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Approximated EU GHG inventory:

Proxy GHG estimates for 2012

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European Environment Agency

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Abbreviations

AD	Activity data
AR	Activity rate
BP	British Petroleum
CH_4	Methane
EUTL	European Union Transaction Log
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
CRF	Common reporting format
EC	European Commission
EEA	European Environment Agency
ETS	Emissions Trading Scheme
EU	European Union
EU-13	Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia
EU-15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.
EU-27	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom
EU-28	Austria, Belgium, Bulgaria, **Croatia**, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom
GDP	Gross domestic product
GHG	Greenhouse gas
HFCs	Hydrofluorocarbons
IEA	International Energy Agency
IEF	Implied emission factor
IPCC	Intergovernmental Panel on Climate Change

LULUCF	Land use, land-use change and forestry
MS	Member State
Mt	Million tons
N_2O	Nitrous oxide
PFCs	Perfluorocarbons
QA/QC	Quality assurance and quality control
SF_6	Sulphur Hexafluoride
UNFCCC	United Nations Framework Convention on Climate Change

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The coordinating author was Anke Herold (Oeko-Institut). Other authors were, in alphabetical order, Graham Anderson (Oeko-Institut), Lukas Emele (Oeko-Institut) and Wolfram Jörß (Oeko-Institut).

The EEA project manager was Ricardo Fernandez. The EEA acknowledges and greatly appreciates the input and comments received from EU Member States and other EEA member countries during the Eionet consultation period and related discussions within the WG1 of the Climate Change Committee.

Note to the reader: Estonia corrected its energy statistics in September and emissions in non-ETS sectors appear to be overestimated in the current report as a result. The EEA has not been able to incorporate Estonia's late data revision in the Proxy GHG estimates

Summary

Objective of the report

This report provides approximated estimates of greenhouse gas (GHG) emissions in the EU-15 and EU-28 for the year 2012. They are also referred to as 'proxy' estimates in this report, and they are based on incomplete activity and/or emissions data at country level. The EU proxy estimates include Croatia for the first time. The official submission of 2012 data to the United Nations Framework Convention on Climate Change (UNFCCC) will occur in 2014.

In recent years, the EEA and its European Topic Centre on Air Pollution and Climate Change Mitigation have developed a methodology to estimate GHG emissions using a 'bottom-up' approach. This 'bottom-up' approach is used in this report. It uses data (or estimates) for individual countries, sectors and gases to derive EU GHG estimates for the preceding year (also known as 't-minus-1'). For transparency, this report shows the country-level GHG estimates from which the EU estimates have been derived. The 2012 estimates are based on the latest activity data available at country level, and these estimates assume no change in emission factors or methodologies as compared to the official 2013 submissions to UNFCCC (which relate to emissions in 2011).

The data and estimates used in this report have mostly been compiled by the EEA's European Topic Centre on Air Pollution and Climate Change Mitigation and are shown in Annex II of the full report. However, some EU Member States also estimate and publish their own proxy estimates of GHG emissions for the preceding year. Where such estimates exist they are clearly referenced in this report in order to ensure complete transparency regarding the different GHG estimates available. EU Member State own proxy estimates were also used for quality assurance and quality control of the EEA's GHG proxy estimates for 2012.

Finally, the EEA has also used the proxy estimates of 2012 GHG emissions produced by EEA member countries to assess progress towards the Kyoto targets in its annual trends and projections report (due to be published alongside the present report). In that report, the EEA's own proxy estimates for 2012 were only used for countries that lack their own early estimates to track progress towards national and EU targets.

Rationale for proxy GHG emission estimates

The European Union (EU), as a Party to the UNFCCC, reports annually on GHG inventories within the area covered by its Member States (i.e. emissions occurring within its territory). National GHG inventories for EU Member States are only available with a delay of one and a half years. Inventories submitted on 15 April of the year t therefore include data up to the year t-minus-2. For example, the data submitted on 15 April 2013 included data covering all of 2011, but not 2012.

The latest official EU data available (1990–2011) covering all countries, sectors and gases were released on 30 May 2013 (EEA, 2013a) in connection with the annual submission of the EU GHG inventory to the UNFCCC (EEA, 2013b). The inventory data include GHG emissions not controlled by the Montreal Protocol — both from sectors covered by the EU Emission Trading

Scheme (ETS) and from non-trading sectors. However, whereas UNFCCC emissions run on a year t-minus-2 timeline, Kyoto registries and EU ETS information are available on a year t-minus-1 timeline. Verified EU ETS emissions are therefore already available for 2012 (EEA, 2013b).

There are clear advantages in generating proxy GHG estimates for all sectors. Under the Kyoto Protocol, the EU-15 took on a common commitment to reduce emissions by 8 % between 2008 and 2012 compared to emissions in the base year. Total emissions from sectors included in the EU ETS are capped for the period 2008–2012, meaning that EU compliance with the Kyoto targets will be largely determined by the performance of non-ETS sectors, i.e. those sectors for which data are only available on a t-minus-2 timeline. A proxy estimate of the previous year's emissions can therefore improve tracking and analysis of progress towards Kyoto targets, as is done in the annual EEA report on greenhouse gas emission trends and projections in Europe. Member States seeking to determine whether they need to use Kyoto's flexible mechanisms to achieve their targets also benefit from access to proxy data.

In addition, the EU's 2009 Climate and Energy Package encourages both the trading and non-trading sectors to run on similar timelines. The Package is the EU's first step in its commitment to limit the global average temperature increase to no more than 2 °C above pre-industrial levels. In order to achieve this commitment, Member States agreed to reduce total EU GHG emissions in 2020 by 20 % compared to 1990 (and to achieve a reduction of 21 % for ETS sectors by 2005, as well as a reduction of 10 %, with country-specific targets, for non-ETS sectors compared to 2005). As with Kyoto, meeting the 2020 national targets will largely be determined by how countries reduce emissions in the non-trading sectors. Proxy GHG estimates can therefore help track progress towards the EU and national targets for 2020.

Publishing a proxy GHG emissions report also fulfils the goals of the 'Beyond GDP' process (EU, 2011), which encourages authorities to produce data on the environment with the same frequency and timeliness as they produce data on the economy.

Previous proxy GHG emission estimates for 2008, 2009, 2010 and 2011

At the end of August 2009, the EEA published its first proxy estimates of total greenhouse gas emissions in 2008 (EEA, 2009). The actual reduction in greenhouse gas emissions in 2008, as officially reported to the UNFCCC in 2010, was within the 'confidence interval' of the EEA's mean proxy estimates for the EU-15 and the EU-27, indicating that our proxy estimates were relatively accurate.

In 2010, 2011, and 2012, the EEA continued to publish its proxy emission estimates for 2009, 2010 and 2011 respectively (EEA, 2010, 2011 and 2012). Just as was the case with our first proxy estimates, the EEA's proxy estimates for the EU-15 and the EU-27 were accurate for 2009 and 2010, with subsequent official UNFCCC emissions falling within the expected range of uncertainty. For the proxy inventory for the year 2011, the EEA underestimated the emissions decline at EU level compared to the official data submitted to UNFCCCC in 2013. One of the key reasons for this underestimate was that we compiled our estimates without a complete energy balance by final uses, a problem that mainly affected our knowledge of the consumption of heat

in the residential and commercial sectors. This has been taken into account in the uncertainty estimates of this year's prediction.

The main factors explaining the change in emissions in 2011 compared to 2010 were further analysed in the 2013 EU GHG inventory submitted to the UNFCCC and in the underpinning analysis paper 'Why did greenhouse gas emissions decrease in the EU in 2011?' (EEA, 2013b).

Methodology for proxy GHG emission estimates

The present report sets out the estimated GHG emissions for 2012 for the EU Member States, the EU-15 and the EU-28 based on data sources that were published by mid-July of 2013. The estimates cover total GHG emissions as reported under the Kyoto Protocol and the UNFCCC excluding the land use, land-use change and forestry (LULUCF) sector.

Estimates are made for all major source categories in all sectors. For the most important source categories, data sources with updated activity or emissions data for the year t-minus-1 were identified and used to calculate emissions. For source categories for which no international datasets with updated activity data exist or which are too complex for such an approach, emissions were extrapolated from past trends (linear extrapolation), or emissions from the previous year were kept constant if historic data did not show a clear trend. On this basis, a detailed bottom-up approach was developed covering the full scope of emissions included in a GHG inventory submission.

The EEA estimates are based on publicly available datasets at the national, European and international levels. These datasets are disaggregated by major source categories in all sectors reported under the UNFCCC and the Kyoto Protocol. Some countries provided and/or published their own proxy greenhouse gas estimates (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Spain, Slovenia, Sweden, the United Kingdom, Norway and Switzerland). Where relevant, the EEA also used these estimates to assess current progress in relation to greenhouse gas emission targets and to verify its own calculations.

Proxy GHG emission estimates for 2012 at EU level

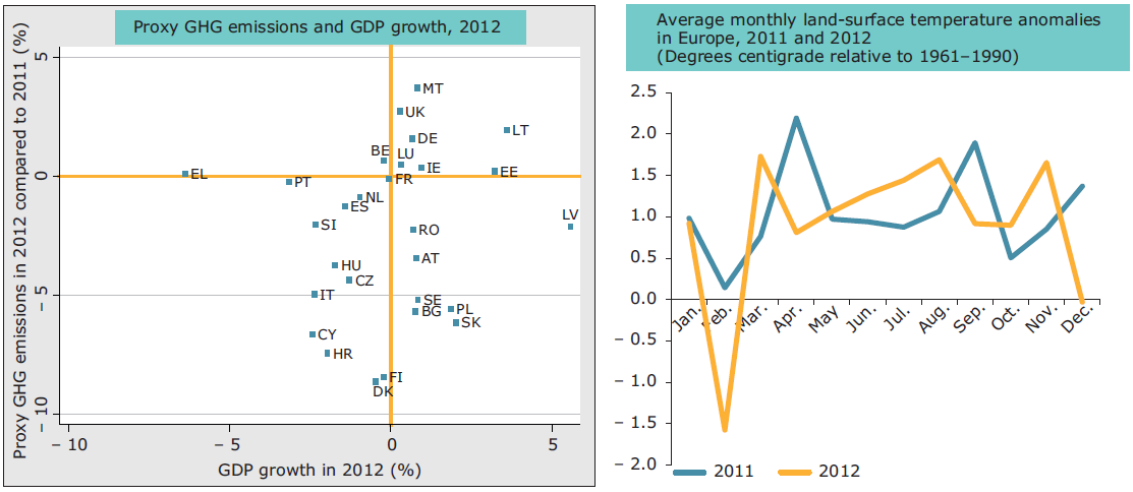
The 2012 EEA estimates indicate that EU greenhouse gas emissions continued to decrease slightly between 2011 and 2012, although by less than the decrease in emissions between 2010 and 2011. Compared to the 2011 official emissions published earlier this year, the fall in total greenhouse gas emissions (without LULUCF) between 2011 and 2012 is estimated to be -9.2 Mt CO_2eq (CO_2 equivalent) or a decline of 0.3 % (uncertainty +/-1.7 %) for the EU-15. For the EU-28, the decline (also without LULUCF) is estimated at 42.6 Mt CO_2eq or 0.9 % (uncertainty +/-2.3 %). The greenhouse gas emissions for the new EU Member States in 2012 (EU-13) decreased by -3.8 % compared to the previous year. Based on these proxy estimates, total EU-15 emissions in 2012 would be 14.9 % below the 1990 level and 15.1 % below base year level. For the EU-28, total GHG emissions in 2012 are estimated to be 19 % below 1990 emissions.

