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From: Secretary-General of the European Commission,
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 10 October 2013

To: Mr Uwe CORSEPIUS, Secretary-General of the Council of the European
Union

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under Article 21 of Regulation (EU) No 525/2013 of the European
Parliament and of the Council of 21 May 2013 on a mechanism for
monitoring and reporting greenhouse gas emissions and for reporting other
information at national and Union level relevant to climate change and
repealing Decision No 280/2004/EC)

Delegations will find attached document [SWD\(2013\) 410 final](#).

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COMMISSION STAFF WORKING DOCUMENT
Accompanying the document

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

**PROGRESS TOWARDS ACHIEVING THE KYOTO and EU 2020 OBJECTIVES
(required under Article 21 of Regulation (EU) No 525/2013 of the European Parliament
and of the Council of 21 May 2013 on a mechanism for monitoring and reporting
greenhouse gas emissions and for reporting other information at national and Union
level relevant to climate change and repealing Decision No 280/2004/EC)**

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change and repealing Decision No 280/2004/EC)

1. DETAILED ANALYSIS OF EMISSION TRENDS IN THE MAIN SECTORS

1.1. Energy supply and use, excluding transport

Table 1: GHG emissions from energy supply and use, excluding transport (1990-2011)

	Share in 1990 total GHG	Share in 2011 total GHG	Change 1990-2011	Change 2000-2011
EU-15	60.8%	57.9%	-18.7%	-13.5%
EU-28	63.2%	59.2%	-23.5%	-12.2%

Total GHG emissions **from energy supply and use** decreased in the period 1990-2011 by 18.7 % in EU-15 and by 23.5 % in EU-28.

- Energy (excluding transport), responsible for about 60 %, is the largest sector in terms of GHG emissions in the EU.
- CO₂ emissions from **electricity and heat production** are the largest key source in the EU-15 accounting for 24 % of total greenhouse gas emissions in 2011 and for 84 % of greenhouse gas emissions of the energy industry sector. Between 1990 and 2011, CO₂ emissions from electricity and heat production decreased by 9 % in the EU-15. Differences in the intensity of greenhouse gas emissions of heat and electricity production between the Member States are to a large extent explained by the mix of fuels combusted.
- CO₂ emissions from public electricity and heat production did not increase in line with fuel consumption. The main explanatory factors at the EU-15 level during the past 20 years are fuel switching from coal to natural gas and improvements in energy efficiency.
- Between 1990 and 2011 in the EU-28, greenhouse gas emissions from **energy industries** increased in eight Member States and fell in twelve. The highest absolute increases were in the Netherlands, Greece, Spain and Finland. Germany and Poland had the largest part of reductions.
- The decoupling of fuel combustion and greenhouse gas emissions is also observed in the EU-28. In 2011, natural gas and liquid fuels use decreased strongly, whereas coal use increased, resulting in increased CO₂ emissions per unit of fossil fuel energy generated. However, CO₂ emissions fell because the increase in coal did not offset the much bigger decrease in natural gas, and to a lesser degree in liquid fuels. The steady increase in biomass use also served as a substitute for fossil fuels.

1.2. Transport

Table 2: GHG emissions from transport (1990-2011)

	Share in 1990 total GHG	Share in 2011 total GHG	Change 1990-2011	Change 2000-2011
EU-15	16.4 %	21.9 %	14.2 %	-3.9 %
EU-28	13.9 %	20.2 %	19.0 %	1.3 %

- Between 1990-2011 total GHG emissions from **transport** increased by 16 % in the EU-15 and by 20 % in the EU-27. The trend of greenhouse gas emissions follows closely the trend of fuel combustion.
- CO₂ emissions from **road transport** is the second largest energy-related sector in both the EU-15 and the EU-28. Between 1990 and 2011, CO₂ emissions - mainly from fuel combustion - from road transportation increased by 15 % in the EU-15 and 21 % in the EU-28. For the latest years, however, from 2010 to 2011 road transport emissions showed a decrease of 1% in both the EU-15 and the EU-28.
- In the EU-28, Germany, France, Italy, Spain and the United Kingdom were the largest contributors to the CO₂-eq emissions from road transport (65%). All Member States, except for Germany (-7.5 %), Lithuania (-3 %), Estonia and the UK, increased emissions from road transportation between 1990 and 2011. The Member States with the highest increases in absolute terms were Spain (+53 %), Poland (+156 %), Italy (+15 %) and France (+9 %).
- Between 2009 and 2011 the total emissions from **road transport** decreased in the EU-15 as well as in EU-28 due to lower gasoline consumption that outweighed the moderate increase in diesel demand. This decline was to a certain extent driven by the economic crisis. It is also the outcome of new EU policies, like the regulations on CO₂ emissions from passenger cars and light commercial vehicles, the labelling of new cars and also of the policies put in place by certain Member States, including incentives to purchase low emission new cars and CO₂ taxes. To a lesser extent, increased use of biofuels also contributed to the lower road transport emission trends.
- Emissions from international aviation and maritime transport showed a slight increase (2.6%) in 2011 after three consecutive years of decline. In 2010, the decline in emissions from international shipping had been much stronger, reflecting the severity of the economic recession and lower freight transport. In 2011, the increase in international shipping was also stronger, with emissions increasing by 7.5% in EU-15. Since 1990 **international aviation and maritime** emissions have grown very rapidly, reaching 6.5 % of total EU greenhouse gas emissions.
- CO₂ emissions from rail transportation account for 0.14 % of total EU-15 GHG emissions in 2011 and 0.16 % of EU-28 emissions. Between 1990 and 2011, CO₂ emissions from rail transportation decreased by 37 % in the EU-15 and 53% in the EU-28 due to the increasing use of electricity compared to diesel. CO₂ emissions from inland navigation account for 0.5 % of total EU-15 greenhouse gas emissions in 2011. Between 1990 and 2011, CO₂ emissions from navigation increased by 8 % in the EU-28.

1.3. Agriculture

Table 3: GHG emissions from agriculture (1990-2011)

	Share in 1990 total GHG	Share in 2011 total GHG	Change 1990-2011	Change 2000-2011
EU-15	10.2 %	10.2 %	-14.8 %	-10.6 %
EU-28	10.8 %	10.1 %	-23.1 %	-8.7 %

- In 2011, total EU-15 greenhouse gas emissions from **agriculture** were 14.8 % below 1990 levels. In the EU-28 emissions were 23.1 % below 1990 levels.

- Agriculture contributes to 10.2 % of total EU-15 GHG emissions and 8.2 % of total EU-28 emissions. It remains the non-energy related sectors with the highest emissions. The most important GHGs from agriculture are N₂O and CH₄ accounting in the EU-15 for 5.8 % and 4.4 % of the total GHG emissions respectively.
- **Enteric fermentation from cattle** is the largest single source of CH₄ emissions in the EU-15 accounting for 2.8 % of total GHG emissions in 2011. Between 1990 and 2011, CH₄ emissions from enteric fermentation from cattle declined by 15 % in the EU-15 and 13 % in the EU-28.
- N₂O emissions from **agricultural soils** account for 5.3 % of total EU-15 GHG emissions in 2011. N₂O emissions from this source decreased by 18 % between 1990 and 2011. All EU-15 Member States show decreased emissions.
- The decrease in emissions is largely a consequence of efficiency improvements (in particular more efficient fertiliser use and increased animal productivity) and the reform of the EU common agricultural policy (CAP) decoupling direct support from production, strengthening the link to environmental legislation (cross-compliance), introducing climate change objectives into the CAP (under the Health Check Reform) and increasing support to climate friendly measures included in agri-environmental programmes. Further, the implementation of the Nitrates Directive has been enhanced.

1.4. Industrial processes

Table 4: GHG emissions from industrial processes (1990-2011)

	Share in 1990 total GHG	Share in 2011 total GHG	Change 1990-2011	Change 2000-2011
EU-15	8.3 %	7.0 %	-28.3 %	-18.3 %
EU-28	8.2 %	7.3 %	-27.5 %	-14.9 %

- Total EU-15 greenhouse gas emissions **from industrial processes** (excluding combustion of fuels in industry) were in 2011 28.3 % below 1990 levels. In the EU-28 emissions were 27.5 % below 1990 emissions.
- **Industrial processes** is the second largest non-energy sector contributing 7 % to total EU-15 GHG emissions in 2011. The most important GHGs from this sector are CO₂ (4.5 % of total GHG emissions), HFCs (1.5 %) and N₂O (0.2 %).
- In 2011, the emissions decreased by 3 % compared to 2010. This followed the previous increase in 2010 when industry was recovering from the economic recession and significant reduction in production experienced in 2009.
- **Cement production** dominates the trend until 1997. Factors for declining emissions in the early 1990s were low economic activity and cement imports from Eastern European countries. Between 1997 and 1999 the trend is dominated by reduction measures in the adipic acid production in Germany, France and the UK. In addition, between 1998 and 1999 large reductions were achieved in the UK due to reduction measures in **hydrochlorofluorocarbons** (HCFC) production. The large decrease of emissions from cement production between 2007 and 2011 was driven by reductions in demand as a consequence of the economic crisis.

- A significant drop in the **iron and steel** production as a consequence of the economic crisis was observed in 2009. However, for this sector emissions increased again in 2010 and 2011 due to economic recovery.
- Large emission reductions occurred in adipic acid production (N₂O) mainly due to reduction measures in Germany, France, the UK and Italy, and in production of halocarbons (HFCs) and SF₆. Additional N₂O emission reductions were achieved in nitric acid production. Large HFC emission increases can be observed from consumption of halocarbons and SF₆.

