EUROPEAN COMMISSION

Brussels, 12.10.2010
SEC(2010)1204 final

COMMISSION STAFF WORKING DOCUMENT
Accompanying the

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)

COM(2010)569 final

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 (1990-2008)

GHG emissions	Share in 1990 total GHG	Share in 2008 total GHG	Change 1990-2008	Change 2000-2008
EU-15	60,2%	58,7%	-8,8%	-2,8%
EU-27	62,7%	59,6%	-15,6%	-3,3%

- Total GHG emissions **from energy supply** and use decreased in the period 1990-2008 by 8.8% in EU-15 and by 15.6% in EU-27.
- Total EU-15 greenhouse gas emissions from energy supply were 5% below 1990 levels in 2008 and in the EU-27 12.3 % below 1990 level.
- Total EU-15 greenhouse gas emissions **from energy use** were 12.5 % below 1990 levels in 2008 and in the EU-27 19.3 % below 1990 level.
- In EU-15 **CO_2 emissions from public heat and electricity production** increased by 1 % during 1990-2008, but emissions would have risen by over 35 %, had the shares of input fuels used to produce electricity and heat and the efficiency remained constant.
- CO_2 emissions increased in seven Member States and fell in eight. Of the seven countries where emissions were higher in 2008 than in 1990, 37 % of the increase was accounted for by Spain alone . Of the eight countries, where emissions fell, 51 % of the reduction came from the UK.
- The relationship between the increase in electricity generation and the actual reduction in emissions during 1990-2008 can be explained by the following factors:
    - An improvement in the thermal efficiency of electricity and heat production. During 1990-2008, there was a 10 % reduction in the fossil-fuel input per unit of electricity produced from fossil fuels.
    - Changes in the fossil fuel mix used to produce electricity, i.e. fuel switching from coal and lignite to natural gas. There was a 18 % reduction in the CO_2 emissions per unit of fossil-fuel input during 1990-2008.
    - The lower combined share of nuclear and renewable energy for electricity and heat production in 2008 compared to 1990. During 1990-2008, the share of electricity from fossil fuels in total electricity production increased by 1 %.
- The decoupling of fuel combustion and greenhouse gas emissions is also observed in the EU-27 and is also caused by fuel switching (e.g. from coal to gas or renewable) and efficiency improvements.

1.2. Transport

Table 2: GHG emissions from transport (1990-2008)

GHG emissions	Share in 1990 total GHG	Share in 2008 total GHG	Change 1990-2008	Change 2000-2008
EU-15	16,5%	21,1%	19,9%	1,0%
EU-27	14,0%	19,5%	23,6%	5,1%

- Total GHG emissions **from transport** increased by 19.9% in EU-15 and by 23.6% in EU-27, between1990-2008. The trend of greenhouse gas emissions follows closely the trend of fuel combustion.
- Additional measures will be necessary to keep control over GHG emissions from transport sector in the coming years. Germany, France, Italy, Spain and the United Kingdom contributed most to the CO_2 emissions from this source (76 %). All Member States, except for Germany (-4%), increased emissions from road transportation between 1990 and 2008.
- The Member States with the highest increases in absolute terms were Spain, Italy and France. The countries with the lowest increase in relative terms were Finland, France, Sweden and the United Kingdom.
- Between 2007 and 2008 emissions **from road transport** decreased in the EU-15 as well as in EU-27. All EU-15 countries except Belgium, Luxembourg and the Netherlands, reported emission decreases. The highest reduction were reported by France, Spain, Italy where the use of biofuels increased strongly, and the United Kingdom. From EU-12 only four MS reported decreases.
- CO_2 emissions from road transportation is the second largest key source of all categories in the EU-15 and had the highest increase in absolute terms of all energy-related emissions.
- CO_2 emissions **from civil aviation**[36] account for 2.6% of total transport-related GHG emissions in 2008 (EU-15). Between 1990 and 2008, CO_2 emissions from civil aviation increased by 29 % in the EU-15.

1.3. Agriculture

Table 3: GHG emissions from agriculture (1990-2008)

GHG emission	Share in 1990 total GHG	Share in 2008 total GHG	Change 1990-2008	Change 2000-2008
EU-15	10,1%	9,5%	-12,2%	-7,8%
EU-27	10,6%	9,6%	-20,2%	-5,8%

- Total EU-15 greenhouse gas emissions **from agriculture** were 12.2 % below 1990 levels. Agriculture is the main CH_4 and N_2O emitter and accounts for 9.5% of total EU-15 GHG emissions in 2008. In the EU-27 emissions were 20.2 % below 1990 emissions in 2008.
- In 2008 N_2O and CH_4 account for 5.3 % and 4.2 % respectively of the total GHG emissions in EU-15.
- Large reductions occurred in the largest key sources: N_2O from direct soil emissions, indirect emissions and CH_4 from cattle. The main reasons for this are decreasing use of fertiliser and manure and declining cattle numbers in most Member States.
- **Enteric fermentation from cattle** is the largest single source of CH_4 emissions in the EU-15 accounting for 2.6 % of total GHG emissions in 2008. Between 1990 and 2008, CH_4 emissions from enteric fermentation from cattle declined by 12 % in the EU-15. In 2008, the emissions were at the level of 2007. The main driving force of CH_4 emissions from enteric fermentation is the number of cattle, which was 15 % below 1990 levels in 2008. The Member States with most emissions from this source were France and Germany (44 %). All EU-15 Member States except Spain, Portugal and Greece reduced CH_4 emissions from enteric fermentation of cattle between 1990 and 2008.

- Swine and cattle contribute more or less equally to CH_4 emisisons from manure management.
- N_2O emissions **from agricultural soils** decreased by 15 % between 1990 and 2008. All EU-15 Member States decreased emissions. Direct N_2O emissions from agricultural soils is the largest source category of N_2O emissions and accounts for 2.6 % of total EU-15 GHG emissions in 2008. The Member States with most emissions from this source were France and Germany. All Member States except the Netherlands reduced N_2O emissions from agricultural soils.
- The decrease in emissions is largely a consequence of efficiency improvements, the reform of the EU common agricultural policy (CAP) as well as the implementation of the Nitrate Directive aimed at reducing water pollution.

1.4. Industrial processes

Table 4: GHG emissions from industrial processes (1990-2008)

GHG emissions	Share in 1990 total GHG	Share in 2008 total GHG	Change 1990-2008	Change 2000-2008
EU-15	8,8%	7,9%	-16,6%	-5,6%
EU-27	8,7%	8,3%	-15,4%	-0,7%

- Total EU-15 greenhouse gas emissions **from industry** were 16.6 % below 1990 levels in 2008. In the EU-27 emissions were 15.4 % below 1990 emissions in 2008.
- Industrial processes is the third largest sector contributing 8 % to total EU-15 GHG emissions in 2008. The most important GHGs from this sector are CO_2 (5.4 % of total GHG emissions), HFCs (1.6 %) and N_2O (0.6 %). Large emisisons decrease in 2008 mainly occurred in cement production as well as iron and steel production.
- CO_2 emissions **from mineral products** category increased by 1 % in 1990-2008. Spain noted largest emission increases in absolute terms and France largest absolute emission reductions in the period 1990-2008. CO_2 emissions from cement production account for 2 % of total EU-15 GHG emissions in 2008. In 2008, CO_2 emissions from cement production were 1 % below 1990 levels in the EU-15.
- Between 1990 and 2008, CO_2 emission **from chemical industry** increased by 2 %. The absolute increase was largest in Germany and Belgium, the absolute reductions were largest in France, Ireland and Italy. Between 1990 and 2008, N_2O emission from this category decreased by 76 %. The absolute decreases were largest in UK, France and Germany.
- Between 1990 and 2008, CO_2 emission **from metal production** decreased by 8 %. The absolute decrease was largest in Germany and Italy, the absolute growth was largest in Austria.
- HFC emissions **from consumption of halocarbons and SF_6** account for 1.5 % of total EU-15 GHG emissions in 2008. HFC emissions in 2008 were 101 times higher than in 1990. The main reason for this is the phase-out of ozone-depleting substances such as chlorofluorocarbons under the Montreal Protocol and the replacement of these substances with HFCs (mainly in refrigeration, air conditioning, foam production and as aerosol propellants). France, Germany, UK and Italy had the most significant absolute increases from this source between 1990 and 2008.