The small emission decrease for the EU-28 came along with economic recession across the EU between 2011 and 2012. Gross Domestic Product (GDP) decreased by -0.3 % for the EU-28 in this period. Total GHG emissions are expected to decrease by 0.9% in 2012 in EU-28. Notwith-

standing economic developments in specific sectors and countries, there was no apparent correlation between GDP and GHG emissions in the EU in 2012, although emissions did not increase significantly in any MS where GDP was negative (see Figure ES.0).

The winter in Europe was generally colder in 2012 than it was in 2011 (see Figure ES.0). This led to higher heating demand and higher emissions from the residential and commercial sectors. However, higher residential emissions did not offset much lower emissions in other combustion sectors, and as a result, total fossil fuel emissions decreased for the EU as a whole.

Figure ES. 0 GHG emissions, GDP growth and monthly European temperatures, changes 2011-2012



Note: GDP from DG ECFIN's Ameco database, European Commission. Average monthly land-surface temperatures from the UK's Met Office Hadley Centre, HadCRUT3 dataset.

Source: EEA

Between 2011 and 2012 emission reductions in the EU-15 were greater for the installations covered by the European Emissions Trading System (a decline in emissions of 0.9 %) (see Figure ES.4 at the end of this summary) than they were in the non-ETS sectors (where emissions remained at a relatively stable level, growing by 0.1 %). In the EU-28, the ETS sectors showed larger reductions in the same period (falling 1.9 %) compared to the non-ETS sectors (which also saw little change, with emissions falling 0.2 %). For the new Member States (EU-13), the decrease in the ETS sectors between 2011 and 2012 was also greater (falling 5.3 %) than the non-ETS sectors (where emissions fell by 1.9%).

On a sectoral basis, the greatest absolute reduction in emissions in the EU occurred in the energy sector (a broad definition that covers all fuel combustion activities including transport, domestic heating, and electricity production from combustible fuels such as coal, oil and gas), and this reduction was largely made in the new Member States. GHG emissions from the energy sector fell by -34.4 Mt CO_2eq (a decline of 0.9 %) across the EU-28 between 2011 and 2012. The decrease for the energy sector in the EU-15 was only -3.1 Mt CO_2eq (a decline of 0.1 %). This decrease in emissions in the energy sector reflects the decline of gross inland energy consumption in the EU-28 in 2012. Within the energy sector, emissions decreased mostly in manufacturing industries, construction and transportation. However, emissions from the residential and

commercial parts of the energy sector increased significantly because of larger heat consumption.

Based on BP data (BP, 2013), total fuel consumption in the EU fell by 2 % between 2011 and 2012 (falling by 2 % in the EU-15, and by 4 % in the new Member States), with different trends for the different fossil fuel types: natural gas consumption fell by 2 % and liquid fuel consumption fell by 4 %, but consumption of coal increased by 4 %.[1] The decrease in oil consumption is likely to be an effect of oil prices remaining at the high levels they reached in 2011.

Electricity production from renewable sources increased by about 11 % between 2011 and 2012 in the EU, according to BP data (BP, 2013).[2] Energy production from wind and solar continued to increase strongly in 2012. The use of renewables continues to play an important role in GHG mitigation efforts by the EU and its Member States. Nuclear electricity production across the EU-27 decreased by 3 % in 2012 compared to 2011 according to BP data.

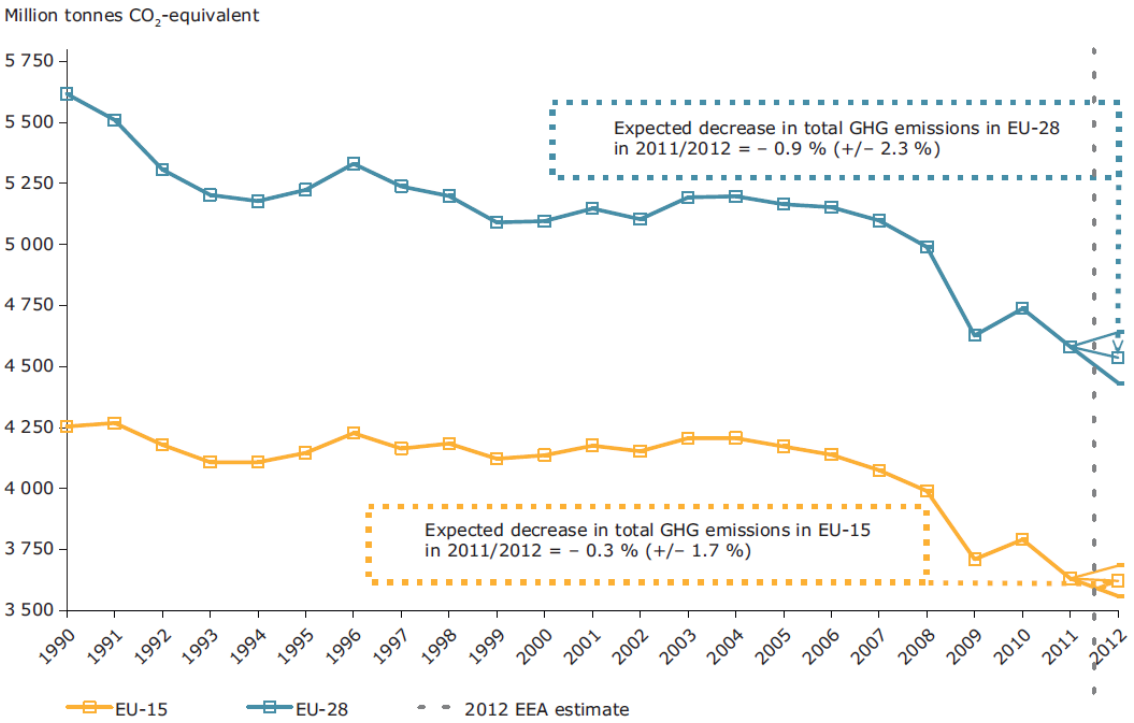
Greenhouse gas emissions from industrial processes decreased in 2012 compared to 2011, falling by 1.4 % in the EU-15 and by 1.6 % in the EU-28. Emissions from mineral products fell by 6.2 % in the EU-15 in 2012 compared to 2011, and by 5.5 % in the EU-28 in the same period. This is consistent with the decrease in emissions from cement and lime production under the EU-ETS in the same period, which was 6.9 % for the EU-15 and 7.0 % for the EU-27. Emissions released by metal production decreased in the EU-15 by -2.9 % and in the EU-28 by 1.4 % between 2011 and 2012. Emissions from chemical production remained relatively stable in the EU-15 (rising by only 0.6 % between 2011 and 2012) while decreasing (down 1.6 %) in the EU-28.

[1] Whereas fuel consumption trends based on Eurostat monthly data show relatively similar trends for liquid and solid fuels than BP data, Eurostat data indicate a higher reduction in natural gas consumption in the EU (of 4 %) than BP data.

[2] Eurostat data were also analysed here, however these data were incomplete with regard to biomass consumption and solar consumption for some EU Member States and were therefore not used for the assessment of trends.

Figure ES.1 shows the emission trend for total GHG emissions without LULUCF in the EU-15 and EU-28 in the period 1990–2012([3]).

Figure ES. 1 Trends in total greenhouse gas emissions excluding LULUCF in the EU-15 and the EU-27



Source: EEA European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/ACM), based on the 2013 EU greenhouse gas inventory submitted to the UNFCCC for the years 1990-2011 and proxy estimates for 2012

Change in GHG emissions in the period 1990–2012

Figure ES.2 presents the estimated change in GHG emissions for each Member State between 1990 and 2012 ([4]).

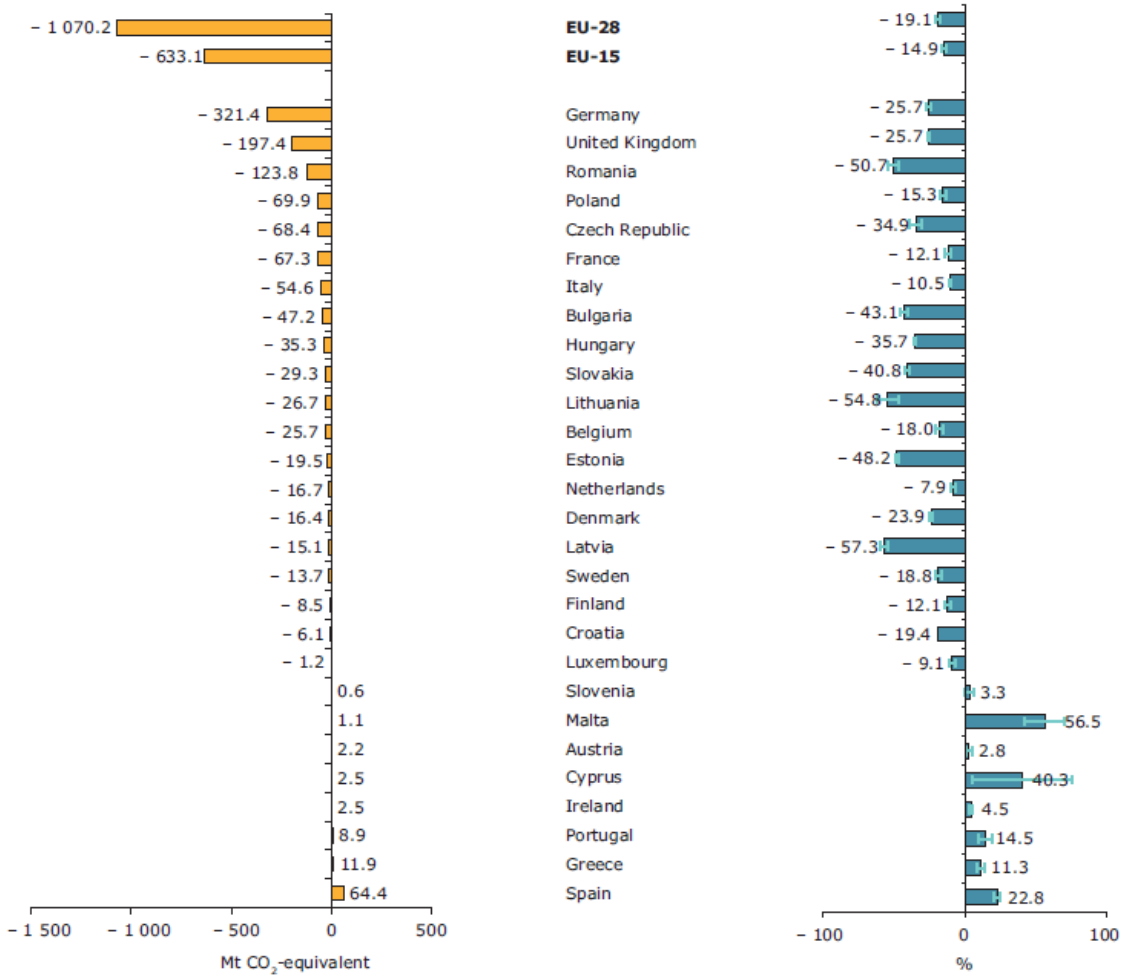
[3] This is not equivalent to the difference to base year emissions because of accounting rules such as the selection of the base year (which varies from country to country) for F-gases and the continuing recalculations of GHG inventories.

