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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

PROGRESS TOWARDS ACHIEVING THE KYOTO OBJECTIVES

**(required under Article 5 of 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)**

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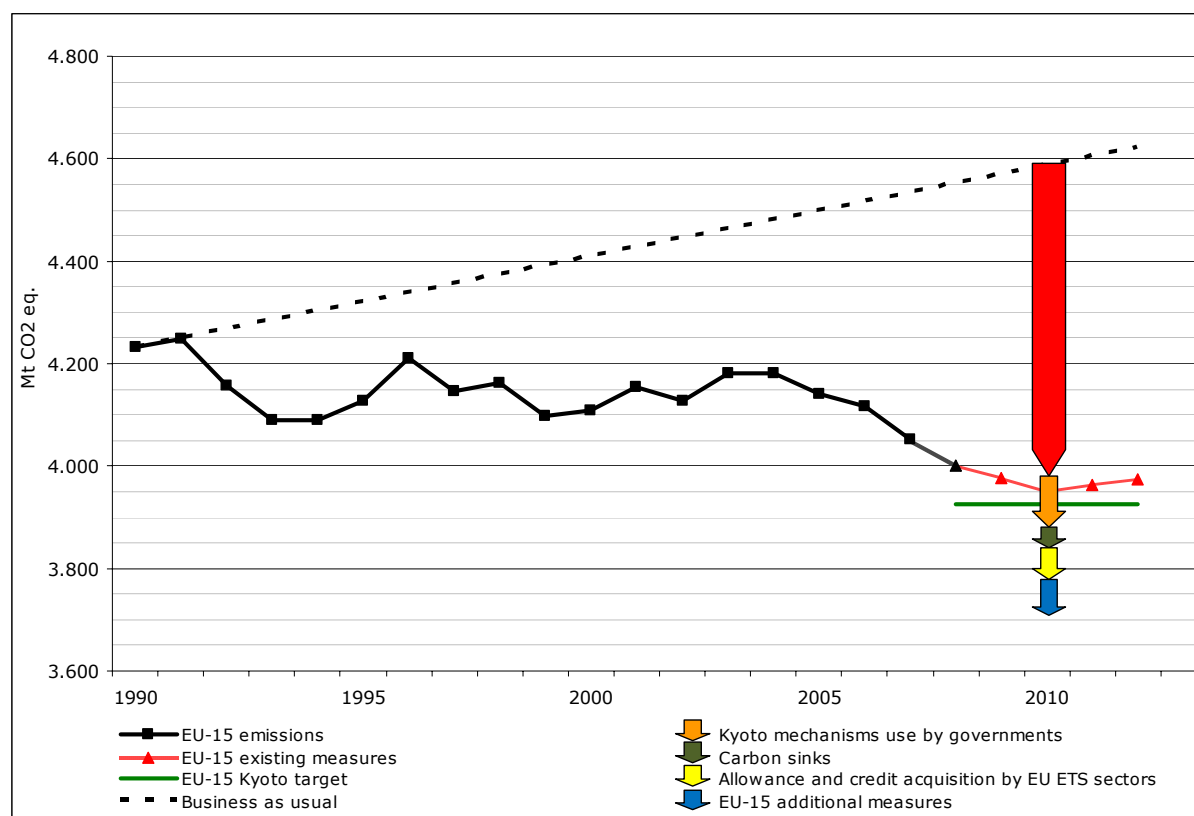
1. SUMMARY

On track to reach the Kyoto target, 2008-2012

Under the Kyoto Protocol, the EU-15 has agreed to reduce its greenhouse gas (GHG) emissions by 8% by 2008–12 compared to base year levels¹. Based on the latest available inventory data of 2007², total GHG emissions in the EU-15 have fallen for the third consecutive year, and were 5.0% below base year emissions without Land Use, Land Use Change and Forestry (LULUCF). GHG emissions in EU-15 have been decreasing while the economy has grown significantly. Since 1990, the EU-15 GDP increased by almost 44%.

In 2007, EU-15 GHG emissions decreased by 1.6% compared to 2006 while the EU-15 GDP grew by 2.7%. Projections³ as shown in Figure 1 indicate that the EU-15 will reach its Kyoto target. Ex-post evaluation⁴ of the impact of environmental policies on GHG emissions in EU-15 between 1990 and 2005 shows that GHG emissions have been reduced by 7.6% (about 350 Mt CO₂ eq.).

Figure 1: Actual and projected emissions for EU-15



Note: the arrows are based on 2008-2012 average and therefore do not correspond exactly to 2010 values of projected emissions.

Source: EEA, European Commission

In the commitment period, five Member States (France, Germany, Greece, Sweden and the United Kingdom) have projected emissions under existing policies and measures that would allow them to achieve their targets. When all measures are taken into account, including carbon sinks, acquisition of credits by governments and EU ETS sectors, nine further Member States are projected to meet their burden sharing target. There is currently only one Member

State (Austria) which is projected to have difficulties with achieving its GHG reduction commitment. The projections, however, do not reflect the current economic downturn and the latest forecast on GDP development and may therefore be overestimated.

The methodology for estimation of the EU ETS effect needs to be robust and consistent, further improvements are necessary, therefore the EU ETS effect presented in this report can be overestimated.

The EU-15 is making good progress towards its Kyoto target and the overall EU-15 target will be met collectively. Current projections indicate that the target will be even overachieved.