1.5. Waste management

Table 5: GHG emissions from waste management (1990-2008)

GHG emission	Share in 1990 total GHG	Share in 2008 total GHG	Change 1990-2008	Change 2000-2008
EU-15	4,0%	2,6%	-40,5%	-24,9%
EU-27	3,7%	2,8%	-33,0%	-19,7%

- In 2008 total EU-15 greenhouse gas emissions **from waste** were 40.5 % below 1990 levels and 33 % below 1990 in EU-27.
- Waste is the fourth largest sector in the EU-15, contributing 2.6 % to total GHG emissions. In 2008, emissions decreased by 2 % compared to 2007.
- CH_4 emissions **from solid waste** decreased by 47 % between 1990 and 2008 in the EU-15. Twelve EU-15 Member States reduced their emissions from this source, Greece, Portugal and Spain did not.
- Between 1990 and 2008, CH_4 emissions **from managed landfills** declined by 48 % in the EU-15. Eleven EU-15 Member States reduced their emissions from this source during that period, Greece, Italy, Portugal and Spain did not. In 2008, CH_4 emissions from landfills decreased by 3 % compared to 2007. A main driving force of CH_4 emissions from managed waste disposal on land is the amount of biodegradable waste going to landfills. Total municipal waste disposal on land declined by 37 % between 1990 and 2008. In addition, CH_4 emissions from landfills are influenced by the amount of CH_4 recovered and utilised or flared. The share of CH_4 recovery increased in several EU-15 Member States.
- The Member States with most emissions **from managed waste disposal on land** were Germany, Spain, Italy and the UK accounting for 72 % of EU-15 emissions. The largest reductions in absolute terms were reported by Germany and the UK. The emission reductions are partly due to the (early) implementation of the landfill waste directive or similar legislation of the Member States.

2. GHG EMISSIONS IN THE EU CANDIDATE COUNTRIES

The Republic of Croatia is a Party to the UNFCCC from April 1996 and ratified the Kyoto Protocol in May 2007 committing to a 5% reduction of GHG compared to the base year (1990)[14]. Between 1990 and 2008 Croatia's GHG emissions decreased by 0.6% and comparing to 2007 decreased by 3.7%. Use of hydro power has significant influence on Croatian GHG emissions from energy sector. CO_2 emissions per capita are at 7.0 tons and CO_2 intensity of GDP is around the double of that of the EU. According to the 5th National Communication, Croatia is projected to face difficulties with achieving its Kyoto target with the current set of policies and measures.

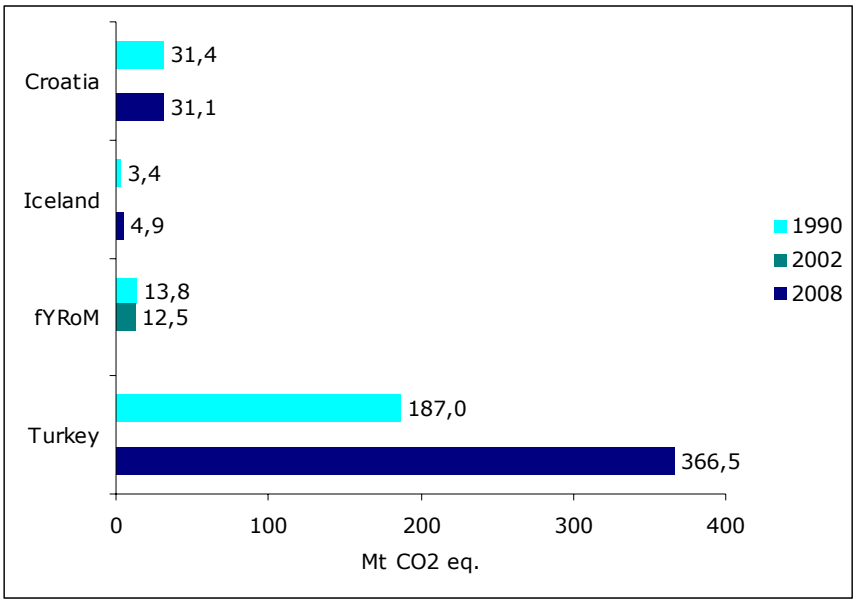
Iceland ratified the UNFCCC in June 1993 and the Kyoto Protocol in May 2002 committing itself to keep the increase of GHG emissions within 10% compared to the base year (1990). Iceland's GHG emissions between 1990 and 2008 increased by 44% and in 2008 were 9% higher than in 2007. The main reason for the increase in emissions is the expansion of heavy industry in Iceland, mainly in the field of aluminium production. CO_2 emissions per capita are at 15.5 tons and CO2 intensity of GDP is around 20% higher than in the EU. According to latest projections included in the 5th National Communication and taking into account

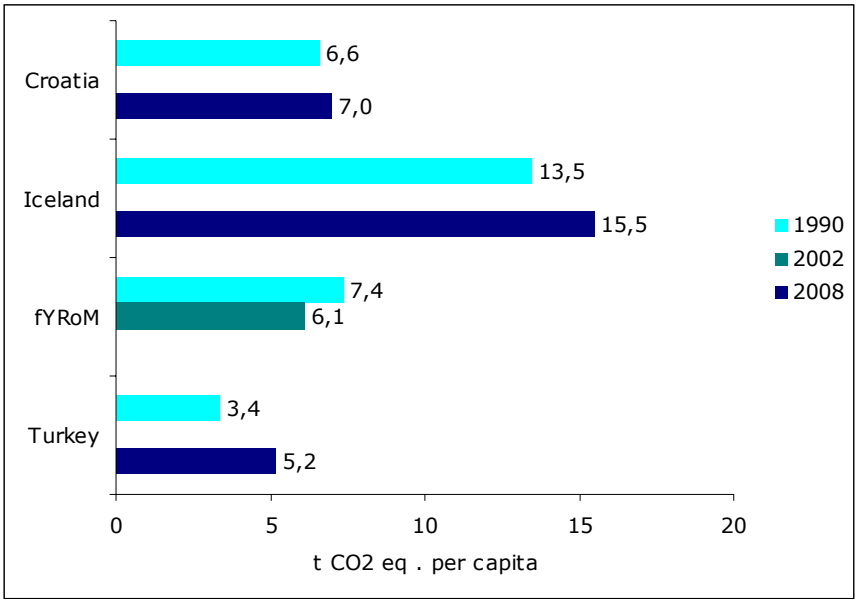
decision 14/CP.7 (allowing Iceland to exclude emission from the heavy industry from the commitment level under the Kyoto Protocol in the period 2008-2012), Iceland is on track to meet its Kyoto target.