[4]The percentage change cannot be directly compared to the emission reduction obligations under the Kyoto Protocol and the Effort Sharing Decision because Member State net balances under the EU Emission Trading Scheme (ETS) need to be taken into account and the fixed base-year emissions are not identical to the latest recalculation of 1990 emissions. Furthermore, Member State use of flexible mechanisms and LULUCF activities also contribute to compliance with the Kyoto targets.

Based on these 2012 estimates, total EU-15 GHG emissions in 2012 were 14.9 % below the 1990 level and 15.1 % below base year level. For the EU-28, total GHG emissions in 2012 are estimated to be 19.1 % below 1990 levels.

A wide range of factors and policies (climate-related and non-climate-related) have contributed to the long-term decline in GHG emissions in the EU, particularly for CO_2. These include improvements in energy efficiency, the shift to less carbon-intensive fossil fuels, and the strong increase in renewable energy use. Implementation of the EU's Climate and Energy Package should lead to further reductions in emissions. The direct effects of the Montreal Protocol in reducing emissions of ozone-depleting substances have also indirectly contributed to very significant reductions in emissions of some potent greenhouse gases such as chlorofluorocarbons. Specific polices to reduce fluorinated gases have also slowed the growth in consumption of fluorinated gases with high global warming potential. Other EU policies such as the Nitrates Directive, the Common Agriculture Policy (CAP), and the Landfill Waste Directive have also been successful in indirectly reducing greenhouse gas emissions from non-CO_2 gases such as methane and nitrous oxides.

Figure ES. 2 Change in total GHG emissions (without LULUCF) in the EU and its Member States, 1990–2012



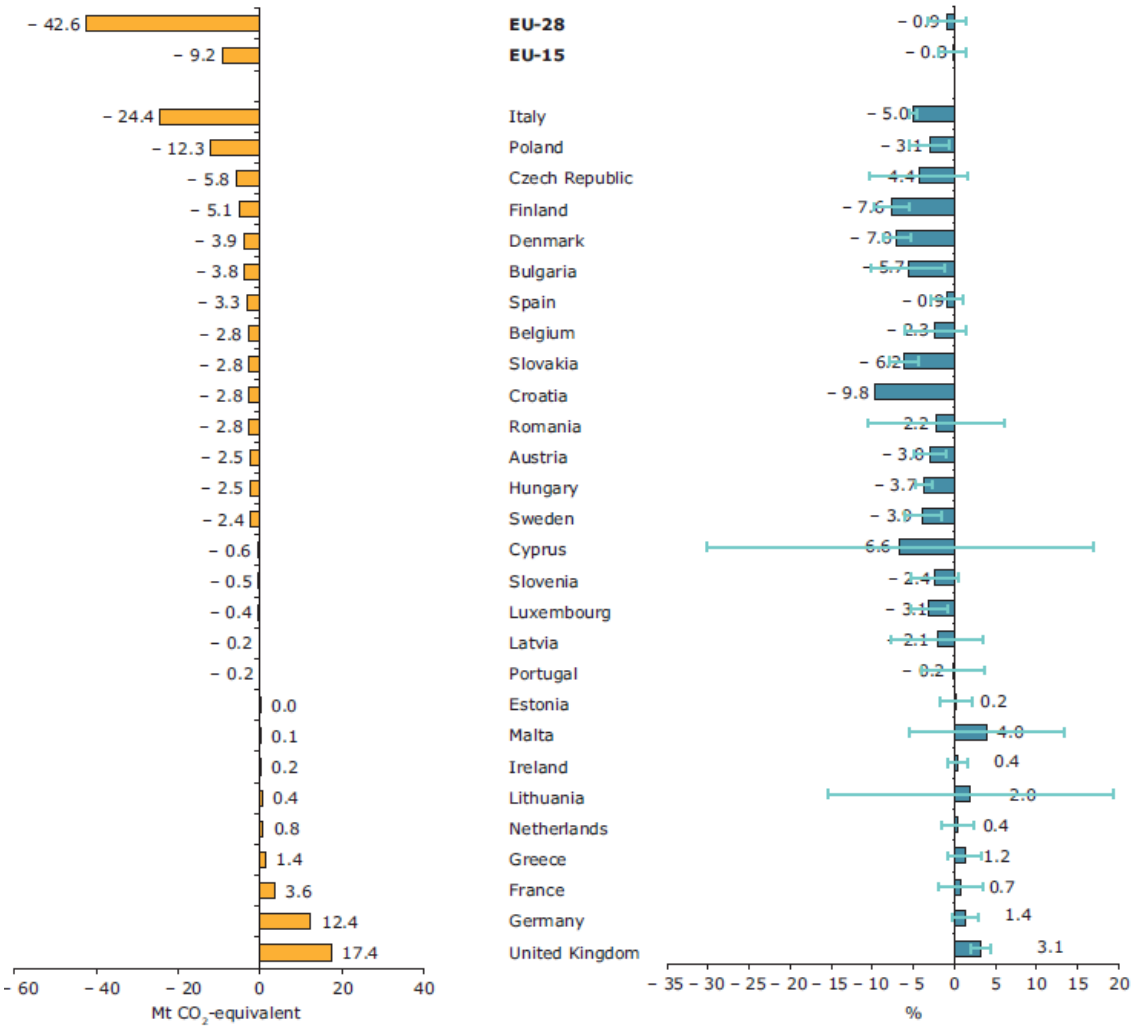
Note: Error bars are based on the absolute difference between last year's proxy estimates for each Member State and the subsequent reported emissions, weighted by sector.

Source: The EEA's proxy GHG emissions are based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and on proxy estimates for 2012

Change in GHG emissions in the period 2011–2012 at Member State level

As Figure ES.3 illustrates, GHG emissions decreased in 19 Member States (Italy, Poland, Czech Republic, Finland, Denmark, Bulgaria, Spain, Belgium, Slovakia, Croatia, Romania, Austria, Hungary, Sweden, Cyprus, Slovenia, Luxembourg, Latvia and Portugal). The largest absolute decrease in emissions occurred in Italy (a decline of 24.4 Mt CO_2eq or 5.0% compared to 2011), followed by Poland (a decline of 12.3 Mt CO_2eq or 3.1 %), the Czech Republic (a decline of 5.8 Mt CO_2eq or 4.4 %), Finland (a decline of 5.1 Mt CO_2eq or 7.6 %) and Denmark (a decline of 3.9 Mt CO_2eq or 7.0 %). The largest relative fall in emissions compared to the previous year took place in Croatia (down 9.8 %), followed by Finland (down 7.6 %), Denmark (down 7.0 %), Cyprus (down 6.6 %) and Slovakia (down 6.2 %). The largest absolute growth in emissions occurred in the United Kingdom (up 17.4 Mt CO_2eq or 3.1 %) and Germany (up 12.4 Mt CO_2eq or 1.4 %). Chapter .1 (General results) of the main report includes explanations for some of the change in emissions by Member State.

Figure ES. 3 Changes in total GHG emissions without LULUCF for the EU and its Member States, 2011–2012



Note: For two Member States – Denmark and the UK – inventories submitted to the UNFCCC are different to the inventories submitted under the EU Monitoring Mechanism Decision due to the fact that Kyoto inventories include non-EU territories. In the case of Denmark, this means that Greenland is included in one set of data but not in the other, and in the case of the UK, emissions from Gibraltar and the Falklands are included in one set but not in the other. The comparison in this table refers to the EC GHG inventory as consistent with the inventory submitted under the EC Monitoring Mechanism Decision.
Error bars are based on the absolute difference between last year's proxy estimates for each member state and the subsequent reported emissions, weighted by sector.

Source: The EEA's proxy GHG emissions are based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy y estimates for 2012

Eighteen Member States also calculated preliminary GHG inventories (or at least some parts of the GHG emissions) for the year 2012 and made these results available to the authors of this report. Austria, Belgium, Croatia, Denmark, Germany, Finland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain and Sweden estimated complete emissions in the form of CRF summary table 2, similar to the approach in this report. France, Greece, and the United Kingdom provided emission estimates for 2012 as national totals but not for all dis-

aggregated inventory subcategories and/or not disaggregated by the different greenhouse gases.

According to the country estimates, the expected change in GHG emissions in 2012 compared to 2011 is as follows: Austria (-3 .4 %), Belgium (+0.7 %), Croatia (-7.5 %), Denmark (-8.6 %), France (- 0.1 %), Germany (+ 1.6 %), Greece (+ 0.1 %), Finland (-8.5 %), Italy (-5.0 %), Ireland (+1.8 %), Luxembourg (+0.5 %), Malta (+3.7 %), the Netherlands (-0.9 %), Poland (-5.6 %), Slovenia (-2.0 %), Spain (–1.3 %), Sweden (-5.2 %) and the United Kingdom (+3.3 %).

Using the available proxy emission estimates by MS, EU-28 emissions are expected to decrease by 1.3 % between 2011 and 2012 (compared to 0.9 % when using EEA proxy estimates only). For the EU-15, emissions would decrease by 0.4 % using available proxy estimates by MS (compared to 0.3 % when using EEA estimates).

These preliminary data estimated by Member States were very useful for QA/QC purposes of the approximated EU inventory. In general, the preliminary estimates from both sources (i.e. both EEA-sourced proxy data and Member States' own estimates) matched well with differences smaller than ± 1-2 %, except for Belgium (where the difference was -3.1 %), Croatia (-2.5), Luxembourg (-3.7%) and Poland (2.6 %).

Some of these Member States published their own approximated greenhouse gas emissions for 2012, and the list below provides the links to these sources for individual EEA member countries:

- ***Austria***
  www.umweltbundesamt.at/aktuell/presse/lastnews/news2013/news_130809
- ***Finland****:*
  www.stat.fi/til/khki/2012/khki_2012_2013-05-16_tie_001_en.html
- ***Germany****:*
  www.umweltbundesamt.de/uba-info-presse/2013/pd13-009_treibhausgasausstoss_im_jahr_2012_um_1_6_prozent_gestiegen.htm
- ***France****:*
  www.citepa.org/fr/inventaires-etudes-et-formations/inventaires-des-emissions/secten
- ***Spain****:*
  www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/Avance_Emisiones_GEI_2012_tcm7-285604.pdf
- ***Sweden****:*
  www.naturvardsverket.se/Sa-mar-miljon/Klimat-och-luft/Klimat/utslapp-av-vaxthusgaser/rekordlaga-utslapp-ar-2012
- ***United Kingdom****:*
  www.gov.uk/government/publications/provisional-uk-emissions-estimates

Uncertainty in proxy GHG emission estimates

There is always a degree of uncertainty in estimating greenhouse gas emissions. This uncertainty increases if there is a lack of up-to-date activity data for some source categories, or there are changes in implied emission factors or in the methodologies used by Member States.

The proxy 2012 estimates are based on the national methodologies and emission factors used by Member States in their 2013 official submissions to the UNFCCC. Current quality improvements in Member State inventories take effect in next year's official submissions to the UNFCCC and are therefore a source of uncertainty for the proxy inventory.

