarding a proper functioning of the Single Market. In this context, the possible Green Paper could also provide a comprehensive assessment of the use of emissions trading as requested by the European Parliament.

A Green Paper would undoubtedly have to deal with the following two basic issues:

- The participation of private entities

A key element concerns the question whether private entities would be allowed in a trading regime. While the participation of private emitting entities would increase cost-effectiveness, all participants would have to accept an absolute cap on their emissions, which has similarities with assuming an environmental agreement with an absolute target.

If private entities are involved in trading, the question arises of how to organise the initial allocation of emission permits. Member States could use different criteria and hence competition issues may arise. Similarly, if a Member State bought permits on the open market and then give them to certain enterprises of its own industry for free or without imposing conditions, then this could constitute state aid which should be consistent with EC competition rules.

Under the current provisions, state aid needs to be authorised in advance by the Commission. In this regard, it would seem reasonable that the allocation of permits should at least be transparent, non-distortionary and based on an objective yardstick that would take account of effort already undertaken²⁶.

- Compatibility with existing EU environmental policy

The EU position on the primacy of domestic action at the international level has important implications for the design of the most suitable trading system.

A trading system could be based on all emitting entities²⁷. However, initially emissions trading is in practice likely to be limited to some key sectors. Other more appropriate policy instruments would be developed for diffuse emitters like households or transport users. This implies that a combination of policy instruments will be appropriate as is already the case today, the major question being which kind of instrument would be the most suited for which polluter.

Alternatively a trading system could be based on energy producers like coalmines and oil and gas suppliers²⁸. They would have to buy permits to cover the emissions that their products will generate when consumed. The Commission once proposed a similar system in its original proposal for a carbon/energy tax, but its new and comprehensive nature created considerable technical and political problems.

The merits of both approaches could be explored further in the Green Paper. However, it would appear at this stage that the former system would also be in line with a prudent step-by-step approach²⁹. In practical terms, a trading system would then start with large emitters or a single economic sector. Analogously, emissions trading could start with the most accurately measured gas, namely CO₂, and the coverage of sectors and gases would then gradually be widened. Next steps in the development of the emissions trading regime would then depend on which sectors and gases would offer sufficient guarantees for an adequate tracking, monitoring and compliance regime.

The Commission currently reflects on organising in the year 2000 a broad consultation of all stakeholders on the basis of a Green Paper including consideration of establishing an emission trading system within the Community by 2005.

5.3. The project mechanisms (AIJ, JI and CDM)

Contrary to international emissions trading, the Clean Development Mechanism (CDM) may come into existence from the year 2000 on, while Joint Implementation (JI) projects can start but not generate credits before 2008. Only limited practical experience is available through the pilot phase called Activities Implemented Jointly (AIJ).

²⁶ This could be based on the BAT work performed by the IPTS in Sevilla in the context of the IPPC directive.

²⁷ Such a system is usually called a downstream trading system.

²⁸ Such a system is usually called an upstream trading system.

²⁹ COM(98)353 final

Financial institutions should play a more prominent role in getting projects and other initiatives off the ground, i.a. by providing favourable lending terms to the private sector for CDM and JI projects. Active co-operation in this area should be set up in particular with international financial institutions, such as the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the World Bank. The Commission and the EIB should further develop their exchange of views in view of a timely conclusion about how to contribute to the implementation of the Kyoto Protocol.

Three questions seem to be fundamental to the project mechanisms: project type, project baselines, and the value of the emission reduction credits (ERUs):

- On project type, the EU has supported the view that it is predominantly for developing countries to determine what constitutes “sustainable development” for them. To bring forward the date of launch for certain types of projects, a limited number of project categories could be defined, particularly in the area of electricity generation from renewables and co-generation. Such projects could start with a reduced degree of investor risk before all the rules are finalised for the operation of CDM and guidelines for Joint Implementation.
- The second issue is the establishment of project baselines. Expertise on the establishment of baselines is limited, even in the light of projects undertaken under the AIJ pilot-phase. Establishment of baselines should not be so burdensome that the transaction costs of the project exceed the value of the credits obtained, or no projects will be undertaken. Conversely, however, project baselines should not over-estimate the emissions reductions or the overall environmental benefit will be undermined.
- The value of emissions permits and credits is a crucial factor for the success of Joint Implementation and Clean Development Mechanism projects. Without a significant value, the credits obtained would have no effect on commercial decision-making and hence fail to attract sufficient private capital. This underlines the importance of not allowing excessive targets or too generous baselines that cause an over-supply of cheap permits into the emissions trading system.