1.5. Waste management

Table 5: GHG emissions from waste management (1990-2011)

	Share in 1990 total GHG	Share in 2011 total GHG	Change 1990-2011	Change 2000-2011
EU-15	4.0 %	2.8 %	-40.7 %	-29.1 %
EU-28	3.6 %	2.9 %	-34.1 %	-24.2 %

- In 2011 total EU-15 greenhouse gas emissions from **waste** were 40.7 % below 1990 levels and 34.1 % below 1990 in EU-28.
- Waste is the third largest non-energy sector in the EU, contributing by around 3% to total GHG emissions. In 2011, emissions decreased by 2.4 % compared to 2010 both in the EU-15 and the EU-28s.
- CH₄ emissions from **solid waste** disposal on land decreased by respectively 47 % between 1990 and 2011 in the EU-15 and 38,5 % in the EU-28. However only fourteen Member States reduced their emissions from this source. Croatia, Cyprus, Czech republic, Estonia, France, Greece, Hungary, Latvia, Malta, Portugal, Romania, Slovenia, Slovakia, and Spain did not.
- Between 1990 and 2011, CH₄ emissions from **managed landfills** declined by 47 % in the EU-15 and 40 % in the EU-28. Nine Member States reduced their emissions from this source during that period. However Spain, France, Portugal, Poland Italy, Greece and Hungary did not. In 2011, CH₄ emissions from landfills in the EU-28 decreased by 3.5 % compared to 2010. A main driving force of CH₄ emissions from managed waste disposal on land is the amount of biodegradable waste going to landfills. In addition, CH₄ emissions from landfills are influenced by the amount of CH₄ recovered and utilised (combustion of biogas for electricity and/or heat generation) or flared. The share of CH₄ recovery has increased significantly in EU since 1990.
- The Member States with the highest emissions from **managed waste disposal on land** in 2011 were UK, Germany, Spain and Italy. These four Member States accounted for 60 % of EU-28 emissions in 2011. The largest reductions in absolute terms during 1990 and 2011 were reported by the UK and Germany, while emissions from France increased over the same period of time. The emission reductions are partly due to the implementation of the landfill directive or similar legislation in the Member States.

2. GHG EMISSIONS IN THE EU CANDIDATE COUNTRIES

Iceland ratified the UNFCCC in June 1993 and the Kyoto Protocol in May 2002 committing itself to keep the increase of GHG emissions within 10 % compared to the base year (1990). Iceland's GHG

emissions between 1990 and 2011 increased by 26 % and in 2011 were 4 % lower than in 2010. The economy grew during the same period of time. This trend is explained by Iceland's participation in the EU ETS, the increase of fuel excise duties in 2009 and the introduction of vehicle taxation in 2010. According to the 5th National Communication and taking into account decision 14/CP.7 (allowing Iceland to exclude emissions from the heavy industry from the commitment level under the Kyoto Protocol in the period 2008-2012), Iceland is on track to meet its Kyoto target.

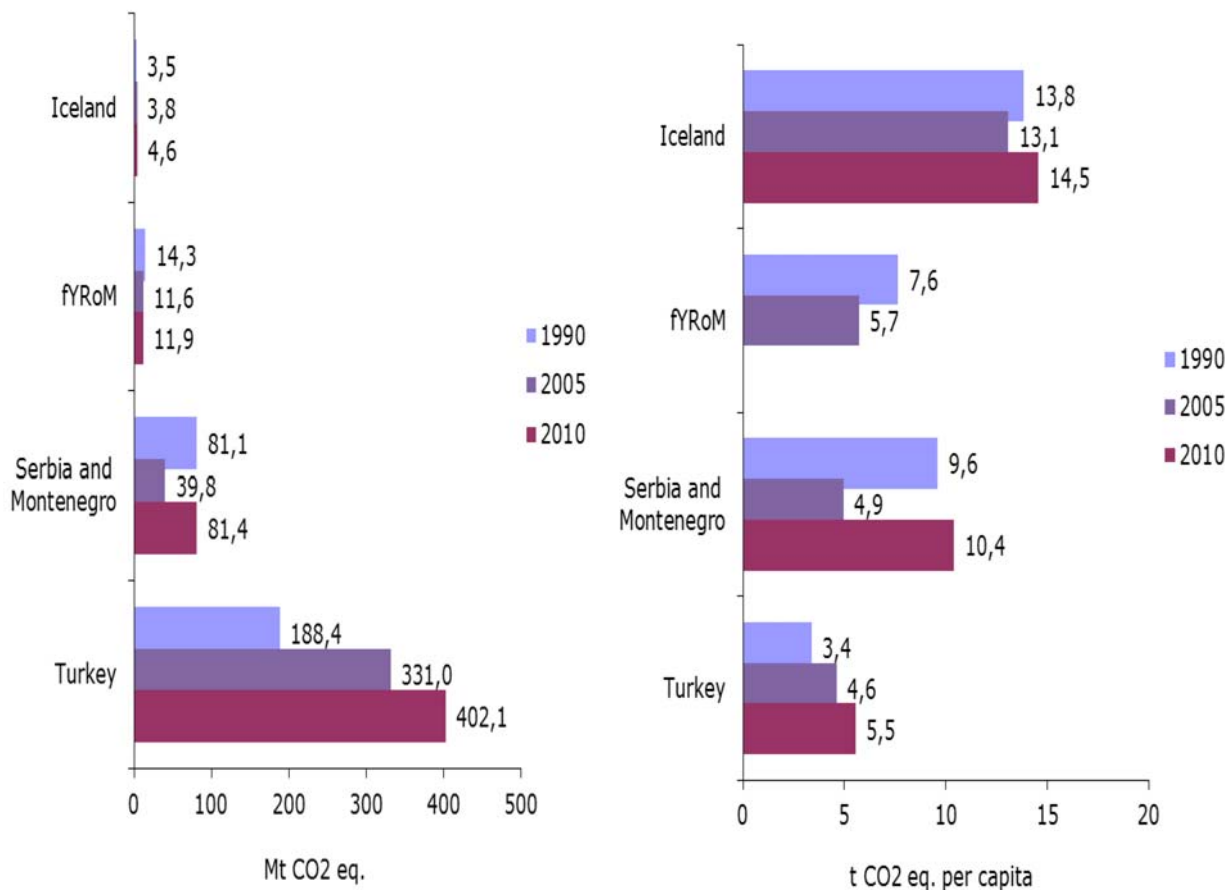
Turkey became an Annex I Party to the UNFCCC in May 2004 and ratified the Kyoto Protocol in May 2009 (however Turkey has no GHG reduction commitment). Turkey's first National Communication to the UNFCCC was submitted in January 2007. According to the recent GHG inventory, Turkey's emissions amounted to 422.42 MtCO₂-eq in 2011. Emissions increase of 97.6 % compared to 188 MtCO₂-eq. in 1990. The emissions also increased by 5 % between 2010 and 2011. Between 1990 and 2011, per capita GHG emissions have increased in Turkey. However, with a 5.7 tonnes CO₂-eq per capita, emissions in Turkey remain significantly below the average EU of 9 tonnes. Turkey's emissions intensity is 20 % higher than in the EU.

The former Yugoslav Republic of Macedonia became a Party to the UNFCCC in January 1998 and ratified the Kyoto Protocol in November 2004. The former Yugoslav Republic of Macedonia is considered a developing country under the Convention and its Protocol. In January 2009 the former Yugoslav Republic of Macedonia submitted to the UNFCCC secretariat its 2nd National Communication, including inventory of GHG emissions for 1990-2002. According to available data for 2005, total GHG emissions decreased by around 19 % since 1990. In 2005, CO₂ emissions per capita are at level of 5.7 tonnes CO₂-eq and GDP per capita amounted to 2300 €. Currently, there is no GHG projections for the former Yugoslav Republic of Macedonia.

Montenegro became a party to the UNFCCC in 2006 and ratified the Kyoto Protocol in 2007. It submitted its initial national communication in May 2010 which provides GHG inventory for 1990 and 2003. Between 1990 and 2003 total GHG emissions (excluding LULUCF) increased by around 4.9 %.

The **Republic of Serbia** is a non-Annex 1 Party to the United Nations Framework Convention on Climate Change (UNFCCC), and has ratified the Kyoto Protocol. Serbia submitted its Initial National Communication in November 2010, with GHG inventories for 1990 and 1998, as well as projections for 2012 and for 2015. Its total GHG emissions - not taking into account the amounts removed by forests - decreased by around 17.9 % between 1990 and 1998. When the amounts removed by forests are taken into account, the decrease is estimated at 22.2 %. Serbia is currently preparing its second national communication to the UNFCCC. An up-to-date inventory of GHG emissions is not available. The Country has begun preparations for the Second National Communication (to cover GHG emissions for 2000 - 2010).

Figure 1: GHG total emissions and emissions per capita in the EU candidate countries



Note: no 2010 data available for the former Yugoslav Republic of Macedonia, 2005 data come from the EDGAR database

Source: UNFCCC submissions, EDGAR database (see: <http://edgar.jrc.ec.europa.eu/index.php>)

Table 6: GHG emissions in CO₂ equivalents (excl. LULUCF) and Kyoto Protocol targets for 2008–12