Turkey became an Annex I Party to the UNFCCC in May 2004 and ratified the Kyoto Protocol in May 2009 (however has no GHG limitation/reduction commitment). Turkey's first National Communication to the UNFCCC was submitted in January 2007. According to the recent GHG inventory, in 2008 Turkey's emissions amounted to 366.5 $MtCO_2$-eq, so an increase of 96% was noted compared to 187 $MtCO_2$-eq. in 1990. Nevertheless, in 2008 GHG emissions decreased by 3.5% compared to 2007. Between 1990 and 2008, per capita GHG emissions have increased in Turkey. However, at 5.2 tonnes, the per capita emissions in Turkey are about half of the average EU-27 per capita emissions. Turkey's emissions intensity doubled between1990-2008, whereas in EU-27 emissions per GDP decreased by 40% over that period.

The former Yugoslav Republic of Macedonia (fYRoM) became a Party to UNFCCC in January 1998 and ratified the Kyoto Protocol in November 2004. FYRoM is considered a developing country under the Convention and its Protocol. In January 2009 the fYRoM submitted to the UNFCCC secretariat its 2nd National Communication, including inventory of GHG emissions from 1990-2002. Between 1990 and 2002 total GHG emissions decreased by around 10%. Currently CO_2 emissions per capita are at level of 4.1 ton and GDP per capita amounts to 2300 € in 2005. Currently, there is no information on projections available for the former Yugoslav Republic of Macedonia.

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





Note: no 2008 data available for fYRoM, 2002 data is the most recent

Source: EEA

Table 6: GHG emissions in CO_2 equivalents (excl. LULUCF) and Kyoto Protocol targets for 2008–12

	1990	Base Year (1)	GHG emissions 2008 (3)	Change 2007-2008	Change 2008 relative to base year	EU burden-sharing or Kyoto target	EU burden-sharing or Kyoto target
		in Mt CO2	in Mt CO2	in %	in %	in %	in Mt CO2
Austria	78,2	79,0	86,6	-0,4%	9,6%	-13,0%	68,8
Belgium	143,4	145,7	133,3	2,3%	-8,6%	-7,5%	134,8
Bulgaria	117,4	132,6	73,5	-3,2%	-44,6%	-8,0%	122,0
Cyprus (4)	5,3	5,3	10,2	3,7%	93,9%	no target	no target
Czech Republic	195,2	194,2	141,4	-4,1%	-27,2%	-8,0%	178,7
Denmark	68,9	69,3	63,8	-4,5%	-7,9%	-21,0%	54,8
Estonia	40,8	42,6	20,3	-8,2%	-52,5%	-8,0%	39,2
Finland	70,4	71,0	70,1	-10,2%	-1,2%	0,0%	71,0
France	563,2	563,9	527,0	-0,6%	-6,5%	0,0%	563,9
Germany	1231,8	1232,4	958,1	0,1%	-22,3%	-21,0%	973,6
Greece	103,3	107,0	126,9	-3,8%	18,6%	25,0%	133,7
Hungary	97,4	115,4	73,1	-3,4%	-36,6%	-6,0%	108,5
Ireland	54,8	55,6	67,4	-0,3%	21,3%	13,0%	62,8
Italy	517,0	516,9	541,5	-2,0%	4,8%	-6,5%	483,3
Latvia	26,8	25,9	11,9	-3,1%	-54,1%	-8,0%	23,8
Lithuania	49,7	49,4	24,3	-4,5%	-50,8%	-8,0%	45,5
Luxembourg	13,1	13,2	12,5	-2,3%	-5,1%	-28,0%	9,5
Malta (4)	2,0	2,0	3,0	-1,8%	44,2%	no target	no target
Netherlands	212,0	213,0	206,9	0,0%	-2,9%	-6,0%	200,3
Poland	453,3	563,4	395,6	-1,1%	-29,8%	-6,0%	529,6
Portugal	59,3	60,1	78,4	-1,9%	30,3%	27,0%	76,4
Romania	242,1	278,2	145,9	-4,4%	-47,6%	-8,0%	256,0
Slovakia	73,9	72,1	48,8	2,3%	-32,2%	-8,0%	66,3
Slovenia	18,5	20,4	21,3	3,5%	4,6%	-8,0%	18,7
Spain	285,1	289,8	405,7	-7,5%	40,0%	15,0%	333,2
Sweden	72,4	72,2	64,0	-3,3%	-11,3%	4,0%	75,0
United Kingdom	771,7	776,3	628,2	-1,8%	-19,1%	-12,5%	679,3
EU-15	**4244,7**	**4265,5**	**3970,5**	**-1,9%**	**-6,9%**	**-8,0%**	**3924,3**
EU-27 (2)	**5567,0**	**5767,1**	**4939,7**	**-2,0%**	**-14,3%**	**no target**	**no target**

Notes:

(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.

(2) EU-27 does not have a common Kyoto Protocol target.

(3) This data has not yet been reviewed by the UNFCCC.

(4)Malta and Cyprus do not have Kyoto targets.

Table 7: Kyoto targets for non-ETS sectors for 2008–2012, compared with emission projections