Despite the fact that in most of the twelve new Member States (MS) emissions are projected to increase between 2007 and 2010, nine of them that have a Kyoto target⁵ are projected to meet or over-achieve their Kyoto targets using only existing policies and measures. Slovenia projects that it will meet its target when all the existing and planned measures will deliver as expected.

Total EU-27 GHG emissions were, in 2007, 12.5% below base year levels without emissions and removals by LULUCF and 1.2% lower compared to 2006. The EU-27 economy grew by 2.9% between 2006 and 2007.

Additionally, according to the provisional 2008 data⁶, emissions from the EU-15 Member States fell by 1.2 percentage points, taking them to 6.2% below their levels in the base year. EU-27 emissions are estimated to have fallen by 1.1 percentage points to stand 13.6% lower than the base year level. Those figures reflect the effects of global economic recession which was not yet the case for 2007 GHG emission data.

New measures to reach the EU's ambitious 2020 target

In December 2008 the climate and energy legislative package proposed by the European Commission in January 2008 was agreed.⁷ For the first time a set of legal acts provides an integrated and ambitious package of policies and measures to tackle climate change until 2020 and beyond.

From 2013 onwards the total EU effort to reduce greenhouse gas emissions by 20% compared to 1990 by 2020 will be divided between the EU ETS and non-ETS sectors as follows: a) a 21% reduction in EU ETS sector emissions compared to 2005; b) a reduction of around 10% compared to 2005 for the sectors that are not covered by the EU ETS. Taken together, this results in an overall reduction of -20% compared to 1990, which also accounts to -14% compared with 2005. A larger reduction is required by the EU ETS sector because it is more cost effective to reduce emissions in the sectors covered by the ETS rather than in the other sectors, not covered by the system.

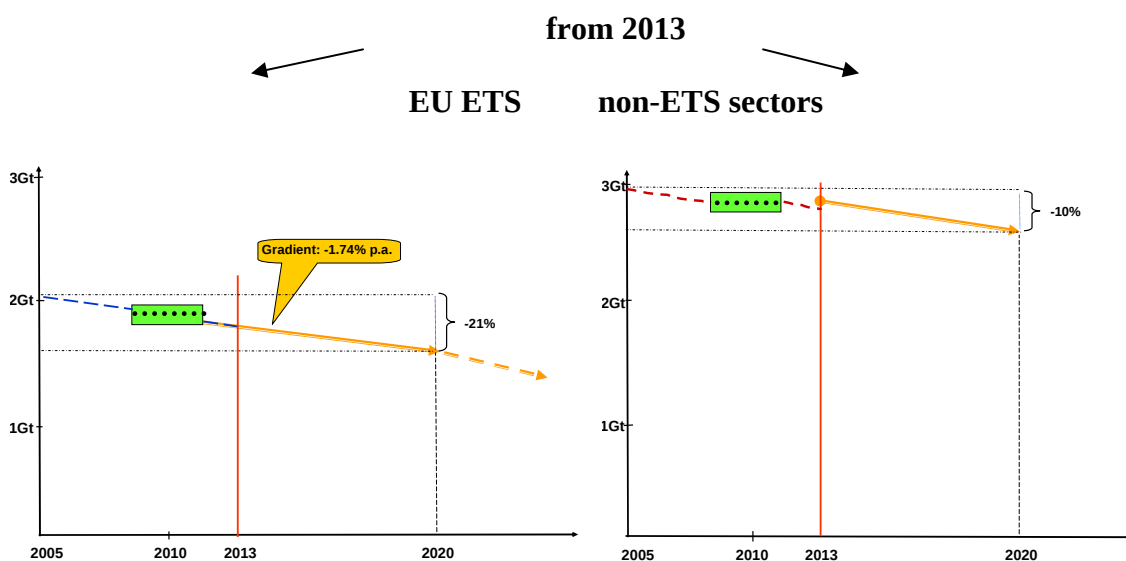
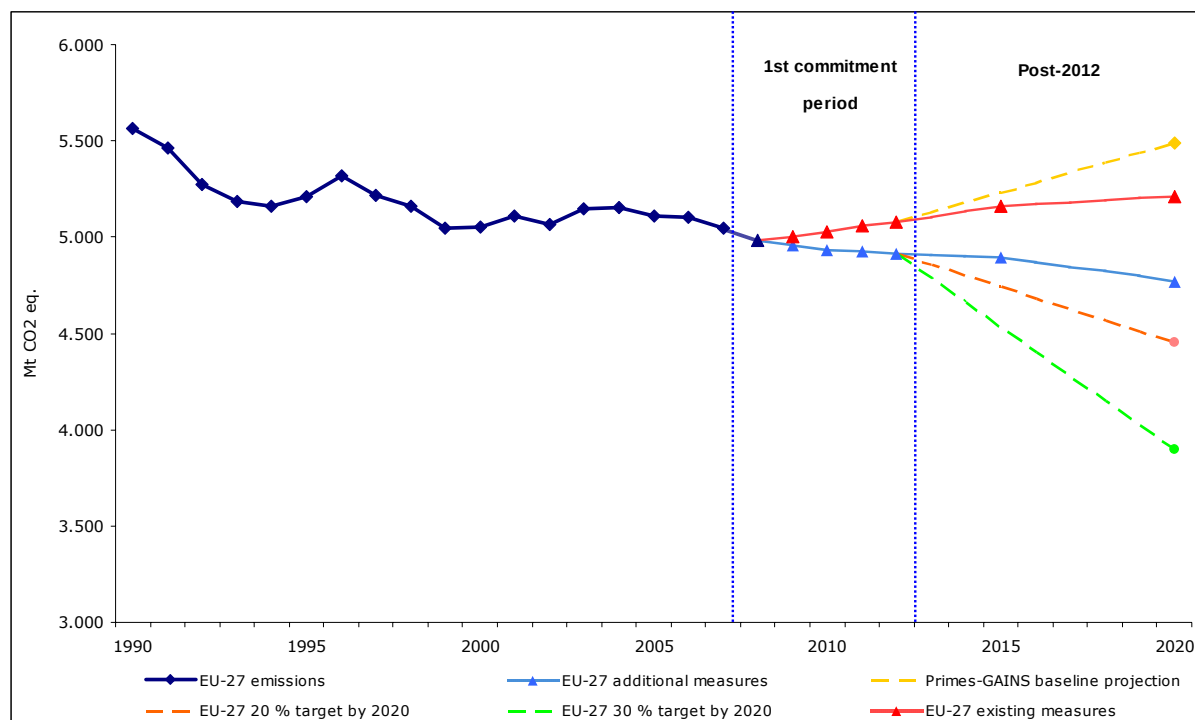
The sectors outside the EU ETS currently represent some 60% of total GHG emissions in the EU. As a rule, it will be left to Member States to define and implement policies and measures in these sectors, although quite a number of EU-wide measures in areas such as energy efficiency standards, reduced CO₂ emissions from cars and waste management will also contribute to emission reductions. For these non-ETS sectors, individual targets for MS were set according to relative levels of current and projected GDP/capita.