Early action should be encouraged as a signal to industry not to hold back investments that will limit emissions. Secondly, the continuation of projects under the “Activities Implemented Jointly” should be allowed in such a way that projects that fulfil the qualifying conditions for CDM and JI could retrospectively have emissions reductions from the year 2000 credited. Thirdly, a satisfactory solution should be identified so that none of the three mechanisms is disadvantaged against the others through special fees or administration costs.

The purpose of the CDM is to attract substantial new and additional financial resources for development projects through private investment. Therefore, in principle, Official Development Assistance (ODA) should not be used to acquire emission reduction credits in the context of CDM projects, as this would be against the principle of financial additionality of the CDM. However, ODA could have a useful role in the preparatory phases of CDM projects and in creating an enabling environment including capacity building, education and training, establishment of an appropriate institutional framework, etc.

Moreover, ODA funding would not have to be excluded *per se* from CDM projects, provided that the part of the credits equivalent to the part of ODA funding in the project are “re-invested” in the same project or in any case used for other development purposes.

Some particularly interesting project categories, which could generate additional environmental or social benefits, such as renewables, “infant” technologies and “pro-poor” projects, may involve relatively high costs which may not always be compensated by the emission reduction credits. In these cases, private sector and ODA co-financing seems to be justified, but clear guidelines in the form of a Code of Conduct need to be developed. Such a Code of Conduct could also address some of the concerns raised by many developing countries, such as regional equity in CDM projects, South-South co-operation and public infrastructure investments.

Within the Community there could be state aid implications if projects involve both private entities and Governments. If Governments buy credits from their private entities at above market prices, then this could constitute state aid, irrespective of whether the Governments have participated in the funding of the project. However, establishing a market price where there is no market yet is difficult. The Community guidelines on state aid for environmental protection that are due to be reviewed in 1999 will cover these project related issues as much as possible.

For the developing countries, it is crucial for the CDM to attract significant foreign and domestic private investment flows. Early estimates indicate that additional annual investment flows could be as high as 5 to 16 billion €³⁰. Such substantial amount would be equal to one to three times the annual amount of Community ODA in 1997.

5.4 Climate change and the World Trade Organisation (WTO)

The relation between measures taken to mitigate climate change and the WTO must be seen in the general context of how environmental measures relate to the multilateral trading system. Trade liberalisation and environmental protection are both desirable objectives and should be mutually supportive. The WTO explicitly recognises that trade and economic endeavours should be conducted in accordance with the objective of sustainable development and so far no dispute under the WTO has arisen over trade measures adopted in the context of a Multilateral Environmental Agreement (MEA). The EU supports the view that, subject to specific conditions being met, trade measures taken pursuant to an Multilateral Environmental Agreement (MEA), should benefit from special treatment under WTO provisions.

The Kyoto Protocol does not include trade measures as such, but depending on how policies and measures and the Kyoto mechanisms are implemented, they could raise issues, difficult to assess at this stage, concerning the relationship with the WTO Agreement.

However, the potential impact of WTO rules on the implementation of the Kyoto Protocol should be further addressed in the international climate negotiations as well as in the broader context of the interface between trade and environment in the New Round of negotiations. The Buenos Aires Plan of Action specifically mentions issues such as transparency, competitiveness issues, non-discrimination and non-distortion of competition. Furthermore, the Parties could envisage a clause whereby possible disputes between them concerning the implementation of the Protocol should be solved through the dispute settlement regime laid down in that Protocol³¹ rather than under the WTO.

³⁰ D. Austin et al. “Opportunities for financing sustainable development via the CDM”, 7.11.98 (summarising the results of modelling exercises done by OECD, G-cubed, SGM and EPPA); Vrolijk “The potential size of the CDM”, 14.4.99.

