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**REPORT FROM THE COMMISSION**

**under Council Decision 93/389/EEC as amended by Decision 99/296/EC for a  
monitoring mechanism of Community greenhouse gas emissions**

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#### 1. EXECUTIVE SUMMARY

This is the fourth progress report under Council Decision 93/389/EEC as amended by Decision 99/296/EC for a monitoring mechanism of Community carbon dioxide (CO<sub>2</sub>) and other greenhouse gas emissions. It assesses the actual and projected progress of Member States and the Community towards fulfilling their greenhouse gas (GHG) emission commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.

This report refers to the European Environment Agency (EEA) Environmental Issue Report *Greenhouse gas emission trends and projections in Europe* (EEA, 2003). In its overall assessment it considers the impacts of domestic policies and measures that reduce emissions. Projected shortfalls in emissions reductions do not take into account future EC and/or international emissions trading, nor do they include reductions that can be achieved by the use of the project-based mechanisms under the Kyoto Protocol (Kyoto mechanisms), Joint Implementation (JI) and the Clean Development Mechanism (CDM). Neither does the report include emission removals by domestic carbon sinks, a policy option explicitly incorporated into the Marrakech Accords.

However, for those Member States which have already submitted data on the projected use of carbon sinks and the Kyoto mechanisms, this report presents a preliminary assessment of how much these instruments could contribute to achieving their individual burden sharing target. Unfortunately, the quantitative information provided by Member States is very limited. Therefore, the overall assessment can only be based on the contribution of domestic action excluding domestic carbon sinks.

**Actual progress of the EC:** In 2001, the emissions of GHG from the EU (European Union) have increased for a second consecutive year. They are estimated to have been 1.0 % higher in 2001 than a year earlier. GHG emissions are now 2.1 percent points above the Kyoto target

path<sup>1</sup>, clearly showing how much more effort still is required for the implementation of more vigorous policies and measures. Member States have to effectively implement policies and measures. The EC and its Member States shall take the necessary measures as identified by the European Climate Change Programme (ECCP) to comply with its commitments under the Kyoto Protocol (cf. Council Decision 2002/358/EC, Article 2 (3)).

Performance among Member States is highly variable. Luxembourg and Sweden have decreased their GHG emissions and are now in the group of Member States that are below their individual target paths in 2001. Most Member States have performed less well. More than half of the Member States are still above their target paths. All of these Member States except for Spain have even increased the distance from their target path between 2000 and 2001.

**Projected progress of the EU:** Aggregate Member States' projections suggest that existing policies and measures will not be sufficient to reach the EC's Kyoto target. The "*with existing measures*" projection suggests that in 2010 the emissions of the European Community (EC) will have decreased by only 0.5 % leaving a significant gap of 7.5 % from the Kyoto target. The figure on projected progress for the EC as a whole is considerably worse than the figure given in last year's report (cf. COM(2002)702). Germany presented updated projections in June 2003. According to these projections, Germany – the largest emitter of GHG within the EC – is even slightly off track of fulfilling its target, whereas Germany's projections in previous years had reported a large over-achievement.

11 Member States have identified additional policies and measures to achieve their respective commitments according to the burden sharing agreement. The projections taking into account these additional measures reveal that six Member States would over-achieve their individual commitment, some of them to a considerable extent. At EC level the over-achievement by these Member States would result in reductions of GHG emissions for the EC as a whole by 7.2 % below base year emissions, still leaving a small gap of 0.8 % to the EC Kyoto target. These projections have to be interpreted with considerable caution because of significant uncertainties and methodological shortcomings, for example in the assumptions on economic development and on the effectiveness of policies and measures that have still to be implemented. With the start of the 1<sup>st</sup> commitment period only five years ahead, it will be important to further improve the methodologies for projections of policy impacts for the next report.

### **Preliminary assessment of the accounting for "flexible mechanisms" of the Kyoto Protocol as well as land use and land use change and forestry**

Seven Member States reported on their intention of using the Kyoto mechanisms to reach their respective reduction commitment. However, these intentions are preliminary and provide more qualitative than quantitative information. At this early stage these Member States have identified measures contributing to the reduction commitment of 21 Million tonnes of CO<sub>2</sub> equivalent<sup>2</sup>, of which 20 million tonnes is identified by the Netherlands. Notably, the Netherlands and Austria have put in place significant budgets for the Kyoto mechanisms. However, more detailed information is required to assess these estimates.

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<sup>1</sup> The "Kyoto target path serves as tool for comparing the achievements of the Member States and the EU as a whole (see Chapter 3).

<sup>2</sup> The equivalent CO<sub>2</sub>-emissions are those emissions from the other GHG regulated by the Kyoto Protocol, which exert the same radiative forcing as CO<sub>2</sub>

Various Member States have also reported on their estimations of net carbon stock changes for the first commitment period under Article 3(3) of the Kyoto Protocol, and some on their intention to account for activities under Article 3(4) of the Kyoto Protocol on land use, and land use change and forestry (LULUCF). The reported aggregated estimations from LULUCF from the Member States would represent a net sequestration of 13 Million tonnes CO<sub>2</sub>. However, these data are preliminary, in particular because the Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance for the LULUCF sector is still under preparation.

**Compliance with reporting requirements:** The timely submission of the inventories is still a problem for Germany, Greece, Italy, Luxembourg, Portugal and Spain. Furthermore, the inventories from Greece and Luxembourg contain considerable gaps. However, there has been continued progress in Member States' reporting on emission inventories and domestic policies and measures under the EC monitoring mechanism.

**Accession Countries:** All Accession Countries except Slovenia were on track to meet their Kyoto target and forecast emissions in 2010 to reach or even be lower than their Kyoto commitments under a "*with existing measures*" scenario.

**Common and Co-ordinated Policies and Measures:** Common and Co-ordinated Policies and Measures at EC level are integral parts of the EC's effort to achieve the Kyoto target. Progress has been made in developing and adopting measures in the field of energy, transport and industry, as agreed under the first phase of the European Climate Change Programme. The potential of these Common and Co-ordinated Policies and Measures for reducing GHG emissions had been evaluated by expert judgement within the different Working Groups of the ECCP without using any model. The policies and measures currently adopted by the EC or those proposed by the European Commission would result – if adopted – in emission reductions of about 300 Million tonnes CO<sub>2</sub>-equivalent in the 15 existing Member States, potentially covering the gap of 7.5% between the "*with existing measures*" projection and the EC Kyoto target. However, whether this potential can be realised during the first commitment period will depend on how swiftly Member States will implement Community legislation. Furthermore, there is a risk of double counting as Member States might have reported some of the potential reductions of these policies already as part of their domestic policies and measures. Methodologies for Community-wide projections on the effectiveness of climate policy impacts need to be further harmonized.