Country	1990	Base year (1)	EU burden-sharing or Kyoto target	EU burden-sharing or Kyoto target	GHG emissions 2008-2012	Change 2008-2012 relative to base year	GHG emissions 2011	Change 2011 relative to base year
	Mt CO ₂	Mt CO ₂	Mt CO ₂	%	Mt CO ₂	%	Mt CO ₂	%
Austria	78,2	79,0	68,8	-13,0%	83,0	4,9%	82,8	5%
Belgium	143,1	145,7	134,8	-7,5%	126,8	-13,0%	120,2	-18%
Bulgaria	109,5	132,6	122,0	-8,0%	62,7	-52,7%	66,1	-50%
Croatia	31,6	31,3	29,8	-5,0%	28,7	-8,5%	28,3	-10%
Cyprus	6,1	no target	no target	no target	9,4	54,4%	9,2	50%
Czech Republic	196,0	194,2	178,7	-8,0%	134,8	-30,6%	133,5	-31%
Denmark (3)	68,7	69,3	55,8	-21,0%	58,7	-15,3%	56,2	-19%
Estonia	40,5	42,6	39,2	-8,0%	19,6	-54,1%	21,0	-51%
Finland	70,4	71,0	71,0	0,0%	67,8	-4,5%	67,0	-6%
France	556,4	563,9	563,9	0,0%	504,8	-10,5%	485,5	-14%
Germany	1250,3	1232,4	973,6	-21,0%	935,5	-24,1%	916,5	-26%
Greece	104,6	107,0	133,7	25,0%	120,3	12,4%	115,0	8%
Hungary	99,0	115,4	108,5	-6,0%	67,7	-41,3%	66,1	-43%
Ireland	55,2	55,6	62,8	13,0%	61,2	10,1%	57,5	3%
Italy	519,0	516,9	483,3	-6,5%	497,1	-3,8%	488,8	-5%
Latvia	26,3	25,9	23,8	-8,0%	11,4	-55,8%	11,5	-56%
Lithuania	48,8	49,4	45,5	-8,0%	22,0	-55,4%	21,6	-56%
Luxembourg	12,9	13,2	9,5	-28,0%	12,1	-8,3%	12,1	-8%
Malta	2,0	no target	no target	no target	3,0	51,4%	3,0	51%
Netherlands	211,8	213,0	200,3	-6,0%	199,5	-6,4%	194,4	-9%
Poland	457,0	563,4	529,6	-6,0%	391,8	-30,5%	399,4	-29%

Portugal	61,0	60,1	76,4	27,0%	73,0	21,3%	70,0	16%
Romania	244,4	278,2	256,0	-8,0%	124,3	-55,3%	123,3	-56%
Slovakia	71,8	72,1	66,3	-8,0%	45,4	-37,1%	45,3	-37%
Slovenia	18,4	20,4	18,7	-8,0%	19,8	-2,8%	19,5	-4%
Spain	282,8	289,8	333,2	15,0%	361,4	24,7%	350,5	21%
Sweden	72,8	72,2	75,0	4,0%	61,6	-14,6%	61,4	-15%
United Kingdom	767,3	776,3	679,3	-12,5%	584,2	-24,8%	552,6	-29%
EU-15	4254,5	4265,5	3924,3	-8,0%	3746,9	-12,2%	3630,7	-15%
EU-28	5606,1	5.799,22	no target	no target	4687,5	-19,2%	4578,5	-21%

(1) 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. The base year for carbon dioxide, methane and nitrous oxide for Bulgaria is 1988, for Hungary is the average of 1985-1987, for Slovenia 1986, for Poland 1988, for Romania 1989; for the fluorinated gases Slovakia has chosen 1990 as the base year and Romania 1989 all other central and eastern European members states have selected 1995. 1990 values have taken considered fo Cyprus and Malta.

(2) Approximate data

Table 7a: Kyoto targets for non-ETS sectors for 2008–2012, compared with inventory emission and 2012 approximate data emissions

Member State	Base-year emissions (BY)	Kyoto burden-sharing target	Total emissions		Total allowed emissions of non-ETS sectors (approximation)	Non-ETS emissions		Removals (+) or emissions (-) from carbon sink activities		Issuance of credits (ERUs) under joint implementation		Use of Kyoto mechanisms at government level		Non-ETS emissions, with carbon sink removals and use of Kyoto mechanisms						
			Annual average 2008-2012	% change from BY		Annual average 2008-2012	Gap between emissions and target	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Annual average 2008-2012	Gap between emissions and target	Annual average 2008-2012	% of 1990 emissions		
																		Mt CO ₂ -eq.	Mt CO ₂ -eq.	Mt CO ₂ -eq.
Austria	79.0	68.8	-13.0%	83.0	4.9%	36.3	53.1	16.8	21.2%	-1.2	-1.5%	0.0	0.0%	-16.0	-20.2%	35.9	-0.5	-0.6%	-0.6%	
Belgium	145.7	134.8	-7.5%	126.8	-13.0%	76.3	78.6	2.3	1.6%	0.2	0.2%	0.0	0.0%	-5.9	-4.0%	72.9	-3.4	-2.3%	-2.4%	
Bulgaria	132.6	122.0	-8.0%	62.7	-52.7%	82.3	26.9	-55.3	-41.7%	-0.5	-0.4%	-1.6	-1.2%	1.4	1.1%	29.4	-52.9	-39.9%	-48.3%	
Croatia	31.3	29.8	-5.0%	28.7	-8.5%	29.8	28.7	-1.1	-3.5%	-0.7	-2.3%	0.0	0.0%	0.0	0.0%	27.9	-1.8	-5.8%	-5.7%	
Cyprus (2)	5.3	no target	no target	9.4	78.4%	n.a.	4.4	na	na	na	na	0.0	Na	na	na	#VAL UE!	na	na	na	na

Czech Republic	194,2	178,7	-8,0%	134,8	-30,6%	92,1	60,2	-31,9	-16,4%	-1,3	-0,7%	-0,9	-0,4%	25,0	12,9%	84,7	-7,4	-3,8%	-3,8%
Denmark (1)	69,3	55,8	-21,0%	58,7	-15,3%	31,2	35,3	4,1	5,9%	-1,8	-2,6%	0,0	0,0%	-2,4	-3,5%	31,1	-0,1	-0,2%	-0,2%
Estonia	42,6	39,2	-8,0%	19,6	-54,1%	26,1	6,2	-19,9	-46,7%	0,4	1,0%	-0,2	-0,5%	14,7	34,5%	21,6	-4,5	-10,6%	-11,2%
Finland	71,0	71,0	0,0%	67,8	-4,5%	33,5	32,6	-0,9	-1,3%	-0,6	-0,8%	-0,2	-0,3%	-1,0	-1,4%	31,1	-2,3	-3,3%	-3,3%
France	563,9	563,9	0,0%	504,8	-10,5%	426,9	392,8	-34,1	-6,0%	-3,2	-0,6%	-1,5	-0,3%	0,0	0,0%	391,1	-35,8	-6,3%	-6,4%
Germany	1.232,4	973,6	-21,0%	935,5	-24,1%	529,3	483,7	-45,6	-3,7%	-10,0	-0,8%	-2,4	-0,2%	0,0	0,0%	476,2	-53,1	-4,3%	-4,3%
Greece	107,0	133,7	25,0%	120,3	12,4%	65,4	57,5	-7,8	-7,3%	-0,6	-0,6%	0,0	0,0%	0,0	0,0%	56,9	-8,5	-7,9%	-8,1%
Hungary	115,4	108,5	-6,0%	67,7	-41,3%	82,4	44,5	-37,9	-32,8%	-2,2	-1,9%	-1,5	-1,3%	4,0	3,5%	47,7	-34,6	-30,0%	-35,0%
Ireland	55,6	62,8	13,0%	61,2	10,1%	41,9	43,7	1,8	3,3%	-3,4	-6,1%	0,0	0,0%	-1,9	-3,5%	38,4	-3,5	-6,3%	-6,3%
Italy	516,9	483,3	-6,5%	497,1	-3,8%	281,5	303,9	22,4	4,3%	-16,8	-3,2%	0,0	0,0%	-2,0	-0,4%	285,1	3,6	0,7%	0,7%
Latvia	25,9	23,8	-8,0%	11,4	-55,8%	19,2	8,6	-10,6	-41,0%	-1,2	-4,5%	0,0	0,0%	8,1	31,2%	15,5	-3,7	-14,3%	-14,1%
Lithuania	49,4	45,5	-8,0%	22,0	-55,4%	36,9	16,1	-20,8	-42,0%	-1,1	-2,3%	0,0	0,0%	14,1	28,6%	29,1	-7,7	-15,7%	-15,9%
Luxembourg	13,2	9,5	-28,0%	12,1	-8,3%	7,0	10,0	3,0	22,6%	0,1	0,4%	0,0	0,0%	-2,8	-21,3%	7,2	0,2	1,7%	1,7%
Malta (2)	2,0	no target	no target	3,0	48,4%	n.a.	1,1	na	na	na	na	0,0	Na	na	na	#VAL UE!	na	na	na
Netherlands	213,0	200,3	-6,0%	199,5	-6,4%	112,8	118,3	5,5	2,6%	0,4	0,2%	0,0	0,0%	-9,2	-4,3%	109,5	-3,3	-1,5%	-1,6%

Poland	563,4	529,6	-6,0%	391,8	-30,5%	323,9	192,9	-	131,0	-23,3%	-8,4	-1,5%	-2,8	-0,5%	0,0	0,0%	187,2	-	-24,3%	-29,9%
Portugal	60,1	76,4	27,0%	73,0	21,3%	44,3	46,5	2,1	3,5%	3,5%	-9,8	-16,3%	0,0	0,0%	-1,6	-2,7%	35,0	-9,3	-15,5%	-15,3%
Romania	278,2	256,0	-8,0%	124,3	-55,3%	181,8	72,4	-	109,4	-39,3%	-3,0	-1,1%	-0,8	-0,3%	2,6	0,9%	72,8	-	-39,2%	-44,6%
Slovakia	72,1	66,3	-8,0%	45,4	-37,1%	33,7	23,0	-10,7	-14,9%	-14,9%	-0,4	-0,5%	0,0	0,0%	8,4	11,7%	31,0	-2,7	-3,8%	-3,8%
Slovenia	20,4	18,7	-8,0%	19,8	-2,8%	10,5	11,7	1,2	5,7%	5,7%	-1,3	-6,5%	0,0	0,0%	-1,0	-4,9%	9,3	-1,2	-5,7%	-6,3%
Spain	289,8	333,2	15,0%	361,4	24,7%	181,4	223,3	42,0	14,5%	14,5%	-11,3	-3,9%	-0,1	0,0%	-38,8	-13,4%	173,3	-8,1	-2,8%	-2,9%
Sweden	72,2	75,0	4,0%	61,6	-14,6%	52,9	41,9	-10,9	-15,2%	-15,2%	-2,1	-2,9%	0,0	0,0%	0,0	0,0%	39,8	-13,1	-18,1%	-18,0%
United Kingdom	776,3	679,3	-12,5%	584,2	-24,8%	433,9	346,9	-87,0	-11,2%	-11,2%	-3,6	-0,5%	0,0	0,0%	0,0	0,0%	343,3	-90,6	-11,7%	-11,8%
EU-15	4.265,5	3.924,3	-8,0%	3.746,9	-12,2%	2.357,4	2.268,2	-89,2	-2,1%	-2,1%	-63,9	-1,5%	-4,2	-0,1%	-81,7	-1,9%	2.126,8	-	-5,4%	-5,4%
EU-27	5.767,1	no target	no target	4.658,9	not applicable	n.a.	2.736,1	na	na	na	-82,9	-1,4%	-12,0	-0,2%	-4,3	-0,1%	2.660,8	na	na	na
EU-28	5.767,1	no target	no target	4.687,5	not applicable	n.a.	2.764,8	na	na	na	-83,7	-1,5%	-12,0	-0,2%	-4,3	-0,1%	2.688,8	na	na	na

((1) Denmark's burden-sharing target and allowed non-ETS emissions include a base-year compensation of 1 million AUs per year of the first commitment period.

