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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)**

{SEC(2011) 1151 final}

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1. SUMMARY

On track to reach the Kyoto target, 2008-2012

In 2009¹, total EU-27 greenhouse gas (GHG) emissions without emissions and removals from Land Use, Land Use Change and Forestry (LULUCF) were 17.4% lower compared to 1990 levels. Emissions decreased by 7.1% compared to 2008 while during the same period the Gross Domestic Product (GDP) in EU-27 dropped by around 4% as a result of the economic recession.

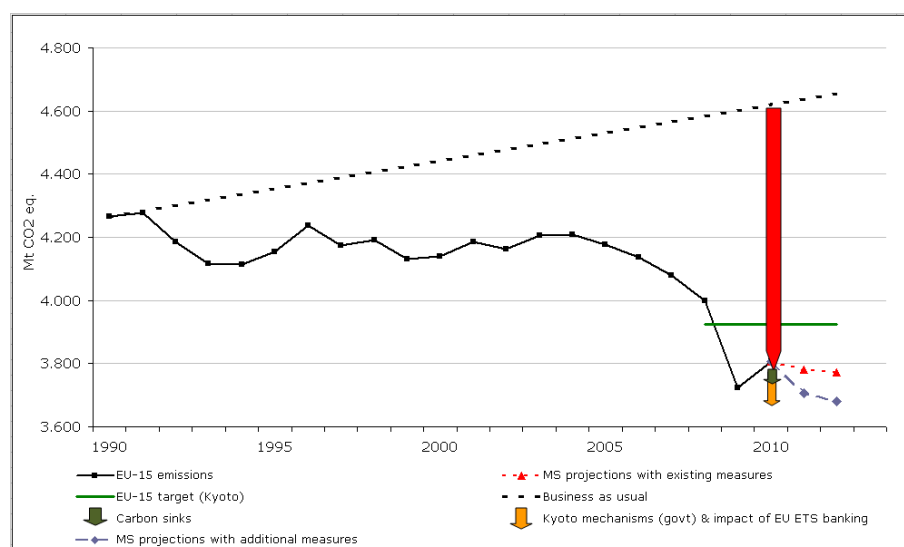
Additionally, according to the provisional 2010 data², EU-15 and EU-27 GHG emissions changed by 2.3% in 2010 compared to 2009. Based on these estimates, EU-15 emissions are 10.7% below the base-year level. EU-27 2010 emissions are approximately 15.5% below the 1990 level. The change of GDP in 1990-2010 was 39% for EU-15 and 41% for EU-27, and around 1.8% between 2009-2010.

Under the Kyoto Protocol, the EU-15 has agreed to reduce its GHG emissions by 8% by 2008–12 compared to base year levels. Based on the latest available inventory data of 2009¹, total GHG emissions in the EU-15 have fallen for the sixth consecutive year and were 12.7% below base year emissions without LULUCF. While since 1990, the EU-15 economy in terms of GDP has grown significantly by almost 37%, GHG emissions in EU-15 have declined.

In 2009, EU-15 GHG emissions decreased significantly, by 6.9% compared to 2008 well exceeding the drop of EU-15 GDP of around 4% as a result of the economic recession, which proves that in 2009, the deep economic crisis in the Union did not stall the transformation of the Union's economy towards a low carbon economy. The rate of improvement in GHG intensity remained at the same level as in the years before.

All in all, **projections³ of total GHG emissions as shown in Figure 1 indicate that the EU-15 is well on track to reach its Kyoto target.** The estimate shows that the target is likely to be overachieved.

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:** European Commission, EEA

According to the recent GHG projections six Member States (Finland, France, Germany, Greece, Sweden, the United Kingdom) are on track to achieve their individual GHG reduction targets domestically. Taking into account the planned use of the Kyoto flexible mechanisms, use of unused allowances from the EU ETS new entrants reserve and carbon sinks as well as additional policy measures, only three Member States (Austria, Italy and Luxembourg) might face difficulties with achieving their targets.

In most of the twelve Member States which acceded the Union as from 2004, emissions are projected to slightly increase between 2009 and 2012. However, nine of them that have a Kyoto target are projected to meet or over-achieve their commitments using only existing policies and measures. Slovenia is estimated to meet its target when all the existing and planned measures, including the purchase of Kyoto credits, deliver as expected.

New measures to reach the Union's ambitious 2020 target

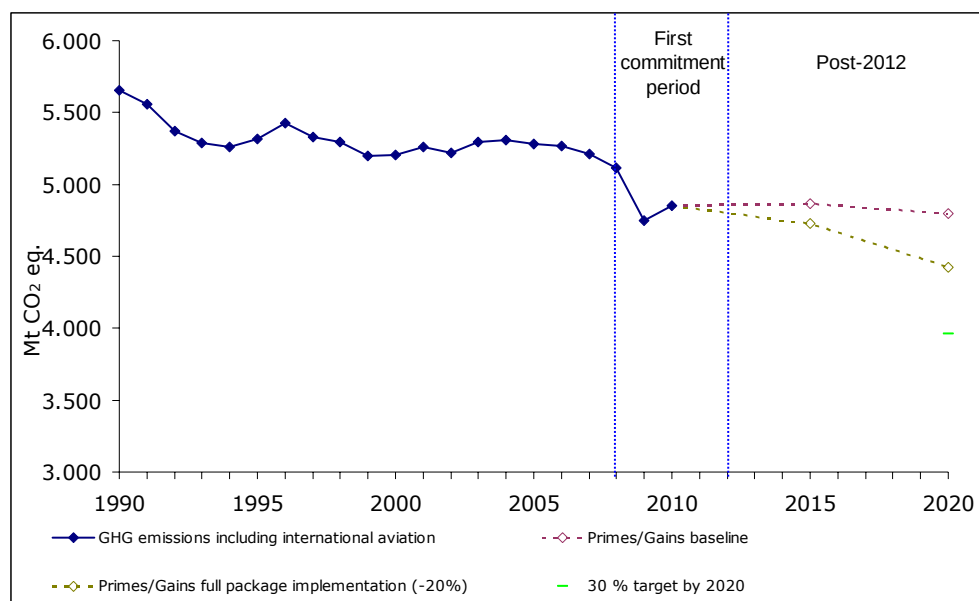
The climate and energy package⁴ adopted in 2009 provides an integrated and ambitious package of policies and measures to tackle climate change until 2020 and beyond. From 2013 onwards the total Union's effort to reduce greenhouse gas emissions by 20%⁵ by 2020 compared to 1990 will be divided between the EU ETS and non-ETS sectors. The GHG data presented in the previous section refer to the scope of the 1st commitment period under the Kyoto Protocol and cannot be directly used to assess progress towards Union's domestic commitment by 2020 because of its broader sectoral coverage.