³¹ Article 19 Kyoto Protocol, Article 14 UNFCCC

Concrete ways on how the Commission and the EIB can contribute to the Kyoto commitments by encouraging project related emission reductions should be explored. The use of ODA in funding climate related projects may be addressed in the 1999 Commission guidelines on environmental protection. A Code of Conduct will be prepared with the active involvement of the developing countries. The relation between measures taken for the implementation of the Kyoto Protocol and WTO rules should be addressed in the international climate negotiations and in the context of discussions on the interface between trade and environment in the New Round.

6. International Relations and preparing for COP5

6.1 Developing countries

In view of their huge expected emission increase, participation from developing countries in climate change mitigation is indispensable for any effective action against climate change. Action in the industrialised countries to reduce greenhouse gas emissions would be offset by an increase in emissions in developing countries due to economic and population growth.

Developing countries understandably oppose constraints on their economic development. A dialogue on the role of developing countries in the fight against climate change will therefore have to take into account the principles of equity and of common but differentiated responsibilities. Such a dialogue should not only involve governments but all stakeholders (environmental NGOs, industry, scientists and financial institutions) from North and South. Furthermore, the EU is fully supporting the view that industrialised countries must show the way in addressing the problem. Therefore, the time horizon for results from such a dialogue would start to be implemented after the first commitment period at the earliest.

In order to convince “non-Annex I” developing countries to participate in an open and constructive debate, the EU and other industrialised countries will need to show demonstrable progress in 2005. Furthermore, the Community and its Member States should present an overview of all the areas where they already provide assistance to developing countries in relation to climate change (e.g. technology transfer, financial assistance for adaptation and mitigation, awareness raising, capacity building and monitoring and reporting). They should also analyse how to improve their effectiveness.³²

The Commission is currently reviewing the environment assessment procedures. It will explicitly integrate climate change aspects into the new procedures of the relevant Commission services dealing with international affairs covering development policies, country programming and project support in order to ensure that Community aid is “climate friendly”.

³² The Commission has commissioned a study to provide such an overview as well as suggestions for improvement, particularly in the field of energy cooperation and in creating an enabling environment for the private sector in order to assume its role in technology transfer. It would be helpful if Member States could provide a similar overview of their own actions, particularly since development aid administered by the Commission accounts for only 17% of total EU development aid.

Possible further improvements could comprise the opening up of funding for specific climate change related initiatives in the context of the ongoing revision of the EC-ACP Convention (Lomé) and of other budget lines governing development aid. Climate change issues should also become an integral element of the regular consultations concerning the identification and formulation of country co-operation programs.

6.2 Enlargement

All the candidate countries, apart from Cyprus, have commitments to emission reduction targets under the Kyoto Protocol³³. Owing to the restructuring of their economies most of the candidate countries have emissions well below their targets and should have no difficulty in meeting their objective. However, the scope for further reduction of GHG emissions in these countries is still substantial if one compares them to existing Member States given the high energy intensity of the candidate countries.

The need for candidate countries to adapt their energy markets and industries to Community rules and environmental standards will be the driving force for new investments. In this context, the Community must take steps to assist these countries in developing their institutional and technical capacity and to raise the profile of this issue with stakeholders and the public in these countries. The Community in its own co-operation programs, and where it is involved with other international donors such as the EBRD, EIB and the World Bank, must also take steps to ensure that this unique opportunity for economic transformation integrates and complements climate objectives.

A Kyoto mechanism that is of mutual benefit to both the candidate countries and the EC is Joint Implementation. It should be further assessed with the EIB and other international financial institutions how to unlock private capital flows into climate friendly technologies, in particular through capacity building and Joint Implementation. Co-operation needs to be intensified in order to ensure that the candidate countries can take on responsibilities as regards compliance, monitoring and participation in the Kyoto mechanisms.

6.3 Prepare for the 5th Conference of the Parties (COP5)

The Buenos Aires Plan of Action is targeted towards COP6. Decisions on the different elements of the Plan will therefore not be taken until the end of the year 2000 at the earliest. However, a set of clear priorities has to be defined for COP5 in order for this meeting to produce substantial progress and results.

It could be appropriate for COP5 to focus on a cluster of issues stimulating active involvement of developing countries, e.g. technology transfer, CDM, capacity building through ODA, etc. It should be for the highest political level, in the context of Expanded Bureau meetings, to steer the process and agree upon a set of priorities.