((2) No commitment under the Kyoto Protocol, therefore no base year and no emission target. 1990 emissions are used in the column "base year".

((3) Projection data

((4) If no MS overachievement is taken into account.

Table 7b: Kyoto targets for non-ETS sectors for 2008–2012, compared with inventory emission and 2012 approximate data emissions with Kyoto Mechanisms, carbon sinks and the impact of the EU-ETS cap

	Base year emissions Mt CO ₂ -eq.	Total emissions		With Kyoto mechanisms		With carbon sink removals and use of Kyoto mechanisms		With carbon sink removals, use of Kyoto mechanisms and impact of the EU ETS cap	
		Annual average 2008–2012 Mt CO ₂ -eq.	change from base year %	Annual average 2008–2012 Mt CO ₂ -eq.	change from base year %	Annual average 2008–2012 Mt CO ₂ -eq.	change from base year %	Annual average 2008–2012 Mt CO ₂ -eq.	change from base year %
EU-15	4.265,5	3.746,9	-12,2%	3.665,2	-14,1%	3.605,5	-15,5%	3.693,7	-13,4%
EU-28	5.799,2	4.658,9	-19,7%	4.654,5	-19,7%	4.583,6	-21,0%	4.734,7	-18,4%
EU-28 (1990)	5.606,1	4.687,5	-16,4%	4.683,2	-16,5%	4.612,2	-17,7%	4.763,4	-15,0%

Notes: Finland, Germany, Italy, Spain and Sweden already provided proxy 2012 data. This data is used here. For all other Member States, 2012 non-ETS emissions are assumed equal to 2011 non-ETS emissions. Therefore for 2012 total emissions = 2012 ETS verified emissions + 2011 non-ETS emissions. The assessment of progress towards Kyoto targets is based on average 2008–2012.

Table 8: Comparison of historic GHG emissions and AAUs budgets

	Burden sharing or KP target	cumulative AAU budget 2008-2012	Cumulative total GHG emissions 2008-2012	Cumulative use of sink activities 2008-2012	Cumulative gap between relevant AAU budget including sink activities, issued ERUs and emissions*	
	Mt CO2 eq	Mt CO2 eq	Mt CO2 eq	Mt CO2 eq	Mt CO2 eq	%
Austria	68,8	343,9	414,8	-3,5	77,7	22,6%
Belgium	134,8	674,0	634,1	1,1	12,6	1,9%
Bulgaria	122,0	610,0	313,6	-2,7	-271,3	-44,5%
Croatia	29,8	148,8	143,3	-3,6	-9,1	-6,1%
Cyprus	no target	no target	47,0	NA	no target	no target
Czech Republic	178,7	893,5	674,2	-6,5	-161,9	-18,1%
Denmark	55,8	278,8	293,5	-8,9	11,5	4,1%
Estonia	39,2	196,1	97,8	2,1	-96,3	-49,1%
Finland	71,0	355,0	339,2	-2,9	-6,6	-1,9%
France (1)	563,9	2.819,6	2.523,9	-16,1	-178,8	-6,3%
Germany (1)	973,6	4.868,1	4.677,4	-49,9	-265,7	-5,5%
Greece	133,7	668,7	601,4	-3,2	-42,4	-6,3%
Hungary	108,5	542,4	338,7	-11,1	-193,2	-35,6%
Ireland	62,8	314,2	306,2	-17,0	-7,8	-2,5%
Italy	483,3	2.416,3	2.485,6	-83,9	27,9	1,2%
Latvia	23,8	119,2	57,2	-5,9	-58,9	-49,5%
Lithuania	45,5	227,3	110,1	-5,6	-109,4	-48,1%
Luxembourg	9,5	47,4	60,4	0,3	15,1	31,9%
Malta	no target	no target	15,2	NA	no target	no target
Netherlands	200,3	1.001,3	997,4	1,8	29,5	3,0%
Poland	529,6	2.648,2	1.959,0	-42,2	-683,4	-25,8%
Portugal	76,4	381,9	364,9	-49,0	-38,5	-10,1%
Romania	256,0	1.279,8	621,3	-15,1	-557,8	-43,6%
Slovakia	66,3	331,4	226,8	-1,8	-55,5	-16,8%
Slovenia	18,7	93,6	98,9	-6,6	-0,8	-0,9%
Spain	333,2	1.666,2	1.806,8	-56,7	153,5	9,2%
Sweden	75,0	375,2	307,9	-10,6	-65,3	-17,4%
United Kingdom	679,3	3.396,5	2.921,0	-18,2	-453,0	-13,3%
EU-15	3.924,3	19.621,4	18.734,4	-319,4	-744,6	-3,8%
EU-28	no target	no target	23.437,6	-418,3	no target	no target

Notes:

(1. For Germany and France corrections for allocated allowances have been included. Germany distributed additional 8.1 Mt in 2008 to finance its auctioning mechanism and in 2009 and 2010 Germany received 4 Mt from operators due to back requirements that are not

included in the CITL. France distributed in 2008 and 2009 additional 9.4 Mt to operators that are not included in the CITL. In 2011 the CITL data showed additional 9.6 Mt that are yet not included in the EEA EU ETS viewer.

3. List of legal acts recently adopted

Implementation of the climate and energy package:

- (1) **EU ETS Registry – Union Registry:** Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011.
- (2) **Monitoring Mechanism:** Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC.
- (3) **LULUCF:** Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities.
- (4) **Effort Sharing Decision:** 2013/162/EU Commission Decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council.

Other:

- (5) **Aviation and the EU ETS:** Decision No 377/2013/EU of the European Parliament and of the Council of 24 April 2013 derogating temporarily from Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community.
- (6) **CO₂ and cars:** Commission Regulation (EU) No 397/2013 of 30 April 2013 amending Regulation (EC) No 443/2009 as regards the monitoring of CO₂ emissions from new passenger cars.

Commission Implementing Decision 013/128/EU of 13 March 2013 on the approval of the use of light emitting diodes in certain lighting functions of an M1 vehicle as an innovative technology for reducing CO₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council.

Commission Implementing Regulation (EU) No 396/2013 of 30 April 2013 amending Regulation (EU) No 1014/2010 as regards certain requirements for the monitoring of CO₂ emissions from new passenger cars.

Commission Delegated Regulation (EU) No 114/2013 of 6 November 2012 supplementing Regulation (EU) No 510/2011 of the European Parliament and of the Council with regard to rules for the application for a derogation from the specific CO₂ emissions targets for new light commercial vehicles.

- (7) **Energy efficiency:** Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.

Table 9: Summary of implemented and planned policies and measures

Cross-cutting measures

Policies and measures 'Cross-cutting'	Stage of implementation /timetable /comments
EU Emission Trading Scheme	In force
Revised Monitoring Mechanism Regulation	Adopted and in force since 8 July 2013
Link Kyoto flexible mechanisms to emissions trading	In force. In June the Commission has prepared a draft Regulation specifying the maximum limits up to which operators under the EU ETS may use eligible credits from the Kyoto Protocol's flexible mechanisms for compliance with emission limits from 2013 to 2020

Energy Supply

Policies and measures 'Energy supply'	Stage of implementation /timetable /comments
Promotion of electricity from RES-E (2001)	In force
(New) Renewable energy Directive (Directive 2009/28/EC)	In force
CCS Directive	In force
NER 300 laying down criteria and measures for the financing of commercial demonstration projects for CCS and innovative renewable energy technologies under the revised EU ETS	Under the first call for proposals, the Commission made funding awards in December 2012 for a total value of €1.2 billion to 23 renewable energy projects. Second call for proposals ongoing, award decision planned for mid-2014
Directive on promotion of cogeneration	In force until mid-2014. Repealed by the new Energy Efficiency Directive.
Further measures on renewable heat (including biomass action plan)	Biomass Action Plan, Dec 2005, over 20 further actions planned. Renewable heat included in proposed new Directive on renewable energy
Intelligent Energy for Europe: programme for renewable energy	Programme for policy support in renewable energy
Developing the internal energy market	Amendments to a number of directives to continue to help complete the internal energy market.
Strategic Energy Technology (SET) Plan	6 European Industrial Initiatives and 10 Integrated Research Programmes that address the development and market roll-out of new generation of renewable energy, carbon capture and

storage, nuclear and smart grids technologies are in force since 2010/11. At EU level these initiatives are supported by FP7.