Preparations for the implementation of the GHG reduction commitment by 2020 have continued to advance swiftly. In regard to the **EU ETS Directive as revised**, last year the technicalities of the rules for free allocation and auctioning of allowances, use of international credits, setting the cap and the modalities for changes of the registries have been decided. As far as the **Effort Sharing Decision**, which regulates GHG emissions in sectors outside the EU ETS by setting binding annual GHG emissions targets for each Member States (MS), is concerned, work on implementing measures continued, especially in relation to determining the absolute values for Member States' targets and the compliance system which will be put in place for monitoring Member States' action annually and helping them to make any necessary corrective measures if they fail to meet their targets.

The 20% GHG reduction objective is rooted in the Europe 2020 strategy for jobs and smart, sustainable and inclusive growth adopted by the European Council in June 2010. The emission reduction target is one of the five headline targets. As noted in the Commission's Annual Growth Survey 2011, in the field of climate mitigation the existing and planned measures are not yet sufficient to reach the 2020 headline targets. Therefore, many Member States need to make additional efforts to meet their obligations under the Effort Sharing Decision. According to recent GHG projections estimates only 11 MS are expected to meet their commitments with policies already in place, further 7 MS would deliver on their targets when their additional policies and measures deliver as expected. The remaining 9 MS need to design additional policies in order to accomplish their targets.

Figure 2 illustrates the gap between projections for 2020 and the Union's 2020 targets (-20% and -30% respectively) requiring the Union to step up its efforts to further reduce its greenhouse gas emissions.

Figure 2: Actual and projected emissions for EU-27



Note: PRIMES/GAINS projections³ used to projected changes in emissions over the period 2010-2020

Source: European Commission, EEA

Projections based on PRIMES/GAINS model which include implemented Union's and national policies as of mid 2009 and covers the Climate and Energy Package emissions scope show that the cut in Union's GHG emissions (with measures already in place) would be at the level of 15.3% between 1990 and 2020.

2. ACTUAL PROGRESS 1990-2009

2.1. GHG emissions trends in Member States

The overall Union GHG emissions trend is strongly influenced by the two largest emitters Germany and the United Kingdom, together accounting for about one third of total EU-27 GHG emissions. In 2009, these two Member States have achieved total GHG emission reductions of 538 Mt CO₂ equivalents compared to 1990.

The main reasons for the favourable trend in Germany (-26.3% in 1990-2009) are the continuous efficiency improvements in power and heating plants, the increased use of renewable energies and combined heat and power, as well as the significant investments in the economic modernization of the five new Länder after the German reunification. The reduction of GHG emissions in the United Kingdom (-27.0% in 1990-2009) was primarily the result of liberalising energy markets and the subsequent fuel switching from oil and coal to gas in electricity production as well as reducing N₂O emissions in adipic acid production. Lately, the recession had also impact on the decrease in emissions in these two countries affecting mainly energy and industrial sectors.

Italy and France are the third and the fourth largest emitters, each with a share of around 11%. Italy's GHG emissions were about 5.4% below 1990 levels in 2009. The observed decreases in 2009 were mainly linked to the economic recession which affected especially electricity and heat production as well as industrial sector. France's emissions were 8.1% below 1990 levels in 2009. Large reductions were achieved in N₂O emissions from adipic acid production.

However, CH₄ emissions from waste and CO₂ emissions from road transport increased considerably between 1990 and 2009.

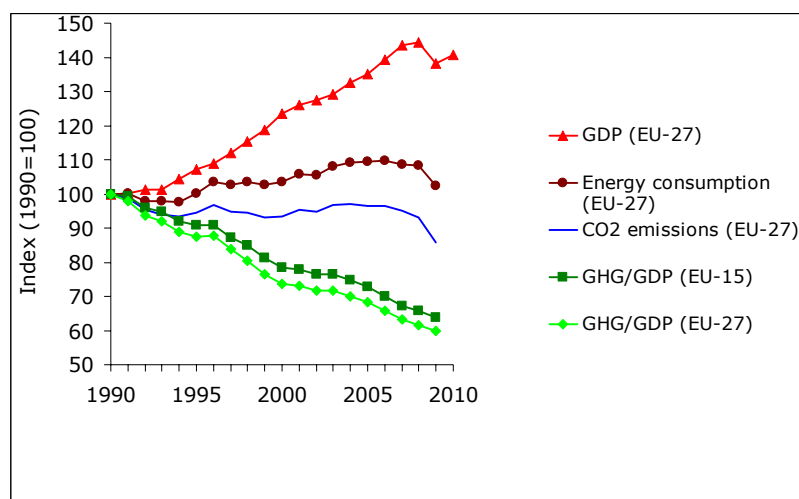
Poland and Spain are the fifth and the sixth largest emitters in the EU-27, each accounting for about 8% of total EU-27 GHG emissions. Poland decreased GHG emissions by 16.8 % between 1990 and 2009 (by 33.2% since 1988, its base year). Main factors for decreasing emissions in Poland - as for other Central and Eastern European Member States - were the decline of energy inefficient heavy industry and the overall restructuring of the economy in the late 1980s and early 1990s as well as energy efficiency improvements over 1990-2009. The notable exception were transport, especially road transport, where emissions increased by around 95% as well as some industrial sectors such as petroleum refining and chemicals. Spain increased emissions by 29.8 % between 1990 and 2009. This was largely due to emission increases from waste, road transport, electricity and heat production and manufacturing industries.