The new set of climate and energy measures also include: legally binding targets for increasing the share of renewables in the energy mix by 2020, new rules on carbon capture

and storage, new rules on environmental subsidies, as well as reduction of CO₂ emissions from cars and improved fuel quality.

Figure 2 illustrates the significant gap between MS projections for 2020 and the EU's 2020 targets (-20% and -30% respectively) requiring the EU to follow a much steeper emission reduction path after 2012 as compared to the period 1990-2012. Depending on the actual target, in 2020 emission reductions will have to amount to 1,000 – 1,500 Mt CO₂ equivalents compared to baseline scenario. This underlines the need for the EU and its MS to implement as soon as possible the new legislation.

Figure 2: Actual and projected emissions for EU-27



Note: The graph includes 2007 update Primes-GAINS baseline projections. Above graphs for EU ETS and non-ETS are rough estimation, final figures will be available according to relevant provisions of the Directive 2009/29/EC⁹ and the Decision 406/2009/EC¹⁰. **Source:** EEA, European Commission

2. ACTUAL PROGRESS 1990-2007

2.1. GHG emission trends

The overall EU GHG emission trend is strongly influenced by the two largest emitters Germany and the United Kingdom, accounting for about one third of total EU-27 GHG emissions. In 2007, these two MS have achieved total GHG emission reductions of 394 Mt CO₂ equivalents compared to 1990 .

The main reasons for the favourable trend in Germany (-21% in 1990-2007) are the economic restructuring of the five new Länder after the German reunification and the still increasing efficiency in power and heating plants as well as in the use of combined heat and power. The reduction of GHG emissions in the United Kingdom (-17% in 1990-2007) was primarily the result of liberalising energy markets and the subsequent fuel switching from oil and coal to gas in electricity production and N₂O emission reduction measures in 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 7% above 1990 levels in 2007. The observed increases since 1990 in Italy's GHG emissions are primarily due to road transport, electricity and heat production and petroleum-refining. France's emissions were 6% below 1990 levels in 2007. Large reductions were achieved in N₂O emissions from the adipic acid production, but CO₂ emissions from road transport increased considerably between 1990 and 2007.

Spain and Poland are the fifth and sixth largest emitters in the EU-27, accounting for 9% and 8% respectively of total EU-27 GHG emissions. Spain increased emissions by 54 % between 1990 and 2007. This was largely due to emission increases from road transport, electricity and heat production, and manufacturing industries. Poland decreased GHG emissions by 13 % between 1990 and 2007 (-29% since the base year, which is 1988 in the case of Poland). Main factors for decreasing emissions in Poland — as for other Central and Eastern European MS — 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.