Energy demand

Policies and measures 'Energy demand'	Stage of implementation / timetable / comments
New Energy Efficiency Directive	Adopted in October 2012. To be implemented by mid-2014.
Directive on the energy performance of buildings	Replaced by the recast Directive below.
Directive on the energy performance of buildings (recast)	Adopted in May 2010 with implementation deadline by June 2012.
Directive on ecodesign requirements for energy-related products Directive on labelling of the consumption of energy and other resources by energy-related products	Product policy under implementation. 14 implementing measures adopted on ecodesign and 9 on energy labelling. Some 20-30 more measures are expected by 2014/2015.
Regulation on the labelling of tyres with respect to fuel efficiency and other essential parameters	Product policy under implementation
Regulation on energy efficiency labelling programme for office equipment (Energy Star)	Product policy under implementation
Directive on energy end use efficiency and energy services	In force until mid-2014. Afterwards to be (almost fully) replaced by the new Energy Efficiency Directive; National Energy Efficiency Action Plans adopted in all EU-27.
Action Plan on Energy efficiency as a follow-up to the Green Paper	Launched Oct 2006. Identifies 10 priority actions to help achieving the to 20% energy efficiency target of 368 Mtoe primary energy savings in 2020 (or 740 MtCO ₂ -eq). Reinforced in March 2011 (see below).
Energy Efficiency Plan 2011	Launched March 2011. Aims at closing the gap to the 20% energy efficiency target in 2020
Action under the Industrial emission directive	Reference document on Best Available Techniques regarding Energy Efficiency finalised.
Intelligent Energy for Europe programme (incl. Covenant of Mayors, ELENA)	Programme for policy support in energy efficiency
European Energy Efficiency Fund	Launched in July 2011. Estimated investment potential of EUR 265 million for energy efficiency, renewables and sustainable urban transport projects.
Public procurement	EU Handbook developed for guidance for increased energy efficient public procurement
Strategic Energy Technology (SET) Plan	Launch in 2012 of the Smart Cities and Communities European

Innovation Partnership addressing the demand side of low carbon technologies in energy, transport and ICT sectors.

Transport

Policies and measures 'Transport'	Stage of implementation / timetable / comments
Strategy on CO ₂ from light duty vehicles; Regulation on CO ₂ emissions from passenger cars, Regulation on CO ₂ emissions from light commercial vehicles, car labelling directive	Labelling: in force Regulations in force and implementing measures almost completed. The Commission made proposals for review of the two Regulations
Fuel quality Directive	First implemented in 1998. Revised in 2009 and amended in 2011
Directive on the promotion of transport bio-fuels	Repealed, Replaced by the Renewable Energy Directive (Directive 2009/28/EC).
Initiative on fair and efficient road pricing, revising Directive 1999/62/EC and Directive 2004/52/EC	Proposal under preparation by the Commission
Infrastructure charging for heavy goods (revised Eurovignette)	Adopted (Directive 2011/76/EU)
Proposal for a Directive revising Directive 96/53/EC on maximum weights and dimensions	Proposal adopted by the Commission.
Shifting the balance of transport modes	Package of measures in implementation
Fuel taxation	In force Review of the Energy Tax Directive under special legislative procedure with unanimity.
Directive on mobile air conditioning systems: HFCs	In force
Inclusion of Aviation in EU ETS	Adopted. Includes all flights since 1/01/2012. In April 2013 a Commission decision was adopted to exempt from enforcement flights into and out of Europe operated in 2010, 2011, and 2012. The general legislation continues to apply to all flights within Europe
Strategy on Integrating maritime transport emissions in the EU's greenhouse gas reduction policies	Adopted. In June 2013 the Commission proposed a Regulation which would establish an EU-wide system for the monitoring, reporting and verification of CO ₂ emissions from large ships starting in 2018
Public procurement of vehicles (Clean vehicles directive 2009/33/EC)	In force
Strategic Energy Technology (SET) Plan	One Joint technology Initiative on Fuel cells and Hydrogen in force since 2009 and one European Industrial Initiative and Integrated Research Programme on bioenergy in force since 2010/11. At EU level these initiatives are supported by FP7.

Industry & non CO₂ gases

Policies and measures 'Industry'	Stage of implementation / timetable / comments
Regulation on fluorinated gases (including Directive on mobile air conditioning systems)	In force. In November 2012 the Commission proposed a new Regulation aiming at further reducing emissions from this sector
IPPC & non-CO ₂ gases	In force In 2008 the Directive was codified and in 2010 amended by the Industrial Emissions Directive

Waste

Policies and measures 'Waste'	Stage of implementation / timetable / comments
Landfill Directive	In force
Waste Framework Directive	Adopted. Launched December 2005, including a revision of the original waste directive of 1975, revised in 2008.
Thematic Strategy on waste	Launched in 2005
Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)	In force. Revised directive in 2012.

Integration Research & Development

Policies and measures	Stage of implementation / timetable / comments
R&D framework Program	In force. Under the 7 th Framework program (FP7), which runs from 2007 to 2013, a budget of 50.5 billion euros will be allocated over the entire period. Over 2.3 billion to energy related R&D activities. Upcoming Horizon 2020 programme (2014-2020) under co-decision
Competitiveness and Innovation Framework Programme (CIP)	CIP runs from 2007 to 2013 with a total budget of 3.6 billion euros. The CIP is divided in three operational programmes two of which are related to energy and climate change.
Strategic Energy Technology (SET) Plan	In force since 2007 and implemented at EU level through FP7.

Integration Cohesion Policy

Policies and measures	Stage of implementation /timetable /comments
Integration climate change in structural funds & cohesion funds	<p>For the budgetary period 2007-13 sustainable transport, adaptation, renewable energy and energy efficiency have been indentified as eligible areas for support.</p> <p>For period 2014-2020, ongoing co-decision process on new programme</p>

Agriculture

Policies and measures 'Agriculture'	Stage of implementation /timetable /comments
CAP reforms (2003 and 2008 Health Check Reform)	Adopted. Major reforms of the CAP were implemented in 2000, 2003 and 2008.
Reduction of CH ₄ and N ₂ O from animal manure	Possibility for support through Rural development programmes
N ₂ O from soils	Possibility for support through Rural development programmes and from an improved implementation of the nitrates Directive
CAP reform post 2013	For period 2014-2020, ongoing co-decision process on new programme

Forests and soils

Policies and measures 'Forests'	Stage of implementation /timetable /comments
Decision on accounting rules and action plans on greenhouse gas emissions and removals resulting from activities related to land use, land use change and forestry (LULUCF)	<p>Adopted and in force since 8 July 2013.</p> <p>First accounting period will end in 2020, with full accounting for agricultural and forest lands from 2021 onwards. National actions to be communicated by mid-2014.</p> <p>In the Decision, Member States agreed to improve monitoring, reporting and verification of agricultural soil carbon pools in a non-binding way as from 2015. Broader environmental and productive aspects are addressed via the 2013-2020 Common Agricultural Policy and the proposed Soil Thematic Strategy.</p>
Proposed soil directive	Under co-decision.
EU Forest Strategy and EU Forest Action Plan	Implemented. The Forest Action Plan was presented in June 2006. Its timeframe was 2006-2011. It builds on the EU's Forestry Strategy adopted in 1998. The EU Forestry Strategy and the EU Forest Action Plan are currently being revised and a new EU Forest Strategy is foreseen for Spring 2013.
<p>Afforestation and reforestation:</p> <ul style="list-style-type: none"> - Afforestation programmes - Natural forest expansion 	Possibility for support through forestry scheme of rural development. New forest related measures are proposed by the Commission to be introduced in rural development policy post 2014.
Restoration of forests damaged by natural disasters, fires, pests damage and forest fire prevention action	Possibility for support through Rural development programmes, specific measure for restoring forestry potential and introduction of prevention actions
Forest management (various measures)	Possibility for support through forestry scheme of rural development, dependent on national implementation.

Table 10: Key figures of the emissions trading scheme for 2008-2012, for EU-27⁽¹⁾

	Number of installations (2)	Freely allocated allowances (MtCO ₂ -eq. / year)						Verified emissions (MtCO ₂ -eq. / year)						Difference between verified emissions and allocated allowances (%) (3)					
		2008	2009	2010	2011	2012	Accum. 2008-2012	2008	2009	2010	2011	2012	Accum. 2008-2012	2008	2009	2010	2011	2012	2008-2012
1. Combustion installations	7.594	1.254	1.264	1.284	1.299	1.326	6.426	1.495	1.365	1.398	1.364	1.356	6.978	19,2%	8,1%	8,9%	5,0%	2,2%	8,6%
2. Mineral oil refineries	156	152	152	157	156	159	777	154	145	142	140	134	716	1,1%	-5,0%	-9,4%	-10,3%	-15,3%	-7,9%
3. Coke ovens	23	23	23	23	23	23	113	21	16	20	20	17	93	-6,9%	-30,1%	-12,8%	-13,7%	-25,5%	-17,8%
4. Metal ore roasting or sintering	30	22	22	22	22	22	110	18	11	13	13	12	68	-19,8%	-49,8%	-39,9%	-40,4%	-44,2%	-38,8%
5. Pig iron or steel	240	185	185	185	186	186	927	133	95	114	113	112	568	-27,9%	-48,4%	-38,6%	-39,1%	-39,8%	-38,8%
6. Cement clinker or lime	562	210	213	214	214	214	1.065	189	152	153	151	140	785	-9,9%	-28,9%	-28,6%	-29,3%	-34,5%	-26,3%
7. Glass including glass fibre	438	25	26	26	26	26	129	23	19	20	21	20	103	-9,7%	-23,8%	-20,9%	-20,6%	-24,6%	-20,0%
8. Ceramic products by firing	1.099	19	19	19	19	18	94	14	9	9	9	8	49	-27,9%	-52,3%	-52,9%	-51,9%	-56,9%	-48,4%
9. Pulp, paper and board	819	39	39	40	40	41	199	32	28	30	29	28	146	-18,2%	-29,2%	-25,0%	-28,3%	-31,4%	-26,5%
99. Other activity opted-in	569	23	24	21	24	26	117	23	20	20	25	20	108	-0,8%	-16,8%	-2,7%	5,1%	-20,0%	-7,3%
All EU installations	11.529	1.951	1.967	1.990	2.008	2.042	9.958	2.100	1.860	1.920	1.885	1.848	9.614	7,7%	-5,4%	-3,5%	-6,1%	-9,5%	-3,5%

Notes:

- (1) Please note that due to changes in the application of the scope (i.e. the coverage by the EU ETS of installations or emissions) in some Member States between the 2005-2007 and the 2008-2012 trading period, one can not perfectly compare data (whether it is allocated allowances or verified emissions) that relate on the one hand to the 2005-2007 trading period, and on the other hand to the 2008-2012 trading period.
- (2) All installations which have participated in the scheme are included, even if their account is already closed.
- (3) Positive value = emissions above free allocation. Negative value = emissions below free allocation.

