COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 27.11.2007
COM(2007) 757 final

COMMUNICATION FROM THE COMMISSION

PROGRESS TOWARDS ACHIEVING THE KYOTO OBJECTIVES

(required under Decision 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol)

{SEC(2007)1576}

TABLE OF CONTENTS

1. SUMMARY

Under the Kyoto Protocol, the European Community (EC) has agreed to reduce its greenhouse gas (GHG) emissions by 8% by 2008–12 compared to base year levels[1]. Based on the latest available inventory data of 2005[2], total GHG emissions in the EU-15 were 2% below base year[3] levels when excluding Land Use, Land Use Change and Forestry (LULUCF). In 2005, EU-15 GHG emissions decreased by 0.8% compared to 2004 while the EU-15 economy grew by 1.6%.

Projections[4] as shown in Figure 1 indicate that the Community will reach its Kyoto target on the condition that MS put in place and implement as soon as possible their additional policies and measures (for details see Tables 1, 2 and 3 in the Annex). In this respect a significant step has been made with the recent decisions on the National Allocation Plans (NAP) under the EU Emissions Trading Scheme (ETS) for the period 2008-2012 which will bring an estimated emission reduction of 3.4% for the EU-15 and 2.6% for the EU-25[5] compared to base year. These estimated reductions are, as yet, not accounted for in the projections.

---

1 In the Council decision (2002/358/EC) on the approval by the EU of the Kyoto Protocol the various commitments of the Member States are expressed as percentage changes from the base-year. In 2006 the respective emission levels were expressed in terms of tonnes of CO_2-equivalent in the Commission Decision 2006/944/EC. In connection with Council decision 2002/358/EC, the Council of Environment Ministers and the Commission have, in a joint statement, agreed to take into account inter alia the assumptions in Denmark's statement to the Council Conclusions of 16–17 June 1998 relating to base-year emissions in 2006. In 2006, it was decided to postpone a decision on this until after all community and MS initial reports have been reviewed under the Kyoto Protocol.

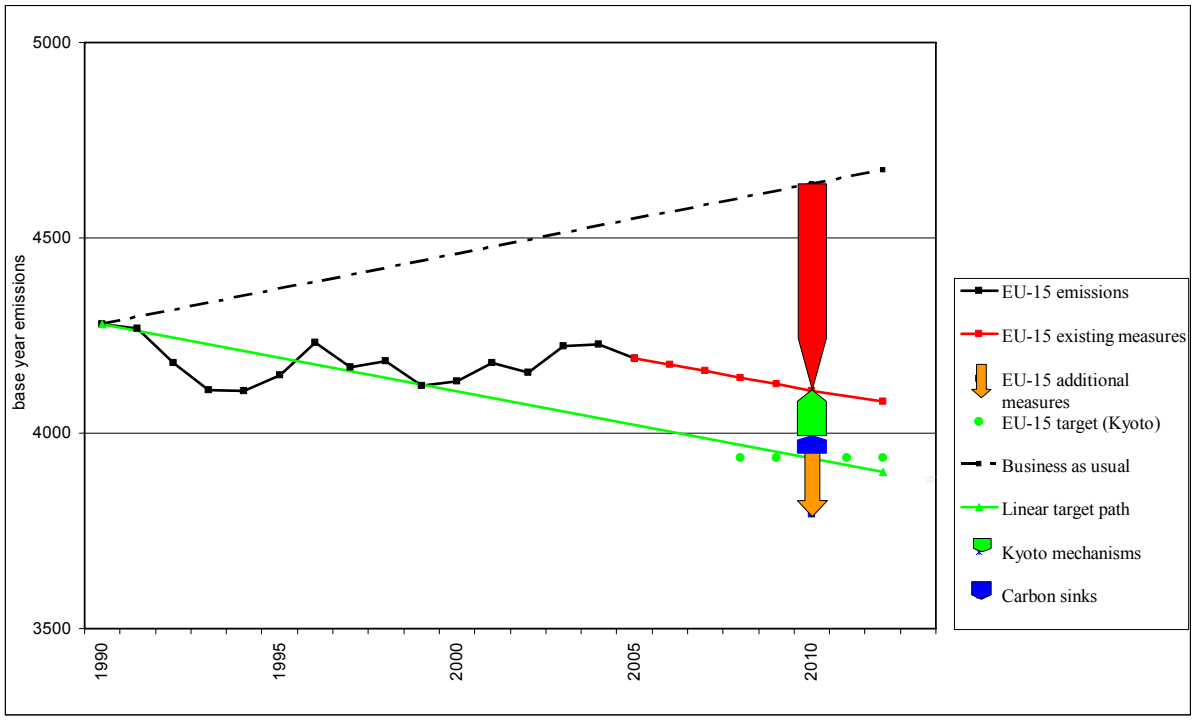
2 Under the EU monitoring mechanism decision (Decision 280/2004), all MS submitted GHG inventories for 2005 except for Malta. All reporting MS submitted all or almost all Common Reporting Format (CRF) tables (i.e., more than 90 %) for 1990–2005.