## 2. MEMBER STATES COMPLIANCE WITH REPORTING REQUIREMENTS

The EC's compliance with UNFCCC and Kyoto Protocol reporting obligations and the evaluation of actual progress depends upon the timely availability of the relevant national inventories from which a complete EC inventory covering all 15 Member States is compiled. Member States are required to submit inventory data by 31 December each year in respect of the previous calendar year (i.e. 2001 data by 31 December 2002). Six Member States (Germany, Greece, Italy, Luxembourg, Spain and Portugal) did not send their inventories in time. By 4 April 2003, however, all Member States had reported data for 2001.

Data availability in general has improved with regard to the previous years. Gaps still exist for Greece (SF<sub>6</sub> for 1990-2001), and Luxembourg (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O<sup>3</sup> for 1991-93; HFCs, PFCs

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<sup>3</sup> CH<sub>4</sub> = Methane, N<sub>2</sub>O = Nitrous oxide

and SF<sub>6</sub> for 1990-2000). A data gap-filling procedure was applied in accordance with the guidelines of the monitoring mechanism for Luxembourg (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for 1991-93 and fluorinated gases for 1990-2000). Additionally, for those countries which did not report HFCs, PFCs and SF<sub>6</sub> before 1995, the gaps were also filled to establish a consistent data series. Data on CO<sub>2</sub>, methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions used in this report do not include emissions and removals from LULUCF. The outstanding methodological decisions under the Article 3(3) and 3(4) of the Kyoto Protocol for LULUCF were agreed upon at the 7<sup>th</sup> Conference of the Parties of the UNFCCC (COP-7) in November 2001 in Marrakech ("Marrakech Accords"). However, the comprehensive methods for estimating changes of carbon pools (sinks) are not yet available but are currently being developed by IPCC.

The future effects of both implemented and proposed policies and measures are used for the assessment of the projected progress towards fulfilling the commitments under the Kyoto Protocol. All Member States submitted projections for total GHG emissions for 2010. However, Germany and Spain did not deliver the projections by gas. For the EU as a whole, the analysis of effects of policies and measures is only possible to a limited extent as Germany, Greece, Luxembourg, the Netherlands, Portugal and Spain did not submit projections for every sector.

### **3. EVALUATION OF ACTUAL PROGRESS**

#### **Progress of the European Union as a whole**

The EC has committed itself to reduce its GHG emissions by 8 % from base year level (emissions in 1990 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O, but 1995 for fluorinated gases) in the first commitment period 2008-2012 of the Kyoto Protocol. A "burden sharing agreement" has been reached by Council Decision 2002/358/EC between the 15 existing Member States in accordance with Article 4 of the Kyoto Protocol. This agreement assigns a specific reduction target to each Member States (cf. EEA 2003, Chapter 2.1, Table 1). It also serves as basis for reaching their commitments individually for every Member States in case the EC as a whole would fail to reach its commitment in the period 2008 - 2012.

The actual and projected progress is measured by the distance-to-target indicator which had already been used in previous years as a tool for displaying the success of the EC and of the Member States. It shows the difference between actual EU GHG emissions and an notional Kyoto target path of the EU. The Kyoto target path shows the theoretical linear decrease of GHG emissions from the base year level until 2010, the mid-term year of the first commitment period (cf. Figure 1). When using the target path it has to be kept in mind that the Kyoto Protocol was agreed in 1997 and ratified by the EC and its Member States in 2002. Furthermore, the European Climate Change Programme was only launched in 2000 and the policies and measures resulting from that programme are only now starting to deliver. Nevertheless, the comparison with the target path is a comfortable tool to visualise the evolution of the greenhouse gases emissions from the EC and its Member States. The EEA report *Greenhouse gas emission trends and projections* (EEA, 2003) provides a detailed analysis of emission trends for the EC and each Member State. Here a summary of these trends is presented.

The EC GHG emissions decreased by 2.3 % from base year level in 2001 (Figure 1) and reached a level of 4108 Million tonnes CO<sub>2</sub>-equivalent. The reduction is not much more than one quarter of the EC's Kyoto target of an 8 % reduction from base year level to 2010. The

distance to the EC Kyoto target is larger than in the last year's evaluation because GHG emissions have increased for the second consecutive year<sup>4</sup>. Total GHG emissions were 2.1 index points above the Kyoto target path in 2001 (Figure 1). This emphasises the importance of more vigorous and efficient implementation of existing and additional policies and measures by the Member States identified in the projections (cf. Chapter 4) as well as the policies and measures identified by the ECCP (see second ECCP Communication<sup>5</sup>).

### **Progress by greenhouse gas**

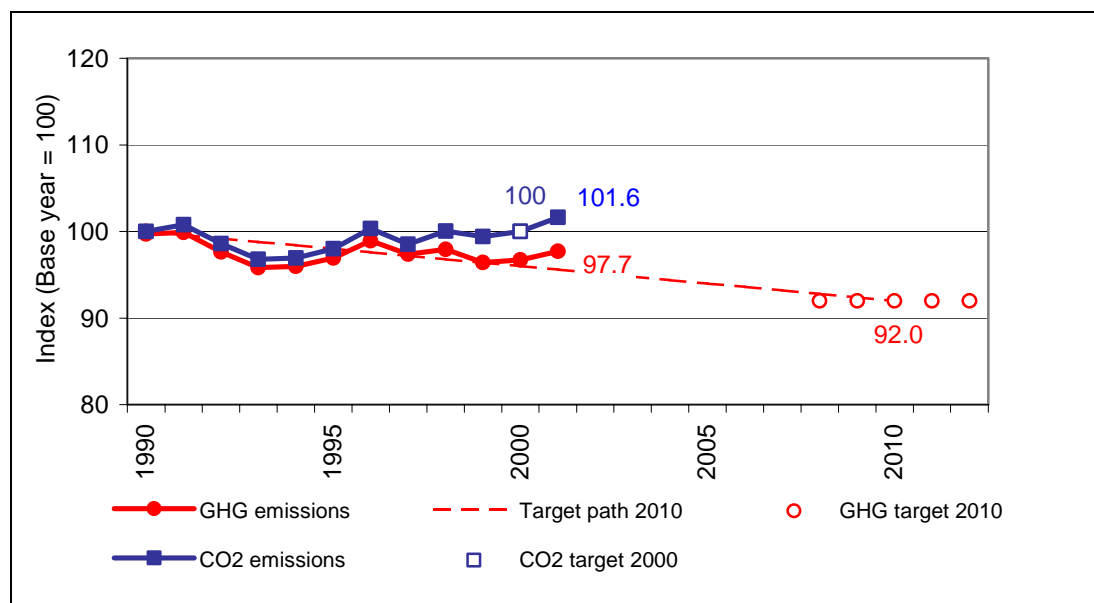
Trends for the different sectors and greenhouse gases varied considerably. CO<sub>2</sub> is the most important greenhouse gas in the EU, accounting for 82 % of total GHG emissions in 2001. From 2000 to 2001, EC CO<sub>2</sub> emissions rose by 1.6 % to the highest level of CO<sub>2</sub> emissions since 1990 which is even more worrying given the importance of this gas within the total of the GHG emissions. Most of the other greenhouse gases have, on the contrary, been reduced since 1996. The transport sector is contributing most to the increase in CO<sub>2</sub> (20 % above 1990 level). The next most significant sector, 'Other sectors' (mainly energy combustion in households, but also in commercial- and institutional buildings, and in agriculture), has increased its GHG emissions by 3 % above 1990 level.