Source: EEA EU ETS data viewer (June 2012)

Table 11: Overview on the EU ETS verified emissions and 2nd NAPs⁽¹⁾

	2005-2007 average emissions	2008-2012 ETS issued: Free Allowances + Auctions	Freely allocated average allowances 2008-2012	2008 verified emissions	2009 verified emissions	2010 verified emissions	2011 verified emissions	2012 verified emissions	2008 verified emissions compared to average annual EU ETS cap	2009 verified emissions compared to average annual EU ETS cap	2010 verified emissions compared to average annual EU ETS cap	2011 verified emissions compared to average annual EU ETS cap	2012 verified emissions compared to average annual EU ETS cap	Share of EU ETS in total GHG emissions in 2008-2012	Share of CER in total verified emissions 2008-2012	Share of ERU in total verified emissions 2008-2012
	Mt CO ₂ -eq./ year															
Austria	32,9	32,5	32,1	32,1	27,4	30,9	30,6	28,4	-1,2%	-15,7%	-4,7%	-5,7%	-12,5%	36,1%	6,0%	3,3%
Belgium	59,5	58,5	56,6	55,5	46,2	50,1	46,2	43,0	-5,2%	-21,0%	-14,3%	-21,0%	-26,5%	38,6%	5,7%	2,2%
Bulgaria (3)	39,2	39,7	39,7	38,3	32,0	33,5	40,0	35,1	-3,6%	-19,4%	-15,6%	0,7%	-11,8%	57,3%	5,5%	7,6%
Cyprus	5,2	5,5	5,5	5,6	5,4	5,1	4,6	4,4	1,9%	-2,0%	-7,6%	-15,9%	-19,9%	17,6%	7,1%	3,4%
Czech Republic	84,6	86,6	86,1	80,4	73,8	75,6	74,2	69,3	-7,2%	-14,8%	-12,7%	-14,3%	-20,0%	55,6%	5,3%	5,0%
Denmark	30,0	24,5	24,0	26,5	25,5	25,3	21,5	18,2	8,2%	3,8%	3,0%	-12,5%	-25,9%	40,8%	4,3%	6,4%
Estonia	13,6	13,1	13,1	13,5	10,4	14,5	14,8	13,5	3,4%	-20,8%	10,8%	13,0%	3,4%	69,3%	0,7%	3,4%
Finland	40,5	37,5	37,5	36,2	34,4	41,3	35,1	29,5	-3,7%	-8,5%	10,0%	-6,5%	-21,4%	52,9%	7,0%	2,3%
France (4)	133,0	137,0	137,0	124,1	111,1	115,7	105,4	103,5	-9,4%	-18,9%	-15,6%	-23,1%	-24,5%	22,4%	10,1%	3,4%
Germany (4)	491,1	444,3	400,3	472,9	428,3	454,9	450,3	452,6	6,4%	-3,6%	2,4%	1,4%	1,9%	48,2%	7,5%	5,9%
Greece	71,3	68,3	64,6	69,9	63,7	59,9	58,8	61,4	2,2%	-6,9%	-12,3%	-13,9%	-10,1%	51,9%	5,3%	3,6%
Hungary	27,7	26,1	24,6	27,2	22,4	23,0	22,5	21,3	4,3%	-14,2%	-12,0%	-14,0%	-18,6%	34,6%	6,0%	2,4%
Ireland (2)	21,8	21,0	20,9	20,4	17,2	17,4	15,8	16,9	-2,8%	-17,9%	-17,2%	-24,8%	-19,4%	28,5%	4,2%	3,3%
Italy	232,5	201,7	201,7	220,7	184,9	191,5	190,0	179,1	9,4%	-8,3%	-5,1%	-5,8%	-11,2%	38,9%	6,9%	3,0%
Latvia	2,9	4,6	4,6	2,7	2,5	3,2	2,9	2,7	-40,3%	-45,8%	-29,4%	-36,3%	-40,3%	24,8%	8,3%	3,3%
Lithuania	6,4	8,6	7,9	6,1	5,8	6,4	5,6	5,7	-29,0%	-32,7%	-25,6%	-34,8%	-33,5%	27,1%	11,3%	11,7%
Luxembourg	2,6	2,5	2,5	2,1	2,2	2,3	2,1	2,0	-15,7%	-12,3%	-9,5%	-17,6%	-20,1%	17,8%	7,5%	0,1%
Malta	2,0	2,1	2,1	2,0	1,9	1,9	1,9	2,1	-5,8%	-11,5%	-12,4%	-9,9%	-4,2%	64,1%	0,0%	11,0%
Netherlands	82,9	87,5	84,3	83,5	81,0	84,7	80,0	76,4	-4,5%	-7,3%	-3,1%	-8,6%	-12,6%	40,9%	4,3%	2,7%
Poland	212,4	205,8	205,7	204,1	191,2	199,7	203,0	196,6	-0,8%	-7,1%	-2,9%	-1,3%	-4,4%	50,4%	6,5%	3,1%
Portugal	34,3	32,0	32,0	29,9	28,3	24,2	25,0	25,2	-6,7%	-11,8%	-24,6%	-21,9%	-21,2%	36,4%	7,6%	3,4%
Romania (3)	69,6	74,2	74,1	63,8	49,1	47,3	51,2	47,9	-14,0%	-33,9%	-36,2%	-30,9%	-35,5%	42,2%	6,1%	6,3%
Slovak	26,9	32,5	32,5	25,3	21,6	21,7	22,2	20,9	-22,1%	-33,6%	-33,3%	-31,7%	-35,7%	49,3%	8,7%	0,3%
Slovenia	8,9	8,2	8,2	8,9	8,1	8,1	8,0	7,6	7,8%	-1,9%	-1,1%	-2,8%	-7,4%	41,4%	3,7%	11,5%
Spain	189,5	151,9	151,9	163,5	136,9	121,5	132,7	135,6	7,6%	-9,8%	-20,0%	-12,6%	-10,7%	38,0%	12,1%	3,4%
Sweden	21,1	22,2	22,2	20,1	17,5	22,7	19,9	18,2	-9,4%	-21,1%	2,2%	-10,4%	-18,0%	32,1%	8,1%	2,2%
UK/Kingdom	276,4	245,4	220,9	265,1	231,9	237,4	220,9	231,2	8,0%	-5,5%	-3,3%	-10,0%	-5,8%	40,6%	4,7%	1,9%
EU-27	2.219	2.074	1.992	2.100	1.860	1.920	1.885	1.848	1,3%	-10,3%	-7,4%	-9,1%	-10,9%	41,0%	6,9%	3,9%

Notes: (1) Please note that due to changes in the application of the scope (i.e. the coverage by the EU ETS of installations or emissions) in some Member States between the 2005-2007 and the 2008-2012 trading period, one can not perfectly compare the verified emissions data that relate on the one hand to the 2005-2007 trading period, and on the other hand to the 2008-2012 trading period. Data on the EU ETS cap may differ from final values yet to be determined by the European Commission due to the fact that issues such as the treatment of the new entrants reserves are still pending. (2) For Ireland, the ETS cap is reduced by the expected leftover units in the new entrants' reserve at the end of the trading period which will not be distributed to operators but used for Kyoto compliance. (3) For Romania and Bulgaria data for 2007 is added on top of EU-25 2005-2007 average and not divided by three for 2005-2007 average. (4) For Germany and France corrections for allocated allowances

have been included. In 2009 and 2010 Germany received 4 Mt from operators due to back requirements that are not included in the CITL. France distributed in 2008 and 2009 additional 9.4 Mt to operators that are not included in the CITL. In 2011 the CITL data showed additional 9.6 Mt that are yet not included in the EEA EU ETS viewer.

Source: EEA EU ETS data viewer, CITL, UNFCCC

Table 12: Planned government use of the Kyoto mechanisms

Member State	Planned use of Kyoto mechanisms	Type of Kyoto mechanisms (IET, CDM, JI) ⁽¹⁾	Achievement of Kyoto target planned through domestic action only	Intended use of flexible mechanisms (AAUs, CERs + ERUs) at government level	Budget
				[Mt CO ₂ eq. per year]	[Mio € for 2008-2012]
Austria	Yes	IET, JI, CDM	No	16,0	611
Belgium	Yes	IET, JI, CDM	No	5,9	241
Bulgaria	Yes	IET, JI	Yes	-1,4	-
Croatia	No	-	Yes	-	-
Cyprus	not applicable	-	-	-	-
Czech Republic	yes	-	Yes	-25,0	-
Denmark	Yes	IET, JI, CDM	No	2,4	188
Estonia	Yes	JI, IET	Yes	-14,7	-
Finland	No	JI, CDM	Yes	-	-
France	No	-	Yes	-	-
Germany	No	-	Yes	-	-
Greece	No	-	Yes	-	-
Hungary	Yes	-	Yes	-4,0	-
Ireland	Yes	IET, JI, CDM	No	1,9	290
Italy	Yes	IET, JI, CDM	No	2,0	-
Latvia	Yes	JI, IET	Yes	-8,1	-191
Lithuania	Yes	JI	Yes	-14,1	-
Luxembourg	Yes	IET, JI, CDM	No	2,8	150
Malta	not applicable	-	-	-	-
Netherlands	Yes	IET, JI, CDM	No	9,2	365
Poland	Yes	IET, JI	Yes	-	-
Portugal	Yes	IET, JI, CDM	No	1,6	125
Romania	Yes	IET, JI	Yes	-2,6	-
Slovakia	Yes	IET, JI	Yes	-8,4	-
Slovenia	Yes	IET, JI, CDM	No	1,0	80
Spain	Yes	IET, JI, CDM	No	38,8	382
Sweden	No	-	Yes	-	-
United Kingdom	No	-	Yes	-	-
EU-15	Yes	IET, JI, CDM	No	80,7	2351
EU-27	Yes	IET, JI, CDM	No	3,3	2431
EU-28	Yes	IET, JI, CDM	No	3,3	2431

Notes:

- (1) IET: International Emissions Trading; JI: Joint Implementation; CDM: Clean Development Mechanism.
- (2) The figures for budget do not include the revenue from the sale of AAUs
- (3) Cyprus and Malta have no emissions targets for the period 2008-2012 under the Kyoto Protocol.