Member State	Base-year emissions (BY)	Kyoto or burden-sharing target		Total allowed emissions of non-ETS sectors (approxi-mation)	Projections of non-ETS emissions			Removals (-) or emissions (+) from carbon sink activities		Use of Kyoto mechanisms at government level		Projections of non-ETS emissions with carbon sink removals and use of Kyoto mechanisms		
				Annual average 2008-2012	Annual average 2008-2012	Gap between projections and target		Annual average 2008-2012		Annual average 2008-2012		Annual average 2008-2012	Gap between projections and target	
	Mt CO_2-eq.	Mt CO_2-eq.	% change from BY	Mt CO_2-eq.	Mt CO_2-eq.	Mt CO_2-eq.	% of BY emissions	Mt CO_2-eq.	% of BY emissions	Mt CO_2-eq.	% of BY emissions	Mt CO_2-eq.	Mt CO_2-eq.	% of BY emissions
Austria	79,0	68,8	-13,0%	38,0	54,7	16,6	21,0%	-0,7	-0,9%	-9,0	-11,4%	45,0	6,9	8,7%
Belgium	145,7	134,8	-7,5%	76,3	77,7	1,3	0,9%	0,0	0,0%	-4,3	-2,9%	73,4	-2,9	-2,0%
Bulgaria	132,6	122,0	-8,0%	83,9	32,9	-51,1	-38,5%	0,0	0,0%	0,0	0,0%	32,9	-51,1	-38,5%
Cyprus (3)	5,3	no target	no target	na	4,7	na	na	na	na	na	na	4,7	na	na
Czech Republic	194,2	178,7	-8,0%	92,0	61,2	-30,8	-15,9%	-1,2	-0,6%	25,0	12,9%	85,0	-7,0	-3,6%
Denmark (2)	69,3	54,8	-21,0%	30,8	36,3	5,5	8,0%	-1,7	-2,4%	-3,9	-5,6%	30,8	0,0	0,0%
Estonia	42,6	39,2	-8,0%	27,4	6,6	-20,8	-48,8%	0,0	0,0%	0,0	0,0%	6,6	-20,8	-48,8%
Finland	71,0	71,0	0,0%	33,4	32,8	-0,6	-0,9%	-0,6	-0,8%	-1,4	-2,0%	30,8	-2,6	-3,7%
France	563,9	563,9	0,0%	431,9	401,2	-30,8	-5,5%	-4,5	-0,8%	0,0	0,0%	396,7	-35,2	-6,2%
Germany	1.232,4	973,6	-21,0%	522,1	467,3	-54,8	-4,4%	-4,5	-0,4%	0,0	0,0%	462,8	-59,4	-4,8%
Greece	107,0	133,7	25,0%	65,4	57,1	-8,3	-7,8%	-1,2	-1,1%	0,0	0,0%	55,9	-9,5	-8,9%
Hungary	115,4	108,5	-6,0%	81,8	46,0	-35,8	-31,0%	-1,1	-0,9%	4,0	3,5%	48,9	-32,9	-28,5%
Ireland (2)	55,6	62,8	13,0%	41,6	45,8	4,3	7,7%	-2,7	-4,9%	-1,7	-3,0%	41,5	-0,1	-0,2%
Italy	516,9	483,3	-6,5%	281,7	316,5	34,8	6,7%	-10,2	-2,0%	-17,1	-3,3%	289,2	7,5	1,5%
Latvia	25,9	23,8	-8,0%	20,4	8,7	-11,7	-45,1%	0,0	0,0%	8,0	30,9%	16,7	-3,7	-14,2%
Lithuania	49,4	45,5	-8,0%	36,9	16,9	-20,0	-40,4%	0,0	0,0%	0,0	0,1%	17,0	-19,9	-40,3%
Luxembourg	13,2	9,5	-28,0%	7,0	10,5	3,5	26,3%	0,0	0,0%	-3,8	-28,9%	6,7	-0,3	-2,5%
Malta (3)	2,0	no target	no target	na	0,9	na	na	na	na	na	na	0,9	na	na
Netherlands	213,0	200,3	-6,0%	112,8	116,2	3,4	1,6%	-0,1	-0,1%	-13,0	-6,1%	103,1	-9,7	-4,6%
Poland	563,4	529,6	-6,0%	323,9	192,3	-131,7	-23,4%	-3,0	-0,5%	0,0	0,0%	189,3	-134,7	-23,9%
Portugal	60,1	76,4	27,0%	41,6	45,8	4,2	7,0%	-4,7	-7,7%	-4,8	-8,0%	36,3	-5,3	-8,8%
Romania	278,2	256,0	-8,0%	181,9	82,2	-99,7	-35,8%	0,0	0,0%	0,0	0,0%	82,2	-99,7	-35,8%
Slovakia	72,1	66,3	-8,0%	33,7	23,8	-10,0	-13,9%	0,0	0,0%	9,4	13,0%	33,2	-0,6	-0,8%
Slovenia	20,4	18,7	-8,0%	10,4	12,5	2,1	10,2%	-1,3	-6,5%	-1,0	-4,9%	10,2	-0,2	-1,2%
Spain	289,8	333,2	15,0%	181,0	238,9	57,9	20,0%	-5,5	-1,9%	-57,8	-19,9%	175,7	-5,3	-1,8%
Sweden	72,2	75,0	4,0%	52,6	43,8	-8,7	-12,1%	-2,1	-3,0%	0,0	0,0%	41,7	-10,9	-15,0%
United Kingdom	776,3	679,3	-12,5%	433,7	357,4	-76,2	-9,8%	-4,0	-0,5%	0,0	0,0%	353,4	-80,3	-10,3%
EU-15	**4.265,5**	**3.924,3**	**-8,0%**	**2.353,8**	**2.300,8**	**-53,0**	**-1,2%**	**-42,5**	**-1,0%**	**-116,7**	**-2,7%**	**2.141,6**	**-212,2**	**-5,0%**
EU-27	**5.767,1**	**no target**	**no target**	**na**	**2.787,7**	**na**	**na**	**-49,0**	**-0,8%**	**-71,3**	**-1,2%**	**2.667,4**	**na**	**na**

Notes:

(1) The approach to project GHG emissions for the Kyoto period between 2008 and 2012 in an up to date and consistent way is to stick as much as possible to reported emissions and use recent PRIMES and GAINS modelling results for the estimation of the trend development for all those countries, for which no up to date recent detailed national projections are available. The PRIMES-GAINS baseline scenario 2009 projects CO_2 and non-CO_2 greenhouse gas emissions from 2005 to 2030 at EU27 and Member State level based on the PRIMES energy system model for CO_2 emissions and the GAINS emissions model for non-CO_2 emissions, supported by the CAPRI agricultural model to estimate trends in agricultural activity.

The baseline 2009 reflects implemented policy measures at EU and national level as of spring 2009, notably the amended ETS directive, the regulation on CO2 emissions of new passenger cars, the implementing measures of the Eco-Design and Labelling Directives and national renewable policies. Achievement of national reduction targets for the sectors not covered by the ETS (Effort Sharing Decision) or national renewable energy targets is not assumed, but progress in the baseline depends on the extent to which legislation and other measures have been put in place by Member States and the EU to achieve these targets effectively. The scenario builds on macro projections of GDP and population which reflect the recent economic downturn, followed by sustained economic growth resuming after 2010. Consultations were organised with Member States during 2009 on inputs used and results[15].

The estimate focuses on non-ETS sector emissions, given that the ETS sector is fully covered by the EU emissions trading system which complies with the Kyoto targets. The average non-ETS emissions between 2008 and 2012 are derived as follows:

- 2008: historical emissions (UNFCCC minus scope adjusted ETS)
- 2010 PRIMES emission trend 2005-10 applied to 2005 historical emissions and controlled for consistency with measured 2008 emissions
- 2009 proxy data estimates by Member States as far as usable, for other countries: average between 2010 and 2008 emissions
- 2011 and 2012 PRIMES emission trend 2010-15 applied to estimated 2010 emissions

(2) Projections from Denmark and Ireland were provided in sufficient detail to be included in this analysis. Both countries also reported an amount of unused allowances projected to remain in their new entrants reserve under the EU ETS by the end of the commitment period, which they intend to use for Kyoto compliance. These amounts (0.55 million AAUs per year for Denmark and 1 million AAUs per year for Ireland) were included in the total allowed emissions of non-ETS sectors. The use of Kyoto mechanisms by Denmark includes also further budgetary measures foreseen [document Aktstykke nr. 116, adopted by Danish Parliament's Finance Committee on 22/04/2010].

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

(4) "na" means "not applicable"

For further details on PRIMES-GAINS projections and its underlying methodology see COMMISSION STAFF WORKING DOCUMENT accompanying the COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage {COM(2010) 265 final}. Background information and analysis, Part II. SEC(2010) 650, Brussels, 26.5.2010; Höglund-Isaksson, L., W. Winiwarter, F. Wagner, Z. Klimont and M. Amann: Potentials and costs for mitigation of non-CO2 greenhouse gas emissions in the European Union until 2030. Update 2010, May 2010, http://ec.europa.eu/environment/climat/pdf/climat_action/non_co2emissions_may2010.pdf; European Commission, DG Energy: EU energy trends to 2030 — UPDATE 2009, September 2010.