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<sup>4</sup> In the 2002 Commission Progress Report a 3.5 % decrease was reported for emissions between the base year and 2000 but, due to updated data provided by Member States, the decrease amounts to the 3.3 %, presented in this report.

<sup>5</sup> [http://europa.eu.int/comm/environment/climat/second\\_eccp\\_report.pdf](http://europa.eu.int/comm/environment/climat/second_eccp_report.pdf)

**Figure 1 EC greenhouse gas emissions compared with targets for 2010 (excl. LULUCF emissions and removals)**



**Note:** The linear Kyoto target path is used to evaluate EC GHG emissions in 2001 compared to the Kyoto target of the EC, not as an approximation of future EC emission trends.

**Source:** EEA, 2003

Methane (CH<sub>4</sub>) emissions account for 8 % of total EU GHG emissions and have decreased by 21 % between 1990 and 2001. The main reasons for declining CH<sub>4</sub> emissions were the decline of coal mining, reductions in solid waste disposal on land and technical measures to reduce these emissions, and decreasing numbers of cattle. The emissions from these sectors have been decreasing constantly since 1990.

Nitrous oxide (N<sub>2</sub>O) emissions, responsible for 8 % of total GHG emissions, have decreased by 16 % between 1990 and 2001. The most important sources contributing to the steady decrease in N<sub>2</sub>O emissions since 1990 are the chemical industry, especially the production of adipic acid, where emissions have fallen substantially due to technical measures, and agricultural soils, where emissions decreased due to a reduction in the use of fertilisers.

Fluorinated-gas emissions show opposing trends: whereas HFC emissions increased by 11 % between 1995 and 2001, PFC emissions declined by 28 % and SF<sub>6</sub> emissions were 25 % below 1995 levels in 2001. Fluorinated-gases accounted for only 1 % of total GHG emissions in 2001. The recent development from 2000 to 2001 shows all fluorinated-gas emissions decreasing.

For more information, refer to EEA 2003, Chapter 3.1.

### Progress by sector

A sectoral analysis has been performed to analyse those sources with the largest contribution to the EU GHG emissions and their trends between 1990 and 2001. The most important in 2001 were:

- CO<sub>2</sub> emissions in the energy industries, with a 27 % share in 2001 of the overall GHG-emissions. These emissions have reduced by 2 % since 1990;

- CO<sub>2</sub> emissions from transport, with a 20 % share in 2001 and an increase of 20 % since 1990;
- CO<sub>2</sub> emissions in ‘Other sectors’ (mainly combustion processes in households, public buildings and agriculture), with a 16 % share in 2001 and an increase of 3 % since 1990;
- CO<sub>2</sub> emissions from manufacturing industries and construction (mainly from heat and power production), with a 14 % share in 2001 and a decrease of 9 % since 1990.

These sources cover more than three-quarters of total GHG emissions in the EC and all result from fuel combustion. A detailed overview of the important sources of greenhouse gases and their development are listed in EEA, 2003, Chapter 3.3.1.

In the transport sector GHG emissions in the EC have been increasing most. Between 1990 and 2001, CO<sub>2</sub> emissions from transport increased by 139 Million tonnes (20 %). Additionally, the N<sub>2</sub>O emissions of transport have been rising. Transport mainly includes emissions from fossil fuel combustion in road transportation, domestic civil aviation, domestic navigation and railways. The main reason for the high growth of CO<sub>2</sub> emissions from transport is the increase in road transport volumes and associated fuel consumption (cf. EEA 2003, Chapter 3.3.3).

The manufacturing industries and construction sectors were, in contrast, the sectors with the largest reductions in emissions. Both the CO<sub>2</sub> emissions from fossil fuel combustion in manufacturing industries and the N<sub>2</sub>O emissions from the chemical industry decreased by about 57 Million tonnes CO<sub>2</sub>-equivalent, leading to a relative reduction of 9 % in the manufacturing sector since 1990 and of 54 % in the chemical sector. Economic restructuring following the German reunification and continuing efficiency improvements, also mainly in Germany, are responsible for this success by manufacturing industry. The reductions in the chemical industry are due to specific technical measures in adipic acid production, mainly in the UK, Germany and France (cf. EEA 2003, Chapter 3.3.2).

Other sectors with large changes in emissions since 1990:

Fugitive CH<sub>4</sub> emissions from solid fuels have been reduced by 33 Million tonnes CO<sub>2</sub>-equivalent, amounting to a reduction of almost 70%. However, they only contribute 0.4 % to total EC GHG emissions. The main reason for this large decrease is the decline of coal mining in the UK, Germany and France (cf. EEA 2003, Chapter 3.3.1).

Substantial reductions in methane emissions (30 Million tonnes CO<sub>2</sub>-equivalent or 28 %) were achieved in solid waste disposal on land (“landfilling”), which is responsible for 2 % of total emissions in 2001. This was mainly due to measures related to the implementation of the European Landfill Waste Directive (cf. EEA 2003, Chapter 3.3.6).

Carbon dioxide emissions in energy industries (electricity, heat and steam production) decreased by 25 Million tonnes (2%) between 1990 and 2001. This was largely caused by fuel shifts from coal to gas in several Member States (particularly in the UK) and improved efficiency (especially in Germany). The use of combined heat and power generation has increased towards a share of 10 % across the EC (cf. EEA 2003, Chapter 5.4.1). Additionally, the increasing use of renewable energy sources (with a nearly 15 % share in electricity consumption in 2000), in particular wind power generation in Germany, Denmark and Spain, contribute to these CO<sub>2</sub> reductions. However, due to a large increase in emissions from energy industries in 2001, the reductions reported this year are about one third less than those



reported last year for the time period 1990-2000. The main reasons for the increase reported this year are the fuel shift to high carbon containing coal in electricity production in 2001, due in part to higher oil and gas prices, and the increased demand in district-heating, in particular by households (Eurostat, NewCronos database, 2003).

EEA, 2003, Chapter 3.3 provides more quantitative information by sector on the trends in GHG emissions for different gases and sectors.

**Progress at Member State level:** Most Member States increased the distance to the target path in 2001 compared to 2000, whereas only Spain reduced this distance and Sweden extended its distance below the target path. The target path serves to evaluate the progress of each Member State in emission reduction or limitation, compared to the theoretical linear Kyoto target path of the Member States under the Burden Sharing Agreement. In 2001, only five Member States (France, Germany, Luxembourg, Sweden and the United Kingdom) were “on track” towards reaching their specific targets, i.e. they were below or close to (France) their target paths (Table 1). Ten Member States were well above their target paths (Austria, Ireland, Spain and Portugal significantly above 10 percentage points).