Source: Questionnaires submitted under the greenhouse gas Monitoring Mechanism

Table 13: Projected net carbon stock changes under Articles 3.3 and 3.4 for the first commitment period

	Article 3.3	Article 3.4						Total used for calculation (2008-2012)
	Net carbon stock change during 2008–2012	Election of activities ⁽¹⁾	Forest Management ⁽²⁾	Cropland Management	Grazing Land Management	Revegetation	Average net carbon stock change during 2008-2011	
	[Mt CO ₂ per year]		[Mt CO ₂ per year]					
Austria	-1,2	None	NA	NA	NA	NA	0,0	-1,2
Belgium	0,2	None	NA	NA	NA	NA	0,0	0,2
Bulgaria	-0,5	None	NA,NO	NA,NO	NA,NO	NA,NO	0,0	-0,5
Croatia ⁽²⁾	0,2	FM	-1,2	NA	NA	NA	-1,2	-1,0
Cyprus	-	-	-	-	-	-	-	0,0
Czech Republic	-0,1	FM	-1,2	NA	NA	NA	-1,2	-1,3
Denmark ^(2,4)	0,0	FM, CM, GM	-0,2	-1,6	0,0	NA	-1,8	-1,8
Estonia	0,4	None	NA	NA	NA	NA	0,0	0,4
Finland ⁽²⁾	3,6	FM	-4,2	NA	NA	NA	-4,2	-0,6
France ^(2,4)	4,9	FM	-8,2	NA	NA	NA	-8,2	-3,2
Germany	-5,4	FM	-4,5	NA	NA	NA	-4,5	-10,0
Greece	-0,3	FM	-0,3	NA	NA	NA	-0,3	-0,6
Hungary ^(2,4)	-1,1	FM	-1,1	NA	NA	NA	-1,1	-2,2
Ireland	-3,4	None	NA	NA	NA	NA	0,0	-3,4
Italy	-6,6	FM	-10,2	NA	NA	NA	-10,2	-16,8
Latvia ⁽²⁾	0,1	FM	-1,3	NA	NA	NA	-1,3	-1,2
Lithuania	-0,1	FM	-1,0	NA	NA	NA	-1,0	-1,1
Luxembourg	0,1	None	NA	NA	NA	NA	0,0	0,1
Malta	-	-	-	-	-	-	-	0,0
Netherlands	0,4	None	NA	NA	NA	NA	0,0	0,4
Poland	-5,4	FM	-3,0	NA	NA	NA	-3,0	-8,4
Portugal	-2,6	FM, CM,	-0,7	-4,0	-2,5	NA	-7,2	-9,8

		GM						
Romania ⁽²⁾	0,5	FM, Revegetation	-4,6	NA	NA	1,0	-3,5	-3,0
Slovakia	-0,4	None	NA	NA	NA	NA	0,0	-0,4
Slovenia ⁽²⁾	0,2	FM	-1,6	NA	NA	NA	-1,6	-1,3
Spain	-6,3	FM, CM	-2,5	-2,5	NA	NA	-5,0	-11,3
Sweden ⁽²⁾	1,8	FM	-3,9	NA	NA	NA	-3,9	-2,1
United Kingdom	-2,3	FM	-1,4	NA	NA	NA	-1,4	-3,6
EU-15 ⁽³⁾	-17,1	FM, CM, GM	-36,1	-8,2	-2,4	0,0	-46,7	-63,9
EU-27 ⁽³⁾	-23,6	FM, CM, GM, Revegetation	-49,8	-8,2	-2,4	1,0	-59,4	-83,0
EU-28 ⁽³⁾	-23,3	FM, CM, GM, Revegetation	-51,0	-8,2	-2,4	1,0	-60,6	-84,0

Note:

Consistent with the reporting of emission inventories a negative sign '-' is used for removals and a positive sign '+' for emissions. NA: not applicable; NE: not estimated.

(1) FM: Forest Management; CM: Cropland Management; GM: Grazing Land Management. The sum for EU-15 and EU-27 includes emissions and removals from Article 3.4 activities as indicated by Member States with application of the cap for Forest Management. Note that the net carbon stock change during 2008–12 resulting from Art. 3.3 activities plus net carbon stock change during 2008–12 resulting from Art. 3.4 activities for EU-15 and EU-27 does not result in their totals, as net emissions from Art. 3.3 in Finland and Sweden could be completely compensated with net removals from Art. 3.4 in these Member States.

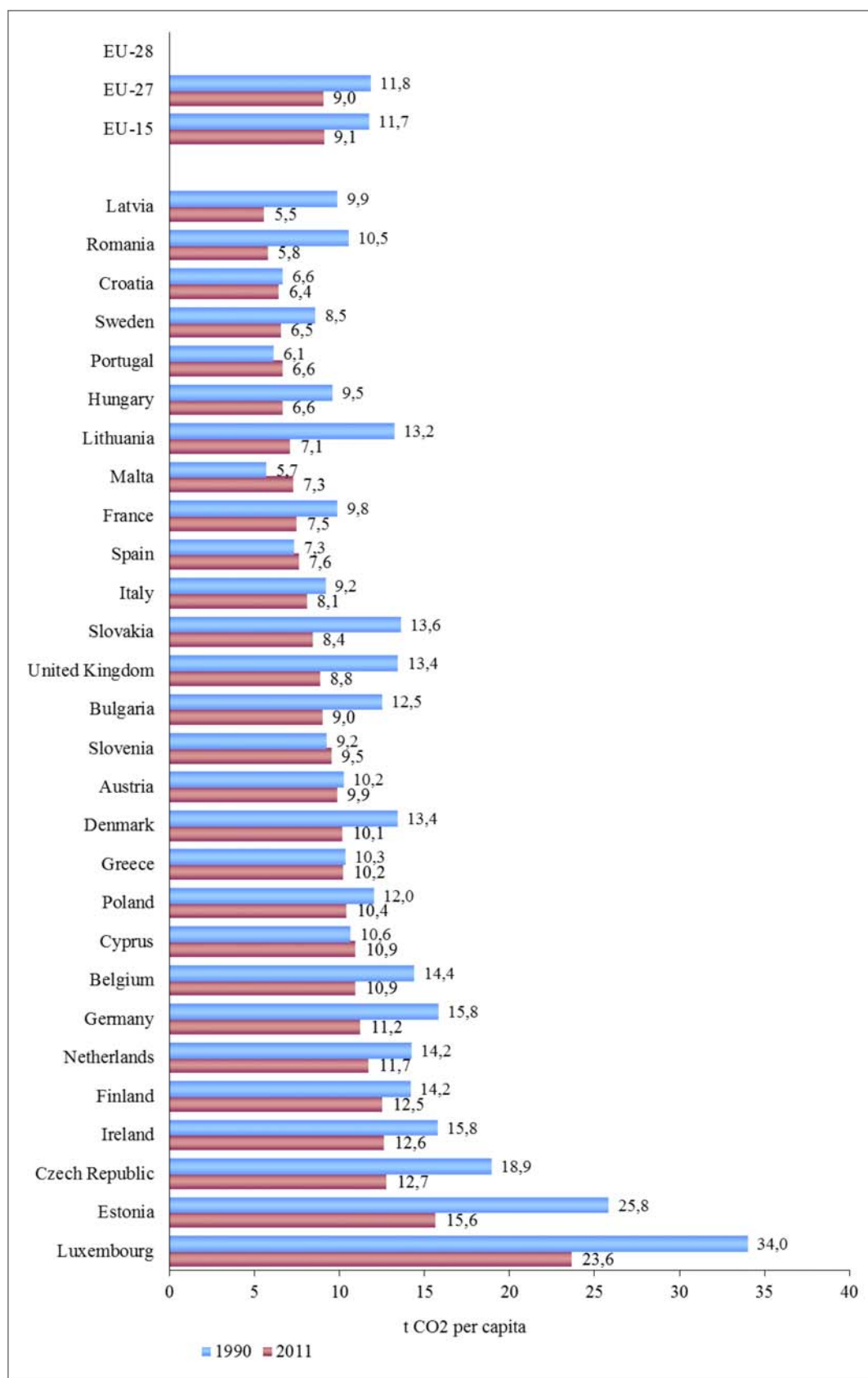
(2) If Parties have net emissions from 3.3 activities AR and D, then they can increase their FM cap by this amount of net emissions. This occurs for Sweden, Finland, France (to a smaller extent in Romania, Netherlands, Belgium, Slovenia)

(3) The sum for EU-15 and EU-27 includes emissions and removals from Article 3.4 activities as indicated by Member States with application of the cap for Forest Management. Note that the net carbon stock change during 2008–12 resulting from Art. 3.3 activities plus net carbon stock change during 2008–12 resulting from Art. 3.4 activities for EU-15 and EU-27 does not result in their totals, as net emissions from Art. 3.3 in Finland and Sweden could be completely compensated with net removals from Art. 3.4 in these Member States.

(4) According to Art. 3.3 and 3.4 Denmark, France and Hungary have decided to choose the annual accounting.

Source: Questionnaires and projection reports submitted under the EC greenhouse gas Monitoring Mechanism; The European Community's initial report under the Kyoto Protocol (EEA Technical report No 10/2006); Initial reports under the Kyoto Protocol of Greece and Romania; Decisions 16/CMP.1 and 8/CMP.2 of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol.