3 For EU-15 the base year for carbon dioxide, methane and nitrous oxide is 1990; for the fluorinated gases 12 Member States have selected 1995 as the base year, whereas Austria, France and Italy have chosen 1990. As the EU-15 inventory is the sum of Member States' inventories, the EU-15 base year estimates for fluorinated gas emissions are the sum of 1995 emissions for 12 Member States and 1990 emissions for Austria, France and Italy. The EU-15 base year emissions also include emissions from deforestation for the Netherlands, Portugal and the UK.

4 Based on Member State (MS) submissions until May 31st.

5 Due to Bulgaria's and Romania's recent accession to the EU, the notified emissions for 2005 have not been independently verified.

Figure 1: Actual and projected emissions for EU-15



By 2010, three MS out of the EU-15, Germany, Sweden and the United Kingdom, are currently projected to be on track to achieve their targets using only existing domestic policies and measures. In addition, 8 MS are projected to reach their targets when the effect of the Kyoto mechanisms, carbon sinks and additional domestic policies and measures, that are already being discussed, are accounted for. According to this analysis, Denmark, Italy, and Spain appear not to be able to achieve their Kyoto target. However, it should be noted that this analysis does not yet fully include the potential effect of the recent Commission decisions on the NAPs on 2008-2012 emissions. Furthermore, it does not include the effect of supplementary actions that most of these MS have recently identified or are in the process of identifying in order to reach their Kyoto target[6,7]. Such measures, however, must be introduced swiftly for them to be effective.

Total EU-27 GHG emissions were, in 2005, 11% below base year level without emissions and removals by LULUCF and 0.7% lower compared to 2004. EU-27 economy grew by 1.8% in 2005.

Despite the fact that in most of the EU-12 MS, emissions are projected to increase between 2005 and 2010, 9 of them that have a Kyoto target but are not part of the EU-15 bubble are projected to meet or even over-comply with their Kyoto targets using only existing domestic policies and measures. Slovenia projects that it will meet its Kyoto target with planned additional policies and measures, the use of Kyoto mechanisms and carbon sinks.