The reductions in emissions achieved since 1990 largely resulted from decreases by Germany and the UK, the largest emitters of GHG within the EC (accounting for approximately 40%). In 2001, these two Member States had reduced their GHG emissions by 313 Million tonnes CO<sub>2</sub>-equivalents compared to the base year level. German CO<sub>2</sub> emissions from energy and manufacturing industries even declined by 16 % and 33 % respectively. However, in 2001 the GHG emissions of both of these Member States increased again. The most important reasons were increasing electricity demand and lower outdoor temperatures within the heating period (winter) compared to the preceding year.

Italy and France are the third and fourth largest emitters with a share of 13 % each. In 2001, the Italian GHG emissions hardly increased (0.3 % from 2000, which is modest compared to the increase of 7% in 2001 from base year levels). The emissions increased primarily in the transport sector and electricity production.

In France, GHG emissions increased again by 0.5 % above 2000, thus reversing the previous downward trend. The emissions were very close to the base year level. In particular, France achieved large reductions in N<sub>2</sub>O emissions from the chemical industry, but CO<sub>2</sub> emissions from transport have nevertheless increased considerably between 1990 and 2001.

The fifth largest emitter in the EU, Spain, accounts for about 9% of total EU greenhouse gas emissions. In 2001, emissions were 32 % higher than their base year level. However, in 2001 Spain was the only Member State that reduced its GHG emissions from their level of the previous year (by 1 % compared to 2000). Emission reductions were substantial within the Spanish energy industries (CO<sub>2</sub> emissions decreased by 5%) due to a large increase in electricity production by hydro power plants. This sector expanded by more than one third during 2001 reaching a share of 18% of Spain’s total electricity production (Eurostat, NewCronos database, 2003).

EEA 2003, Chapter 3.2 provides more quantitative information on progress by Member States.

**Table 1: Greenhouse gas emissions in CO<sub>2</sub> equivalents (excl. LULUCF emissions and removals) and Kyoto Protocol targets for 2008-2012**

	Base year <sup>6</sup> (Mt CO <sub>2</sub> )	Kyoto target <sup>7</sup> according to EC Burden sharing	GHG emissions 2001 (Mt CO <sub>2</sub> )	Change 2001 (in % of base year emissions)	Change 2001 (in % of 2000 emissions)	Distance-to target indicator (index points)
Austria	78.3	-13.0 %	85.9	+9.6 %	+4.8 %	+16.8
Belgium	141.2	-7.5 %	150.2	+6.3 %	+0.2 %	+10.5
Denmark <sup>8</sup>	69.5	-21.0 %	69.4	-0.2 % (-9.0)	+1.8 %	+11.4 (+2.6)
Finland	77.2	0.0 %	80.9	+4.7 %	+7.3 %	+4.7
France	560.8	0.0 %	560.8	+0.4 %	+0.5 %	+0.4
Germany	1216.2	-21.0 %	993.5	-18.3 %	+1.2 %	-6.8
Greece	107.0	+25.0 %	132.2	+23.5 %	+1.9 %	+9.8
Ireland	53.4	+13.0 %	70.0	+31.1 %	+2.7 %	+23.9
Italy	509.3	-6.5 %	545.4	+7.1 %	+0.3 %	+10.7
Luxembourg	10.9	-28.0 %	6.1	-44.2 %	+1.3 %	-28.8
The Netherlands	211.1	-6.0 %	219.7	+4.1 %	+1.3 %	+7.4
Portugal	61.4	+27.0 %	83.8	+36.4 %	+1.9 %	+21.6
Spain	289.9	+15.0 %	382.8	+32.1 %	-1.1 %	+23.8
Sweden	72.9	+4.0 %	70.5	-3.3 %	+2.2 %	-5.5
The United Kingdom	747.2	-12.5 %	657.2	-12.0 %	+1.3 %	-5.2
<b>Total EC</b>	<b>4204.0</b>	<b>-8.0 %</b>	<b>4108.3</b>	<b>-2.3 %</b>	<b>+1.0 %</b>	<b>+2.1</b>

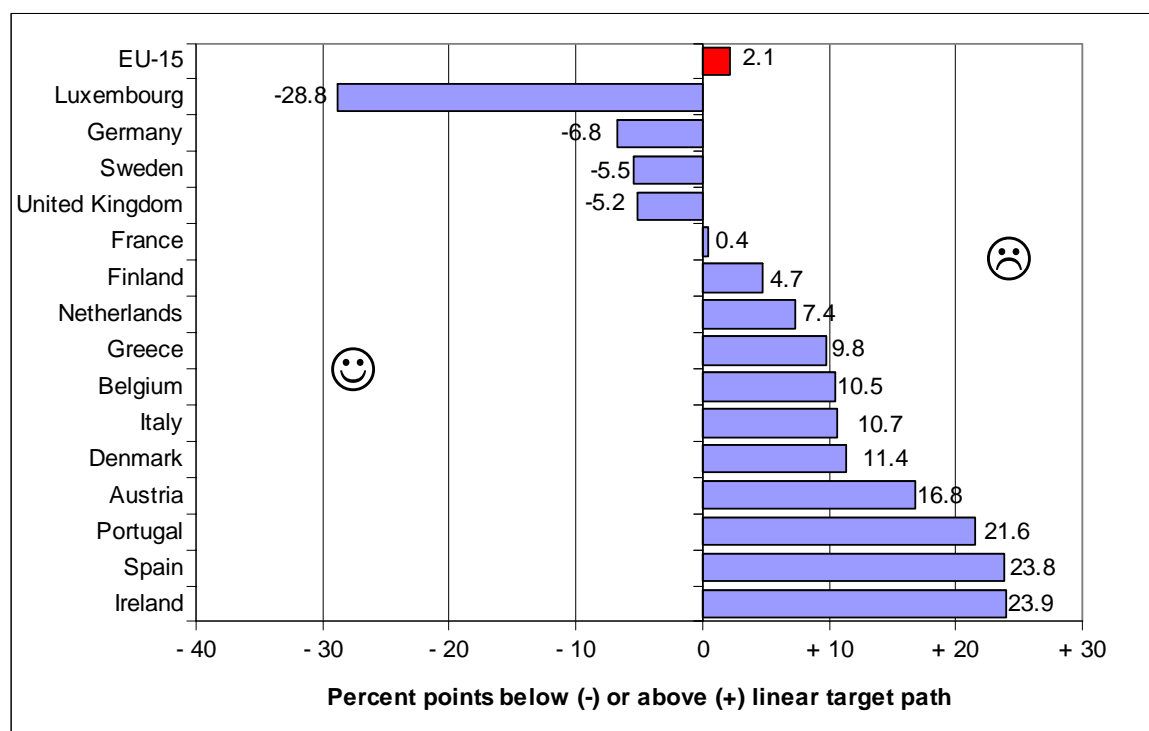
Source: EEA, 2003

<sup>6</sup> Base year for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O is 1990; for the fluorinated gases most Member States have indicated to select 1995 as base year, as allowed for under the Protocol. Therefore, for the purpose of this analysis of the EU greenhouse gas emission trends, 1995 is used as the base year for fluorinated gases for all Member States.