Figure 2: Greenhouse gas emissions (tCO₂-eq.) per capita of Member States for 1990 and 2011



Source: EEA

Table 14: comparison of EU-28 GHG total emissions and projections under the Kyoto Protocol and under the Climate and Energy Package

The EU uniteral 20% reduction commitment by 2020 includes also CO₂ emissions from international flights from the EU. The Kyoto Protocol covers only GHG emissions from domestic aviation. The table below presents the quantitative differences. Reductions achieved by the EU-28, so far, when the emissions from international aviation are also taken into account, amount to -16.9 % compared to 1990 levels. When excluding international aviation, the reduction amounts to -18.3%.

Emissions (MtCO₂-eq.) covered by the Kyoto Protocol

	1990	2005	2011	2020
Total GHG emissions	5606.0	5159.6	4578.5	
<i>Of which domestic aviation</i>	13.9	18.8	16.3	
Projections as compilation of MS data, WEM scenario				4360.6 ⁽¹⁾
-20% compared to Kyoto base year ⁽²⁾				4639.4

Emissions (MtCO₂-eq.) covered by the Climate and Energy Package

	1990	2005	2011	2020
Total GHG emissions	5675.6	5291.0	4713.8	
<i>of which domestic aviation</i>	13.9	18.8	16.3	
<i>of which international aviation CO₂⁽³⁾</i>	69.6	131.4	135.3	
Projections as compilation of MS data, complemented by PRIMES/GAINS ⁽⁴⁾				4512.2
-20 % compared to 1990				4540.5

Note: (1) This projected value is based on aggregated national projections for 2013, gap-filled by the 2013 EU projections with implemented measures based on PRIMES and GAINS models where necessary. (2) The Kyoto base year emissions is different from 1990 emissions level and amount to 5799.2 Mt CO₂ eq. (3) figures for emissions from domestic aviation cover CO₂, CH₄, N₂O; figures for emissions from international aviation cover CO₂ only. (4) National projections as under (1), international aviation estimated based on the 2013 EU projections with implemented measures based on PRIMES and GAINS models.

Table 15: The implementation of the EU Strategy on adaptation to climate change

The EU Adaptation Strategy adopted in April 2013 foresees 8 actions in order to achieve its key objectives of promoting action by Member States, 'climate-proofing' action at EU level and better informed decision-making.

Action	EU action – status and planned
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<p>Action 1: Encourage all Member States to adopt comprehensive adaptation strategies.</p>	<p>As of June 2013, 15 Member States have adopted an adaptation strategy</p> <p>Guidelines for the development of adaptation strategies have been published as part of the EU Adaptation Strategy</p> <p>First discussions with Member States on a list of performance indicators for the adaptation preparedness scoreboard are envisaged for the end of 2013.</p>
<p>Action 2: Provide LIFE funding to support capacity building and step up adaptation action in Europe. (2013-2020).</p>	<p>LIFE work programme is to be discussed with Member States in the course of 2013</p>
<p>Action 3: Introduce adaptation in the Covenant of Mayors framework (2013/2014).</p>	<p>A call for tender on “Mainstreaming of climate change adaptation at the local level: launch of a climate change adaptation initiative for cities within the framework of the Covenant of Mayors” was published in April 2013. The selection process is expected to be carried out during the second half of 2013.</p>
<p>Action 4: Bridge the knowledge gap.</p>	<p>A state of play on knowledge gaps in adaptation is under preparation, in contact with relevant Commission departments, to be discussed with relevant stakeholders and Member States in 2014. The relevant findings will feed into the programming of Horizon 2020. Horizon 2020 will also address some of the knowledge gaps identified, considering also ongoing research of the 7th Framework Programme.</p> <p>Additional work is under preparation with the Commission’s Joint Research Center on how to close gaps in the biophysical and economic assessment of climate change impacts, with a focus on droughts, coastal areas, ecosystems, as well as on the economic impacts of climate change in the rest of the world and their repercussions for the EU.</p> <p>In 2013, the Commission will produce a cross-sectoral EU overview of natural and man-made risks.</p> <p>The final report of a service contract Assessing the spillover effects in the EU of the adverse effects of climate change in the rest of the world, in particular the EU’s Neighbourhood countries will be finalised during the second half of 2013.</p>
<p>Action 5:</p>	<p>The Commission works together with the European Environment Agency to implement this action. The Climate-</p>

<p>Further develop Climate-ADAPT as the ‘one-stop shop’ for adaptation information in Europe.</p>	<p>ADAPT resources are permanently and regularly updated with new uploads, improvements to the information available, updating of national pages, etc.</p> <p>A service contract has further developed the platform's IT tools and functionalities in 2013. Also, the Commission’s Joint Research Center is developing mapping tools to facilitate visualization of information.</p> <p>Dissemination and capacity building amongst key stakeholders was promoted through a service contract in 2013. A new contract for dissemination and exchange of adaptation knowledge will further enhance Climate-ADAPT's role across the EU.</p> <p>A first meeting was organised in June 2013 on the links between national adaptation platforms and Climate-ADAPT. It will be followed by a second meeting in October 2013.</p> <p>A Commission’s service contract “Sharing of Best Practices on Integrated Coastal Zone Management in a Context of Adaptation to Climate Change in Coastal Areas” considers option for coordination and integration of the OURCOAST database with other platforms like Climate-ADAPT</p> <p>Discussions between the Commission and relevant stakeholders are ongoing on the preparation of a Copernicus Climate service, and its future integration in Climate-ADAPT</p> <p>A process has been developed for stakeholder involvement following the adoption of the EU strategy on adaptation to climate change. One of its dimensions concerns adaptation at the regional level. The results of this exercise will feed into Climate-ADAPT.</p>
<p>Action 6:</p> <p>Facilitate the climate-proofing of the Common Agricultural Policy (CAP), the Cohesion Policy and the Common Fisheries Policy (CFP).</p>	<p>A Commission Staff Working document on principles and recommendations on how to integrate climate change adaptation considerations under the 2014-2020 European Maritime and Fisheries Fund operational programmes is currently under preparation.</p>
<p>Action 7:</p> <p>Ensuring more resilient infrastructure.</p>	<p>A draft mandate (titled "Standards for a European infrastructure that is resilient to climate change") addressed to European Standardisation Organisations (CEN/CENELEC/ETSI) is under consultation with relevant stakeholders</p> <p>A Commission’s Communication on “Green Infrastructure (GI)</p>

	<p>— Enhancing Europe’s Natural Capital” was adopted on May 6, 2013 (COM(2013) 249 final).</p> <p>Commission’s guidance on integrating climate change and biodiversity into Strategic Environmental Assessment and Environmental Impact Assessment have been published (See http://ec.europa.eu/environment/eia/pdf/SEA%20Guidance.pdf and http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf)</p>
<p>Action 8:</p> <p>Promote insurance and other financial products for resilient investment and business decisions.</p>	<p>An online public consultation on the Green Paper on the Insurance of Natural and Man-made Disasters took place from 16.04.2013 to 15.07.2013. A report on the results of the public consultation is expected for the second half of 2013.</p> <p>A process has been developed for stakeholder involvement following the adoption of the EU strategy on adaptation to climate change. One of its dimensions concerns the insurance sector and commercial banks. The results of this exercise will notably be disseminated via Climate-ADAPT.</p>

Technical notes

- (1) The six corresponding legislative acts were published in the Official Journal of the European Union in June 2009 (5.06.2009 L 40), and are already in force.

Directive 2009/29/EC expands, strengthens and improves the functioning of the EU ETS post-2012. From 2013 an emission cap will be set at EU level and cut each year to reach -21% in 2020 (comparing to 2005 levels). The auctioning system of allowances will be increased and ambitious ex-ante benchmark for free allocation will be introduced. Industrial installations not subject to carbon leakage will be required to buy 20% of allowances in 2013 rising to 70% in 2020 and 100% in 2027, while those identified to be exposed to the risk of carbon leakage will receive 100% of the quantity determined by benchmarks for free. Use of offset credits from outside of the EU is allowed but this amount remains below half of the reduction effort in order to ensure a sufficient level of emissions reductions inside the EU. (OJ 5.06.2009 L 140)

Decision 406/2009/EC sets national commitments to reduce GHG emissions which are outside the scope of the EU ETS (small-scale emitters: transport, buildings, agriculture, waste), which represent some 60% of total GHG emissions in the EU. The decision sets legally binding annual targets in the period 2013-2020 for each MS ensuring that by 2020 emissions from these sectors will be reduced at EU level by 10% comparing to 2005 levels. The efforts (targets ranging from -20% to +20%) are shared between MS according to differences in GDP per capita. Less wealthy Member States will be allowed to increase their emissions in non-ETS sectors by up to 20% above 2005 levels. These targets do, however, still represent a cap on their emissions and will still require a reduction effort compared to business as usual. By contrast, the wealthier Member States, with GDP/capita above the EU average, will have to reduce emissions, up to a maximum figure of -20% below 2005. (OJ 5.06.2009 L 140)

Directive 2009/28/EC on the promotion of the use of renewable energy sets legally binding targets for each Member State in order to reach the EU target of 20% share of renewable energy in the EU's final energy consumption and 10% share in transport by 2020. (OJ 5.06.2009 L 140)

Directive 2009/31/EC on geological storage of CO₂ provides a legal framework to manage possible environmental risks and liability issues and includes a long-term incentive for investment in demonstration projects to capture and geologically store CO₂. (OJ 5.06.2009 L 140)

Regulation (EC) No 443/2009 sets standards for CO₂ emissions from new passenger cars, which will ensure that emissions from the new car fleet are reduced to an average of 130g CO₂/km by 2015. A stringent long-term target of 95g CO₂/km by 2020 was also set. Estimate of total GHG emission savings per year amounts to 50 Mt CO₂ eq. (OJ 5.06.2009 L 140)

Fuel quality directive 2009/30/EC puts an obligation on suppliers to reduce greenhouse gas emission from entire fuel production chain by 6% by 2020. A review in 2012 will consider increasing the target to 10% by 2020. Estimate of total GHG emission savings per year amounts to 62.5 Mt CO₂-eq. (OJ 5.06.2009 L 140)