

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, from base year levels. Based on the latest (2004) available inventory data, total GHG emissions in the EU-15, without Land Use, Land Use Change and Forestry (LULUCF) were 0.9% lower, and with LULUCF 3.0% lower, than the base year. Compared to 2003, EU-15 GHG emissions increased by 0.3% in 2004. Projections data based on Member State submissions, indicate that the EC will reach its Kyoto target, but only under the conditions that:

- all additional measures currently under discussion at a European or at a national level are fully put into force in time to influence the emissions during the commitment period;

- Kyoto mechanisms will be used to the full extent planned;

- removals from Article 3.3 and 3.4 activities (carbon sinks) contribute to the extent projected by Member States.

The divergence between projected and actual emissions clearly indicates that Member States need to accelerate their efforts in implementing policies and measures as planned. One of the cornerstones of EU climate change policy is the EU Emissions Trading Scheme. Member States are currently in the process of submitting their 2nd National Allocation Plans (NAPs) which will cover the period 2008-2012. Less than two years ahead of the start of the Kyoto's 1st commitment period, it is of crucial importance that MS use their NAPs to ensure that they will meet their reduction obligations.

This report gives the following key figures:

- Total EU-25 GHG emissions were, in 2004, 7.3% below base year levels without emissions and removals by LULUCF. EU-25 greenhouse gas emissions rose in 2004 for the second consecutive year by 0.4% compared to 2003 - and are now on the highest level since 1997, when the Kyoto Protocol was adopted.

- By 2010, total EU-25 GHG emissions are projected to be about 4.6% below base-year levels taking into account all existing domestic policies and measures that have already been agreed. The projected reduction is 8.1% with additional domestic policies and measures which are already under discussion and 10.8% when the Kyoto mechanisms and carbon sinks are accounted for.

- By 2010, two Member States out of the EU-15, Sweden and the United Kingdom, are on track to achieve their targets in 2010 using only existing domestic policies and measures. In addition, 6 Member States are projected to reach their targets with the additional domestic policies and measures that are already being discussed, the use of the Kyoto mechanisms and carbon sinks. Seven Member States (Austria, Belgium, Denmark, Ireland, Italy, Portugal and Spain) foresee that they will not reach their targets employing all measures included. They will have to identify further emission reduction policies and measures.

-By 2010, all eight new Member States are projected to meet or even over-comply with their Kyoto targets with existing domestic policies and measures. However, in most countries emissions will increase between 2004 and 2010. Slovenia projects that it will meet its Kyoto target with additional policies and measures discussed and carbon sinks.

GHG emissions in 2004 compared to 2003: the increase in GHG emissions 2003-2004 was mainly due to: a) higher CO₂ emissions from road transport (+1.5%), iron and steel production (+5.4%), and oil refining (+3.3%), and b) higher hydrofluorocarbons (HFCs) emissions from refrigeration and air conditioning (+12.1%). In road transportation the substantial increase of CO₂ from diesel consumption (+5%) was only partly offset by the decrease of CO₂ from gasoline consumption (-3.2%).

Substantial decreases in GHG between 2003- 2004 were noted among other in: a) CO₂ emissions from households and services (-1.4%), and electricity and heat production (-0.3%) and b) CH₄ emissions from landfills (-4.3%), coal mining and handling (-16.5%).

Energy: between 1990 and 2004, the rise in energy demand exceeded the increase in emissions in all EU-15 Member States. Sweden, France and the UK were most successful at accomplishing a decoupling of emission levels and demand. In Germany and the United Kingdom, emission decreases were mainly due to improved efficiency in Germany's coal-fired power plants and to the fuel switch from coal to gas in power production in the United Kingdom. The remarkable decoupling between thermal power production and CO₂ emissions in Sweden was mainly due to a shift towards biomass.

On current trends, electricity from renewable energy sources will probably achieve a share of 19 % by 2010. The renewable energy target for the EU-15 is 22% of gross electricity consumption, and for the EU-25, 21% of gross electricity consumption. CO₂ emissions from households increased by 3% from 1990 to 2004, while the number of dwellings increased by 12% up till 2000. This shows some decoupling. Remarkably, Denmark, Finland and Sweden reduced their household fuel use as a result of the increase of district heating. In Germany, efficiency improvements through thermal insulation of buildings and fuel switch in particular in eastern German households, solar thermal energy production and biomass district heating were largely responsible for CO₂ reductions from households.

Transport: between 1990 and 2004, EU-15 GHG emissions from domestic transport increased by 26% with emissions from transport by road increasing also by 26% over the same period. Only, Finland, Germany, Sweden and the UK saw a small increase of their transport emissions. EU-15 CO₂ emissions from international aviation and maritime transport (not addressed under the Kyoto Protocol) have increased by 59% between 1990 and 2004.

The projected use of **carbon sinks** for achieving the EU-15 Kyoto target is so far relatively small, however it is important for reaching the Kyoto target. For the EU-15, so far, there are plans to remove, by 2008–2012, a net amount of about 18 million tonnes CO₂ per year through afforestation and reforestation. These estimates are relatively uncertain also because details on the types of carbon sinks included are missing. This figure has decreased by around 13 Mt CO₂ per year since last year's estimate due to corrections by Ireland and the UK. Additional reductions of GHG emissions from activities in forest management are projected to amount to around 14.2 million tonnes CO₂ per year. Additionally, Portugal projects to achieve 0.5 Mt/yr removals through cropland and grazing land management. Hence the total removal due to activities under Articles 3.3 and 3.4 of the Kyoto Protocol during the Kyoto commitment period is estimated at 32.6 Mt CO₂ per year, or in total at about 0.8% in relation to the EU-15 target of -8%.