Table 8: Aggregate of GHG projections for the various scenarios

	Base year emissions	Projections of total emissions		Projections of total emissions with use of Kyoto mechanisms		Projections of total emissions with carbon sink removals and use of Kyoto mechanisms	
		Annual average 2008–2012	change from base year	Annual average 2008–2012	change from base year	Annual average 2008–2012	change from base year
	Mt CO2 eq.	Mt CO2 eq.	%	Mt CO2 eq.	%	Mt CO2 eq.	%
EU-15	4.265,5	3.821,0	-10,4%	3.704,3	-13,2%	3.661,8	-14,2%
EU-27	5.767,1	4.769,9	-17,3%	4.698,6	-18,5%	4.649,6	-19,4%
EU-27 (1990)	5.567,0	4.769,9	-14,3%	4.698,6	-15,6%	4.649,6	-16,5%

Table 9: Summary of implemented and planned policies and measures

Cross-cutting measures

Policies and measures 'Cross-cutting'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
EU Emission Trading Scheme	N/a	N/a	In force. First phase (2005-07)Second phase (2008-12)Third phase (2013-20)
Revision of the monitoring mechanism	N/a	N/a	In force
Link Kyoto flexible mechanisms to emissions trading	N/a	N/a	In force

Energy Supply

Policies and measures 'Energy supply'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
Promotion of electricity from RES-E (2001)	100-125[16]		In force
(New) Renewable energy Directive		600-900[17]	In force
CCS Directive	N/a	0.875[18]	In force
NER300 laying down criteria and measures for the financing of commercial demonstration projects for CCS and innovative renewable energy technologies under the revised EU ETS			In preparation
Directive on promotion of cogeneration	65[19]		In force
Further measures on renewable heat (including biomass action plan)	36-48[20]		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	N/a		Programme for policy support in renewable energy
Developing the internal energy market	80-120 [16]		Amendments to a number of directives[26] to continue to help complete the internal energy market.
TOTAL	**282-358**	**600.9-900.9**	

Energy demand

Policies and measures 'Energy demand'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation / timetable /comments
Directive on the energy performance of buildings	20[22]		In force Monitoring and review
Directive on the energy performance of buildings (recast)		190-290[23]	Adopted on 18 May 2010
Directive on ecodesign requirements for energy-related products Directive on labelling of the consumption of energy and other resources by energy-related products		170	9 implementing measures adopted on ecodesign and 8 on energy labelling. To be revised or complemented by further measures.
Regulation on the labelling of tyres with respect to fuel efficiency and other essential parameters		6-16	
Regulation on energy efficiency labelling programme for office equipment (Energy Star)		11.2 (2009-2014)	
Directive on energy end use efficiency and energy services	92[24]		In force; National Energy Efficiency Action Plans adopted in all EU-27.
Action Plan on Energy efficiency as a follow-up to the Green Paper	N/a		Launched Oct 2006[25]. Identifies 10 priority actions to achieve up to 20% energy savings by 2020.
Action under the directive on integrated pollution prevention and control (IPPC) on energy efficiency	Not known		Reference document on Best Available Techniques regarding Energy Efficiency finalised.
Intelligent Energy for Europe programme / Covenant of Mayors	N/a	132	Programme for policy support in energy efficiency
Public awareness campaign on energy efficiency	N/a		Supporting program as part of Intelligent Energy for Europe: In implementation
Programme for voluntary action on motors (Motor Challenge)	30 [16]		Supporting programme for voluntary action on efficient motor systems
Public procurement	25-40 [16]		EU Handbook developed for guidance for increased energy efficient public procurement
TOTAL	**193-208**	**509.2-619.2**	

Transport

Policies and measures 'Transport'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation / timetable / comments
Fuel quality Directive		62.5[26]	First implemented in 1998. Revisions adopted in December 2008
Directive on the promotion of transport bio-fuels	35-40[16]		In force
Voluntary agreements with European, Japanese and Korean car manufacturers.	75-80[16]		Implemented
Strategy for Car CO_2		50[27]	Adopted
Infrastructure charging for heavy goods (revised Eurovignette)	N/a		Adopted
Shifting the balance of transport modes	N/a		Package of measures in implementation
Fuel taxation	N/a		In force Focus on EU harmonisation of taxation, not on CO_2 reduction; ongoing review
Directive on mobile air conditioning systems: HFCs	See regulation on fluorinated gases		In force
Inclusion of Aviation in EU ETS		183[28]	Adopted. Will include all flights from 1/01/2012
Public procurement of vehicles		1.9[29]	
TOTAL	**110-120**	**297.4**	

Industry & non CO_2 gases

Policies and measures 'Industry'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation / timetable / comments
Regulation on fluorinated gases	23[30]		In force
IPPC & non-CO_2 gases	60-70[16]		In force In 2008 the Directive was codified and currently is being amended by the Industrial Emissions Directive

Waste

Policies and measures 'Waste'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation / timetable / comments
Landfill Directive	41[16]		In force
Waste Framework Directive			Adopted. Launched December 2005[31], including a revision of the original waste directive of 1975, revised in 2008.
Directives on waste electrical and electronic equipment (WEEE)	35[32]		In force. Revised directive in 2008

Integration Research & Development

Policies and measures	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
R&D framework Program	N/a		In force. Under the 7th 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.
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.

Integration Cohesion Policy

Policies and measures	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
Integration climate change in structural funds &cohesion funds	N/a	N/a	The Community Strategic Guidelines highlight investments to promote Kyoto commitments, including renewable energy, energy efficiency and sustainable transport systems as eligible areas for support. About € 48 billion are planned to co-finance projects on climate change in the 2007-2013 Cohesion Policy.

Agriculture

Policies and measures 'Agriculture'	Emission reduction potential in 2010 in EU-15 (Mt CO_2-eq.)	Emission reduction potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
CAP health check (2003 reform) - Rural development policies - Market policies	60-70[33] 12[33]		Adopted. In 2008 the EU Commission decided to move to new changes to the CAP.
Rural development policy	N/a		Rural development policy for 2007-13 focus on: - Improving competitiveness - Improving the environment - Improving quality of life and encourage diversification of the rural economy.
Support scheme for energy crops	N/a		Abolished as of 2010
N_2O from soils	10[34]		Improved implementation of the nitrates Directive
Proposed soil directive	N/a	N/a	The European Climate Change Programme (ECCP) Working Group on Sinks Related to Agricultural Soils estimated this potential at equivalent to 1.5 to 1.7% of the EU's anthropogenic CO2 emissions during the first commitment period under the Kyoto Protocol[35]

Forests

Policies and measures 'Forests'	Sequestration potential in 2010 in EU-15 (Mt CO_2-eq.)	Sequestration potential in 2020 in EU-27 (Mt CO_2-eq.)	Stage of implementation /timetable /comments
EU Forest Action Plan	N/a	N/a	Adopted. The Forest Action Plan presented in June 2006 builds on the EU's Forestry Strategy adopted in 1998.
Afforestation and reforestation: - Afforestation programmes - Natural forest expansion	14[16]		Possibility for support through forestry scheme of rural development
Forest management (various measures)	19 [16]		Possibility for support through forestry scheme of rural development, dependent on national implementation.