<sup>7</sup> In the Council decision on the approval by the EC of the Kyoto Protocol the different commitments of the Member States are expressed as percentage change from the base year. In 2006 the respective emission level shall be expressed in terms of tonnes of carbon dioxide equivalent. In this connection, the Council of Environment Ministers and the Commission have a joint statement agreed to take into account i.a. the assumptions in Denmark's statement to the Council Conclusion from June 16-17 1998 relating to the base year emissions.

<sup>8</sup> For Denmark, data that reflect adjustments for variations in electricity trade in 1990 are given in brackets.

**Figure 2: Distance-to-target indicators (in index points = percent) for the Kyoto Protocol and burden sharing targets of EU Member States**



**Notes:**

1. Distance to target in percent (the bars) show the deviations between a hypothetical target (in 2001) and what actually has been achieved (in 2001), under the assumption that reductions as a percentage of 1990 levels take place on a linear basis. It assumes that the Member States meet their target entirely on the basis of domestic measures and therefore does not include the use of Kyoto mechanisms or sinks allowed for under the protocol.

2. The Danish distance-to-target indicator is +2.6 index points, if Danish greenhouse gas emissions are adjusted for electricity trade in 1990.

**Source:** EEA, 2003

**4. EVALUATION OF PROJECTED PROGRESS**

This section compares the most recent projections of the GHG emissions of Member States for the year 2010 (the midterm year of the first commitment period of the Kyoto Protocol) with their individual targets. Additionally, it compares the aggregated Member State projections with the EC Kyoto target. The “with existing measures” projections only consider the domestic (including EU common and coordinated) policies and measures currently implemented, while the “with additional measures” projections also take those policies and measures into account which are under discussion and have a realistic chance of implementation. The projections are supplemented by a preliminary assessment of contribution of the Kyoto mechanisms and carbon sinks.

**Comparison of Member States “with existing measures” projections with the EC Kyoto target**

Table 2 on “with existing measures” projections shows how far existing policies and measures implemented by Member States are expected to contribute to their individual targets and the size of the remaining gaps. These contributions vary significantly across Member States, reflecting the different degree of policy development between countries. Sweden and

the UK are the only Member States projecting themselves to have lower GHG emissions in 2010 than their respective targets with existing domestic policies and measures. In both of these Member States, this projection is made on the strength of efficient measures introduced since the Kyoto Protocol was agreed in 1997. However, this will not prevent other Member States from being in breach of their commitments. Decision 2002/358/EC requires every Member State to take the necessary measures to meet their individual target. For more information, see EEA 2003, Chapter 2.1.

**Table 2: Comparison of Member States’ “with existing measures” total emissions projections (excluding LULUCF emissions and removals) compared with the Kyoto commitments**

	Base year (Mt CO2)  (used for projections assessment)	Individual burden sharing target <sup>9</sup>	Commitment implied by burden sharing  (Mt CO2)	Scenario with existing policies and measures  (Mt CO2)  in 2010	Scenario with existing policies and measures  % change  in 2010	Gap (Mt CO2)	Gap (in % of Base year)
Austria	77.2	-13.0 %	67.2	86.1	+11.5 %	+18.9	+24.5 %
Belgium	145.0	-7.5 %	134.1	167.4	+15.4 %	+33.3	+22.9 %
Denmark	69.5	-21.0 %	54.9	81.2	+16.8 %	+26.3	+37.8 %
Finland	77.2	0.0 %	77.2	89.9	+16.5 %	+12.7	+16.5 %
France	542.7	0.0 %	542.7	594.3	+9.5 %	+51.6	+9.5 %
Germany	1218.2	-21.0 %	962.4	977.8	-19.7 %	+15.4	+1.3 %
Greece	107.0	+25.0 %	133.8	145.2	+35.7 %	+11.4	+10.7 %
Ireland	53.8	+13.0 %	60.7	75.2	+39.8 %	+14.4	+26.8 %
Italy	521.0	-6.5 %	487.1	540.1	+3.7 %	+53.0	+10.2 %
Luxembourg	12.7	-28.0 %	9.2	9.9	-22.4 %	+0.7	+5.6 %
The Netherlands	212.0	-6.0 %	199.3	225.0	+6.1 %	+25.7	+12.1 %
Portugal	64.9	+27.0 %	82.4	91.5	+41.0 %	+9.1	+14.0 %
Spain	207.0	+15.0 %	238.1	307.0	+48.3 %	+69.0	+33.3 %
Sweden	70.4	+4.0 %	73.2	70.9	+0.7 %	-2.3	-3.3 %
United Kingdom	744.7	-12.5 %	651.6	640.9	-13.9 %	-10.7	-1.4 %
<b>Total EC</b>	<b>4123.3</b>	<b>-8.0 %</b>	<b>3773.8</b>	<b>4102.3</b>	<b>-0.5 %</b>	<b>+328.5</b>	<b>+7.5 %</b>

<sup>9</sup> See footnote 5

The aggregated current “*with existing measures*” projections for the EC only project a small decrease of GHG emissions of 0.5 % by 2010 relative to the base year level. This leads to a shortfall of 7.5 percentage points with regard to the target of minus 8 % (about 329 Million tonnes CO<sub>2</sub>-equivalent) by 2010.

This result is considerably worse than last years’ projections which had forecasted a 4.7 % decrease in EC GHG emissions for 2010. Recently updated projections from Denmark, Germany and Greece estimate their respective projected emissions for 2010 to be higher than reported last year. On the other hand, Austria and Italy estimate slightly lower emissions in 2010. Germany’s revised projection (preliminary information given in June 2003) affects the EC projections significantly. The new German projections indicate that Germany might miss its target by 15 Million tonnes of CO<sub>2</sub>-equivalent. In contrast, the last projection from Germany showed an over-achievement of 155 Million tonnes for 2010. In their updated projections, Germany has evaluated the effects of its climate change programme adopted in 2000 and recent policies and measures (including those of 2002).

The EC “*with existing measures*” projections for individual gases reveal that the emissions of CO<sub>2</sub> are projected to increase by 4 % (mainly because of the projected large increase in traffic-related emissions). Information for other GHG is less comprehensive especially because Germany and Spain did not report these data. Therefore, it is difficult to draw firm conclusions. Decreases are projected for CH<sub>4</sub> and N<sub>2</sub>O of 32 % and 12 % respectively over the period 1990 to 2010 for those countries that reported information on these gases. However, for fluorinated gases a significant increase of 39 Million tonnes CO<sub>2</sub>-equivalent (98%) is projected by 2010 compared to the base year. For more information, refer to EEA 2003, Chapter 4.1.

The projections of GHG emissions from the transport sector are of considerable concern. They indicate under the “*with existing measures*” scenario a rise of about 34 % by 2010, compared to 1990. This, however, is lower than previous projections, thus indicating that actions undertaken, such as the agreement with car manufacturers on the reduction of CO<sub>2</sub> emissions per kilometre from new passenger cars, are starting to deliver.