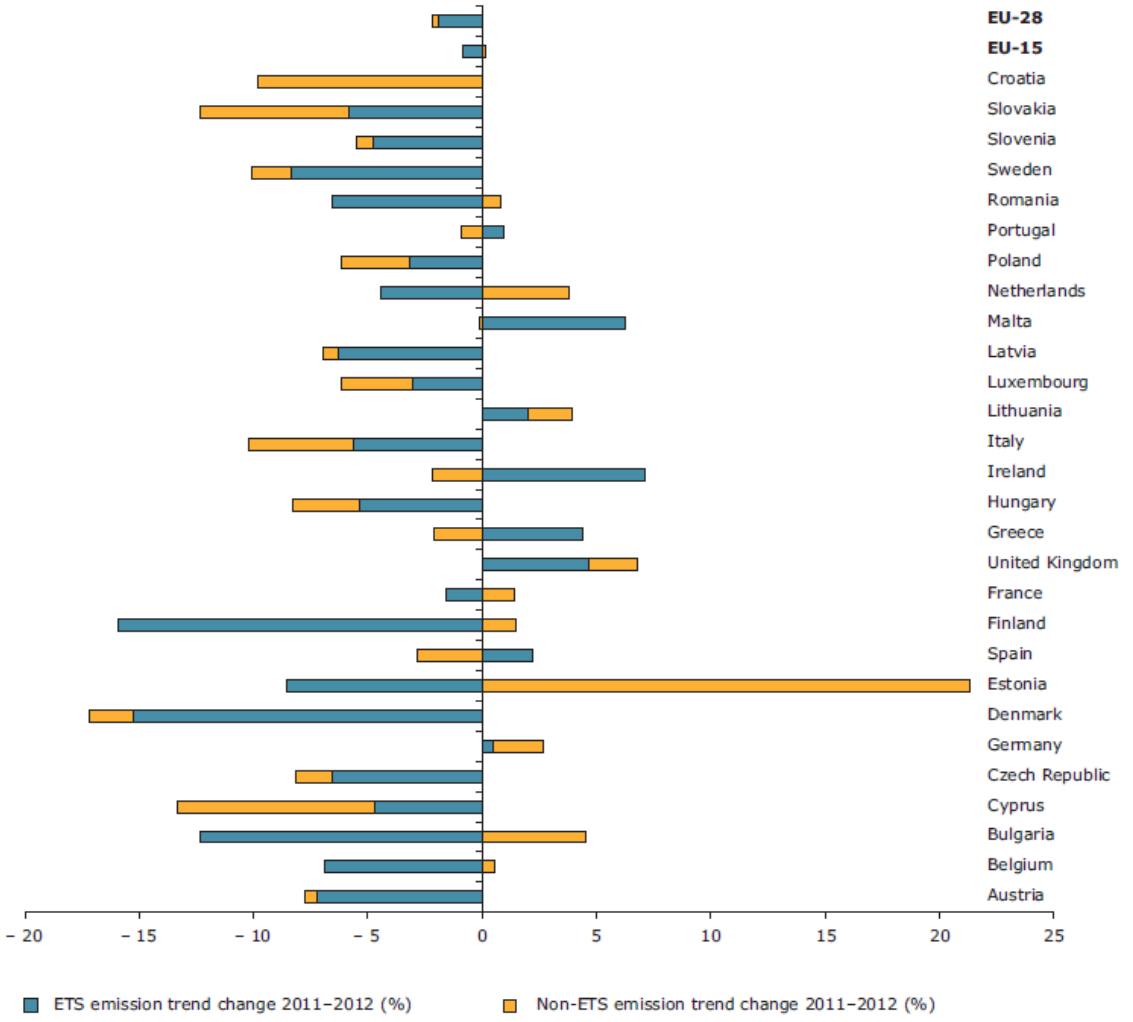
The uncertainty ranges presented for the proxy 2012 estimates are derived by comparing the official national data submitted to the UNFCCC for 2011 with the EEA proxy estimates for that year. However, by assessing the proxy greenhouse gas estimates that several Member States have produced for 2011 (Austria, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovakia, Spain and the United Kingdom), the EEA was able to verify the most suitable methodology for calculating emissions, resulting in a reduced uncertainty range.

The uncertainty ranges for the approximated 2012 GHG emissions presented in this analysis are also derived by comparing the official national data submitted to the UNFCCC for 2011 with the EEA proxy estimates for that year. Each emissions source category is estimated using different methodologies, and each emission-source category makes a different contribution to Member States' total greenhouse gas emissions. For this reason, the emission deviations are assessed at sectoral level for each Member State [5] and are weighted by the sectoral emission levels. For the EU-15 and EU-27, the uncertainty for the approximated 2012 emissions is estimated as the weighted mean of these differences: weighted again by the relative contribution that each Member State makes to total EU-15 and EU-27 emissions. As Croatia only joined the EU on 1 July 2013 it is not possible to calculate an uncertainty in this way for that country. Thus, for EU-28 emission estimates, the uncertainty range calculated for the EU-27 as explained above was used.

Official 2012 greenhouse gas emissions for the EU will be available in the late May or early June 2013, when the EEA publishes the EU greenhouse gas inventory 1990–2012, and the inventory report 2014 for submission to the UNFCCC.

[5] The deviation assessment was performed at the levels of the sectors '1: Energy', '2: Industrial Processes', '3: Solvent and Other Product Use', '4: Agriculture' and '6: Waste'.

Figure ES. 4 Change in GHG emission trends in Europe separated between ETS and non-ETS emissions between 2011 and 2012 in percentage



Note: Estonia corrected its energy statistics in September and emissions in non-ETS sectors appear to be overestimated in the current report as a result. The EEA has not been able to incorporate Estonia's late data revision in the Proxy GHG estimates.

Source: The EEA's proxy GHG emissions are based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011, on proxy estimates for 2012, and on verified emissions from EUTL as of August 2013

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• Background and objective

The objective of this report is to provide a proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimate of greenhouse gas (GHG) emissions in the EU-15 and EU-28 for the year 2012. The national GHG (greenhouse gas) inventories of the EU-28 Member States under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol are available for policy and market analysis at a delay of normally 16 to 18 months.[6] The next official GHG inventory submissions to UNFCCC will occur in April/May 2014.

There are clear advantages in generating proxy GHG estimates for all sectors. Under the Kyoto Protocol, the EU-15 took on a common commitment to reduce emissions by 8 % between 2008 and 2012 compared to emissions in the base year. When Member States set national emission caps for installations under the ETS for the period 2008–2012, they allocated part of their Kyoto emission budget (Kyoto Assigned Amounts) to the EU ETS and fixed the overall contribution of the ETS sectors towards reaching Kyoto national targets. ETS information runs on a year t-1 timeline but success in reducing emissions from sectors not covered by the EU ETS (running on a year t-2 timeline) will determine whether governments need to use Kyoto flexible mechanisms to achieve their targets. Therefore, a proxy estimate of the previous year's emissions can improve tracking and analysis of progress towards Kyoto targets, as it is done in the annual EEA report on greenhouse gas emission trends and projections in Europe and also summarized in section .2 of this report.

In addition, the 2009 EU's Climate and Energy Package encourages trading and non-trading sectors to run on similar timelines. The Package represents the EU's response to limiting the rise in global average temperature to no more than 2 °C above pre-industrial levels. To achieve this Member States agreed to reduce total EU GHG emissions by 20 % compared to 1990 by 2020. Both ETS and non-ETS sectors will contribute to the 20 % objective. Minimising overall reduction costs to reach the 20 % objective implies a 21 % reduction in emissions from EU ETS compared to 2005 by 2020 and a reduction of approximately 10 % compared to 2005 by 2020 for non-trading sectors. From 2013, there will be an EU-wide cap on emissions from ETS installations (instead of national allocation plans as under Kyoto) and national targets for the non-trading sectors. As with Kyoto, meeting the 2020 national targets will by and large be determined by how countries reduce emissions in the non-trading sectors. Proxy GHG estimates can therefore help tracking progress to towards EU and national targets for 2020.

In recent years, the EEA and its European Topic Centre on Air Pollution and Climate Change Mitigation have developed a methodology to estimate GHG emissions using a bottom up approach — based on data or estimates for individual countries, sectors and gases — to derive EU GHG estimates in the preceding year (t–1). In 2007 a feasibility study was conducted to identify appropriate data sources and methodologies for providing a more recent estimate for GHG

[6] In terms of the delivery to the European Commission, the delay is 3 months shorter.

emissions of the past year. In 2008 these methodologies were applied for the first year resulting in approximated GHG estimates.

The EEA published its first proxy estimates of greenhouse gas emissions for 2008 at the end of August 2009. The actual development in greenhouse gas emissions in the official report to UNFCCC one year later, was captured with very low deviations by the proxy EEA estimates for EU-15 and EU-27 for this first and subsequent proxy estimates (see section .2).

In the present report the methodological approach from 2012 is repeated. The 2012 emission results for Member States and EU as well as the methodologies used are presented in the following sections of this report for transparency reasons, as this is how EU estimates have been derived. The 2012 estimates are based on the latest activity data available at country level and assume no change in emission factors or methodologies as compared to the official 2013 submissions to UNFCCC (which relate to emissions in 2011).

The approximated GHG inventory for 2012 covers total GHG emissions as reported under the Kyoto Protocol, excluding the LULUCF sector. For the most important source categories, data sources with updated activity or emission data for 2012 were identified, which were then used to calculate emissions. For source categories for which no international datasets with updated activity data exists or which are too complex for such an approach from a methodological point of view, emissions were extrapolated from past trends (linear extrapolation) or emissions from the previous year were held constant if historic data did not show a linear trend. On this basis, a detailed bottom-up approach was developed that covers the full scope of emissions of a GHG inventory submission.

Some countries are producing and/or publishing their own proxy greenhouse gas estimates for the preceding year. These have been used by the EEA to better assess current progress in relation to greenhouse gas emission targets and also as a QA/QC activity and verification of the calculations presented in this report. Where such estimates exist they are clearly referenced in this report in order to ensure complete transparency regarding the different GHG estimates available. The EEA has used the proxy estimates of 2012 GHG emissions produced by EEA member countries to assess progress towards the Kyoto targets in its annual trends and projections report (due to be published alongside the present report). In that report, the EEA's proxy estimates for 2012 were only used for countries that lack their own proxy estimates to track progress towards national and EU targets. Countries' proxy emission estimates were also used for quality assurance and quality control of the EEA's GHG proxy estimates for 2012.

In essence, this report aims at providing greenhouse gas estimates at EU level one year before the official submission of national greenhouse gas inventories to UNFCCC. The estimates are based on a bottom-up approach with country specific sources and country-specific methods. The calculations make use of publicly available verified EU ETS emissions for 2012 (t-1) and published (t-1) activity data (at national, European and international levels) disaggregated by major source category in all sectors reported under the UNFCCC and the Kyoto Protocol.

• General results

.1 European GHG emissions in 2012

The 2012 EEA estimates indicate that for EU-28 emissions continued to decrease slightly between 2011 and 2012 though much less significantly than the decrease in emissions between 2010 and 2011. For EU-15 emissions in 2012 stabilized at the level of 2011 emissions. Compared to the 2011 official emissions published earlier this year, the fall in emissions between 2011 and 2012 is estimated to be -9.1 Mt CO_2eq or -0.3 % (+/-1.7 %) for the EU-15 and -39.9 Mt CO_2eq or -0.9 % (+/-2.3 %) for the EU-28 (total greenhouse gas emissions without LULUCF). The greenhouse gas emissions for the new Member States (EU-13) decreased by -3.8 % compared to the previous year. Based on these 2012 estimates, total EU-15 emissions in 2012 would be -14.9 % below the 1990 level and -15.1 % below base year level. For EU-28, total GHG emissions in 2012 are estimated to be -19 % below 1990 emissions.