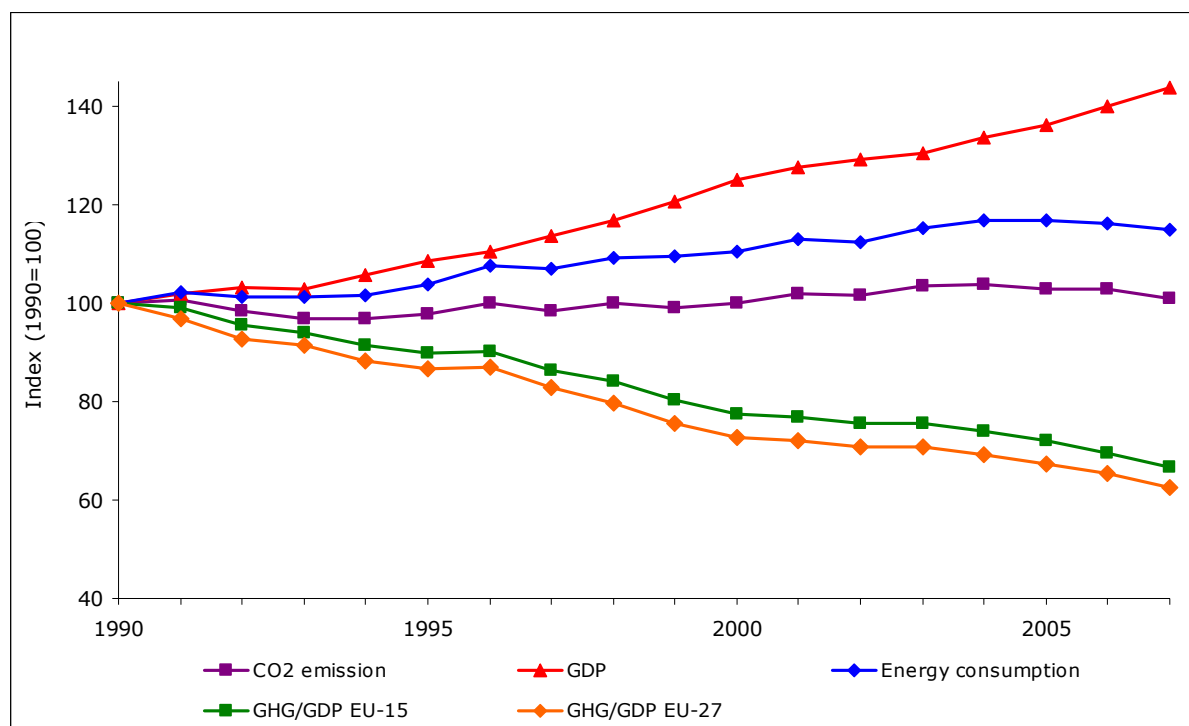
In 2007, eight MS had GHG emissions above base year levels whereas the remaining 17 MS had emissions below base year levels. Cyprus and Malta do not have emission reduction commitments under the Kyoto Protocol. In those countries, emissions in 2007 were above 1990 levels. The percentage changes of GHG emissions from the base year to 2007 range from -53.4% (Latvia) to +52.6% (Spain).

2.2. GHG intensities and emissions per capita in 2007

Emissions in both EU-15 and EU-27 have been decreasing while the economy has grown significantly. This indicates that a relative decoupling of GHG emissions growth from GDP growth has been taking place in the EU-15 since 1993, and in the EU-27 since 1996. Between 1990 and 2007, GDP in the EU-27 grew by 45 % while emissions decreased by 9 % and in the EU-15, GDP increased by 44 % with a 4 % reduction of GHG emissions.

All EU MS, except Cyprus, Portugal and Spain have significantly reduced their emissions while their economy grew strongly between 1990 and 2007. Strong economic growth but decreasing emissions were in particular observed in the MS in Central and Eastern Europe, due to the transformations of the inefficient heavy industry based manufacturing sector.

Figure 3: GHG intensity for EU-15 and EU-27, GDP, energy consumption and CO₂ emissions for EU-15



In 2007, the EU-27 emissions per capita were on average at 10.2 tCO₂-eq. In the EU-15, the average was 10.3 tCO₂-eq. per capita, a decrease of 0.4 tCO₂-eq. compared to 2006, or 1.3 tCO₂-eq. compared to 1990. However, GHG emissions per capita show significant differences across European countries. Emissions per capita are correlated to the energy intensity and the energy mix of each country (see also figure 2 of the Staff Working Document (SWD)).

In the 1990s, per capita emissions decreased in the whole EU. However, between 2000 and 2007, they decreased by 5.1 % in the EU-15 while they have risen by 7.1% in the EU-12. Between 1990 and 2007, per capita GHG emissions increased most in Spain, Portugal, Cyprus and Malta.

2.3. GHG emissions in 2007 compared to 2006

Between 2006 and 2007, emissions within the EU-27 fell by 59.8 MtCO₂-eq. (1.2%) with a decrease in the EU-15 by 64.0 MtCO₂-eq. (1.6%) and a slight emission increase in the other MS by 4.2 MtCO₂-eq. (0.6 %). GHG emissions decreased or were stable in all EU-15 MS except for Greece and Spain. Emissions increased in most EU-12 MS except Hungary, Poland, Romania and the Slovak Republic.

Germany, the United Kingdom, France and Italy contributed significantly to the overall decrease of GHG emissions (respectively -23.9 MtCO₂-eq., -11.2 MtCO₂-eq., -10.6 MtCO₂-eq., -10.2 MtCO₂-eq.). The emission decreases were due in particular to lower consumption of all fuel types by households and services. This was a result of reduced heating needs in Europe due to a warmer winter in 2007, together with higher fuel prices. All four mentioned countries also reported important emissions decreases from energy use in manufacturing industries. Germany reported the highest emission decrease, as a result of a warmer winter, an increased value added tax and a sharp increase in fuel prices for households.

Total GHG emissions grew most in Spain (9.3 MtCO₂-eq.), Greece (3.8 MtCO₂-eq.) and Bulgaria (4.2 MtCO₂-eq.). In all three countries emissions from public electricity and heat consumption are the decisive factor. Estonia had the highest relative emission increase (2.8 Mt CO₂-eq., 15 %) caused by the increase of the electricity generation from conventional thermal power plants by 25%. Lithuania (1.9 MtCO₂-eq.) and the Czech Republic (1.7 MtCO₂-eq.) also experienced notable increases in total GHG emissions.

Emissions from road transport continued to grow in most countries. Apart from EU-15 states (especially Denmark, Ireland, Greece), the highest increases were reported by Slovenia, Lithuania, Slovakia and Latvia, due to increased traffic volumes. In Bulgaria, Germany, France, Luxembourg, the Netherlands and Portugal emissions from road transport decreased slightly. This results in an emission increase from road transport of only 1 % in the EU-27 and a stabilisation of emissions on EU-15 level. However, additional measures will be necessary to keep control over GHG emissions from transport sector in the following years.