### **Comparison of Member States “*with additional measures*” projections with the EC Kyoto target**

The “*with additional measures*” projections reveal that even with these additional policies and measures in place the EC will not achieve its Kyoto target. With additional measures, the EC will decrease its GHG emissions by 7.2 % from base year level to 2010, still leaving a gap of 0.8 percent points to its Kyoto target of –8 %. This result can only be achieved because Finland, France, Greece, Ireland, Sweden and the UK project to achieve or over-achieve their burden-sharing target. For more information, refer to EEA 2003, Chapter 4.2.

The quality of the projections provided still leaves much scope for improvement. Four Member States (Germany, Luxembourg, Portugal and Sweden) did not provide any quantification of their additional policies and measures. Sweden projects existing policies and measures to be sufficient. For those countries that have identified additional savings of greenhouse gases, most of these savings are expected to come from further reductions in CO<sub>2</sub>. The overall quality of the above mentioned projections generally suffers from the uncertainties related to:

- the level of implementation of policies and measures; and,
- the methodologies used for the projections and their reporting.

### **Preliminary assessment of accounting for the use of flexible mechanisms and carbon sinks under the Kyoto Protocol**

In order to complement the assessment of progress on the basis of domestic measures, the European Commission sent a questionnaire to Member States on their intentions and preparations for use of Kyoto mechanisms (Articles 6, 12 and 17 of the Kyoto Protocol) and carbon sinks (Articles 3(3) and 3(4) of the Kyoto Protocol).

The status of preparations for the use of Kyoto mechanisms differ largely between Member States. Six Member States (Austria, Belgium, the Netherlands, Portugal, Spain and the UK) have already decided to use these Kyoto mechanisms in addition to domestic policies and measures to achieve their targets for the first commitment period, 2 of which have presented their first quantitative estimations. The Netherlands and Portugal are planning to account for 20 and about 1 Million tonnes of CO<sub>2</sub>-equivalent per year, respectively through the use of flexible mechanisms. Austria intends to account for up to 50% of its effort to meet its commitment by flexible mechanisms. Austria and the Netherlands have proceeded furthest in their preparations for implementing the project based mechanisms and have allocated considerable budgets. With its forecast use of the Kyoto mechanisms of 20 Million tonnes of CO<sub>2</sub> equivalent, the Netherlands would close the gap between its “*with additional measures*” projections and its burden-sharing target only if the most optimistic scenario of its “*with additional measures*” projections is considered<sup>10</sup>. Portugal, which intends to generate up to 1.3 Million tonnes CO<sub>2</sub> equivalent, would only achieve a slight reduction of its gap. Furthermore, Portugal did not provide detailed information on the implementation of a legal framework or any specific projects.

For the EU these quantified estimates on the use of Kyoto mechanisms by Member States would contribute some 0.5% of the base year emissions. However, this figure has to be interpreted with caution because only very few Member States have until now indicated their intention to account for JI and CDM and provided the respective data. For more details, see EEA, 2003, Chapter 6.

Member States have also to account for afforestation, reforestation and deforestation activities under Article 3(3) of the Kyoto Protocol. However, only five Member States (Austria, the Netherlands, Portugal, Spain and the UK) provided projected annual estimates for net carbon stock changes under Article 3(3) of the Kyoto Protocol. Whereas Austria and Sweden expect unquantified additional emissions from such activities, the Netherlands, Portugal, Spain and the UK expect net sequestration. Regarding Article 3(4) of the Kyoto Protocol, only three Member States have decided so far to account for forest management.

Reported aggregate estimations from Articles 3(3) and 3(4) activities of the Member States would represent a net sequestration of 13 Million tonnes of CO<sub>2</sub> per year. This amount is composed of 10 Million tonnes for afforestation, reforestation and deforestation and 3 Million tonnes for forest management, cropland management, grazing-land management and re-vegetation. At the EC level, these activities would amount to approximately 0.3% of base year emissions.

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<sup>10</sup> The Netherlands did not give a specific amount of reduction of emissions but a range.

For some Member States, these activities can make a significant contribution to their commitments. Spain and Portugal are the Member States intending to take most account of carbon sinks, or “land use, land use change and forestry” activities (LULUCF), projecting to reduce their gap by about 3 % each. The UK projects to further increase its over-achievement from these activities.

However, these data are still preliminary and therefore a reliable projection on the contribution at the EC level is not possible. More detailed projections on the effects of sinks are difficult to provide because the IPCC Good Practice Guidance for the LULUCF sector is still under preparation. Additionally, the policies to account for LULUCF and the associated budgets are still in the early stages of their preparation. For more details, see EEA, 2003, Chapter 7.

### **Common and Co-ordinated Policies and Measures (CCPMs) of the EC**

This section summarises briefly current CCPMs at the Community level. The European Climate Change Programme (ECCP) was established to help identify the most environmentally and cost-effective measures to meet the EC target. The “Communication from the Commission on the implementation of the first phase of the European Climate Change Programme”<sup>11</sup> highlighted a package of measures which the Commission intended to bring forward in 2002 and 2003. The second report in 2003 under the ECCP<sup>12</sup> updated that package of measures together with more proposals, especially in those fields where no measures had been proposed previously.

According to preliminary estimations of the reduction potential, based on expert judgement, all the measures identified in the ECCP represent a total emission reduction potential of about twice the amount required for fulfilling the Kyoto target (578 to 696 Million tonnes CO<sub>2</sub>-equivalent). The legislative measures currently in force or already proposed by the Commission would – according to these figures – already result in potential emissions reductions of about 300 Million tonnes CO<sub>2</sub>-equivalent. If these measures are adopted and implemented by Member States in a comprehensive and timely manner this reduction potential would materialise and could cover the gap between the “*with existing measures*” projection and the EC target. Table 3 gives an overview of the progress in the policy measures proposed by the ECCP as at September 2003. However, given the uncertainties whether proposals made will be adopted and implemented as proposed, evaluation of their potential contribution should be viewed with great caution.

