

Air pollution, greenhouse gas emissions: monitoring mechanism and implementation of the Kyoto Protocol

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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.

Based on the latest available inventory data of 2005, 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%.

This report gives the following key figures:

- by 2010, three out of the EU-15 Member States, Germany, Sweden and the United Kingdom, are projected to be on track to achieve their targets using only existing domestic policies and measures.
- in addition, 8 Member States 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.
- Total EU-27 GHG emissions, in 2005, were 11% below base year level without emissions and removals by LULUCF and 0.7% lower compared to 2004. The economy of the EU-27 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.
- 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 materialise.

GHG emission trends: The overall EC GHG emission trend is dominated by the two largest emitters. Germany and the United Kingdom account for about one-third of the total EU-27 GHG emissions. These 2 Member States have achieved total GHG emission reductions of 340 million tonnes CO₂ 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 reductions of GHG emissions in the United Kingdom are primarily the result of liberalising energy markets and the subsequent fuel switches from oil and coal to gas in electricity production and N₂O emission reduction measures in the adipic acid production.

For the EU-27 as a whole, 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. Compared to 2004, EU-15 GHG emissions decreased by 0.8 % or 35.2 million tonnes CO₂ eq. in 2005 and EU-27 emissions decreased by 0.7% or 37.9 million tonnes. The overall decrease in 2005 of EU-15 emissions was due mainly to lower CO₂ emissions from public electricity and heat production, households and services, and road transport. CO₂ emissions from public electricity and heat production fell by 0.9% mainly due to a reduction in the use of

coal. CO₂ 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, CO₂ emissions from road transport dropped by 0.8% in the EU-15, largely due to a significant fall in Germany.

Emission trends in the main economic sectors: The most important sector 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 while industrial processes are responsible for 8% and waste for 3%.

Projections by Member States: By 2010, total EU-27 GHG emissions are projected to be about 10.7% below base-year levels. 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.

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) With only a few exceptions, policies and measures under the ECCP I are now implemented.

Implementation of the EU Emissions Trading Scheme (EU ETS): 2005 is the first year for which verified CO₂ emissions data are available from installations covered by the EU ETS. In 2005, the EU ETS covered about 50% of total EU-25 CO₂ 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.

Projected use of Kyoto mechanisms by government: 10 EU-15 Member States and Slovenia have decided to use the Kyoto mechanisms to reach their Kyoto targets. Together, the 10 EU-15 Member States would acquire 107.5 Mt CO₂eq. 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 will depend on the actual development of GHG emissions, especially in the transport sector.

Projected use of carbon sinks: In addition to the policies and measures targeting various sources of GHG emissions, Member States can make use of carbon sinks. The information provided by the EU-15 Member States indicates that the total net sequestration during the commitment period from forestation and reforestation activities under Art. 3.3 of the Kyoto Protocol will be about 13.5 MtCO₂ per year.

Furthermore, the use of activities under Art.3.4 as estimated by the Member States is projected to contribute 17.6 MtCO₂ 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 Member States (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 Member States are projected to reduce emissions by 39.1 Mt CO₂ per year of the commitment period equivalent to 11% of the EU-15 reduction commitment of 342 Mt CO₂ per year of the commitment period compared to base year emissions. Slovenia expects an additional reduction of 1.7 Mt CO₂ per year of the commitment period.