Table 10: Key figures of the emissions trading scheme for 2005-2007, 2008 and 2009 for EU-27

	Number of installations (a)			Allocated allowances			Verified emissions			Difference between allocated allowances and verified emissions		
				1 000 EUA (c)			kt CO2-eq.			%		
	2005–2007 (b)	2008	2009	2005–2007	2008	2009	2005–2007	2008	2009	2005–2007	2008	2009
1. Combustion installations	6.938	7.169	7.287	1.470.961	1.255.124	1.259.971	1.491.238	1.496.407	1.362.193	1,4%	19,2%	8,1%
2. Mineral oil refineries	150	150	150	160.772	151.441	151.740	151.676	153.335	144.309	-5,7%	1,3%	-4,9%
3. Coke ovens	20	21	22	22.789	22.531	22.409	20.857	20.989	15.757	-8,5%	-6,8%	-29,7%
4. Metal ore roasting or sintering	20	28	28	25.248	21.928	21.995	17.209	17.643	11.033	-31,8%	-19,5%	-49,8%
5. Pig iron or steel	229	237	238	155.631	184.733	184.950	131.478	133.276	95.423	-15,5%	-27,9%	-48,4%
6. Cement clinker or lime	532	555	559	193.715	209.613	212.080	186.884	189.029	150.111	-3,5%	-9,8%	-29,2%
7. Glass including glass fibre	412	438	441	22.495	25.152	25.533	20.497	22.704	19.361	-8,9%	-9,7%	-24,2%
8. Ceramic products by firing	1.140	1.079	1.085	18.118	18.609	19.094	14.821	13.362	8.990	-18,2%	-28,2%	-52,9%
9. Pulp, paper and board	798	813	812	37.138	37.919	38.382	29.769	31.177	27.506	-19,8%	-17,8%	-28,3%
99. Other activity opted-in	320	398	410	245	22.458	23.257	7.043	22.321	19.397	2777,4%	-0,6%	-16,6%
All EU installations	**10.559**	**10.888**	**11.032**	**2.107.111**	**1.949.510**	**1.959.411**	**2.071.472**	**2.100.241**	**1.854.080**	**-1,7%**	**7,7%**	**-5,4%**

Notes:

(a) All installations which have participated in the scheme are included, even if their account is already closed.

(b) For this analysis installations have been included if allocated allowances or verified emissions have been published for each year. With this attribute the average values are not the same as in last year's report, where averages have been calculated in a different way.

(c) European Union Allowance.

Source: EEA EU ETS data viewer (12 July 2010)

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

Member State	Average 2005-2007 verified emissions	Share of EU ETS in total GHG emissions in 2007	2008 verified emissions	Share of EU ETS in total GHG emissions in 2008	2009 verified emissions	2008-2012 EU ETS cap (a)	CDM / JI limit for EU ETS operators
	Mt CO2-eq. per year	%	Mt CO2-eq. per year	%	Mt CO2-eq. per year	Mt CO2-eq. per year	%
Austria	32,5	37%	32,0	37%	27,3	30,7	10,00%
Belgium	54,3	41%	55,5	42%	46,2	58,5	8,4%
Bulgaria	39,2 (b)	52%	38,3	52%	32,0	38,1	12,5%
Cyprus	5,2	55%	5,6	55%	0,1	5,2	10,0%
Czech Republic	84,6	60%	80,4	57%	73,8	86,7	10,0%
Denmark	30,0	44%	26,5	42%	25,5	24,0	17,0%
Estonia	13,4	70%	13,5	67%	10,3	11,8	0,0%
Finland	40,1	54%	36,2	52%	34,3	37,6	10,0%
France	128,3	24%	124,1	24%	111,1	132,0	13,5%
Germany	480,1	51%	472,7	49%	428,2	451,5	22,0%
Greece	71,3	55%	69,9	55%	63,7	68,3	9,0%
Hungary	26,3	35%	27,2	37%	22,4	26,7	10,0%
Ireland	21,8	31%	20,4	30%	17,2	21,3	10,0%
Italy	226,6	41%	220,7	41%	184,9	201,6	15,0%
Latvia	2,9	23%	2,7	23%	2,5	3,4	10,0%
Lithuania	6,4	24%	6,1	25%	5,8	8,6	20,0%
Luxembourg	2,6	20%	2,1	17%	2,2	2,5	10,0%
Malta	2,0	67%	2,0	68%	1,9	2,1	10,0%
Netherlands	79,0	39%	83,5	40%	81,1	87,5	10,0%
Poland	207,5	52%	204,1	52%	191,0	205,7	10,0%
Portugal	33,6	39%	29,9	38%	28,3	34,8	10,0%
Romania	69,6 (b)	46%	64,1	44%	48,6	74,1	10,0%
Slovak Republic	25,1	51%	25,3	52%	21,6	32,5	7,0%
Slovenia	8,9	44%	8,9	42%	8,1	8,3	15,8%
Spain	183,3	43%	163,5	40%	136,9	152,2	20,6%
Sweden	19,4	29%	20,1	31%	17,5	22,5	10,0%
United Kingdom	250,1	40%	265,1	42%	231,9	245,6	8,0%
EU-27	**2.071,5 (c)**	**43%**	**2.100,2**	**43%**	**1.854,1**	2.073,8	

Notes:

(a) 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 entrant reserves are still pending. For Denmark and 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.

(b) Verified emissions for 2007only as BG and RO did not participate in the EU ETS in 2005 and 2006.

(c) The total EU-27 figure was calculated on the basis of actual emissions as reported in the CITL and divided by the number of 3 years, 2007 emissions for BG and RO were also divided by 3.

Source: EEA EU ETS data viewer (12 July 2010), EEA GHG data viewer (12 July 2010), National Allocation Plans, NAP table decisions

Table 12: Planned government use of the Kyoto mechanisms

Member State	Planned use of Kyoto mechanisms	Type of Kyoto mechanisms (ET, CDM, JI)	Achievement of Kyoto target planned through domestic action only	Implemented use of credits at government level (c)	Projected emission reduction 2008-12 through the use of Kyoto mechanisms	Budget
				[Mt CO2 eq. per year]	[Mt CO2 eq. per year]	[Mio € for 2008-2012]
Austria	Yes	IET, JI, CDM	No	0,6	9,0	531
Belgium	Yes	IET, JI, CDM	No	1,0	4,3	263
Bulgaria	No	-	Yes	0,0	-	-
Cyprus (a)	No	-	na	na	-	-
Czech Republic	No	-	Yes	-27,2	-25,0	-
Denmark	Yes	IET, JI, CDM	No	0,5	3,9	217
Estonia	No	-	Yes	-0,1	0,0	-
Finland	Yes	IET, JI, CDM	No	0,2	1,4	70
France	No	-	Yes	0,1	-	-
Germany	No	-	Yes	1,1	-	-
Greece	No	-	Yes	0,0	-	-
Hungary	No	-	Yes	-3,4	-4,0	-
Ireland	Yes	IET, JI, CDM	No	2,7	1,7	290
Italy	Yes	IET, JI, CDM	No	0,7	17,1	79
Latvia	No	-	Yes	-18,2	-8,0	-
Lithuania	No	-	Yes	0,0	0,0	-
Luxembourg	Yes	IET, JI, CDM	No	0,4	3,8	360
Malta (a)	No	-	na	na	-	-
Netherlands	Yes	IET, JI, CDM	No	7,7	13,0	507
Poland	No	-	Yes	0,0	-	-
Portugal	Yes	IET, JI, CDM	No	0,2	4,8	305
Romania	No	-	Yes	0,4	-	-
Slovakia	No	-	Yes	-7,4	-9,4	-
Slovenia	Yes	IET, JI, CDM	No	0,0	1,0	80
Spain	Yes	IET, JI, CDM	No	10,9	57,8	638
Sweden (b)	No	(JI, CDM)	Yes	-0,4	(2)	41
United Kingdom	No	-	Yes	2,2	-	-
EU-15	**Yes**	**IET, JI, CDM**	**No**	**28,0**	**116,7**	**3.301**
EU-27	**Yes**	**IET, JI, CDM**	**n.a.**	**-27,9**	**71,3**	**3.381**

Notes:

(a) Cyprus and Malta are non-Annex I Parties to the Kyoto Protocol and do not have an emissions target for the period 2008-2012.