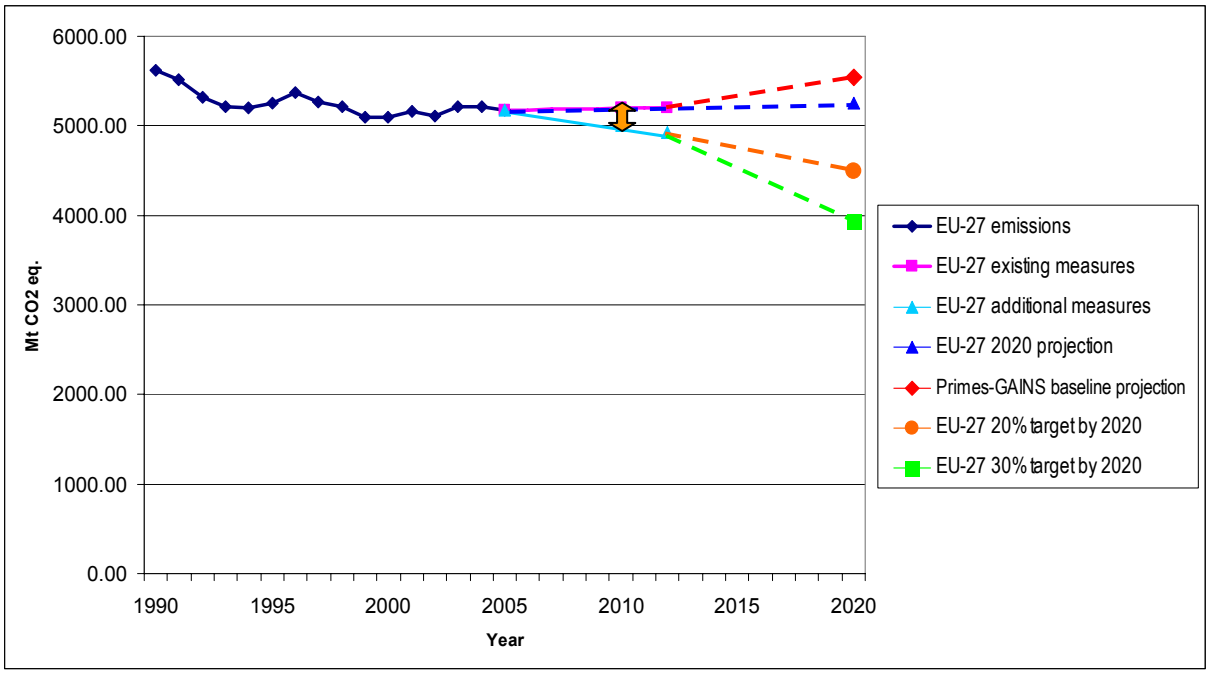
---

6 According to Denmark's NAP for the period 2008-12 and additional information submitted to the Commission, Denmark will reach its target by initiating new national climate initiatives and through state purchases of JI/CDM credits.

7 Spain established in the NAP2, a compliance strategy that included the identification of additional reduction measures to fill the gap. A part of these measures is included in a Plan of Urgent Measures against Climate Change which will be implemented during 2007.

In spring 2007, the European Council endorsed the EU's independent commitment to reduce GHG emissions by at least 20% by 2020 compared to 1990 levels even if no international agreement is reached. The EU would be prepared to increase this reduction to 30%, provided that such an agreement would indeed materialize. Figure 2 illustrates the significant gap between MS projections for 2020 and the EU's 2020 targets requiring the EU to get onto a much steeper emission reduction path after 2012 as compared to 1990-2012. This underlines the need for the EU and its MS to put as soon as possible the necessary legislation in place to implement all the new policies and measures identified in the climate change and energy package. The Commission will put forward legislative proposals by the end of 2007 including the EU ETS review, renewables targets, emission reduction measures for sectors outside the EU ETS, a regulatory framework for carbon capture and geological storage, CO_2 and cars.

Figure 2: Actual and projected emissions for EU-27



2. ACTUAL PROGRESS 1990-2005

2.1. GHG emission trends

The overall EC GHG emission trend is dominated by the two largest emitters Germany and the United Kingdom accounting for about one third of the total EU-27 GHG emissions. These 2 MS have achieved total GHG emission reductions of 340 million tonnes CO_2 eq. compared to 1990.

The main reasons for the favourable trend in Germany are increasing efficiency in power and heating plants and the economic restructuring of the five new *Länder* after the German reunification. The reduction of GHG emissions in the United Kingdom was primarily the result of liberalising energy markets and the subsequent fuel switches from oil and coal to gas in electricity production and N_2O emission reduction measures in the adipic acid production.

Italy and France are the third and fourth largest emitters both with a share of 11 %. Italy's GHG emissions were about 12% above 1990 levels in 2005. Italian GHG emissions increased since 1990 primarily from road transport, electricity and heat production and petrol-refining. France's emissions were 2 % below 1990 levels in 2005. In France, large reductions were achieved in N_2O emissions from the adipic acid production, but CO_2 emissions from road transport increased considerably between 1990 and 2005.

Spain and Poland are the fifth and sixth largest emitters in the EU-27 each accounting for about 9 % and 8 % of total EU-27 GHG emissions respectively. Spain increased emissions by 53 % between 1990 and 2005. This was largely due to emission increases from road transport, electricity and heat production, and manufacturing industries largely driven by significant population growth and economic development. Poland decreased its GHG emissions by 18 % between 1990 and 2005 (-32 % since the base year, which is 1988 in the case of Poland). Main factors for decreasing emissions in Poland — as for other MS in Eastern Europe — was the decline of energy inefficient heavy industry and the overall restructuring of the economy in the late 1980s and early 1990s. The notable exception was transport, especially road transport, where emissions increased.