³³ Poland and Hungary have a target of -6% the other candidate countries have the same target -8% as the EC. However, they do have the option to choose a different base year than 1990.

The EU should use its international relations to speed up ratification by as many Parties as possible. Because of the nature of the climate change problem, particular attention is to be paid to the involvement of the developing countries. COP5 represents a first opportunity in this respect.

Annex 1

Greenhouse gas* emissions in the EU

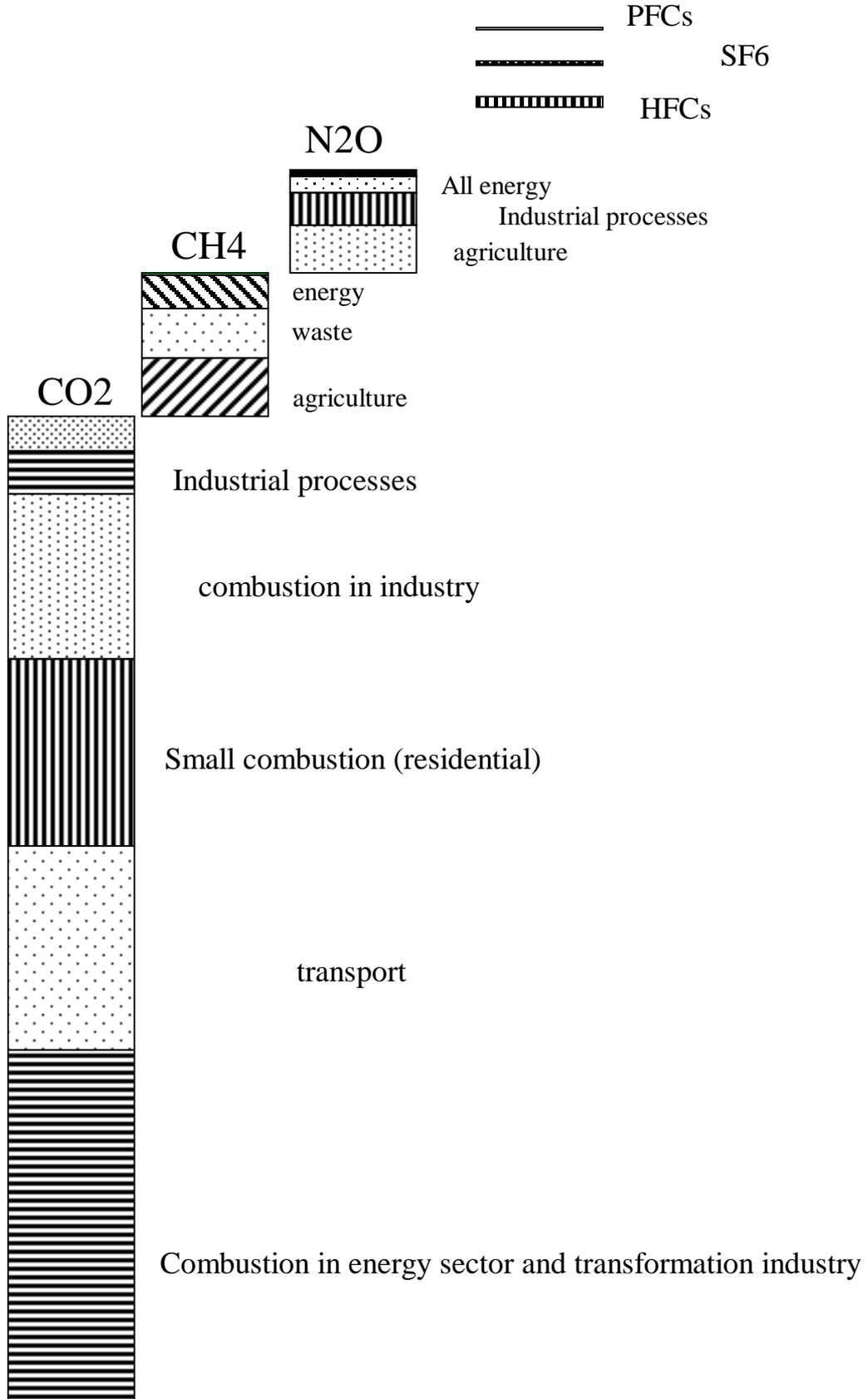
	Share of EU emissions in 1990	Emissions in 1990 in Mt eq CO ₂	Emissions in 1990 in t eq CO ₂ per capita	Evolution from 1990 to 1994 (%change)	Evolution from 1990 to 1995 (%change)	Burden sharing	Burden sharing in Mt eq CO ₂
Austria	1,7	74	9,2	-1,3	0,6	-13%	64
Belgium	3,2	139	13,7	4,1	4,4	-7,5%	129
Denmark	1,7	72	13,7	15,2	10,0	-21%	57
Finland	1,7	73	14,2	-3,6	-0,5	0%	73
France	14,7	637	11,0	-2,9	-1,1	0%	637
Germany	27,7	1201	14,7	-12,1	-12,3	-21%	949
Greece	2,4	104	9,9	3,2	4,6	25%	130
Ireland	1,3	57	16,0	2,6	4,3	13%	64
Italy	12,5	542	9,5	-2,9	1,7	-6,5%	506
Luxembourg	0,3	14	34,7	-10,2	-45,0	-28%	10
Netherlands	4,8	208	13,5	3,4	7,5	-6%	196
Portugal	1,6	69	7,0	6,0		27%	87
Spain	7,0	301	7,6	4,0	8,0	15%	347
Sweden	1,6	69	7,9	-2,6	-3,3	4%	72
UK	17,9	775	13,3	-6,9	-8,4	-12,5%	678
total EU	100	4334	13,1				3998