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<sup>11</sup> COM(2001)580, 23/10/2001

<sup>12</sup> [http://europa.eu.int/comm/environment/climat/second\\_eccp\\_report.pdf](http://europa.eu.int/comm/environment/climat/second_eccp_report.pdf)

**Table 3: Progress in Common and Co-ordinated Policies and Measures**

<b>Proposed measure</b>	<b>Status of implementation</b>
<b>Cross-cutting issues</b>	
Directive establishing a scheme of GHG emission trading within the Community	Adopted by Council and Parliament <sup>13</sup>
Effective implementation of IPPC (Integrated Pollution Prevention and Control Directive)	Work on an IPPC reference document on generic energy efficiency techniques started in 2003;  Ongoing work on various sector-specific BAT (best available techniques) reference documents;  Revision of published BAT reference documents to start in 2003
Linking project based mechanisms to GHG emissions trading	Proposal adopted by the Commission <sup>14</sup>
Review of the monitoring mechanism	Proposal adopted by the Commission <sup>15</sup>
<b>Energy</b>	
Directive on taxation of energy products	Adopted by the Council <sup>16</sup> .
Directive on energy performance of buildings	Adopted by Council and Parliament <sup>17</sup>
Directive on the promotion of electricity from renewable energy sources	Adopted by Council and Parliament <sup>18</sup>
Proposal for a framework directive on eco-efficiency requirements for energy using products	Proposal adopted by the Commission <sup>19</sup>
Proposal for a Directive on energy demand	In preparation
Proposal for a Directive on combined heat and power	Proposal adopted by the Commission <sup>20</sup> ; in co-decision
Initiatives on increased energy efficient public procurement	In preparation

<sup>13</sup> 2003/87/EC from 13/10/03, OJ L275, 25/10/2003, p.32-46

<sup>14</sup> COM(2003)403 of 23/07/03

<sup>15</sup> COM(2003)51 of 05/02/2003

<sup>16</sup> 2003/96/EC, OJ L 283 of 31/10/2003

<sup>17</sup> 2002/91/EC, OJ L 001 of 04/01/2003, p. 65-71

<sup>18</sup> 2001/77/EC, OJ L 283 of 27/10/2001, p. 33-40

<sup>19</sup> COM(2003)453 of 23/07/03

<sup>20</sup> COM(2003)416,OJ C 291 E of 26/11/2002, p. 182-209



Public awareness campaign and campaign for take-off	Included in 2003 Work Plan “Intelligent Energy for Europe”
<b>Transport related</b>	
Voluntary agreement of the car manufacturers from EU, Japan and Korea to reduce fleet average CO <sub>2</sub> emissions to 140g/km by 2008/2009 (pre ECCP)	Monitored through yearly report Review in 2003/2004
Shifting the balance between modes of transport	Package of actions, in accordance with the White Paper on a Common Transport Policy <sup>21</sup>
Proposal for improvements in infrastructure use and charging	Proposal adopted by the Commission <sup>22</sup>
Promotion of the use of bio-fuels for transport	Adopted by Council and Parliament <sup>23</sup>
Proposal on special tax arrangements for diesel fuel used for commercial purposes and on the alignment of excise duties on petrol and diesel fuel	Proposal adopted by the Commission <sup>24</sup>
Proposal on a regulation on the granting of Community financial assistance to improve the environmental performance of the freight transport system	Proposal adopted by the Commission <sup>25</sup>
<b>Agriculture</b>	
Common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers	Adopted <sup>26</sup>
Support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF)	Adopted <sup>27</sup>
<b>Industry</b>	
Proposal for legislative action on fluorinated gasses	Proposal adopted by the Commission <sup>28</sup>

<sup>21</sup> COM(2001)370, ISBN 92-894-0339-X

<sup>22</sup> COM(2003)448 of 23.07.2003

<sup>23</sup> 2003/30/EC, OJ L 123 E of 17/05/2003, p. 42-46

<sup>24</sup> COM(2003)410 of 24/07/2002

<sup>25</sup> Regulation EC No. 1382/2003, OJ L 196 of 02.08.2003, p. 1-6

<sup>26</sup> Regulation 1782/2003, OJ L 270 of 21.10.2003, p. 1

<sup>27</sup> Regulation 1783/2003, OJ L 270 of 21.10.2003, p. 70

<sup>28</sup> COM (2003) 492 of 11/08/2003

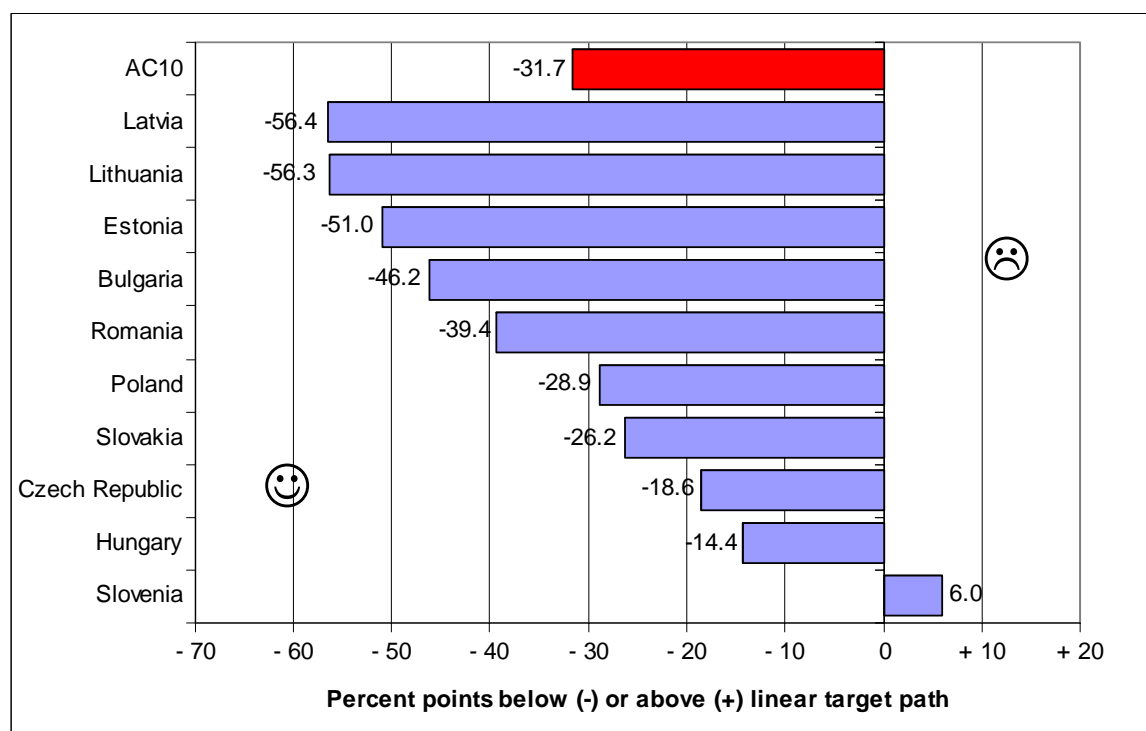
## 5. EMISSION TARGETS AND REDUCTIONS OF ACCESSION COUNTRIES

The GHG emissions and projections of Accession and Candidate Countries are listed for the base year, for 2001 and for 2010, in Table 4. Accession Countries are not part of the EC's burden sharing agreement. Instead, most of them are subject to individual –8 % Kyoto targets, except Hungary and Poland which both have a Kyoto target of –6 %. Cyprus and Malta do not have any Kyoto target. Furthermore, these data reveal considerable gaps and therefore cannot be compared directly with the data of the current Member States. However, an aggregated analysis has been performed in this section for information purposes so that the overall trends in these 10 Accession and Candidate Countries can be compared with the trends in the 15 current Member States.