Emissions of greenhouse gases from international aviation and shipping activities continued to rise in 2007, increasing by 1.8 % in the EU-27. Emissions from these sectors, currently not included under the Kyoto Protocol, rose in the EU-27 by 1.8 MtCO₂ (shipping) and 3.7 MtCO₂ (aviation).

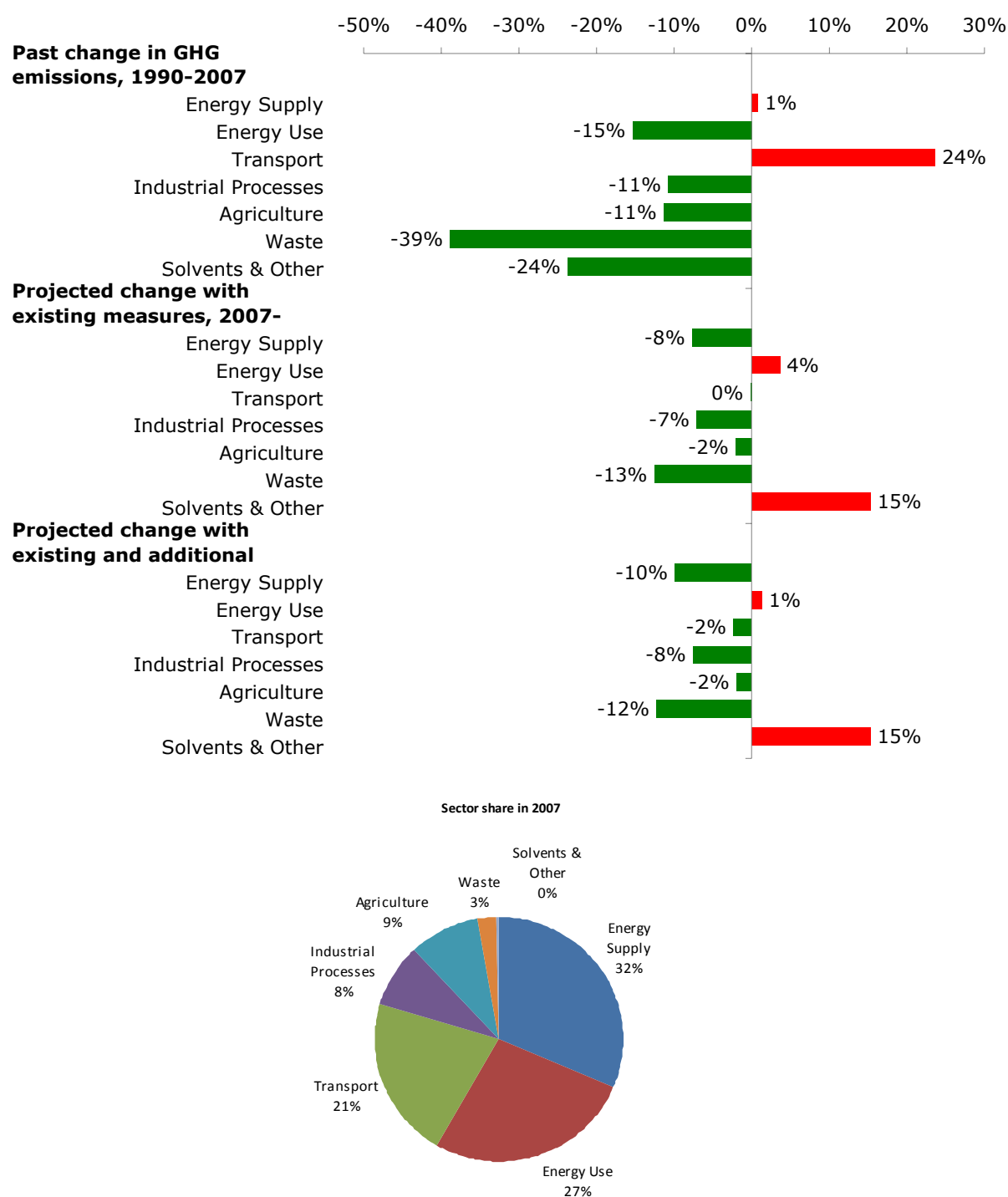
2.4. Emission trends in the main sectors

Figure 4 shows that energy (supply, use) and transport are the most important sectors, accounting for 80% of total EU-15 emissions in 2007. Transport is responsible for 21% of total GHG emissions, agriculture for 9%, industrial processes for 8% and waste for 3%.

The decreases in energy, agriculture, industrial processes and waste has been partially offset by significant increases in the transport sector (for further details see also the SWD). In summary, compared to 1990, emissions in the EU-15 from:

- energy (supply and use, excluding transport) decreased by 7%,
- transport increased by 24%,
- industrial processes decreased by 11% mainly due to lower emissions from adipic acid production and production of halocarbons and sulphur hexafluoride,
- agriculture declined by 11% due to declining cattle numbers and decreasing use of mineral fertiliser and manure,
- waste decreased by 39% due to lower CH₄ emissions from managed landfills.

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



Source: EEA

3. PROJECTED PROGRESS TOWARDS MEETING THE KYOTO TARGET

3.1. Projections by Member States⁸

The GHG emission projections include the impact of the EU ETS. However, the underlying methodology for the estimation of the effect of the EU ETS needs further improvement. Robust and consistent methodologies and assumptions are needed in order to more accurately project the EU ETS effect. Taking this into account, next year it will be further investigated how to best estimate and project the ETS effect and how to improve the methodologies through the revision of the Monitoring Mechanism Decision.