The small emission decrease for EU-28 came along with negative economic growth across the EU between 2011 and 2012. Gross Domestic Product (GDP) decreased by -0.3 % for EU-28. Total GHG emissions are expected to decrease by -0.9% in EU-28 (GDP from DG ECFIN's Ameco database provided by EEA). Notwithstanding economic developments in specific sectors and countries, there was no apparent correlation between GDP and GHG emissions in the EU in 2012 (see Figure 1). Latvia achieved considerable GDP growth of 5.6 % in the period 2011-2012 and at the same time emission reductions of -2.1 %. In Poland also GDP grew by 1.9 % decoupled from falling emissions by 3.1 %. In Slovakia 2 % of economic growth could be achieved combined with a decline in emissions of -6.2 %. Bulgaria, Luxembourg, Austria and Sweden also had small positive GDP growth rates and declining emission trends. In Greece the opposite situation could be observed and the economic crisis led to a GDP reduction by -6.4 %, but nevertheless an emission increase of 1.2 % between 2011 and 2012. For all other Member States GDP and emission trends show the same trend direction.

The winter in Europe was generally colder in 2012 than in 2011 (see Figure 1). This led to higher heating demand and higher emissions from the residential and commercial sectors. In particular in Spain, France, Portugal and Malta colder days increased by 20 % or more. For the northern and Baltic Member States the winter was about 10 to 12% colder than the previous year. Few Member States in South-Eastern Europe with a generally lower heating demand (Greece, Bulgaria, Hungary, Cyprus and Romania) experienced a warmer winter than in the year before. Higher residential emissions, however, did not offset much lower emissions in other combustion sectors and total fossil fuel emissions decreased as a result for the EU as a whole.

Figure 1 *GHG emissions, GDP growth and monthly European temperatures, changes 2011-2012*

Note: GDP from DG ECFIN's Ameco database, European Commission. Average monthly land-surface temperatures from the UK's Met Office Hadley Centre, HadCRUT3 dataset.

Source: EEA

On a sectoral basis, the largest absolute emission reduction in the EU occurred in the Energy sector (i.e. all combustion activities), and reduction was largely in the new MS. GHG emissions fell by -34.4 Mt CO2eq (-0.9 %) across the EU-28. The decrease for the EU-15 was only -3.1 Mt CO2eq (-0.1 %). This decrease in emissions in the Energy sector reflects the decline of gross inland energy consumption in the EU-28 in 2012. Within the energy sector, emissions decreased mostly in manufacturing industries and construction as well as for transportation whereas emissions from residential and commercial increased significantly because of larger heat consumption. Based on BP data (BP, 2013), total fuel consumption in the EU fell by -2 % (EU-15 by -2 % and in the new Member States by -4 %), with different trends for the different fossil fuel types: natural gas consumption fell by -2 % (EU-15 by -2 % and in the new Member States remained constant) and for liquid fuels by -4 %(EU-15 by -5 % and in the new Member States by --4 %), but consumption of coal increased by 4 % (EU-15 increase by 9 % and in the new Member drop by -6 %).[7] However, the trend for coal consumption varied considerably in different Member States with Belgium, Bulgaria, Denmark, Czech Republic, Finland, Romania and Sweden showing large relative decreases in coal consumption and France, Ireland, Portugal, Spain and the UK significant increases (BP, 2013).

The decrease in oil consumption is likely to be an effect of oil prices continuing at the high levels reached in 2011, with nominal and real crude oil import costs fluctuating around USD 110 per barrel for most of 2012. End use energy costs for industry and households increased by

[7] Whereas fuel consumption trends based on Eurostat monthly data show relatively similar trends for liquid and solid fuels, Eurostat data indicate a higher reduction of natural gas consumption in the EU of -4 % than BP data (-5% for EU-15 and -2% for new Member States).

4.5 % and 5.1% respectively for the first three quarters of 2012 compared to the same period in 2011. In the third quarter of 2012 consumer end-use energy prices for industry and households were only -5.8 % lower than the historic 2008 peak (IEA, 2013).

Electricity production from renewable sources increased by about 11 % in the EU according to BP data for 2012, with a growth of 12 % in EU-15 and of 7 % in new Member States (BP, 2013).[8] The use of renewables continues to play an important role in GHG mitigation efforts by the EU and its Member States. Strong relative growth of renewable energy consumption is reported for Austria (27 %), Belgium (18 %), Bulgaria (19 %), Finland (18 %), France (26 %), Poland (21 %) and the UK (23 %). Lithuania (-11 %), Portugal (-17 %) and Romania (-9 %) showed decreasing consumption of renewable energy according to BP data. The share of renewables in electricity generation at EU-27 level increased for hydro production by 6.5 % and the consumption of other renewable sources grew by 15.6 % with an increase of wind power by 12.6 % and a continued strong growth of 52 % for solar power according to BP data.

Nuclear electricity production across the EU-27 decreased by -3 % in 2012 compared to 2011 according to BP data. This change largely took place in the EU-15 (-3 %). The largest increases in nuclear electricity generation were in Sweden, Spain and Czech Republic. The largest decreases were in Belgium (-17 %), Germany (-8%), Netherlands (-5%) and France (-4%).

Between 2011 and 2012 the emission reductions occurred in the installations covered by the European Emissions Trading Scheme (-0.9 %) for EU-15, whereas emissions from the Non-ETS sector kept at a stable level (0.1 %). Also for EU-28 the ETS sector showed larger reductions (-1.9 %) compared to the Non-ETS sector with almost stable emissions (-0.2 %). The new Member States (EU-13) experienced emission reductions in this period, the decrease in the ETS sector was greater (-5.3 %) whereas the Non-ETS emissions only fell by -1.9%.

Change in GHG emissions in the period 2011–2012 at Member State level

Figure 2 illustrates the changes in emissions in Europe from 2011 to 2012. GHG emissions decreased in 19 Member States (Italy, Poland, Czech Republic, Finland, Denmark, Bulgaria, Spain, Belgium, Slovakia, Croatia, Romania, Austria, Hungary, Sweden, Cyprus, Slovenia, Luxembourg, Latvia and Portugal). The largest absolute decrease of emissions occurred in Italy (-24.4 Mt CO_2eq or -5.0% compared to 2011), followed by Poland (-12.3 Mt CO_2eq or -3.1 %), Czech Republic (-5.8 Mt CO_2eq or -4.4 %), Finland (-5.1 Mt CO_2eq or -7.6 %) and Denmark (-3.9 Mt CO_2eq or -7.0 %). The largest relative fall in emissions compared to the previous year took place in Croatia (-9.8 %), followed by Finland (-7.6 %), Denmark (-7.0 %), Cyprus (-6.6 %) and Slovakia (-6.2 %). The largest absolute growth in emissions occurred in the United Kingdom (17.4 Mt CO_2eq or 3.1 %) and Germany (12.4 Mt CO_2eq or 1.4 %).

[8] Eurostat data were also analysed, however these data were incomplete with regard to biomass consumption and solar consumption for some EU Member States and were therefore not used for the assessment of trends.

The following section explains the emission trends for those Member States that contribute considerably to total EU emissions (Germany, UK, France, Italy and Spain) as well as for those Member States that showed pronounced changes in emissions compared to the previous year.

Member States with decreasing emission trends

Italy is the fourth largest GHG emitter in Europe. In 2012 emissions fell by -24.4 Mt CO2eq or -5.0% compared to 2011. Heat demand increased however and the residential and commercial sectors saw an increase in emissions in 2012 compared to 2011. Relative to 1990, Italy's emissions decreased by -54.6 Mt CO2eq or -10.5%. The recent reduction reflects the continuing economic recession (GDP fell by -2.4%). Despite of the economic crisis in Italy, the renewable energy consumption further grew by 10 % (Italy, personal communication 2013). As a consequence of the economic crisis and the increased use of renewable energy, the consumption of fossil fuels decreased, especially petroleum liquids which fell by-9 %. Consumption of solid fuels were relatively stable (0.6 % increase) and natural gas consumption fell by about -4 %. Total internal energy consumption in Italy was down by -3 % (Italy, personal communication 2013). There were also significant reductions in clinker production (-20 %) and associated emissions in the industrial processes sector (Italy, personal communication 2013).[9] In Italy, both the emissions covered by the EU-ETS and the non-ETS emissions decreased, by -5.6 % and -4.6 % respectively.

In Poland GHG emissions were down by -12.3 Mt CO2eq or -3.1 % compared to 2011 despite the fact that the economy grew by 1.9 % and despite colder winter temperatures with higher heating demand. Over the long term, emissions fell by -69.9 Mt CO2eq or -15.3 % relative to 1990. The greatest decrease in GHG emissions was in the energy sector, where according to national statistics hard coal use decreased by almost -12 %, diesel use by -8.9 % and gasoline consumption by -9 % (Poland, personal communication 2013). There were also decreased emissions from the agriculture sector due to a reduction of the number of swine (-14%) and poultry (-9%). As with Italy, in Poland the emissions reductions were very similar for the ETS emissions (-3.1 %) and the non-ETS emissions sources (-3.0%).

In the Czech Republic GHG emissions were down by -5.8 Mt CO2eq or -4.4% compared to 2011. Relative to 1990, Czech emissions fell by -68.4 Mt CO_2eq or -34.9%. The fall in emissions came along with negative economic growth in the same period (Czech GDP fell by -1.3 %). Renewable energy consumption grew by 11 % in 2012 compared to the previous year and also nuclear energy consumption increased by 7 % in Czech Republic according to BP data. At the same time solid fuel consumption fell by almost 8 % (BP, 2013). Emissions from the residential and commercial sectors increased due to higher heat demand in 2012 compared to 2011. The GHG emissions reductions were greater for the ETS emissions (-6.6 %) than for non-ETS emissions (-1.6%).

[9] From Italy's own EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown greenhouse gas estimates DGSAIE, 2013 Bilancio di sintesi dell'energia in Italia

Finland also showed a significant decrease in emissions (-5.1 Mt CO_2eq or -7.6%), mainly due to higher electricity imports in 2012 (imports increased by 22 %) from Norway where hydro power generation increased significantly in 2012 mainly due to a considerably higher reservoir levels at the start of 2012 (Official Statistics of Finland 2013a, 2013b). But also total energy consumption decreased by 2 % in 2012 compared to the previous year, in particular in the transport sector and manufacturing industries (Offical Statistics of Finland, 2013b). This led to a strong decline in fossil fuel consumption in Finland of -15 % for solid fuels, -6 % for liquid fuels and -11 % for natural gas in 2012 compared to 2011 (BP, 2013). Nuclear generation remained at relatively constant level. The higher imports also counterbalanced the winter effect which was colder in 2012 than in the year before. In Finland all emissions reductions were from sources covered by EU-ETS (-5.6 Mt CO_2eq or -15.9%). These were offset by the slight increase in emissions from non-ETS sources (0.5 Mt CO_2eq or 1.5%).

Denmark also attained emission reductions (-3.9 Mt CO_2eq or -7.0%) due to significantly increased electricity imports (the highest Danish imports since 1990) through the Nordic electricity market, in particular from Norway and Sweden due to favourable rainfall conditions in these countries (Denmark, personal communication 2013, NordReg 2013). Due to the higher electricity imports and subsequently lower thermal generation, solid fuel use dropped by about -23 % in Denmark, liquid fuel consumption by -4 % and gas consumption by -7 %. The use of renewable energies continued to grow by 3 %. However, in Denmark also total electricity consumption went further down (-3 %), even in a situation where electricity consumption is relatively low compared to other Nordic countries (NordREG 2013). The emissions reductions were largely from sources covered by the ETS (-3.3 Mt CO_2eq or -15.3%) with a reduction of only -0.7 Mt CO_2eq or -1.9% from sources outside the ETS.