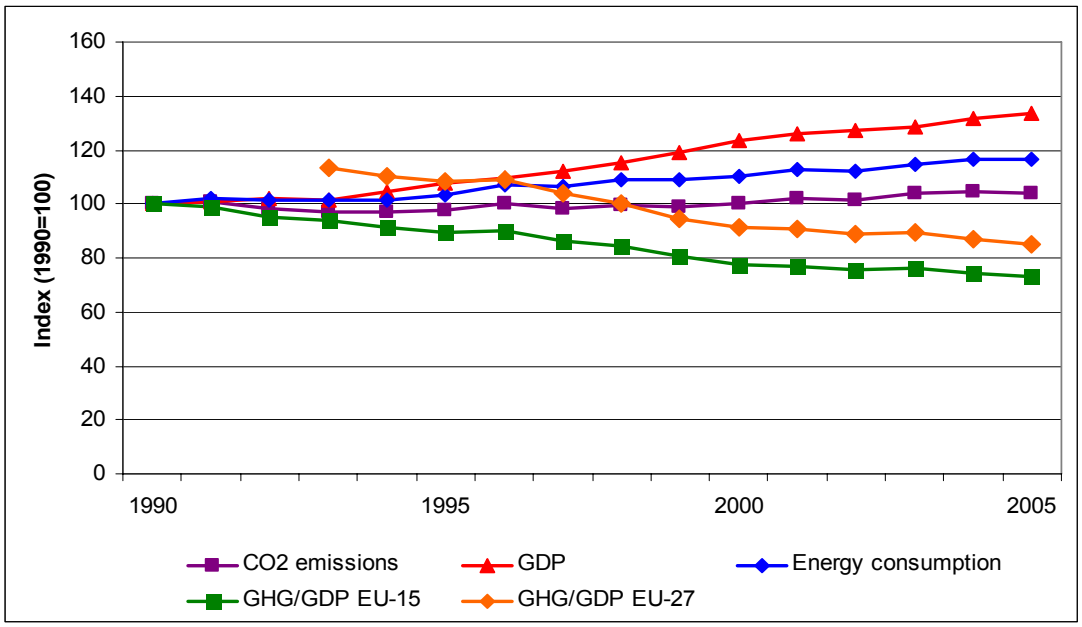
In 2005, 11 MS had GHG emissions above base year levels whereas the remaining 14 MS had emissions below base year levels. The percentage changes of GHG emissions from the base year and 1990 respectively to 2005 range from -58% (Latvia) to +64% (Cyprus).

2.2. Per capita emissions and GHG intensities in 2005

EU-27 per capita emissions declined by 11.7 % (1.4 tonne per capita) between 1990 and 2005, mainly due to a strong decrease in the early 1990s (Figure 1 in the Annex). While per capita emissions in the EU-27 did not change over the period 2000-2005, a slight decrease of -1.2% occurred in the EU-15, but per capita emissions increased by 3.4% in the EU-12. While GHG emissions per capita converge they still are significantly different. There is a factor of three difference between the MS with lowest emissions per capita (Latvia, Lithuania, Portugal and Sweden), and those with highest per capita emissions (Luxembourg and Estonia).

As regards GHG intensity, which reflects the amount of GHG emissions produced per unit of GDP, Figure 3 shows the decoupling of emissions from economic growth that was observed in the EU-27 particularly from 1998 onwards. This is due to the economic growth of, primarily, the eastern European MS in the late 1990s. In the EU-27, GHG intensity between 1990-2005 decreased by about 32%. However, the individual GHG intensities of the economies of the MS can vary widely and are still quite high in some of them. In all new MS, except Latvia, the absolute GHG intensity in 2005 is higher than the EU-27 average.

Figure 3: GHG intensity for EU-15 and EU-27, GDP, energy consumption and CO_2 emissions for EU-15



2.3. GHG emissions in 2005 compared to 2004

Compared to 2004, EU-15 GHG emissions decreased by 0.8 % or 35.2 million tonnes CO_2 eq. in 2005 and EU-27 emissions decreased by 0.7% or 37.9 million tonnes.

Germany, Finland, the Netherlands and Romania contributed most to the 2005 decrease in absolute terms. Germany reduced its emissions by 2.3% or 23.5 million tonnes of CO_2 equivalents, Finland by 14.6% (11.9 million tonnes), the Netherlands by 2.9% (6.3 million tonnes) and Romania by 4% (6.4 million tonnes). Belgium, the Czech Republic, Denmark, Estonia, France, Luxembourg, Slovakia, Sweden and the UK also recorded falls.

The overall decrease in 2005 EU-15 emissions was due mainly to lower CO_2 emissions from public electricity and heat production, households and services, and road transport. CO_2 emissions from public electricity and heat production fell by 0.9% mainly due to a reduction in the use of coal. CO_2 emissions from households and services decreased by 1.7% with substantial falls in Germany, UK and the Netherlands. In Germany and the Netherlands this might be due to a milder than usual winter. As in previous years, Germany also achieved significant reductions in methane emissions from the waste sector due to innovative policies and measures. Remarkably, CO_2 emissions from road transport dropped by 0.8% in the EU-15, largely due to a significant fall in Germany.

Among EU-15 MS, Spain recorded the biggest emissions increase in absolute terms in 2005, with a rise of 3.6% or 15.4 million tonnes of CO_2 eq. This was due mainly to a 17% increase in electricity production by fossil-fuel power stations coupled with a 33% fall in electricity generation by hydro-power plants due to reduced river levels.