* CO₂ + CH₄ + N₂O

Source: "Annual European Community Greenhouse Gas Inventory 1990-1996, submission to UNFCCC", prepared by the European Environment Agency for the European Commission (DGXI), April 1999

Annex 2

The relative importance of the 6 greenhouse gases within the EU year 1990 - in CO2 equivalent



Common and Co-ordinated Policies and Measures – Progress Report

Notes

- ◆ *The Council (ENV) has on a number of occasions with regard to common policies and measures referred to Council Conclusions in other Councils as well as its own conclusion (see par 10 of Council (ENV) Conclusion of March 1999 for detailed references). In these conclusions there is a considerable overlap as regards the common policies and measures (CCPMs) seen as essential for meeting climate change – the most complete and well defined list of CCPMs is contained in Council (ENV) conclusions of 16/17 June 1998. The table below is based on this list.*
- ◆ *In the table below items 1-10 are common policies and measures, 11-16 are co-ordinated measures. For item 17 both common and co-ordinated actions are appropriate. Common policies and measures refer to actions at the Community level that are adopted by all MS usually in the form of a Directive or other legal measure. Co-ordinated policies and measures are actions which produce value added to national measures when these are co-ordinated at EC level*

Common and Co-ordinated Policies and Measures

N°	MEASURES	REF	PROGRESS AT COMMUNITY LEVEL	NEXT STEPS	IMPACT
1	<p>A) Reducing CO₂ emissions from passenger cars</p> <p>B) Reducing CO₂ emissions from freight transport by road</p>	<p>COM (95)689</p> <p>COM(97)242 COM(97)243 COM(95)691</p>	<p>Environmental Agreement with ACEA. CO₂ emissions 140gm/ Km by 2008 for the average of new passenger cars</p> <p>Trans-European Freight Freeway Intermodality and Intermodal Freight Transport Fair and Efficient Pricing</p>	<p>Monitoring System (COM(98) 348) Negotiation of agreements with Japan/Korea/and firms outside ACEA</p> <p>Some freeways open</p> <p>Implement information programmes, promote voluntary actions/best practice</p>	<p>+/- 15% of total emissions reduction under Kyoto 80-90 Mtonnes</p> <p>reduce relative price of rail reduction in freight movements 10-40% equivalent decrease in CO₂ emission from freight</p>
2	Taxation of aircraft fuel/kerosene		<p>Commission review of exemption – proposed extension of excise duties to aviation kerosene –Art 13(1)c of COM(97)30</p> <p>Detailed study of impact of taxing kerosene (finalisation:)</p>	<p>On the basis of this study the Commission will issue a Communication setting out instruments</p>	<p>Intra- EU aviation emissions not yet included in Kyoto target – impact would therefore be difficult to evaluate</p>
3	Common action progressively to reduce/remove fossil fuel and other subsidies, tax schemes and regulations which counteract an efficient use of energy	<p>Decision 36/32/93/ECSC Of 23.12.93</p>	<p>Schemes to subsidise fossil fuels are mainly at national level.</p> <p>The Commission guidelines for state aid (1994-2002) aim at viable coal production and degression of aids</p> <p>Proposal for an energy products tax</p>	<p>31.07.99 ECSC expires.</p> <p>State aids will be covered by EC regime</p> <p>COM (97) 30</p>	<p>Reduced support for domestic solid fuels leading to decline in this sector and substitution by less carbon intensive fuels. Also reduction in CH₄ emissions Before Council for two years.</p>