3.1.1. EU-15

Figure 5 presents the projections for non-ETS sectors and assesses the gaps between projected emissions and the target in those sectors. The aggregate projections for all sectors and based on existing domestic policies and measures, including the effect of the EU emission trading system on domestic emissions, show that GHG emissions of the EU-15 will be 6.9% below base-year levels in the commitment period (1.1% distance from the Kyoto target). When including the,

- (1) government use of the Kyoto mechanisms which are expected to deliver an additional 2.2% emission reduction,
- (2) total removal due to activities referred to in Art. 3.3 and 3.4 of the Kyoto Protocol in the EU-15 corresponding to a 1.0% reduction, and
- (3) use by the ETS sectors of allowance and credit acquisitions, corresponding to a 1.4% reduction

the EU-15 is projected to reduce its emissions by even more than 8.0% in the commitment period, exceeding the Kyoto target (-8%). Assuming that all measures deliver as expected, the projected overall reduction of GHG emissions could be up to 13.1% in commitment period compared to base year levels (including -1.6% effect of additional domestic measures).

Given, however the EU's ambitious reduction target of 20% by 2020 compared to 1990 and in order to pave the way for a smooth compliance with this target, it is imperative that MS not only ensure the timely delivery of emissions reductions from existing policies and measures but also that they accelerate the development and full implementation of their additional policies and measures.

3.1.2. EU-12

Aggregate emissions based on existing domestic policies and measures from the other 12 MS are projected to increase after 2007 but will still be about 29.8% below their base year levels in the commitment period. Slovenia is the only MS out of the EU-12 that intends to invest in Kyoto mechanisms. Slovenia, the Czech Republic and Poland intend to account for carbon sinks.

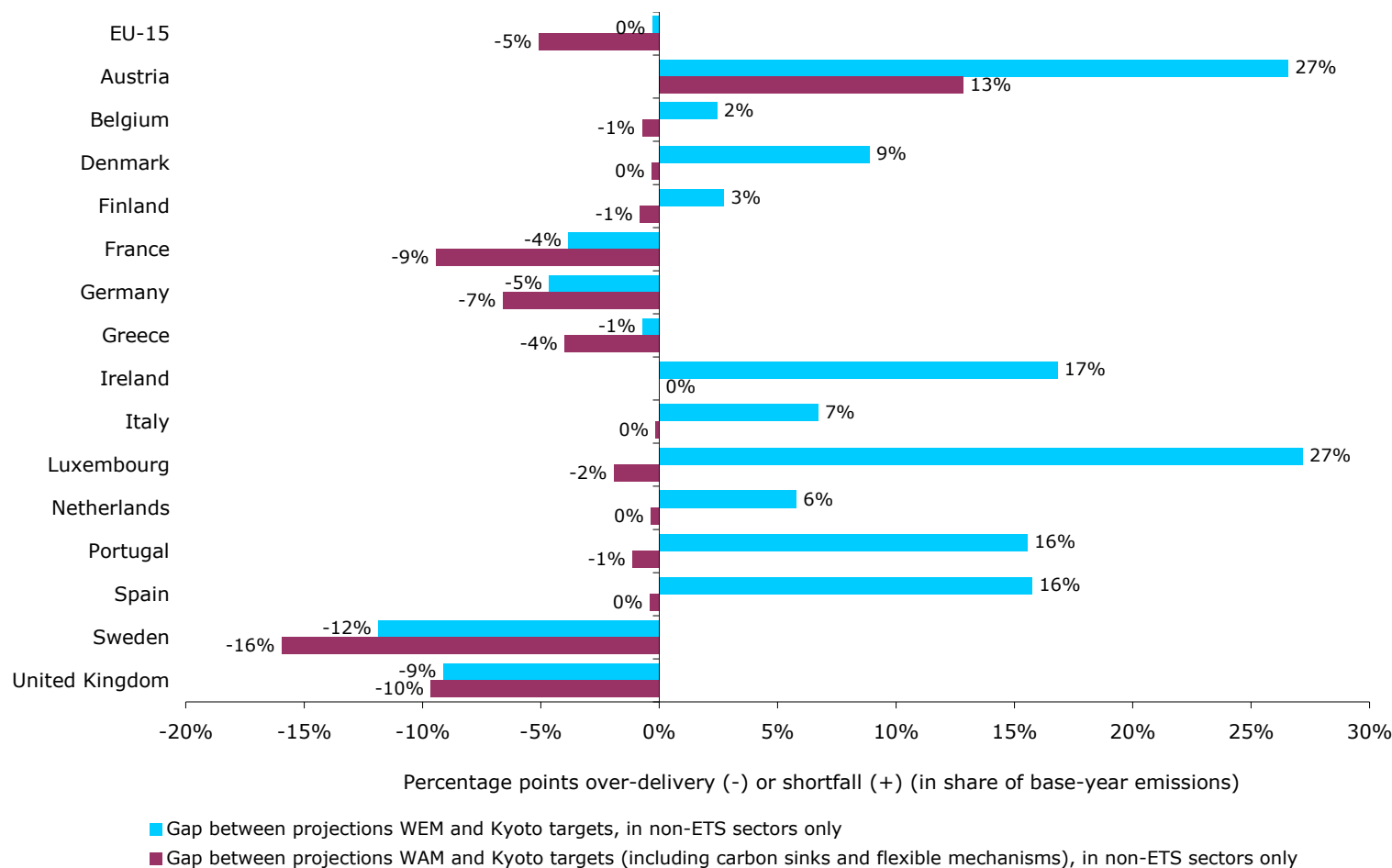
3.1.3. EU-27

In the commitment period, total EU-27 GHG emissions are projected to be about 12.8% below base-year levels. This projection is based on the compilation of MS own estimates which take into account all existing domestic policies and measures, including the effect of the EU emission trading system on domestic emissions. The projected decline is 15.0% when the effect of acquisitions of

credits via the Kyoto mechanisms by governments and carbon sinks is accounted for, and it could reach 16.5% if the additional policies and measures were to be implemented on time and deliver as estimated.