Croatia showed the largest relative emission decrease between 2011 and 2012. This was due to the emissions from the energy sector where national energy data indicate a decrease in solid fuel consumption by -12 % between 2011 and 2012, a 4 % decline in liquid fuel consumption and a drop in gas consumption by -9 %. The total gross electricity production from thermal power plants reduced by 10 % in this period (Croatian Bureau of Statistics, 2013).

Member States with increasing emission trends

In the United Kingdom emissions increased by 17.4 Mt CO_2eq or 3.1% in 2012. This is in contrast to the preceding -6.1 % fall in emissions (-35.92 Mt CO_2eq) in 2011 relative to 2010 and the -197.4 Mt CO_2eq or -25.7% decrease relative to 1990. Primary energy consumption increased by 2 %, mainly due to colder temperatures in winter (temperature adjusted consumption was stable) (DECC 2013a). The increase in emissions between 2011 and 2012 reflects the lower use of gas (-31 %) and greater use of coal for electricity generation at power stations (+31 %), whereas demand for electricity was broadly stable (DECC 2013, 2013a, 2013b). In total, there was a 8% increase in emissions (9.9 Mt CO_2eq) from electricity generation (DECC 2013). The UK also experienced an increase in residential gas use of 15 % which was influenced by colder winter temperatures in 2012 (DECC 2013). Emissions from the transport sector were down by -1.2% (1.4 Mt CO_2eq) from 2011. ETS emissions grew stronger by 4.7 % compared to non-ETS emissions (2.1 %).

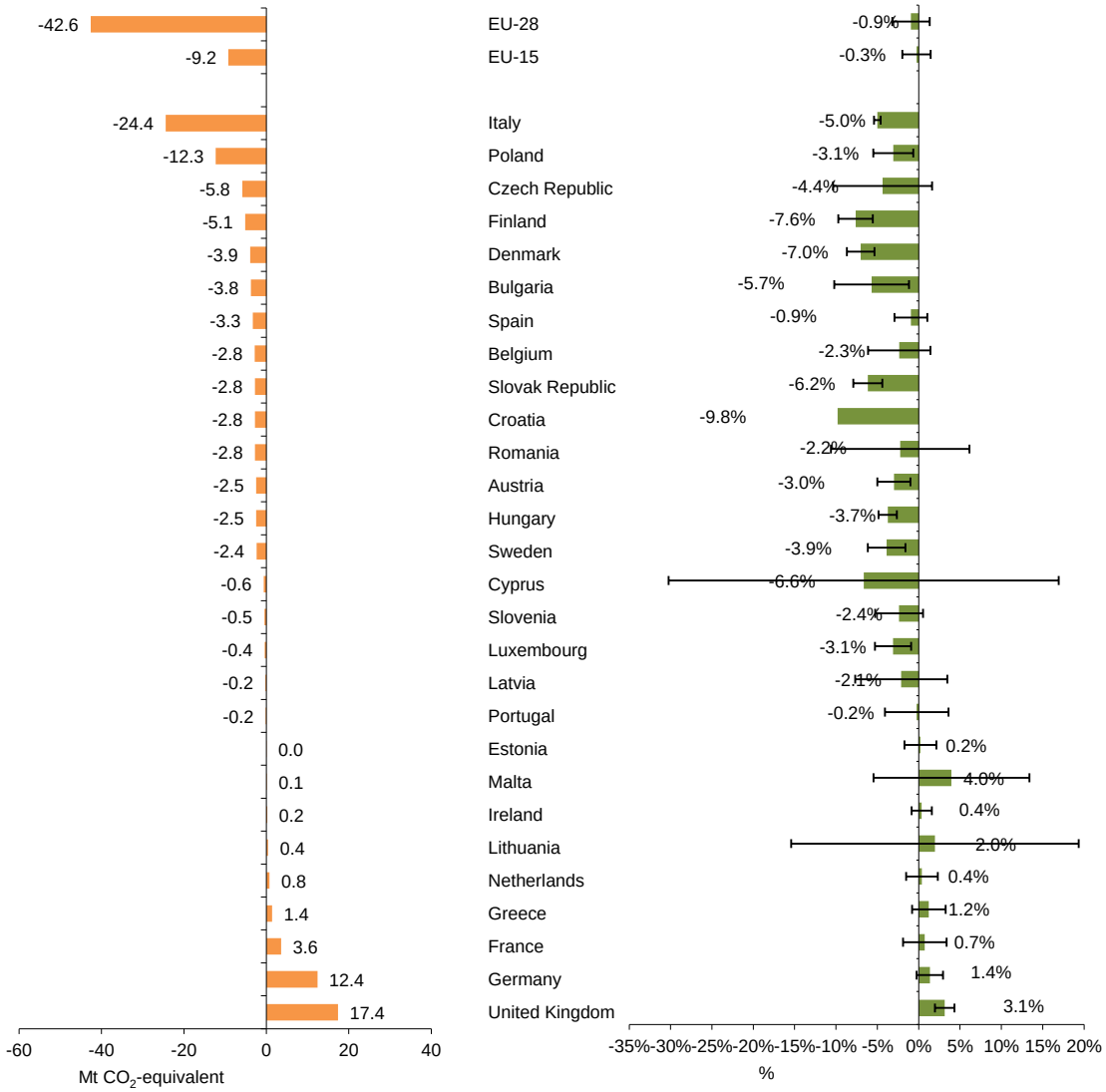
In Germany, the largest European economy and the largest GHG emitter, there was an emissions increase of 12.4 Mt CO_2eq or 1.4 % in 2012. However, Germany continues to hold first place for the largest emissions reduction relative to 1990 levels (-321.4 Mt CO_2eq or -25.7%). The 2012 emissions increase was greater from sources outside the ETS (2.2 %), than from sources inside the ETS (0.5%). The 2012 emissions increase was largely from energy sector fuel combustion (14.9 Mt CO_2eq or 2.0 %). Consumption of lignite and coal for electricity generation increased by 5 % and a colder winter increased the heating demand of the residential sector which led to an increase of natural gas use. These increases overshadowed the small emissions reductions in the Industrial Processes and Waste sectors. At the same time electricity generation from renewables increased by about 10 % and the electricity export surplus grew by 17 TWh (+167 %).

Member States with relatively stable emissions compared to 2011

In France GHG emissions remained at a relatively constant level and only increased by 0.7 %. However, France's own calculations of approximated GHG emissions for 2012 resulted in a very small decline in emissions of -0.1 %. Relative to 1990, French emissions have fallen by -67.3 Mt CO_2eq or -12.1%. The small increase is due to increasing coal consumption (20 %) whereas liquid fuel and natural gas consumption decreased (by -3 % and -4 % respectively) (BP, 2013). There was a strong impact from colder winter temperatures with an increase in heating degree days of 19 % compared to the year before and a related high consumption of fossil fuels in the residential sector. In France, nuclear energy consumption fell by -4 % or 16.7 TWh between 2011 and 2012 which was compensated by an increase in renewable generation by 26 % from hydro and other renewable energy sources of 17.2 TWh (BP, 2013). Emissions decreased from sources in the ETS (-1.6 Mt CO2eq or -1.6%) and increased from sources outside the ETS (5.3 Mt CO2eq or 1.4%).

Also Spain does not show a very pronounced emission trend with an emission reduction of 0.9 % in 2012 compared to 2011. Spain's own proxy calculations indicate a slightly higher emission reduction of -1.3 %. Similar to the previous year, the consumption of coal further increased drastically in Spain (20 %) while gas consumption decreased (-2 %) as well as oil consumption (by 7 %) leading to a higher CO_2 intensity of the fuel mix (Ministerio de Agricultura, Alimentación y Medio Ambiente, 2013). Nuclear consumption increased by 7 % and renewable energy production grew by 3 % (Ministerio de Agricultura, Alimentación y Medio Ambiente, 2013). The increases in emissions from fossil fuel consumption for power generation and in the residential sector were counterbalanced by decreasing emissions from transport and industrial processes. The latter reductions are likely to reflect the continued economic recession in Spain, with GDP contracting by -1.4% in 2012.

Figure 2 Change in GHG emission trends in Europe for total GHG emissions without LULUCF, 2011-2012[10]

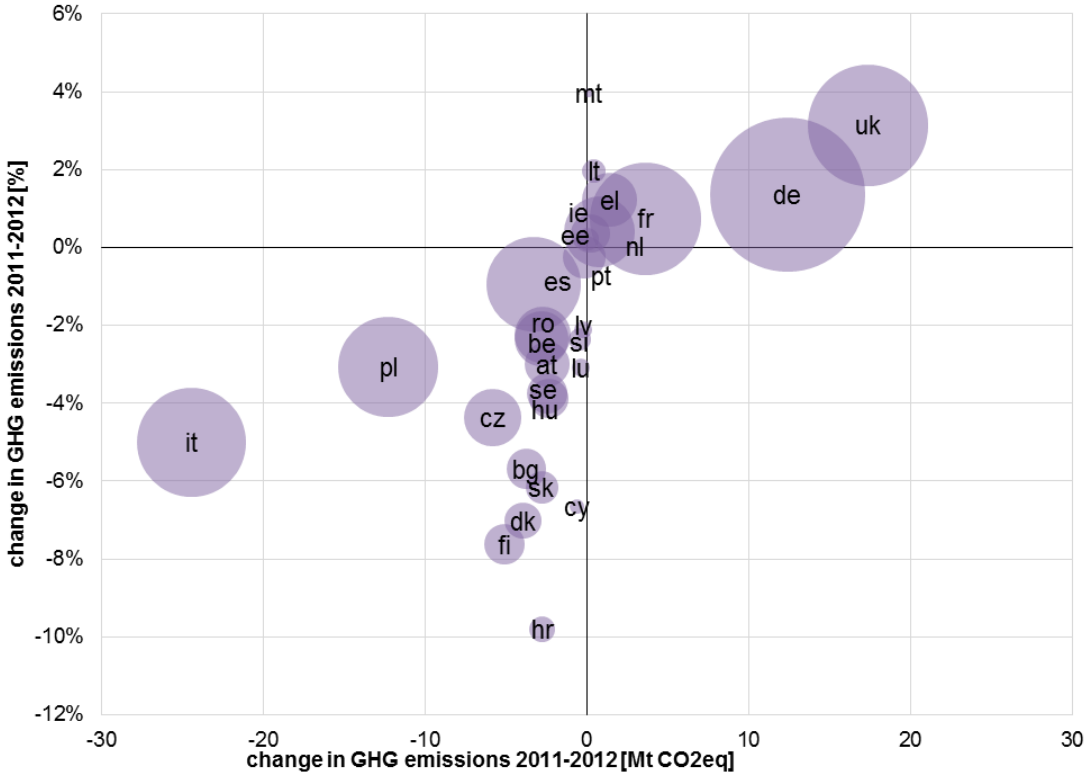


Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Note: Error bars are based on the absolute difference between last year's proxy estimates for each member state and the subsequent reported emissions, weighted by sector and weighted by Member State for EU aggregates. (cf. Table 4).

[10] For two Member States – Denmark and the UK – GHG inventories submitted to the UNFCCC are different to the inventories submitted under the EU Monitoring Mechanism Decision, as their Kyoto inventories include non-EU territories. The comparison in this table refers to the EU GHG inventory consistent with the inventory submitted by these countries under the EU Monitoring Mechanism Decision.