In 2009, five Member States had GHG emissions above base year levels (mostly 1990) whereas the remaining twenty Member States had emissions below base year levels. Cyprus and Malta do not have emission reduction commitments under the Kyoto Protocol. In those two Member States, emissions in 2009 were above 1990 levels. The percentage changes of GHG emissions from the base year to 2009 range from -60% (Estonia) to +27% (Spain).

2.2. GHG intensities and emissions per capita in 2009

Emissions in both the EU-27 and the EU-15 have been decreasing while the economy has grown significantly. This indicates that a **decoupling** of GHG emissions growth from GDP growth has been taking place.

Figure 3: Development of GHG intensity, GDP, energy consumption and CO₂ emissions



Source: EEA, DG ECFIN (Ameco database), Eurostat

Between 1990 and 2009, in the EU-27 GDP grew by 38 % while emissions decreased by 17.4 % and in the EU-15 GDP increased by 37% with a 12.7 % reduction of GHG emissions. Between 2008 and 2009 a decrease in GDP of around 4% in both the EU-27 and the EU-15 was noted and was linked to the economic recession. However, the decoupling process continued also in 2009 as demonstrated by a further decline in GHG intensity of 3.0% in the EU-27 and of 2.7% in the EU-15. The 2010 GDP data suggest that economic recovery has

started. The economy-wide trend to decoupling of GHG emissions and GDP growth is also confirmed in the development of the manufacturing sector observed since 1990.

Between 1990 and 2009 **GHG intensity** decreased in all MS. The deepest decrease was observed in Estonia (-80%), Slovakia (-73%), Bulgaria (-62%), Romania (-61%), Lithuania (-60%), Latvia (-59%) and Poland (-59%). The smallest changes took place in Portugal (-12%), Cyprus (-13%), Italy (-20%), Spain (-20%) and Malta (-22%).

In 2009, in the EU-27 **emissions per capita** were at the level of 9.2 tCO₂-eq. In the EU-15 they were a bit higher, on average 9.4 tCO₂-eq. per capita. Per capita emissions decreased by 0.7 tCO₂-eq. compared to 2008, or 2.3 tCO₂-eq., which is equivalent to an almost 20% reduction compared to 1990. However, 2009 GHG emissions per capita show significant differences across Member States ranging from 4.7 (Latvia) to 23.7 (Luxembourg) tCO₂-eq. per capita. They are to a large extent determined by the energy intensity and the energy mix of each country. Also per capita emission trends differ greatly between Member States. Since 1990, largest per capita reductions have been made in Member States in central and Eastern Europe, Luxembourg, United Kingdom, Germany, Sweden and Belgium. In six Member States per capita emissions have increased since 1990. While per capita emissions in Malta, Portugal and Spain are well below the Union's average, in Slovenia, Greece and Cyprus they are above this average level. (see also figure 3 of the Staff Working Paper (SWP))

2.3. GHG emissions in 2009 compared to 2008

Between 2008 and 2009¹, GHG emissions decreased in all Member States. Emissions within the EU-27 fell by 354.4 MtCO₂-eq. (7.1%) with a decrease in the EU-15 by 274.3 MtCO₂-eq. (6.9%). The current economic recession contributed to a large extent to the absolute year-on-year cut and accelerated the downward trend since 2004. However, as outlined earlier GHG intensity improved further because of other factors such as increased use of renewable energy.

Most significant cuts in GHG emissions, in absolute terms, were recorded in Germany (-61.4 MtCO₂-eq), the United Kingdom (-54.0 MtCO₂-eq), Italy (-50.6 MtCO₂-eq) and Spain (-37.2 MtCO₂-eq). Important decreases in GHG emissions took place also in Romania, France and Poland (-22.6 MtCO₂-eq., -21.9 MtCO₂-eq., -19.1 MtCO₂-eq. respectively). The emission decreases were, in particular, due to lower public electricity and heat production, lower emissions from manufacturing industries as well as transport.

In terms of relative changes, deepest declines in GHG emissions were observed in Estonia (16.1%), Romania (14.7%) and Bulgaria (13.8%). Many Member States such as Lithuania, Latvia, Slovakia, Italy, Spain, Slovenia, Hungary, UK, Ireland, Austria and Belgium recorded a decrease ranging between 8% and 10%. The smallest decrease took place in the Netherlands (2.8%).

The 2009 recession affected all economic sectors in the Union. This resulted in a fall in fossil fuel consumption, mainly coal, and lower activity levels in industry. Despite a cold winter, emissions went down also in the residential sector due to lower use of fuels, especially liquid ones, in non-distributed heat. As a result, most significant decreases in GHG emissions were recorded in public electricity and heat production (-103.2 Mt CO₂-eq or 7.8%), manufacturing industries (-65.7Mt CO₂-eq or 12.9%), iron and steel production (-53.6 Mt CO₂-eq or 29.6%), road transport (-23.7 Mt CO₂-eq. or 2.7%), households and services (-22.0Mt CO₂-eq. or 3.2%).