Poland saw the biggest emissions increase in absolute terms among the EU-12 MS, with a rise of 0.6% or 2.3 million tonnes of CO_2 eq. This was mainly due to a 1% increase in fugitive CH_4 emissions from energy and rises in CH_4 and N_2O emissions from the agriculture sector of 5% and 4.5% respectively. Austria, Bulgaria, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Portugal and Slovenia also saw their emissions increase in 2005.

2.4. Emission trends in the main economic sectors

The most important sector, as highlighted in Figure 4, is energy which accounted in 2005 for 80% of total EU-15 emissions, a 3% increase of energy GHG emissions compared to base year. The energy sector also covers transport which is responsible for 26% of the emissions of this sector. Agriculture is responsible for 9% of the overall GHG emissions, industrial processes are responsible for 8% and waste for 3%.

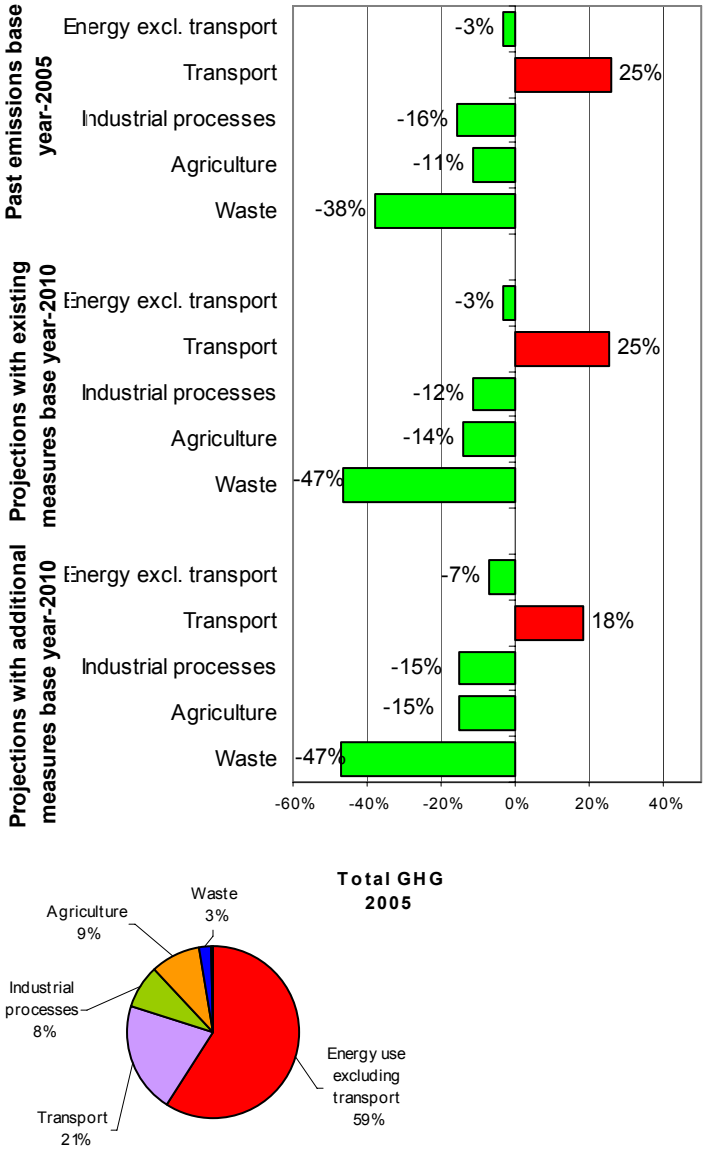
Between 1990 and 2005, CO_2 emissions from road transport had the highest increase in absolute terms of all energy-related emissions, while CO_2 emissions from manufacturing industries decreased substantially. The increase in the energy sector has been offset by decreases in all other source categories (for further details see also the Annex in the Staff Working Document). In summary, compared to 1990, emissions from:

– industrial processes decreased by 16% due to lower nitric acid production, lower emissions from iron and steel and due to changes in processing;

– agriculture declined by 11% due to declining cattle numbers and decreasing use of fertiliser and manure;

– waste by 38% due to lower CH_4 emissions from managed landfills.

Figure 4: Change in EU-15 GHG emissions by sector and share of sectors for EU-27 in 2005



Source: EEA

3. PROJECTED PROGRESS TOWARDS MEETING THE KYOTO TARGET8

3.1. Projections by Member States

3.1.1. EU-27

By 2010, total EU-27 GHG emissions are projected to be about 10.7% below base-year levels (see Tables 2 and 3 in the Annex). This projection is based on MS' own estimates which take into account all existing domestic policies and measures. The projected decline is 13.2% when the effect of the Kyoto mechanisms and carbon sinks are accounted for and it could reach 16.7% if the additional domestic policies and measures currently under discussion were to be implemented on time and would deliver as estimated.