4	Promoting energy efficiency	<p>Council Decision 96/737 (SAVE II)</p>	<p>Energy efficiency :</p> <ul style="list-style-type: none"> - SAVE II Programme - pilot actions and studies for promoting energy efficiency, including measures to facilitate the implementation of legislation 	<p>- Work underway</p>	<p>Reduce growth in energy intensity. Cost effective efficiency potential around 20% of total current energy consumption using current</p>

			- Framework Directive on Energy labelling followed by daughter directive 94/2, 95/12, 95/13, 96/89, 97/17, 98/11		technologies
		COM(97)69	- Proposal for an Integrated rational planning techniques directive	- Discussion on amended proposal	
		COM(98)246	- Energy Efficiency in the EU –Towards a Strategy for the Rational Use of Energy	-Action Plan requested by the Council in Resolution on EE to be presented in 1999	Economic potential 18% of 1995 final Energy cons in 2010 Target of 1% yearly improvement in energy efficiency above “business as usual” scenario
5	Improved technical performance and design of appliances and equipment	92/42/EC 96/57/EC	- Domestic Boiler Directive (92) - Refrigerator Directive (96) -Negotiated agreements on minimum energy efficiency standards for washing machines and TVs and VCRs	-energy efficiency standards for electric water heaters and air conditioners to be expanded to include other equipment	Electricity saving of 10% (220TWh/yr) with market transformation of all end use equipment

6	More widespread adoption of energy efficiency best practice taking into account IPPC-BAT	Council directive 96/61/EC	- Energy efficiency to be taken into account establishing BATS –implementation by MS	IPPC adopted by Council 9/96; enters into force 10/99 for new plants and by 10/07 for all existing plants	Implementation of BAT reference notes up to MS – this will determine impact on emissions.
7	Legislation on waste to take into account the latest research and best available technology for minimising greenhouse gas emissions	COM (98) 189	"Landfill Directive Applies to new and existing landfills" Step wise reduction in biodegradable waste. Commission proposal limits on biodegradable content of waste of 75%, 50% and 25% of production by 2002, 2005 and 2010. Council common position 75% (2006), 50% (2009) 35%(2016). 4 year derogation for (UK.I.E)	- Council common position by unanimity. More stringent standards demanded by EP unlikely to be adopted - Adoption of Directive end of first semester 1999	Landfill accounts for around a third of EU methane emissions – landfill currently accounts for around 160 Mtonnes of CO ₂ equivalent – saving substantial
8	Plan of action for reducing methane emissions		Commission study on cost-effective options to reduce methane emissions completed	Communication setting out Action programme –1999? Agenda 2000 See items 4 & 7	Reform of CAP under Agenda 2000 – proposal for a rural development regulation, - less intensive pasture systems - increase feed conversion efficiency
9	Solutions to the emissions of N ₂ O, in particular from catalysts in motor vehicles, taking into account the impact on emissions of other gases		On-going research needed		
10	Maximise the contribution of RTD activities under the Fifth Framework Programme to meeting climate change objectives by bringing forward new technologies and		Adoption of the Fifth RTD programme - RTD to mitigate GHGs technology + socio-economic chapters - Technology innovation in Energy - Clean cities	Adoption of the Fifth Framework Programme - RTD support for scientific research on climate change, policies and technologies (including renewable energy	Medium to long-term impacts