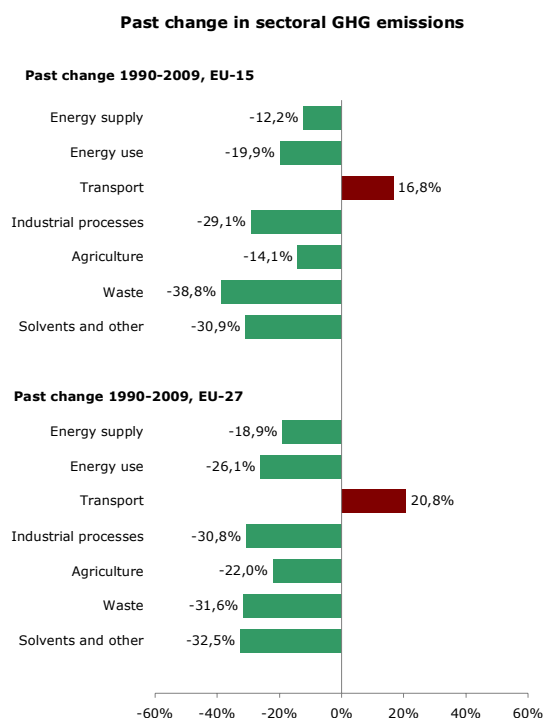
Despite GHG emissions decreases in the transport sector between 2008 and 2009, this sector remains an important emission source. 87% of transport emissions originate from the EU-15 Member States and the observed GHG emissions reductions from road transport in the EU-27 (-23.7Mt CO₂-eq.) are proportionate to this and mainly due to the EU-15 Member States (-20.5 Mt CO₂-eq.).

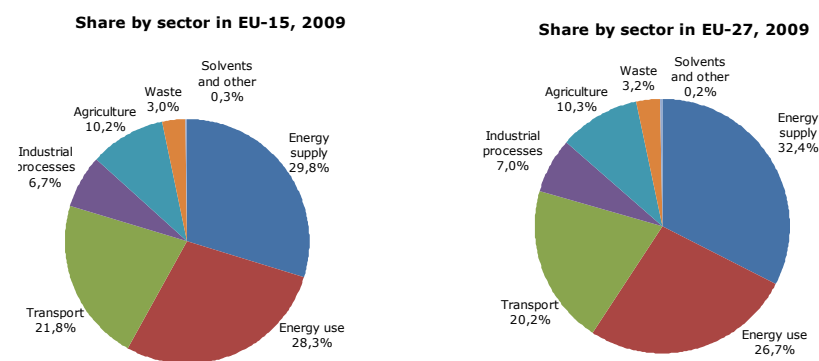
Also emissions from the international aviation and shipping fell for a second year in row, mainly due to the impacts of the economic recession (7% for aviation and 10% for international shipping). Currently, these two sectors account for about 6.3% of total GHG emissions in EU-27 but are not included in the Kyoto targets.

2.4. Emission trends in the main sectors

Figure 4 shows that energy supply and use including transport are the most important sectors accounting for 80% of total Union's emissions in 2009. Transport is responsible for 22% of total GHG emissions, agriculture for 10%, industrial processes for 7% and waste for 3%. Since 1990, the decreases in energy, agriculture, industrial processes and waste have been partially offset by significant increases in the transport sector (for further details see also the SWP). However, in 2009, the economic recession lead to lower transport emissions.

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





Source: EEA

3. PROJECTED PROGRESS TOWARDS MEETING THE KYOTO TARGET

3.1. Projections of GHG emissions

3.1.1. EU-27

In the Kyoto commitment period, total EU-27 GHG emissions are projected to be about 17.9% below base-year levels. This estimate is based on MS projections³ and takes into account existing policies and measures. The projected decline is even bigger when the effect of acquisitions of credits via the Kyoto mechanisms by governments, carbon sinks and additional measures are accounted for (for more details see tables 7a and 7b in the SWP).

3.1.2. EU-15

The aggregate projections for all sectors estimate that total GHG emissions of the EU-15 are likely to be 10.5% below base-year levels during the Kyoto commitment period. When including,

- (1) the government use of the Kyoto mechanisms which is expected to deliver an additional 2.5% emission reduction, and
- (2) the total removal of carbon sinks due to activities referred to in Art. 3.3 and 3.4 of the Kyoto Protocol in the EU-15 corresponding to a 0.9% reduction,