These emission projections need to be considered in the perspective of the effective reductions already achieved, which amounted to -9% for the EU-27 and -4% for the EU-15 between 1990 and 2007. Therefore, reduction efforts will need to accelerate substantially across the EU in the future if it is to meet its -20% or -30% target by 2020.

Figure 5: Relative gaps (over-delivery or shortfall) between GHG projections in the non-ETS sectors for the commitment period and the respective 2008-2012 targets based on ‘existing’ and ‘additional’ domestic policies and measures, the use of Kyoto mechanisms and carbon sinks. (related to base year emissions)



Source: EEA

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

Across the EU-27, an assessment of Member States' policies and measures identified eight Common and Coordinated Policies and Measures (CCPMs) that are projected to deliver significant GHG emissions savings in the EU. These are the EU ETS Directive and in the energy supply sector the Renewables (RES-E) Directive (related to the promotion of electricity produced from renewable energy sources). In the transport sector fuel quality and reduction of CO₂ from cars are of significant importance. Further, in the energy demand sector the Directives on the energy performance of buildings, energy taxation and promotion of co-generation (combined heat and power) play a role. Finally the Kyoto Protocol flexible mechanisms are projected to deliver significant GHG emissions savings in the EU.

In addition to these eight key policies and measures, a further five CCPMs were identified that are also predicted to deliver important savings across the EU (from 4 to 7 MtCO₂-eq. per policy). These five policies are the Landfill Directive, the efficiency standards for new hot-water boilers, the Directive on Integrated Pollution Prevention and Control (IPPC), the Directive on labelling of appliances and the Motor Challenge programme, aimed at improving the energy efficiency of industrial electric motors.

By 2010, the largest savings are expected from the EU ETS and the renewable energy directives. Members States also expect large savings from the internal energy market, the implementation of the energy performance of buildings directive and the use of the Kyoto flexible mechanisms are also expected to deliver significant reductions.

The top eight policies account for 92% of the total savings attributed to CCPMs in the EU-27. This highlights the importance of these key policies in helping MS to achieve their emission reduction commitments.

Recent developments

The climate and energy package was agreed in December 2008 and includes:

- (1) **Improved EU ETS:** Directive 2009/29/EC⁹ amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community.
- (2) **Effort Sharing in emission reductions from sectors not covered by the EU ETS:** Decision 406/2009/EC¹⁰ on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, setting national commitments for GHG emissions outside the scope of the EU ETS.
- (3) **Binding targets for Renewable Energy:** Directive 2009/28/EC¹¹ on the promotion of the use of energy from renewable sources, setting legally binding targets for each MS in order to reach the EU target of 20% share of renewable energy in the EU's final energy consumption by 2020.
- (4) **Carbon Capture and Storage:** Directive 2009/31/EC¹² on geological storage of CO₂.

- (5) **CO2 and cars:** Regulation 443/2009¹³ setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO2 emissions from light-duty vehicles, which will ensure that emissions from the new car fleet are reduced to an average of 130g CO2/km by 2015.
- (6) **Transport fuels:** Fuel quality directive 2009/30/EC¹⁴ puts an obligation on suppliers to reduce greenhouse gas emission from entire fuel production chain by 6% by 2020.

Other important developments have included:

- (7) **Aviation:** Directive 2008/101/EC¹⁵ on inclusion of aviation activities into the EU ETS.
- (8) **Road transport:** Directive 2009/33/EC¹⁶ on the promotion of clean and energy-efficient road transport vehicles.

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

In 2008, the total amount of verified emissions from EU ETS installations in the EU-27 was 2.11 billion tonnes¹⁷ of CO₂, 3% lower than in 2007. While the economic slowdown was felt strongly in the sectors covered by the system, the drop in emissions was also due to reduction measures undertaken by installations in reaction to the robust carbon price which prevailed for most of 2008 before the onset of the recession. Figure 6 shows the share of EU ETS emissions in the total GHG emissions by the EU.