	techniques, notably regarding energy efficiency, renewable energies, and their dissemination to third countries			and improvement of energy efficiency) to mitigate GHG emissions - TRD for sustainable urban management, building sector and transport systems	
1 1	Ensure promotion of environmental objectives in liberalised electricity and gas markets	SEC(99)470	Commission working paper on access of renewable electricity to grids	Proposal for a Directive on common rules for renewable electricity (1999)	Contributes to objective of increase use of renewable energy– see 12
1 2	Promote a substantially increased use of renewables in the EU	Decision 98/352 COM(97)599	-ALTENER II Programme - Strategy and Action Plan on renewables – increase share of RES in EC primary gross inland energy consumption from 6% to 12% by 2010	First round of projects implemented, second call for proposals (2000 budget) in preparation Implementation of action plan, including Campaign for Take Off for RES	400 Mtonnes of CO ₂ saved per year by 2010
1 3	Measures to promote the increased use of combined heat and power (CHP) generation	COM(97)514 COM(98)415	Commission Communication on CHP CHP introduced in proposal for a revision of the Directive on Large Combustion Plants (LCP)	pending	Double use of CHP in EC by 2010 (9% to 18%)
1 4	Promotion of environmental agreements	COM(96)561	Communication on Environmental Agreements. Environmental Agreements on minimum efficiency standards (see 5 above)	Establish timetable. Discussion with industrial/electricity sectors on Long-Term Agreements in 1999. Conclude agreements in 2000	Substantial potential
1 5	Transport policies to influence travel demand towards less damaging forms of transport and to manage overall transport demand, tacking into account environmental constraints on transport volume	COM(97)243	Green Paper –“Citizens Network” Green Paper –“Fair and Efficient Pricing”	First phase of programme to apply the principle of charging for marginal social costs. Committee of MS to be set up to examine this issue.	

1 6	Standards for efficiency use in new and refurbished buildings		Buildings account for 40% of EC CO ₂ emissions. Main actions at MS level At EC level the review of Dir 93/76 EEC	In Action Plan for Energy Efficiency	
1 7	Policies to limit/reduce emissions of HFCs, PFCs and SF ₆		– data and scoping studies completed by Commission – policy response in development	Legislation/VA with respect to each of the three gases	+/- 41% increase projected by 2010 to +/- 80 Mtonnes CO ₂ equivalent mainly due to HFCs. Potential for reduction large if HFCs regulated.

Annex 4

RTD Highlights of DG XII related to Climate Change and the Kyoto-Protocol

FP4 Research programmes	Research areas	Ref.	Progress	Issues addressed
Industrial and material technologies				– Development of cleaner and more efficient technologies in industries ;
Environment and climate	Climate & Global change (incl. natural resources)	OJ L361 (31.12.1994)	– 119 MECU – 124 projects	– Monitoring and understanding of climate related processes on global and regional scale; – Quantification of the budget of GHGs and the exchange between the reservoirs; – Quantification of GHG's physical properties incl. GWP; – CH4 and N2O flux estimates from agricultural soils as a contribution to global greenhouse gases budget; – Quantification of atmospheric effects of (civil) aircraft emissions; – State-of-the art climate change scenarios for IPCC – Climate in the past, climate modelling, climate processes – Climate change impacts on agriculture and forest
	Environmental technologies		– 13,8 MECU – 14 projects	Ecosystem functioning (Terrestrial)
	Space techniques for environmental monitoring and research		– 110 MECU – 100 projects – 80 projects ongoing	– Development of space-borne monitoring techniques, including forest assessments, with involvement of national environmental authorities and EEA where relevant ;
	Socio-economic research related to global change/climate		- 10 MECU - 22 projects - 162 institutions involved -10 projects are completed, 3 near completion; 9 in progress	– Assessment of policy instruments (including Kyoto Mechanisms) to mitigate GHGs; analysis of public acceptance of climate mitigation policies; identification of socio-economic impacts and adaptation options.
Agriculture and fisheries		<i>DG VI</i>		– Development of renewable energy sources, e.g. biomass; – Primary production; – Processing of biological raw material;