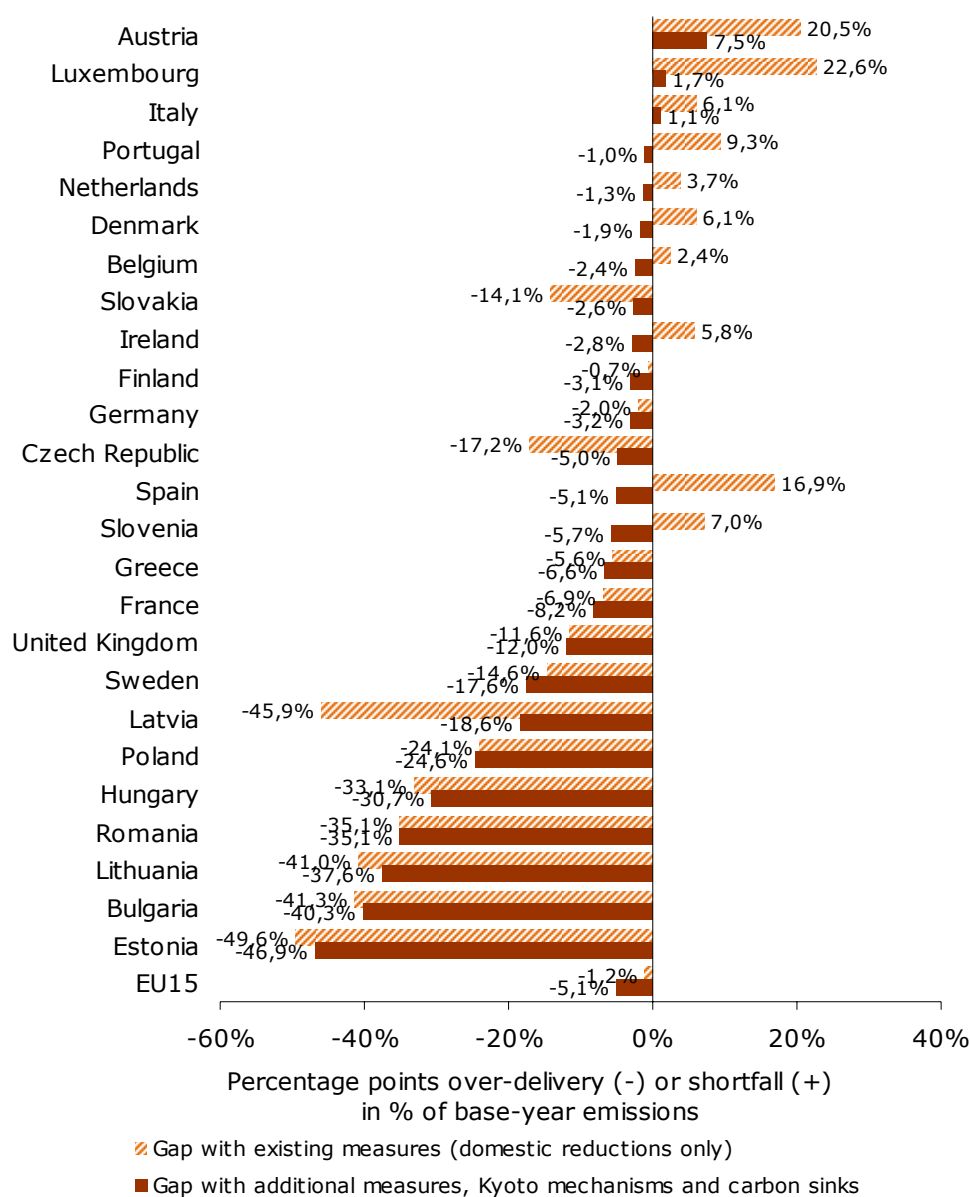
the EU-15 is projected to reduce its emissions even further. Assuming that all measures deliver as expected and allowance and emission reduction credits trade under the EU ETS is taken into account, the projected overall reduction of GHG emissions could be up to 13.4% in the Kyoto commitment period compared to base year levels.

Figure 5 presents the gaps between projected non-ETS emissions and the respective targets for the sectors concerned per each Member State. This analysis indicates that existing policies and measures would be sufficient for the EU-15 to meet its part of the collective Kyoto target attributed to the non-ETS sectors. However, as some Member States are going to retire their Assigned Amount Units (AAUs) surplus in practice all Member States will need to meet their respective individual commitments in order to ensure that the Union will deliver on its collective target under the Kyoto Protocol.

3.1.3. *EU-12*

Aggregate emissions based on existing domestic policies and measures from the 12 Member States which joined the Union after 2004 are projected to slightly increase compared to 2009 and will be about 38.7% below their base year levels in the Kyoto commitment period. Slovenia is the only Member State out of the EU-12 that intends to invest in Kyoto mechanisms. The Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia intend to account for carbon sinks. The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia plan to sell part of their AAUs.

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 GHG projections and the use of Kyoto mechanisms and carbon sinks.



Note: (1) For BG, PT, RO estimates are based in PRIMES/GAINS projections; (2) For all the other MS, (excluding Cyprus and Malta which do not have emission reduction commitments under the Kyoto Protocol) estimates are based on national projections; (3) Use of unused allowances from the NER under the EU ETS is taken into account for those MS which indicated plans to use them for non-ETS compliance (Ireland)

Source: EEA, European Commission

3.2. State of implementation of the Union's climate change policy

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 Union**. The largest savings can be expected from the EU ETS Directive (2003/87/EC) as revised and the Renewable Energy Directive (2009/28/EC) promoting electricity produced from renewable energy sources. In the transport sector, the fuel quality legislation and reduction of CO₂ from cars are of significant importance. Further, energy demand will be reduced through the implementation of the Directives on the energy performance of buildings, eco-design requirements, energy taxation and the promotion of co-generation (combined heat and power). Finally, use of the Kyoto Protocol's flexible mechanisms is projected to deliver significant GHG emissions savings.

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 Union. These five policies are the Landfill Directive (99/31/EC), the efficiency standards for new hot-water boilers, the Directive on labelling of appliances (2000/13/EC), the Industrial Emissions Directive (2010/75/EU) and the Motor Challenge programme, aimed at improving the energy efficiency of industrial electric motors. A Report from the Commission on the application, effects and adequacy of the Regulation EC No 842 concludes that this Regulation has already achieved some reduction of emissions of F-Gases compared to a scenario without the Regulation. Together with the MAC Directive (2006/40/EC) they have the potential to achieve a significant reduction of projected emissions by 2020 and beyond.

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

Recent developments

Since the adoption of the climate and energy package, work on implementation measures is ongoing. Before the end of 2012, about twenty new legal acts and documents have to be in place in order to ensure proper functioning of the EU ETS as revised as well as to prepare the ground for the implementation of national GHG emission targets in the non-ETS sectors.

Recently, the EU ETS cap for 2013-2020 has been updated taking into account the extended scope of the system post-2012. Enhancement of the integrity and the security of the registries system underpinning the EU ETS have been prepared. The Commission has proposed to amend the list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage. This proposal covers adding a few additional sectors such as for example manufacture of bricks, tiles and constructions products in baked clay, and production of salt. These two last proposals are currently subject to the scrutiny by the European Parliament and the Council. Preparation for the 3rd trading period continued also in regard to further enhancement of a harmonised application of the allocation rules.