3.1.2. EU-15

The aggregate projections based on existing domestic policies and measures show that GHG emissions of the EU-15 will be 4% below base-year levels by 2010. When including the,

- government use of the Kyoto mechanisms which are expected to deliver an additional 2.5% emission reduction, and
- total removal (39.1 $MtCO_2$ eq. per year) due to Art. 3.3 and 3.4 activities in the EU-15 corresponding to a 0.9% reduction,

the EU-15 is projected to reduce its emissions by 7.4%. In order for the EU-15 to reach its Kyoto target, it is imperative that the additional measures planned both at Community and MS level are implemented as soon as possible. In case that these measures deliver as expected, the projected overall reduction of GHG emissions could be up to 11.4% compared to base year levels signifying that the EU would overachieve its Kyoto target.

Moreover, it is estimated that the recent NAP decisions on allowance allocation for the 2nd trading period under the EU ETS would contribute an estimated 3.4% of the EU-15's Kyoto target which, as yet, has not been fully factored into MS projections.

3.1.3. EU-12

Aggregate emissions from the other 12 MS are projected to increase after 2005 but will still be 29% below their base year levels by 2010. With additional measures, however, emissions are projected to be further reduced by 2%. Slovenia is the only MS out of the EU-12 that intends to invest in Kyoto mechanisms and to include carbon sinks.

---

8 This assessment contains information on the 27 EU MS, but is most detailed for the EU-15. Updated projections were available from 18 MS. Information on the use of flexible mechanisms under the Kyoto Protocol was available for 20 MS. Activities concerning LULUCF ('carbon sinks') under Art. 3.3 and 3.4 of the Kyoto Protocol were included as reported by a total of 14 MS.