				<ul style="list-style-type: none"> – Inputs control/sustainable exploitation of resources
Transport				<ul style="list-style-type: none"> – Development of more efficient transport technologies and systems ; – Economic assessment of economic instruments and other policies and measures for transport ; – Improvements of aeronautics technologies;
Energy (Non Nuclear)	Rational use of Energy Renewable Energies Fossil Fuels	OJ L126 (18/05/1994)	450 MECU (JOULE programme) 760 projects 1500 institutions involved	<ul style="list-style-type: none"> – Renewable energies (solar, biomass, wind, ...) – Energy efficiency measures

FP5 Thematic programmes	Key actions and generic activities	Ref.	Progress	Outcome
Quality of life and living resources	Environment and health			– Generation of knowledge to understand the impacts of GHG on health ;
Competitive and sustainable growth	Innovative products, processes, and organisation			– Development of cost efficient technologies regarding reduction of GHG emissions ; – Research on appropriate methodologies for life-cycle assessment and “zero” emission technologies;
	Sustainable mobility and intermodality			– Development of energy efficient transport systems; – Planning in favour of mitigation policies;
	New perspective for aeronautics			– Reduction of GHGs in Aeronautics;
Energy, Environment and Sustainable Development A)	Sustainable management and quality of water			
	Global change, climate and biodiversity		– 301 M€ – First call on 20 March 1999; – Second call foreseen in October 1999	– Quantification of emissions and concentrations of GHGs, their budgets, radiative properties and prediction of future trends; – Development of renewable energy sources ; – Increasing the capacity of CO ₂ absorption in the biosphere, e.g. enhancement of sinks ; – Finding means to support adaptation to climate change of ecosystems, e.g. through biotechnology ; – Development of a European component in global observing systems;
B)	Cleaner energy systems, including renewables	OJ L64/58 (12/03.1999)	– 479 M€ – First call on 20 March 1999	– Development of cost efficient technologies for mitigating climate change through environmentally friendly energy supply; – Generation of electricity with reduced CO ₂ emissions; – New renewable energy sources; – Integration of RE into energy systems; – Cost-effective environmental abatement technologies for power reduction
	Economic and efficient energy for a competitive Europe	OJ L64/58 (12/03/1999)	– 547 M€ – First call on 20 March 1999	– Rational and efficient use of energy; – Technologies for: * transmission and distribution of energy * storage of energy * more efficient explo

				<p>ration, extraction and production of hydro carbons</p> <ul style="list-style-type: none"> - Development of CO₂ scenarios and technological strategies for mitigation;
C)	Generic Socio-economic activities			<ul style="list-style-type: none"> - Development of ece³⁴ tools, assessment of policies and economic instruments; - Understanding of social and institutional dimensions according to climate change policies;
	Generic Earth Observation technologies			<ul style="list-style-type: none"> - Pilot projects for using space borne observations in the implementation of environmental treaties
Euratom programme	Controlled thermonuclear fusion			

³⁴ ece = energy economic environmental models and database

5th RTD FP – Direct Action – Joint Research Centre

Projects linked to Climate Change and the Kyoto Protocol

<u>Programme line</u>	<u>Research areas</u>	<u>JRC project n°</u>	<u>Funding (V FP)</u>	<u>Issues addressed</u>
Enhancing sustainability	GHG and aerosols	EI-1	17 M€	Regional modelling
	Global Environmental Information Systems	SAI-6	18.3 M€	Global forest and fire monitoring Information Systems
Enhancing sustainability	Integration of environmental concepts	IPTS-3 ISIS-20	7.5 M€	Green accounting, technological assessment; decision tools for integrated assessment
	Land cover / land use dynamics	SAI-4	20 M€	Spatial aspects of land use; monitoring
Energy and transport	Renewable energies	IPTS-2 EI-7 EI-9 EI-8 EI-10	26.6 M€	Energy scenarios, re-newable energy systems, energy saving technologies
	Power generation	IAM-7 IAM 8	19 M€	New materials in power plants
	Transport and mobility	IPTS-10	2.4 M€	Impact of technology and regulations
	Emission control	EI-11 IAM-15 IAM-16	32.6 M€	Emissions characterisation, validation of abatement technologies