(b) Sweden has planned to purchase 2 million AAU per year, but does intend to use them to achieve its commitment under the Kyoto Protocol.

(c) Credits delivered to/sold from party holding account, 2008-2009 average.

"na" means "not applicable"

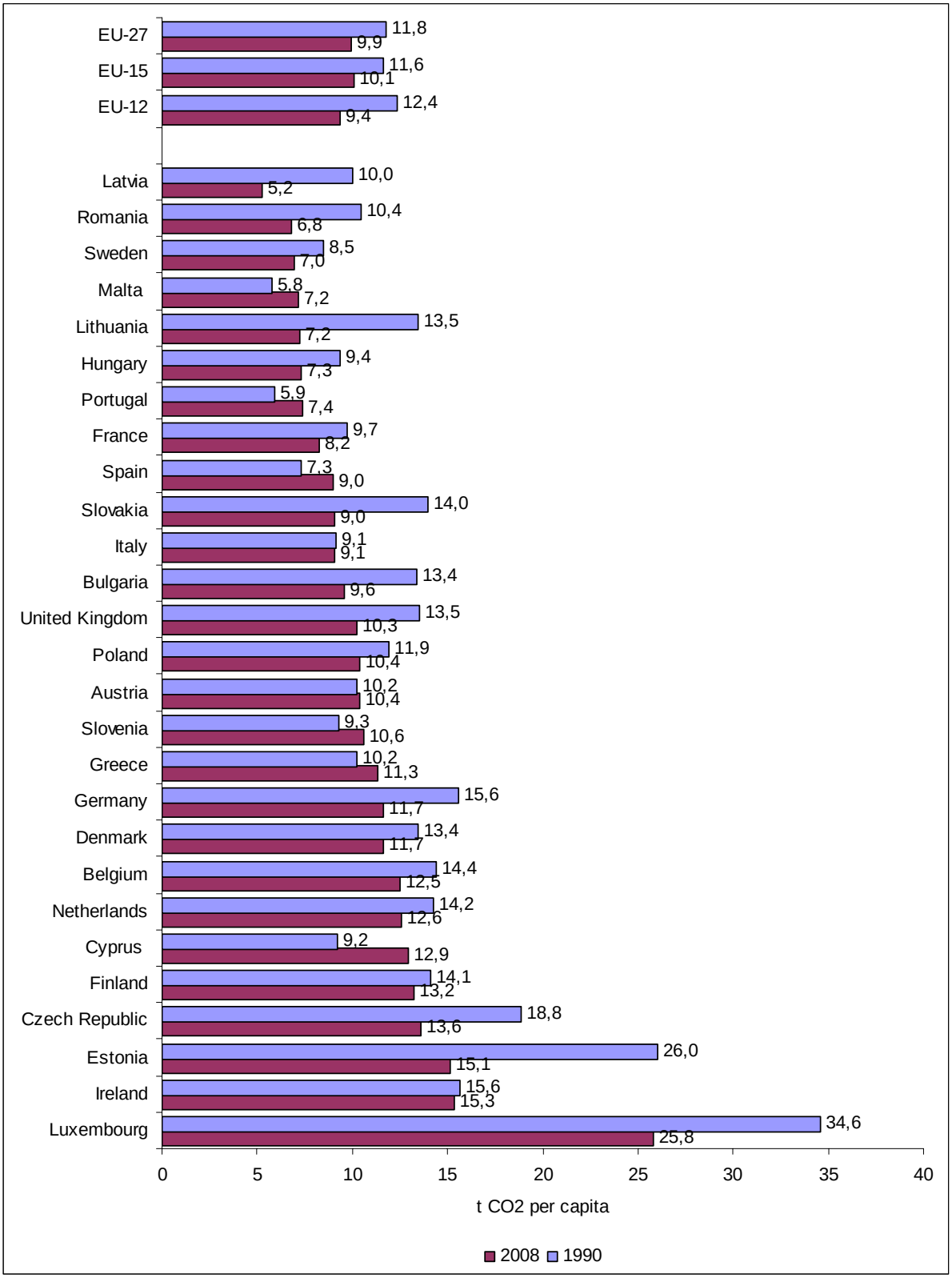
Source: Questionnaires and projection reports submitted under the EC greenhouse gas Monitoring Mechanism, SEF tables (26 Mai 2010) and the EEA EU ETS data viewer (12 July 2010)

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
	Net carbon stock change during 2008–12	Election of activities[(a)]	Net carbon stock change during 2008–12	Maximum allowance for forest management	
	[million tonnes CO_2 per year]		[million tonnes CO_2 per year]	[million tonnes CO_2 per year]	[million tonnes CO_2 per year]
Austria	-0.7	None	Not applicable	Not applicable	-0,70
Belgium	No estimate available	None	Not applicable	Not applicable	No estimate available
Bulgaria	Not reported	None	Not applicable	Not applicable	No estimate available
Cyprus	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Czech Republic	Probably small sink	FM	Likely larger than max. allowance	-1,17	-1,17
Denmark	-0,13	FM, CM, GM	FM: 0.42 CM+GM: - 1.7	-0,18	-1,65
Estonia	No estimate available	None	No estimates available	NA	No estimate available
Finland	+ 1.9 to + 2.4	FM	- 2.5 to - 3.0	-0,59	-0,59
France	-1,24	FM	-83,97	-3,23	-4,47
Germany	No estimate available	FM	-7,30	-4,55	-4,55
Greece	-0,88	FM	- 2 to - 4	-0,33	-1,21
Hungary	Probably net sink	FM	-4,24	-1,06	-1,06
Ireland	-2,72	None	Not applicable	NA	-2,72
Italy	No estimate available	FM	-10,20	-10,19	-10,19
Latvia	Net sink	FM	No estimates available	-1,25	No estimate available
Lithuania	Probably net sink	FM	No estimates available	-1,03	No estimate available
Luxembourg	0,00	None	Not applicable	Not applicable	No estimate available
Malta	Not applicable	NA	Not applicable	Not applicable	Not applicable
Netherlands	-0,11	None	Not applicable	Not applicable	-0,11
Poland	Net sink	FM	Likely larger than max. allowance	-3,01	-3,01
Portugal	-3,36	FM, CM, GM	FM: - 0.8 CM+GM: - 0.5	-0,81	-4,66
Romania	Not reported	FM, Revegetation	Not reported	-4,03	No estimate available
Slovakia	Net sink	None	Not applicable	Not applicable	No estimate available
Slovenia	No estimate available	FM	-1,32	-1,32	-1,32
Spain	-3,00	FM, CM	-2,46	-2,46	-5,46
Sweden	0,60	FM	-15,00	-2,13	-2,13
United Kingdom	-2,68	FM	-1,69	-1,36	-4,04
EU-15	**-12,05**	**FM, CM, GM**	**-27,66**		**-42,45**
EU-27	**-12,05**	Not applicable	**-34,22**	Not applicable	**-49,01**