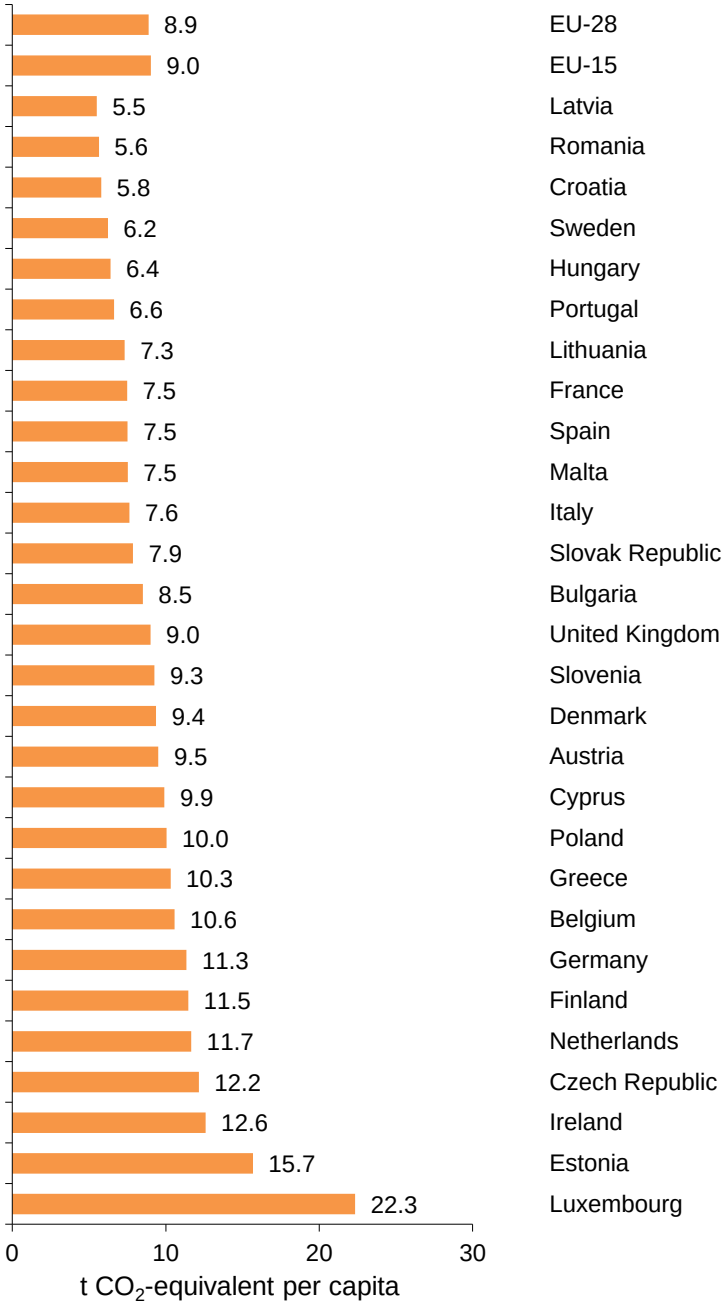
Figure 3 Relative GHG emissions and GHG emissions change in Europe, 2011-2012



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Note: The size of each bubble is in proportion to the total amount of greenhouse gases (as CO_2eq, without LULUCF), emitted by each MS in the latest year. The absolute and relative change in GHG emissions (without LULUCF) is shown by position of the centre of each bubble on the *x* and y axis respectively.

Figure 4 GHG emissions per capita for the year 2012



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012 (total GHG emissions without LULUCF). Population data from Eurostat, Population on 1 January by age and sex (demo_pjan)

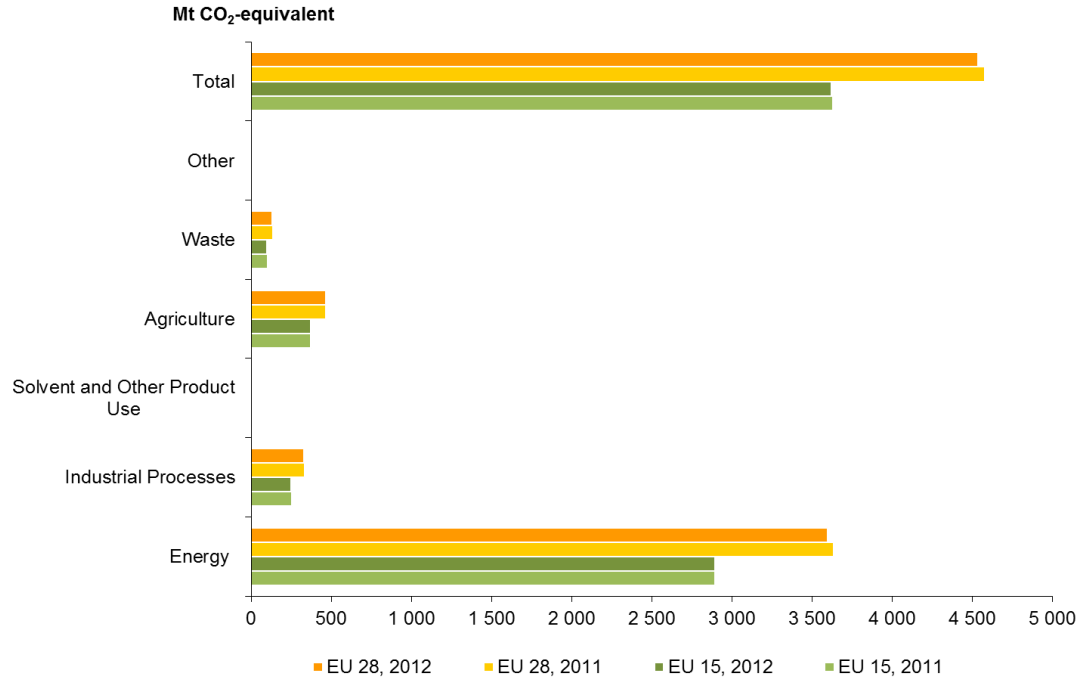
Table 1 and Figure 5 show the changes between 2011 and 2012 at sectoral level for the EU-15 and the EU-27.

Table 1 Change in GHG emissions between 2011 and 2012 at sectoral level in absolute and relative terms

	Emissions change between 2011 and 2012 in the EU			
	EU-15		**EU-28**	
	Mt CO2eq	**%**	**Mt CO2eq**	**%**
Energy	-3.1	-0.1%	-34.4	-0.9%
Industrial Processes	-3.6	-1.4%	-5.2	-1.6%
Solvent and Other Product Use	-0.3	-3.8%	-0.4	-3.6%
Agriculture	1.0	0.3%	0.4	0.1%
Waste	-3.2	-3.1%	-2.9	-2.2%
Other	NE,	NE,	NE,	NE,
Total	-9.1	-0.25%	-39.8	-0.9%

Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Figure 5 GHG emissions for 2011 and 2012 at sectoral level



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Change in GHG emissions in the period 2011–2012 at sectoral level

On a sectoral basis, the largest absolute emission reduction occurred in the Energy sector (i.e. all combustion activities), and reduction was largely in the new MS. GHG emissions fell by -34.4 Mt CO2eq (-0.9 %) across the EU-28. The decrease for the EU-15 was only -3.1 Mt CO2eq (-0.9 %). More detailed explanations for the trends in the energy sector were already provided in the general section above.

The greenhouse gas emissions from Industrial Processes decreased slightly compared to the previous year (EU-15 -1.4 %, EU-28 -1.6 %). The emissions from mineral products were reduced by -6.2 % in EU-15 and by -5.5 % in EU-28 which is consistent with the decrease of emissions from cement and lime production under the EU-ETS (-6.9 % for EU-15 and -7.0 % for EU-27). The emissions from Metal Production decreased in EU-15 by -2.9 % and in EU-27 by -1.4 %. Emissions from chemical production were projected to remain stable in EU-15 (0.6 %) and decrease slightly by -1.4 % in EU-28.

In the agricultural sector GHG emissions in 2012 were relatively constant compared to the previous year for both EU-15 (0.3 %) and EU-28 (0.1 %).

Waste sector emissions show a decrease of –3.1 % for the EU-15 and -2.2 % for the EU-28. GHG emissions decreased mainly in the sub-sector Waste-water Handling and Waste Disposal on Landfills.

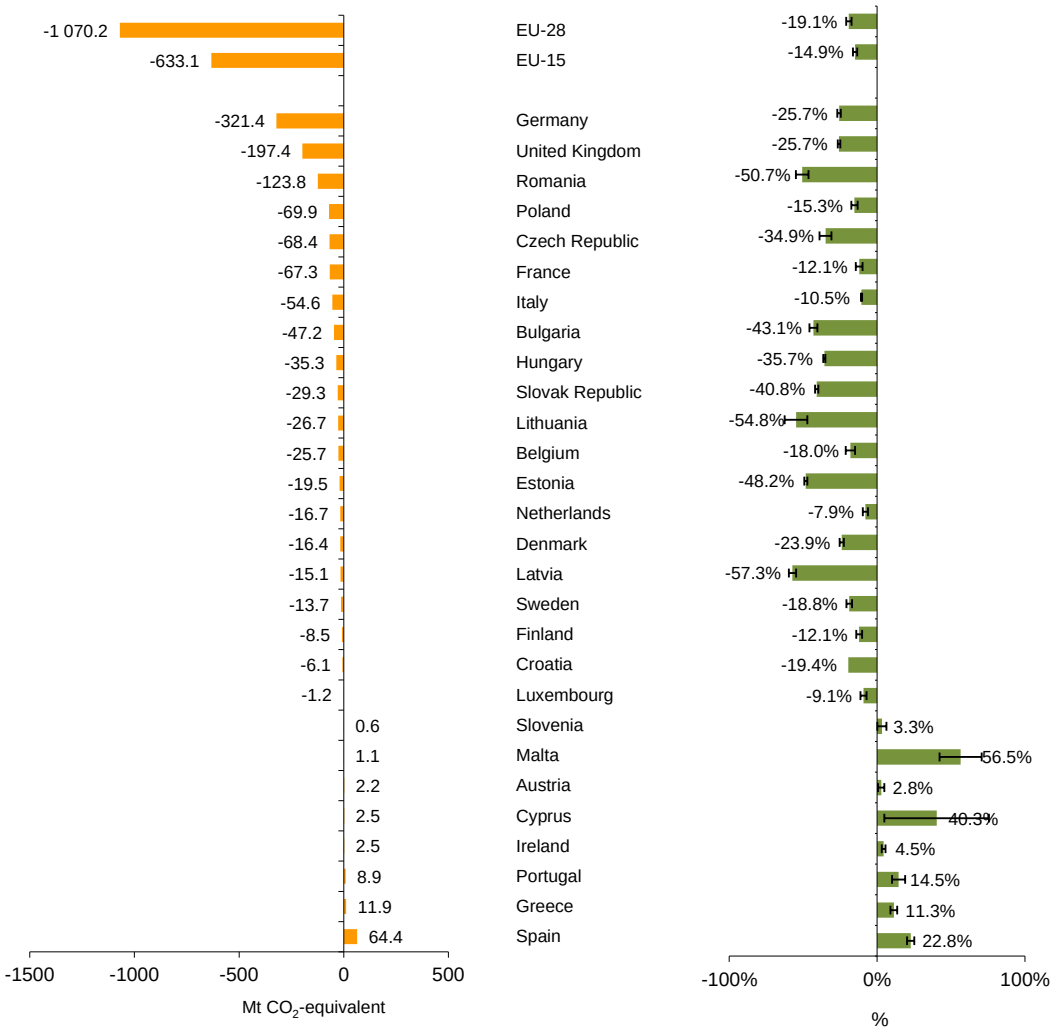
Figure 6 shows the emission trend for total GHG emissions without LULUCF between the years 1990 and 2012. According to these estimates, total EU-15 emissions in 2012 will be -14.9 % below

the 1990 level and -15.1 % below base year level. For EU-28, total GHG emissions in 2012 are estimated to be almost -19.1 % below 1990 emissions.