Except for Slovenia and Hungary, the Accession Countries will achieve emissions by 2010 much below their Kyoto targets (EEA 2003, chapter 4). Total greenhouse gas emissions for these Accession and Candidate Countries declined by 36 % between the base year and 2001. In 2001, the distance-to-target indicator for the whole region was about 32 index points below the hypothetical linear path from 1990 towards the target in 2010 (Figure 3). The performance of the Accession and Candidate Countries, however, varies considerably (Table 4). Nine countries were below their Kyoto target path, with distance-to-target indicators ranging from –14 percentage points in Hungary to –56 in Latvia. Only Slovenia was above its target path, with +6 percentage points (cf. EEA 2003, Chapter 4).

The projections of GHG emissions of Accession and Candidate Countries presented in Figure 4 are based on the Third National Communication submitted to the UNFCCC Secretariat from Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Poland, Slovakia and Slovenia by June 2003. All of these countries except for two had presented “*with additional measures*” projections. On the basis of these projections, Slovenia does not expect to reach its individual Kyoto target while Latvia and Estonia expect to have an over-achievement of their Kyoto target of more than 50 %. The legislation implemented in the Accession Countries for reducing GHG emissions arises from harmonising the national legislation with EC legislation. Key areas are energy use and waste management (cf. EEA 2003, Chapter 4.3).

**Figure 3: Distance-to-target indicators in 2001 (in percentage points) for the Kyoto Protocol of 10 Accession Countries**



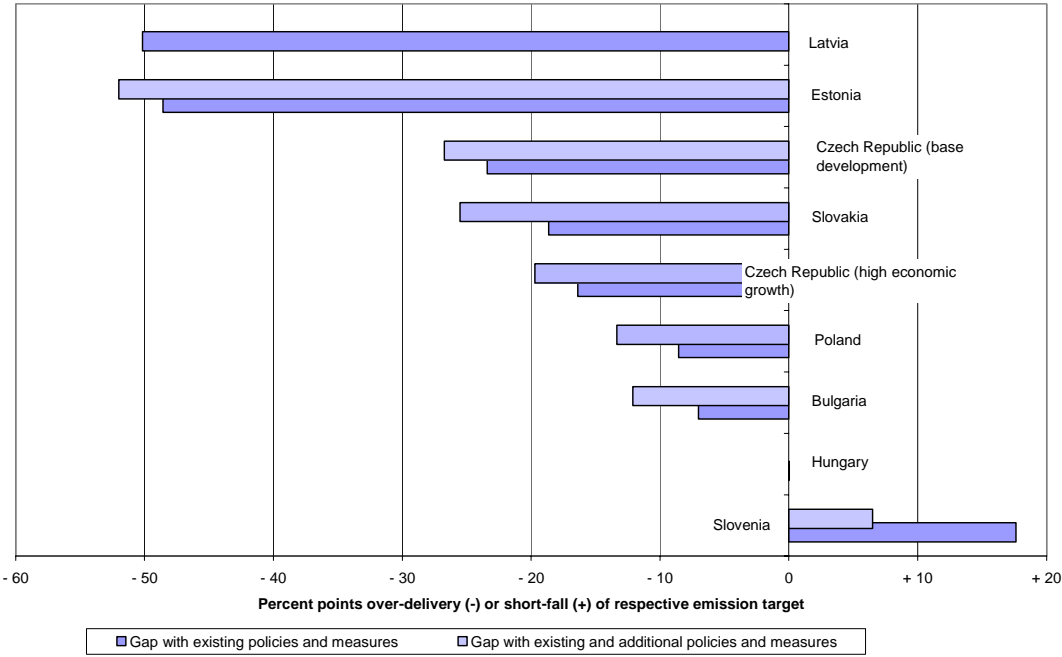
**Note:** Bulgaria 1999, Hungary 2000, Lithuania 1998, Slovenia 1996 did not report the complete time series. For missing years the values were interpolated (in the middle of series) or data from the last submitted year were used. Cyprus and Malta are not included as they have no Kyoto target.

**Source:** EEA, 2003

**Table 4: Actual and projected GHG emissions in Accession Countries**

	GHG emissions base year		Actual GHG emissions 2001 (Mt CO <sub>2</sub> -eq)	Projected GHG emissions 2010	
	(Mt CO <sub>2</sub> -eq)	base year		With existing measures (Mt CO <sub>2</sub> -eq)	With additional measures (Mt CO <sub>2</sub> -eq)
Bulgaria	157.7	1988	77.7	133.7	125.5
Czech Republic	192.1	1990	148.0	131.7	125.3
Estonia	43.5	1990	19.4	18.9	17.4
Hungary	102.6	ave. 1985-87	84.3	95.6	
Latvia	29.0	1990	11.4	12.8	
Lithuania	51.5	1990	20.2		
Poland	565.3	1988	382.8	394.0	372.0
Romania	264.8	1989	148.3		
Slovakia	72.2	1990	50.1	53.2	48.2
Slovenia	19.9	1986	20.2	22.1	19.9

**Figure 4: Relative gap (over-delivery or shortfall) between projections and targets for 2010 for Accession Countries**



## GLOSSARY AND ABBREVIATIONS

Actual progress	Actual progress is assessed by the comparison of base year inventories with the latest available inventories to establish actual trends of emissions and by a comparison with emission objectives at Member State and Community level. The evaluation is based on emission inventories of Member States and the Community.
BAT	Best available technology
CCPM	Common and co-ordinated policies and measures at EU level
CDM	Clean Development Mechanism
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
ECCP	European Climate Change Programme, a programme whose goal is to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol
EEA	European Environment Agency
EEA, 2003	Report <i>Greenhouse gas emission trends and projections</i> from EEA in 2003, used as background paper for this report
EC	European Community
EC Burden Sharing Agreement	The Kyoto Protocol to the UNFCCC sets different binding emission targets for a number of Parties including the European Community (EC). The EC agreed to reduce its greenhouse gas emissions by 8 % by 2008-2012, from 1990 levels. This overall target has been distributed on a differentiated basis to individual Member States according to Council Decision 2002/358/EC.
GHG	Greenhouse gases covered by the Kyoto Protocol
HFC	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LULUCF	Land-use, land use change and forestry

Monitoring mechanism	The monitoring mechanism is an instrument to assess accurately and regularly the extent of progress being made towards the Community's commitments under the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol
N <sub>2</sub> O	Nitrous oxide
PFC	Perfluorocarbons
Projected progress	Projected progress is assessed by the evaluation of additional (planned, or currently in discussion) policies and measures at both national and Community level and by a comparison of projected emissions in 2010 with emission objectives at Member State and Community level. This evaluation is based on emission projections of Member States and the Community
SF <sub>6</sub>	Sulphur hexafluoride
Sinks	Means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a green-house gas from the atmosphere
Source	Means any process or activity which releases a green-house gas, an aerosol or a precursor of a greenhouse gas into the atmosphere
UNFCCC	United Nations Framework Convention on Climate Change