Also an agreement has been reached on a proposal to start auctioning of up to 120 million allowances in the form of futures or forwards already in 2012, so ahead of the start of the 2013-2020 trading period. Its aim is to ensure a smooth transition from the second to the third

trading period of the EU ETS, which underpins proper functioning of the secondary carbon market.

Work on enhanced rules for monitoring and reporting of GHG emissions by operators covered by the EU ETS as well as requirements for the verification of emission reports and the accreditation and supervision of verifiers is ongoing and aims for improved harmonisation of the applied rules. Two new regulations are to be finalised by the end of 2011.

Preparation of the implementing measures under the Effort Sharing Decision is ongoing and currently focuses on determining the absolute values for Member States' annual emissions targets in 2013-2020 and setting rules for transfers of annual emission allocations among Member States as well as ensuring their transparency.

In addition, the revision of the EU Monitoring Mechanism has started. It is driven by the need to address the reporting needs of the climate and energy package, Europe 2020 Strategy, new requirements deriving from the Cancun agreements as well as lessons learnt so far.

Work on the implementation measures of the Regulation (EC) 443/2009 related to emissions from cars is ongoing. The procedure for the approval and certification of innovative technologies for reducing CO₂ emissions from passenger cars should be adopted soon.

In addition, a White Paper on Transport (COM(2011) 144 final) which sets out a list of important measures to be taken in order to reduce transport emission further in the coming years has been recently adopted.

Legal acts recently adopted

Implementation of the climate and energy package:

- (1) **EU ETS Cap:** Commission Decision 2010/634/EU⁶ adjusting the Union-wide quantity of allowances to be issued under the Union Scheme for 2013.
- (2) **EU ETS Auctioning – third trading period:** Commission Regulation (EU) No. 1031/2010⁷ on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances.
- (3) **EU ETS Harmonised allocation rules:** Commission Decision 2011/278/EU⁸ determining transitional Union-wide rules for harmonised free allocation of emission allowances.
- (4) **NER 300:** Commission Decision 2010/670/EU⁹ laying down criteria and measures for the financing of commercial demonstration projects.
- (5) **EU ETS Use of international credits:** The Commission Regulation (EU) No 550/2011¹⁰ on determining certain restrictions applicable to the use of international credits from projects involving industrial gases.

Other:

- (6) **Aviation and the EU ETS:** Commission Regulation (EU) No 394/2011¹¹ amending Regulation (EC) No 748/2009 on the list of aircraft operators.
- (7) **CO₂ and cars:** Commission Regulation (EU) No 1014/2010¹² on monitoring and reporting of data on the registration of new passenger cars.

- (8) **CO₂ and cars:** Commission Regulation (EU) No 63/2011¹³ laying down detailed provisions for the application for a derogation from the specific CO₂ emission targets.
- (9) **CO₂ and vans:** Regulation (EU) No 510/2011¹⁴ setting emission performance standards for new light commercial vehicles.

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

The first period of the EU ETS covered the years 2005-2007. Currently, operators subject to the EU ETS are approaching the last year of the second trading period (2008-2012). In 2013, a substantially revised system will begin its operation. For more information on the implementation of the EU ETS as revised see section 3.2.

3.3.1. Second trading period (2008-2012)

The EU-wide average annual 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 2010, more than 12000 installations participated in the system. The total amount of verified emissions in 2010 from EU ETS installations in the EU-27 was 1.913 billion tonnes¹⁵ of CO₂-eq., around 3% higher than in 2009. The increase reflects the economic recovery following the recession which caused an exceptional fall of 11.6% in 2009 emissions. However, the EU ETS emissions in 2010 remained well below the cap for the 2008-2012 period and in comparison to 2005 have fallen by an average of more than 8%.

In 2010 average emissions per installation were more than 17,000 tonnes CO₂eq. lower than in 2005, when the EU ETS was launched. Although emissions increased slightly in 2007 as Romania and Bulgaria joined the Union, and again in 2010 in line with the recovery from the economic crisis, average annual emissions per installation are now 8.3% below 2005 levels. For more information see tables 10 and 11, and figure 2 in the SWP.

During the first 3 years 2008-2010 of the 2nd trading period, on aggregate, operators surrendered mostly allowances (EUAs) (appr. 95%) to cover their emissions. The remaining (appr. 5%) of their surrendering obligation was met with Certified Emission Reductions (CERs) and/or Emission Reduction Units (ERUs).

3.3.2. Use of JI and CDM by operators

As part of the second National Allocation Plans (NAPs), a limit was established by each Member State 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 Member States in the second trading period, which corresponds to 13.4 % of the EU-wide cap for this period. In 2010, operators used 137 million CERs or ERUs which was 7.1% of all units surrendered for compliance. From 2013 onwards the rules for the use of JI and CDM credits will be revised as set in the EU ETS Directive as revised.¹⁶

3.4. Projected use of Kyoto mechanisms by Union's governments

Ten Member States of the EU-15 as well as Slovenia have decided to purchase and use Kyoto mechanisms to reach their Kyoto targets. Together, these EU-15 Member States would acquire up to 108.4 Mt CO₂-eq. per year for compliance under the first commitment period

under the Kyoto Protocol. This would represent approximately 2.5 percentage points towards the EU-15 Kyoto target of -8 % (see Table 12 in the SWP).

These 10 Member States together have decided to invest up to € 2.8 billion to acquire units through JI, CDM or emissions trading. Austria, the Netherlands, Spain, Ireland and Luxembourg allocated the largest budgets (€ 531 million, € 500 million, € 386 million, € 290 million and € 250 million, respectively) for the five-year commitment period. In Slovenia, the budget has been estimated for € 80 million. However, given the impact of the recent recession on GHG emissions MS might not need as many emission reduction credits as initially estimated. So far, this hypothesis seems to be supported by the fact that the amount of credits actually delivered to Member States' accounts in the registry only amounts to about 28 Mt CO₂-eq.