Notes:
Consistent with the reporting of emission inventories a negative sign '-' is used for removals and a positive sign '+' for emissions; n.a.: not applicable; n.e.: not estimated.
(a) FM: forest management; CM: cropland management; GM: grazing land management.
(b) In addition to accounting for forest management up to the maximum allowance Parties may account for removals from forest management to compensate net emissions under Art. 3.3. In Finland and Sweden, removals from forest management are projected to exceed the sum of emissions under Art. 3.3. and the maximum allowance for forest management.
(c) The sum for EU-15 and EU-27 includes emissions and removals from Article 3.4 actvities as indicated by Member States with application of the cap for Forest Management.
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 per capita of EU-27 Member States for 1990 and 2008



Source: EEA

Technical notes

(1) In the Council decision (2002/358/EC) on the approval by the EU of the Kyoto Protocol the various commitments of the Member States are expressed as percentage changes from the base-year. In 2006 the respective emission levels were expressed in terms of tonnes of CO_2-equivalent in the Commission Decision 2006/944/EC. In connection with Council decision 2002/358/EC, the Council of Environment Ministers and the Commission have, in a joint statement, noted "that the respective emission levels referred to in the decision shall be expressed in terms of tonnes of carbon dioxide equivalent, …, taking into account the assumptions relating to base year emissions as also reflected in the relevant statements to the Council minutes to the Council Conclusions of 16-17 June 1998. …". Following the UNFCCC reviews of Member States' 'initial reports' during 2007 and 2008 and pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol, the base-year emissions for the EU-15 have been fixed to 4 265.5 million tonnes CO2 equivalents.

(2) The Annual European Community greenhouse gas inventory 1990–2008 and inventory report 2010 (EEA, Technical report No 6/2010). Under the EU monitoring mechanism decision (Decision 280/2004), all MS submitted all or almost all Common Reporting Format (CRF) tables, (i.e., more than 90 %) for 1990–2008.

(3) Based on PRIMES/GAINS and national projections for Denmark and Ireland. The use of unused allowances from the new entrant reserve under the EU ETS was not taken into account in the analysis.

(4) Cyprus and Malta do not have targets under the Kyoto Protocol

(5) For further information see the EEA website: http://www.eea.europa.eu/highlights/recession-accelerates-the-decline-in

(6) 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% in transport by 2020. Also a 10% share of renewable energy sources in transport by 2020 target was adopted. (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)

Directive 2008/101/EC included aviation into EU ETS. It is estimated that a total of 183 million tonnes of CO2 will be saved per year on the flights covered by the scheme equal to a 46% reduction by 2020 compared with business as usual. From 1 January 2012 flights between EU airports and all flights arriving or departing form the airports in the EU will be covered by the system. (OJ 13.01.2009 L 8)

(7) Commission Decision of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage (OJ 5.1.2010)

(8) Commission Decision of 9 July 2010 on the Community-wide quantity of allowances to be issued under the EU Emission Trading Scheme for 2013 (2010/384/EU) (OJ 10.7.2010 L175)

(9) Commission Decision of 8 June 2010 amending Decision 2007/589/EC as regards the inclusion of monitoring and reporting guidelines for greenhouse gas emissions from the capture, transport and geological storage of carbon dioxide (2010/345/EU) (OJ 22.6.2010)

(10) Commission Regulation (EU) No 82/2010 of 28 January 2010 amending Regulation (EC) No 748/2009 on the list of aircraft operators which performed an aviation activity listed in Annex I to Directive 2003/87/EC on or after 1 January 2006 specifying the administering Member State for each aircraft operator (OJ 29.1.2010 L25)

(11) Commission Regulation (EU) No 606/2010 of 9 July 2010 on the approval of a simplified tool developed by the European organisation for air safety navigation (Eurocontrol) to estimate the fuel consumption of certain small emitting aircraft operators (OJ 10.7.2010 L175)

(12) CITL, 12 July 2010

(13) The revised directive on EU ETS allows existing operators (from 2013) to use JI and CDM credits in such a way that the overall use of credits is limited to 50% of the EU-wide reductions below the 2005 levels over the period 2008-2020 and for new sectors and aviation 50% of the reductions below the 2005 levels over the period from the date of their inclusion in the EU ETS to 2020. This amounts to an overall JI/CDM limit of roughly 6.5% of the EU-wide cap over the period 2008-2020.The exact limits for each installation will still need to be determined but the Directive already grants to existing operators an access to credits of at least of 11% of their allocation during the period 2008-2012. In addition, new entrants and new sectors including aviation receive minimum levels of access to JI and CDM credits.

(14) Base year level of GHG emissions for Croatia has not been decided yet and the case under the Executive Branch of the Compliance Committee is ongoing

(15) For further details see the COMMISSION STAFF WORKING DOCUMENT SEC(2010) 650 of 26.5.2010 accompanying the COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage{COM(2010) 265 final}. Background information and analysis, Part II (in particular section 3.2 and Annex 10.4); http://ec.europa.eu/environment/climat/pdf/26-05-2010working_doc2.pdf

(16) Second ECCP progress report April 2003 http://europa.eu.int/comm/environment/climat/pdf/second_eccp_report.pdf

(17) Directive on the promotion of energy from renewable sources, Citizens' Summary, 23 January 2008

(18) The original figure refers to a cumulative estimate of 7 MtCO2eq by 2020.

(19) Proposal for a Directive of the European Parliament and of the Council on the promotion of cogeneration based on a useful heat demand in the internal energy market

(20) COM (2005) 628 final “Biomass Action Plan, December 2005”

(21) Decision No 1229/2003/EC, Regulation (EC) No 807/2004, Directive 2003/54/EC & 2003/55/EC, Regulation (EC) No 1228/2003

(22) COM (2004)366 – final “The share of renewable energy in the EU, May 2004

(23) Energy performance of buildings – impact assessment on the revised directive SEC(2008) 2864

(24) Proposal for a Directive of the European Parliament and of the Council on End-Use Energy Efficiency and Energy Services, COM(2003) 739 final

(25) COM(2006)545 – final “Action Plan for Energy Efficiency: Realising the Potential”

(26) Questions and answers on the EU strategy to reduce CO2 emissions from cars, MEMO/07/46.

(27) Questions and answers on the EU strategy to reduce CO2 emissions from cars, MEMO/07/46.

(28) Inclusion of Aviation in the EU Greenhouse Gas Emissions Trading Scheme (EU ETS), Summary of the Impact Assessment, SEC(2006) 1685

(29) Directive on the promotion of clean and energy efficient road transport vehicles, 2005/0283 (COD)

(30) Regulation proposal on certain fluorinated greenhouse gases, COM (2003) 492 final; estimated emissions reductions are due to both the implementation of F-gases Regulation (842/2006) and the MAC Directive (2006/40/EC- for air conditioning systems in motor vehicles)

(31) Thematic Strategy on Waste Prevention, COM (2005) 666 and 667 (final)

(32) Value in 2011 - Directive on waste electrical and electronic equipment (WEEE), (recast) Impact Assessment, {COM(2008) 810}, {SEC(2008) 2933}

(33) From ECCP working group on agriculture and sub-group on carbon sinks related to agricultural soils. Some of potential for bioenergy crops will be covered within potential from biofuels, cogeneration from biomass, further promotion of RES-H etc.

(34) EEA, 2008, GHG Trends and Projections in Europe http://www.eea.europa.eu/publications/eea_report_2008_5/TPReport2008Annexes.pdf

(35) Thematic Strategy for Soil Protection, COM(2006)231

(36) Civil domestic passenger and freight traffic that departs and arrives in the same country