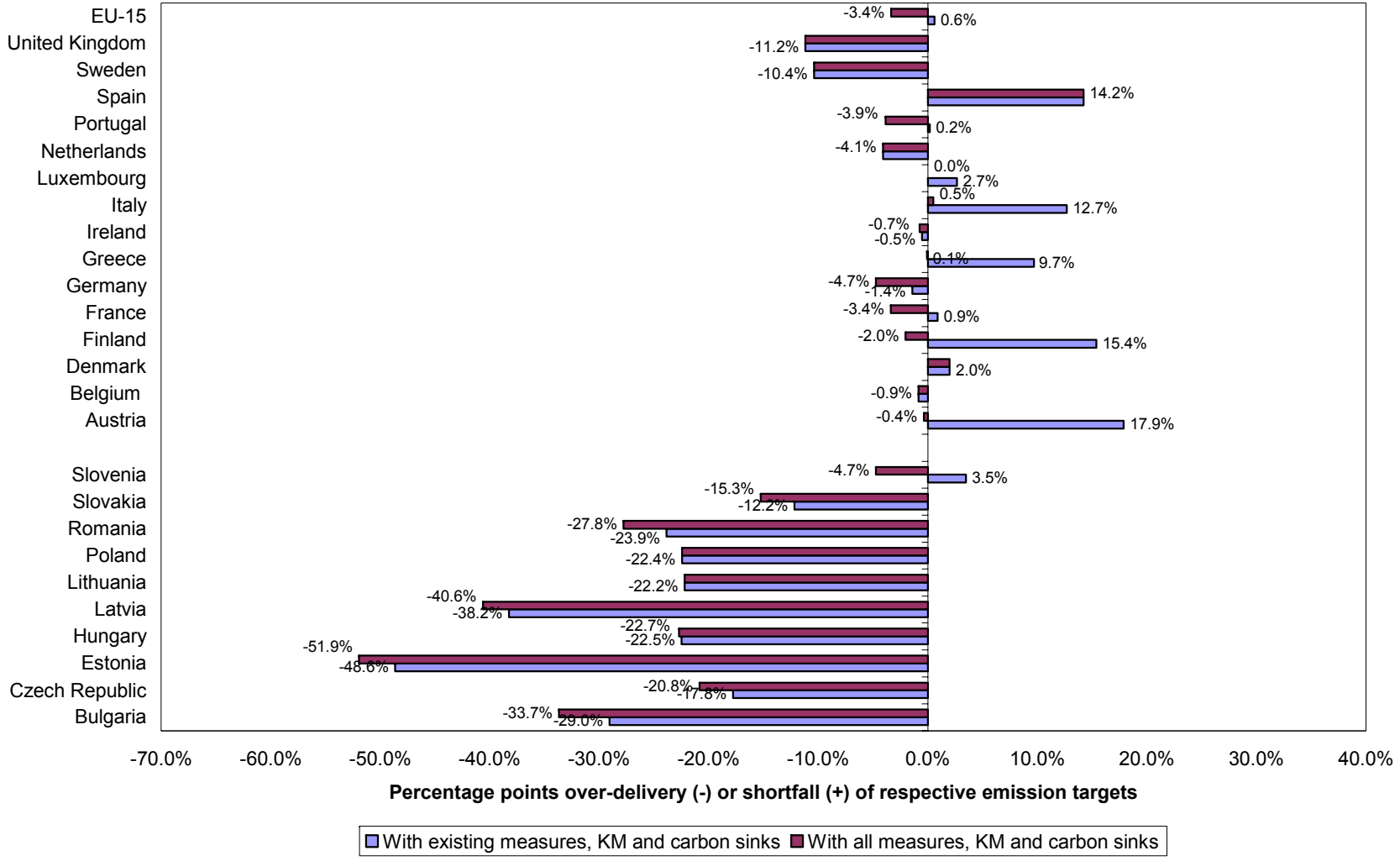
3.1.4. Candidate countries

In 2005, Croatia was on track to meet its Kyoto target. However, projections indicate that Croatia might not be able to reach its target when relying only on domestic measures. The Former Yugoslav Republic of Macedonia ratified the Kyoto Protocol in 2005 but as a non-Annex I country, it does not have any reduction commitments. Turkey is Annex I Party to the UN Framework Convention on Climate Change, but has no reduction commitments under Annex B of the Kyoto Protocol. Turkey has not yet ratified the Kyoto Protocol.

Between 1990 and 2005, per capita GHG emissions[9] have increased in both Turkey and Croatia. However, at 4.4 tonnes per year, the per capita emissions in Turkey are less than half of the average EU-27 per capita emissions. In both countries, the emission level per GDP has also declined, indicating a decoupling of economic growth and resource consumption.

[9] There is currently no information available on 2005 GHG emissions for the Former Yugoslav Republic of Macedonia. As a non-Annex I country without a target under the Kyoto Protocol, the Former Yugoslav Republic of Macedonia is not required to report annually such information.

Figure 5: Relative distance between GHG projections for 2010 and the respective 2010 targets based on 'existing' and 'additional' domestic policies and measures, the use of Kyoto mechanisms and carbon sinks.
(A negative sign (-) indicates an overachievement of the Kyoto target while a positive sign (+) a shortfall)



3.2. Implementation of the European Climate Change Programme (ECCP)

In June 2001, the ECCP identified a number of EU-wide common and coordinated policies and measures (CCPMs) (Table 4 in the Annex). With only a few exceptions, policies and measures under the ECCP I are now implemented.

An assessment of policies and measures across the EU-27 showed that the EU Emissions Trading Scheme (ETS) including the use of project-based mechanisms will substantially contribute to achieving the Kyoto commitments. Other CCPMs that are both widespread and are expected to deliver significant GHG emissions savings are the RES-E directive (related to the promotion of electricity produced from renewable energy sources), the directives on the energy performance of buildings, the biofuels directive, the promotion of co-generation (combined heat and power), and energy taxation.

In addition to these key policies and measures further CCPMs that are also expected to deliver important reductions across the EU are the directive on Integrated Pollution Prevention and Control (IPPC), the efficiency requirements for new hot-water boilers, the F-gases regulation, the directive on HFC emissions from air conditioning in motor vehicles, and the landfill directive. CCPMs that are particularly important for the EU-12 include the directives on waste, large combustion plants and the Common Agricultural Policy (CAP) direct support schemes.

In total, the most important policies as identified above are estimated to account for up to 89% of the total savings attributed to CCPMs in the EU-27.

ECCP II was launched in October 2005 with a stakeholder conference held in Brussels. The focus for ECCP II was on the ECCP I review, and on exploring new policy areas such as adaptation, aviation, CO_2 and cars, carbon capture and storage, and the EU ETS. ECCP II working groups met throughout 2006 and 2007. As a result, the Commission has proposed several actions:

- Aviation: Legislative proposal integrating aviation into EU ETS (December 2006)
- Fuel quality directive: Legislative proposal (January 2007)
- CO_2 and Cars: Communication (February 2007) and legislative proposal (end 2007 – early 2008)
- Impacts and Adaptation: Green Paper on Adaptation (June 2007)
- Carbon Capture and Geological Storage: Legislative proposal on carbon capture and geological sequestration (end 2007)
- EU ETS review: Legislative proposal (end 2007)

The first three proposals, if adopted timely, could still contribute to reaching the EU's Kyoto target.