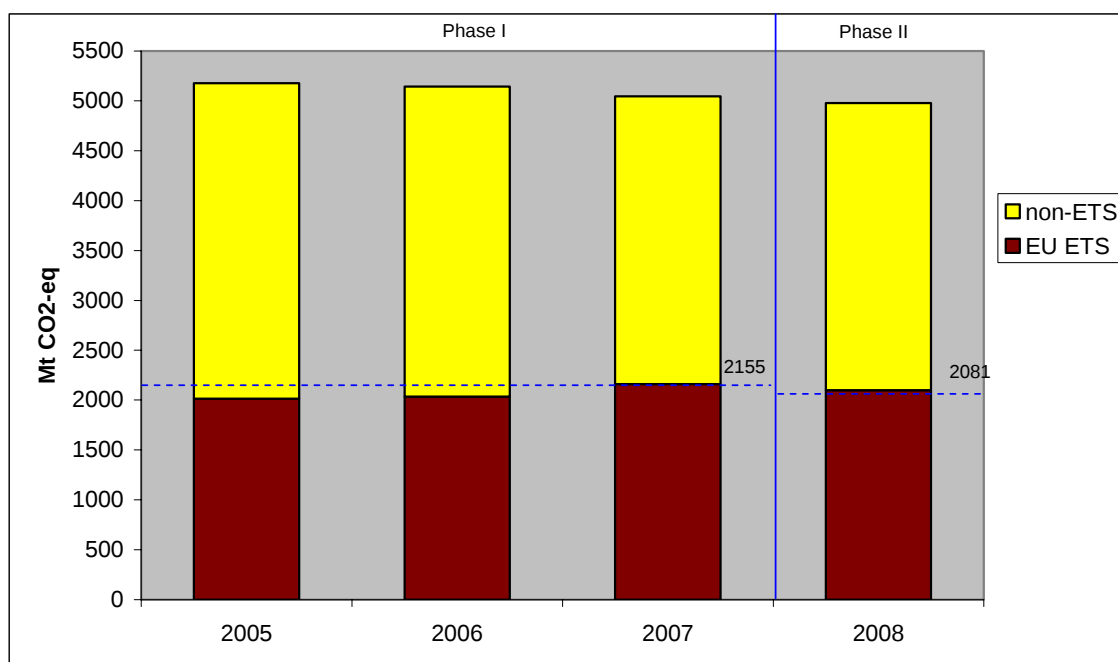
3.3.1. First trading period (2005 to 2007)

On average 10,559 installations participated in the first trading period. These installations received emission rights for 2,107 Mt CO₂ per year and on average emitted 2%¹⁸ less (2,071 Mt CO₂ per year). In 2007, the share of the EU ETS was about 43% of total EU-27 greenhouse gas emissions. Almost two thirds of all installations are classified as combustion installations¹⁹ and these are responsible for more than 70% of overall emissions.

3.3.2. Second trading period (2008 to 2012)

The EU-wide cap for 2008-2012 amounts to 2.081 billion allowances per year, 10.5% lower than what was initially proposed in the national allocation plans submitted by the Member States. In 2008, 10,680 installations participated in the system and their verified emissions were 9% higher than the allowances allocated to them.

Figure 6: Total GHG emissions in EU-27 split into EU ETS and non-ETS sectors



Note: The figure is a preliminary estimate. For 2008 preliminary estimates of total GHG emissions were included.

Source: European Commission

3.3.3. Use of JI and CDM by operators

As part of the second NAPs, a limit was established by each MS for the maximum use of project based credits by operators (Joint Implementation (JI) and Clean Development Mechanism (CDM)). In total, up to 278 million CERs or ERUs may be used per year by ETS installations from all MS in the second trading period. This corresponds to 13.4 % of the EU-wide cap for the second trading period. In 2008, operators used 81.7 million CERs or ERUs which was 3.9% of all surrendered allowances. From 2013 onwards the rules for the use of JI and CDM credits will be revised as set in the revised EU ETS directive.²⁰

3.4. Projected use of Kyoto mechanisms by government

Ten MS of the EU-15 as well as Hungary and Slovenia have decided to use the Kyoto mechanisms to reach their Kyoto targets. Together, these EU-15 MS would acquire 93.1 Mt CO₂-eq. per year for compliance under the first commitment period under the Kyoto Protocol. This represents approximately 2.2 percentage points towards the EU-15 Kyoto target of -8 % (see Table 12 in the SWD).

These 10 MS together have decided to invest almost € 3 billion to acquire units through JI, CDM or emissions trading. Austria, the Netherlands, Spain, Luxembourg and Portugal allocated the largest budgets (€ 531 million, € 506 million, € 409 million, € 330 million and € 305 million, respectively, for the five-year commitment period). In Slovenia, the budget has been estimated for € 80 million. Hungary plans to participate in international emission trading.

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 13 in the SWD). The information provided so far 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 8.2 MtCO₂ per year for EU-15. In addition, the use of activities under Art. 3.4 is projected to contribute 25.6 MtCO₂ per year of the commitment period in the EU-15 and the Czech Republic, Poland and Slovenia expect a removal of 5.5 Mt CO₂ per year of the commitment period. These figures take the maximum allowance for forest management into account but do not include Spain due to the lack of detailed data. 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 42.4 Mt CO₂ per year of the commitment period equivalent to almost 12.4% of the EU-15 reduction commitment of 341 Mt CO₂ per year during the commitment period compared to base year emissions.

4. SITUATION IN THE EU CANDIDATE COUNTRIES

Between 1990 and 2007 **Croatia's** GHG emissions increased by 3% and compared to 2006 increased by 5.3%. In 2007, Croatia's emissions were 32.4 MtCO₂-eq. or 10% below base year emissions. Croatia is projected to slightly exceed its Kyoto target taking into account existing measures and carbon sinks, but would meet and indeed overachieve the target with the effect of planned (additional) measures.

In 2007, **Turkey's** emissions were 373 MtCO₂-eq compared to 170 MtCO₂-eq. in 1990, an increase of 119% and comparing to 2006 increased by 12%.

In January 2009 **the former Yugoslav Republic of Macedonia** submitted to the UNFCCC secretariat its 2nd National Communication, including inventory of GHG emissions from 1990-2002. Between 1990 and 2002 total GHG emissions decreased by around 10%.

For more information please see section 2 of the SWD.