As regards Assigned Amount Units (AAUs) sold by Member States, according to data in the registry about 56 Mt CO₂-eq. have been transferred. The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Poland reported that they intend to further sell AAUs. One Member State (UK) has legislated that it would retire any surplus AAUs between the Kyoto target and UK unilateral 'carbon budget' after the 1st commitment period.

3.5. 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 so far indicates that total net sequestration during the commitment period from afforestation and reforestation activities under Art. 3.3 of the Kyoto Protocol will be about 8.9 MtCO₂ per year for the EU-15. In addition, the use of activities under Art. 3.4 is projected to contribute 27.7 MtCO₂ per year of the commitment period in the EU-15. Taking in addition into account contributions from EU-12 it will amount to 35.5 MtCO₂ per year (for details see Table 13 in the SWP).

Together, activities under Art. 3.3 and 3.4 in the EU-15 Member States are projected to reduce emissions by 40.2 Mt CO₂ per year of the commitment period. This is equivalent to almost 1 percentage point of the EU-15 reduction commitment of 8 % during the 1st commitment period compared to base year emissions.

4. MEETING THE 2020 TARGET

4.1. Union's GHG emission reduction target by 2020

The Climate and Energy Package set a 20% GHG emission reduction target for EU-27 by 2020 compared to 1990, which is equivalent to -14% compared with 2005. This effort will be divided between the EU ETS and non-ETS sectors as follows:

- (a) 21% reduction in EU ETS sector emissions by 2020 compared to 2005;
- (b) reduction of around 10% by 2020 compared to 2005 for the sectors that are not covered by the EU ETS.

These greenhouse gas emissions reduction targets were included in the Europe 2020 strategy for smart, sustainable and inclusive growth.

4.2. Policies contributing to the fulfilment of targets

The emission caps from 2013 until 2020 are defined in the Effort Sharing Decision (ESD) and the revised ETS Directive. The EU ETS is a market based mechanism covering over 12,000 installations. The ESD obliges Member States to limit their GHG emissions between 2013 and 2020 according to a linear trajectory with binding annual targets which will ensure a gradual move towards agreed 2020 targets. The ESD regulates GHG emissions in all sectors except installations and aviation covered by the EU ETS, LULUCF and international maritime shipping. In the ESD sectors, complementary Union-wide policies will contribute to reaching the targets by Member States, such as the binding targets for renewable energy, energy efficiency measures, the emission performance standards for new light-duty vehicles, the CCS Directive, F-Gases Regulation or the Fuel Quality Directive. Also the Commission's and Member States' efforts to facilitate the demonstration and deployment of innovative technologies in reducing GHG emissions such as under the SET Plan and the NER300 could play a role here.

Under the ESD, Member States will be responsible for implementing these Union-wide policies and measures in these sectors, and, if necessary, for defining additional national policies and measures to limit their emissions. A robust reporting and compliance system will be put in place for monitoring Member States' action and help them make any necessary corrective measures if they fail to meet their targets.