In addition to the actions to be implemented in the context of the ECCP, the Commission will give particular importance to the reduction of the GHG emissions by shipping, in the context of the recently proposed Maritime Policy[10].

3.3. Implementation of the EU Emissions Trading Scheme (EU ETS)

2005 is the first year for which verified CO_2 emissions data are available from installations covered by the EU ETS. In 2005, the EU ETS covered about 50% of total EU-25 CO_2 emissions and about 40% of all EU-25 GHG emissions, equivalent to about 2 billion tonnes.

A lack of independently verified emissions data for the years before the introduction of the EU ETS makes it difficult to measure the scheme's full impact on emissions. However, early academic research indicates that emissions may have fallen in 2005 compared with their level before the start of the EU ETS.

3.3.1. First trading period (2005 to 2007)

Table 5 in the Annex gives an overview over the covered sectors and installations during the first trading period based on the verified emission reports for 2005 and 2006. On average 10,800 installations participated in the first two years of the trading scheme emitting approximately 2,020 Mt CO_2/yr. These installations received emission allowances for about 2,080 Mt CO_2/yr. Two thirds of all installations are classified as combustion installations; and are responsible for 72% of overall emissions. In 5 MS (Austria, Ireland, Italy, Spain and the UK) verified emissions were higher than allocation (Table 6 in the Annex).

3.3.2. Second trading period (2008 to 2012)

The assessment process for the second NAPs started in 2006. Bulgaria and Romania, which joined the EU on 1 January 2007, had to prepare NAPs for year 2007. On average, after the assessment of all NAPs the cap for the EU-25[5] was reduced by roughly 7% compared to the 2005/2006 verified emissions (for further details please see Table 6 in the Annex). The future price for 2008 allowances has remained between 12 € and 25 € since the start of the assessment of the second national allocation plans in July 2006.

3.3.3. Use of JI and CDM by operators

As part of the second NAPs, a limit is established by each Member State for the maximum use of project based credits by operators (JI and CDM). In total, as yet around278 million CERs or ERUs may be used per year by ETS installations from the 27 MS in the 2nd trading period. This corresponds to about 13.4% of the approved cap.

3.4. Projected use of Kyoto mechanisms by government

Twenty MS provided information on their intended use of the Kyoto mechanisms in 2007 through a questionnaire under the EC monitoring mechanism decision. For the remaining 7 MS (Germany, Greece, Hungary, Italy, Latvia, Luxembourg and Poland) the use of Kyoto Mechanisms in the second NAP under the European emissions trading Directive (2003/87/EC) has been used (Table 7 in the Annex).

---

[10] COM(2007) 575 final.

10 MS of the EU-15 and Slovenia have decided to use the Kyoto mechanisms to reach their Kyoto targets. Together the 10 EU-15 MS would acquire 107.5 Mt CO_2eq. per year of the first commitment period under the Kyoto Protocol. This represents approximately 2.5% towards the EU-15 Kyoto target of -8 %. In Slovenia, the exact amount of units to be bought depends on the actual development of GHG emissions, especially in the transport sector.

These 10 MS together have decided to invest around € 2.9 billion to acquire units through JI, CDM or international emissions trading. Austria, Luxembourg, the Netherlands, Portugal and Spain allocated the largest budgets (€ 319 million, € 300 million, € 693 million, € 354 million and € 310 million, respectively, for the five-year commitment period).

Sweden has made the necessary arrangements to use the Kyoto mechanisms if needed but is currently not planning to do so. The German government decided to support prototype funds for the establishment of a carbon market.

3.5. Projected use of carbon sinks

In addition to the policies and measures targeting various sources of GHG emissions, MS can make use of carbon sinks (see Table 8 in the Annex). The information provided by the EU-15 MS indicates that the total net sequestration during the commitment period from afforestation and reforestation activities under Art. 3.3 of the Kyoto Protocol will be about 13.5 $MtCO_2$ per year. In addition, the use of activities under Art.3.4 as estimated by MS is projected to contribute 17.6 $MtCO_2$ per year of the commitment period in the EU-15. These figures take the maximum allowance for forest management into account but do not include the sinks under Art. 3.3 and Art.3.4 from Spain (which only provided an aggregate estimate for the whole carbon sink) and from other MS (i.e., FR, DE and GR) which elected forest management activities but did not provide yet any estimate on the projected sink. Together with the Spanish aggregate, all activities under Art. 3.3 and 3.4 in the EU-15 MS are projected to reduce emissions by 39.1 Mt CO_2 per year of the commitment period equivalent to 11% of the EU-15 reduction commitment of 342 Mt CO_2 per year of the commitment period compared to base year emissions. Slovenia expects an additional reduction of 1.7 Mt CO_2 per year of the commitment period.