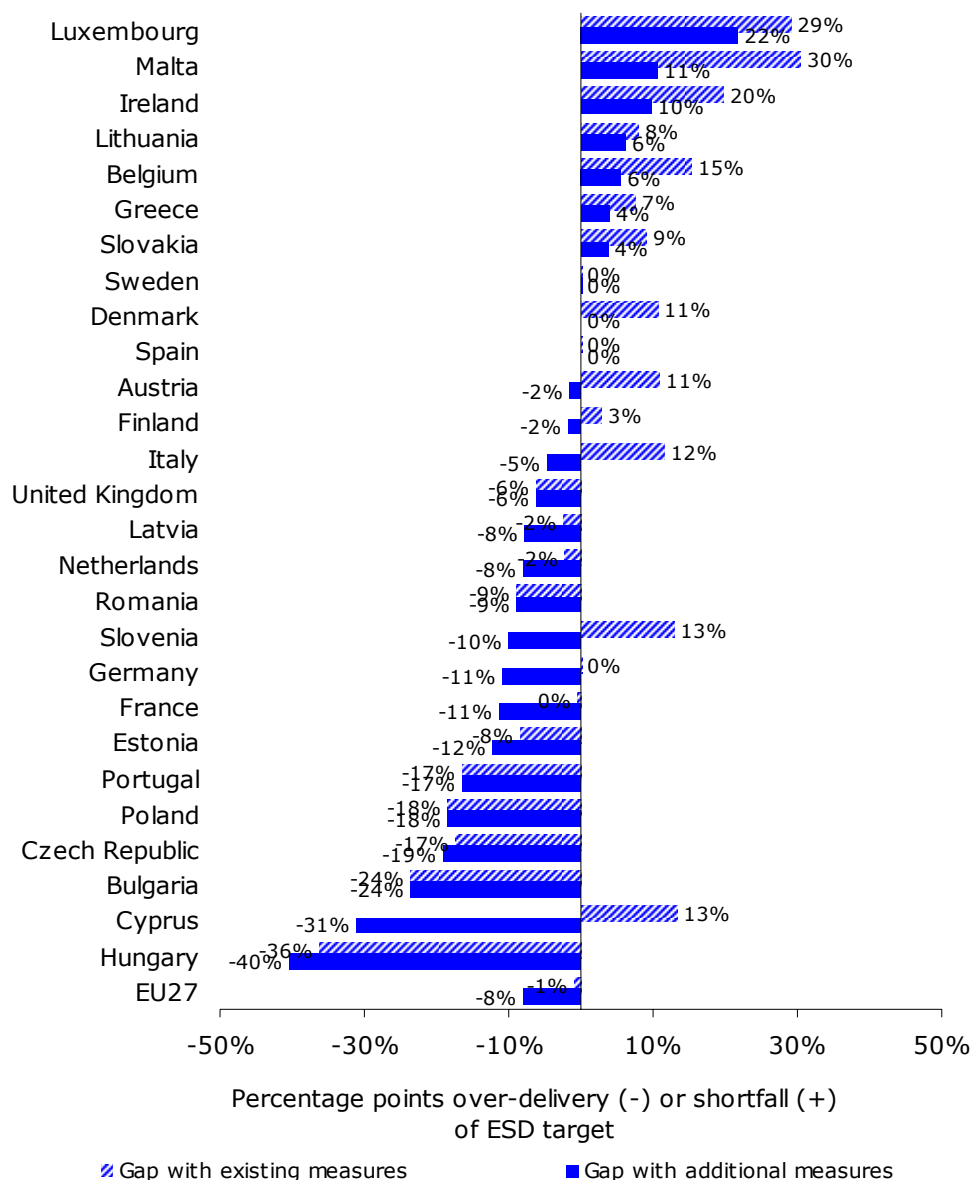
4.3. Projected distance to targets

Despite the positive trends towards KP commitment achievement shown by 2008-2012 projections, more effort and additional policies will be necessary to achieve the Union's 2020 objectives. The flexibilities provided for in the ESD and the revised ETS Directive, such as the use of project credits, will also contribute to the attainment of the targets. Figure 6 shows first estimates of the gap between non-ETS GHG emissions projections by 2020 and 2020 targets.

According to these provisional projections still much effort will be needed by individual Member States to deliver on their 2020 targets set for the non-ETS sectors. Only 11 Member States are expected to reach these commitments with existing policies and measures. Further 7 MS would meet their targets with planned additional policies and measures. 9 Member States are unlikely to be able to deliver on their commitments even with the additional measures foreseen for now. However, as regards EU-27, the estimates show that the overall non-ETS target would be delivered. This analysis does not yet take into account the use of credits from JI and CDM projects.

In order to pave the way for a smooth compliance with the 2020 target, it is imperative that Member States not only ensure timely delivery of emissions reductions of existing policies and measures but also accelerate the development and full implementation of their additional policies and measures as well as consider other options including the use of international credits.

Figure 6: Projected gap to 2020 targets for non-ETS sectors



Note: (1) The underpinning data for this calculation are based on MS projections for 2020 non-ETS emissions, gap-filled and adjusted where necessary³, as well as estimated 2020 non-ETS targets for MS (still subject to some changes). Several Member States (CZ, EE, FI, LT, NL, PL) have not provided specific national projections for non-ETS sectors, so the share of these emissions had to be estimated. (2) The assessment provided in this figure should be treated as indicative, due to differences in methodology and assumptions. Some data, such as the Greek and Lithuanian projection for instance deviate substantially from the projections made for the 'EU energy trends to 2030 - update 2009' (Publication by the European Commission, Directorate-General for Energy in collaboration with Climate Action DG and Mobility and Transport DG, ISBN 978-92-79-16191-9).

Source: EEA, European Commission

5. ADAPTATION TO CLIMATE CHANGE

Reducing emissions in the coming decades can still avoid large scale dangerous climate change. However, even if the world keeps the average annual global temperature increase to below 2 degrees Celsius, European citizens and business will be affected by the adverse effects of inevitable climate change and therefore will have to adapt cost effectively.

The European Commission adopted the **White Paper on Adaptation to Climate change in April 2009** outlining the Union's policy framework for action to improve Europe's resilience to climate change. The four key pillars of action established by the White paper are building a solid knowledge base on the impact and consequences of climate change for the Union, integrating adaptation into Union's key policy areas, employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) to ensure effective delivery of adaptation and stepping up international cooperation on adaptation, which are currently in the process of being implemented by 33 actions (see table 15 in SWP).

The 2009 White Paper on Adaptation to Climate Change also foresees the establishment of a **European Adaptation Clearinghouse Mechanism** on climate change impacts. It is a web-based IT tool and database on adaptation to climate change, with the objective of providing an aid for the development and implementation of adaptation strategies. It will entail both technical functions (providing relevant data and information and visual insight in spatially-resolved impacts, vulnerability and adaptation issues) and policy support functions (in particular via an adaptation support tool, guiding users through the policy cycle for the development of adaptation strategies). The 1st prototype of the Union's Clearinghouse has been delivered at the end of April 2011 and is currently under evaluation. Following an additional development phase, the final version will go live in March 2012. From that date onwards, the European Environment Agency (EEA) will manage the Adaptation Clearinghouse.

The White Paper also put forward the idea of an **Union's Adaptation Strategy**, foreseen for adoption in 2013, with a time-frame for implementing actions under the Strategy from 2013-2020. The aim of this Strategy will be the development of a comprehensive framework for adaptation-related activities at all levels.

6. SITUATION IN THE UNION'S CANDIDATE COUNTRIES

Between 1990¹⁷ and 2009 **Croatia's** GHG emissions decreased by 8%, and compared to 2008 they decreased by 7%. However, according to the GHG projections included in the 5th National Communication, Croatia is projected to face difficulties with achieving its Kyoto target with the current set of policies and measures.

Iceland's GHG emissions between 1990 and 2009 increased by 35% and in 2009 were 5.4% lower than in 2008. Taking into account decision 14/CP.7, and according to the GHG projections included in the 5th National Communication, Iceland is on track to meet its Kyoto target.

In 2009, **Turkey's** GHG emissions were 369.6 MtCO₂-eq. compared to 187 MtCO₂-eq. in 1990, so increased by 97.6% and comparing to 2008 increased by 1%. While Turkey is an Annex I Party, it has no GHG target under the current 1st commitment period of the Kyoto Protocol.

An up-to-date inventory of GHG emissions in **the former Yugoslav Republic of Macedonia** is not available. Between 1990 and 2005 total GHG emissions decreased by around 19%.

For more information on GHG emissions in the Union's candidate countries please see section 2 of the SWP.