Figure 8 presents a differentiation of the emission trend change between ETS emissions and Non-ETS emissions. Between 2011 and 2012 the emission reductions in EU-28 were larger in the ETS sector (-1.9 %) than in the Non-ETS sector (-0.2 %). For EU-15, ETS emissions show a smaller decline of -0.9 % whereas Non-ETS emissions remained at stable level. In absolute terms, the share of the ETS sector in the total emission reduction in EU-28 of -42.6 Mt CO_2eq in the 2011-2012 period is -36.3 MtCO2eq and the Non-ETS share is -6.3 MtCO2eq. At Member State level the trend change separated between the ETS and Non-ETS sector look different:

Three Member States show strong decreases of emissions in the ETS sector which are Finland (-15.9 %), Denmark (-15.3 %) and Bulgaria (-12.4 %). For Denmark and Finland this trend is due to higher electricity imports as already explained above. Whereas Denmark has also a small emission decline in the Non-ETS sector, for Finland and Bulgaria Non-ETS emissions grew (by 1.5 % for Finland and 4.5 % for Bulgaria). In Malta, Ireland, UK and Greece ETS emissions increased quite substantially. Cyprus, Slovakia and Croatia are the few Member States in which Non-ETS emissions further decreased (Croatia by -9.8%, Cyprus -8.6 %, Slovakia -6.5 %). Estonia experienced a very strong increase of 21.3 % in Non-ETS emissions.

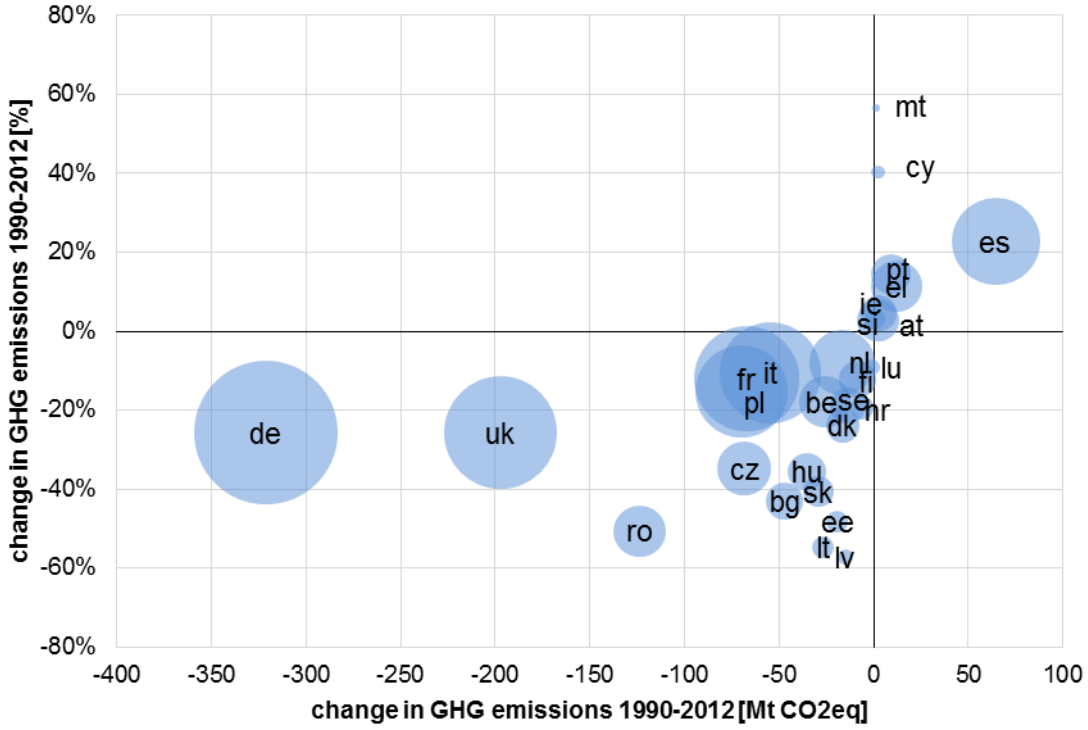
Figure 6 Change in GHG emission trends in Europe for total GHG emissions without LULUCF, 1990-2012



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Note: Error bars are based on the absolute difference between last year's proxy estimates for each member state and the subsequent reported emissions, weighted by sector. (cf. Table 4)

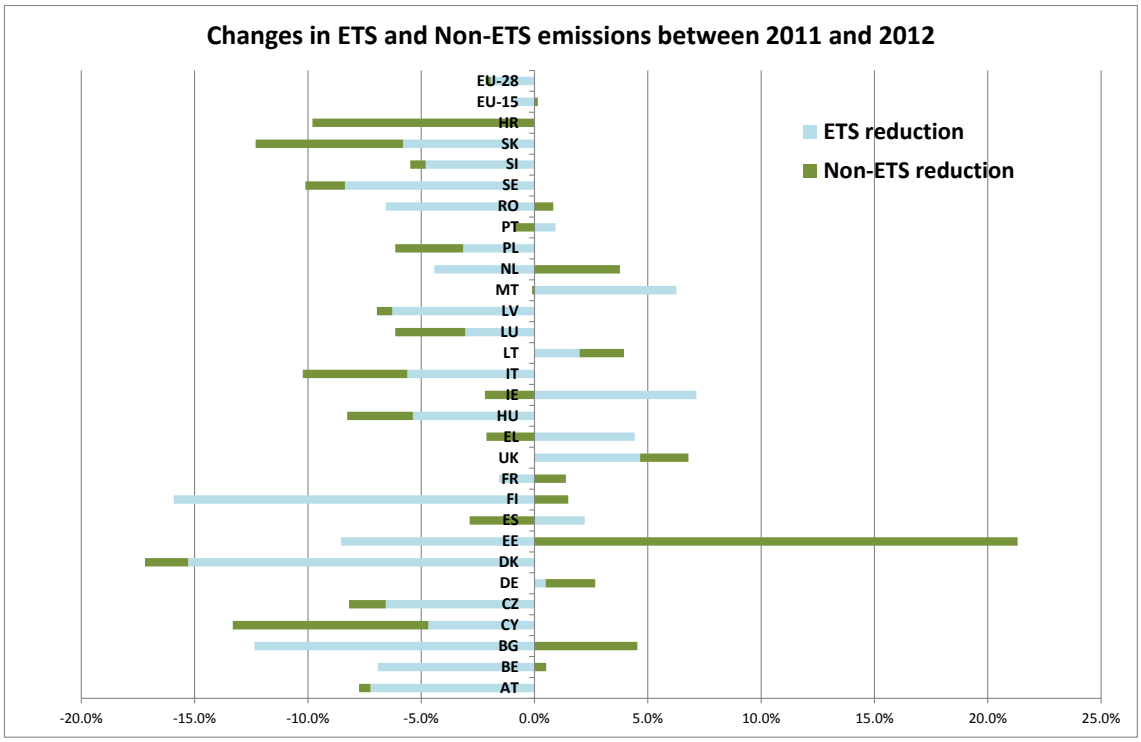
Figure 7 Relative GHG emissions and GHG emissions change in Europe, 1990-2012



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Note: The size of each bubble is in proportion to the total amount of greenhouse gases (as CO_2eq, without LULUCF), emitted by each MS in the latest year. The absolute and relative change in GHG emissions (without LULUCF) is shown by position of the centre of each bubble on the *x* and y axis respectively.

Figure 8 Change in GHG emission trends in Europe separated between ETS and non-ETS emissions between 2011 and 2012 in percentage



Note: Estonia corrected its energy statistics in September and emissions in non-ETS sectors appear to be overestimated in the current report as a result. The EEA has not been able to incorporate Estonia's late data revision in the Proxy GHG estimates.

Source: The EEA's proxy GHG emissions are based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011, on proxy estimates for 2012, and on verified emissions from EUTL as of August 2013

Annex 2 includes summary tables for 2012 for the EU-28, EU-15 and for each Member State. Table 2 and Table 3 show the detailed results for the EU-15 and the EU-28.

Table 2 Summary table of approximated GHG emissions for 2012 for EU-15 (total emissions without LULUCF)

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS							Inventory 2012
(Sheet 1 of 1)							Submission 2013 v1.0
							EU-15
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	**CO2 (1)**	**CH4**	**N2O**	**HFCs (2)**	**PFCs (2)**	**SF6 (2)**	**Total**
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**2 993 467.20**	**283 475.79**	**261 282.18**	**74 212.07**	**3 074.59**	**5 936.13**	**3 621 447.96**
1. Energy	**2 828 653.45**	**38 801.63**	**27 202.73**				**2 894 657.81**
A. Fuel Combustion (Sectoral Approach)	2 811 109.59	12 735.51	27 102.26				2 850 947.36
1. Energy Industries	1 036 504.14	3 122.62	7 989.82				1 047 616.58
2. Manufacturing Industries and Construction	449 463.58	1 405.31	5 259.43				456 128.32
3. Transport	757 984.35	1 053.45	7 253.40				766 291.19
4. Other Sectors	IE	IE	IE				IE,
5. Other	567 157.52	7 154.14	6 599.60				580 911.26
B. Fugitive Emissions from Fuels	17 543.86	26 066.12	100.47				43 710.45
1. Solid Fuels	969.63	6 241.70	IE				7 211.33
2. Oil and Natural Gas	16 574.23	19 824.42	IE				36 398.65
2. Industrial Processes	**156 848.61**	**632.62**	**8 849.46**	**74 212.07**	**3 074.59**	**5 936.13**	**249 553.48**
A. Mineral Products	84 834.56	22.23592467	NE				84 856.79
B. Chemical Industry	31 257.10	461.36	8814.62				40 533.07
C. Metal Production	40 396.83	113.44	22.30		IE	IE	40 532.58
D. Other Production	21.0544678	0.00	0.00				21.0544678
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	339.07	35.58264897	12.536865	IE	IE	IE	387.19
3. Solvent and Other Product Use	**5375.42**		**2293.47426**				**7668.90**
4. Agriculture		**159 105.40**	**211 722.85**				**370 828.25**
A. Enteric Fermentation		120 231.58					120 231.58
B. Manure Management		35 823.11	19 540.60				55 363.70
C. Rice Cultivation		2 556.86					2 556.86
D. Agricultural Soils(3)		9.229780507	192 068.57				192 077.80
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		484.62	113.68				598.29
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**2 589.72**	**84 936.13**	**11 213.67**				**98 739.52**
A. Solid Waste Disposal on Land	1.64	73 564.21	0.00				73 565.85
B. Waste-water Handling		10 291.42	10 021.77				20 313.18
C. Waste Incineration	2 568.68	77.02	167.84				2 813.54
D. Other	19.39	1 003.48	1 024.07				2046.947569
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**
Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**
Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry							3 621 447.96
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry							NE,

Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Table 3 Summary table of approximated GHG emissions for 2012 for EU-28 (total emissions without LULUCF)

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS							Inventory 2012
(Sheet 1 of 1)							Submission 2013 v1.0
							EU-28
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**3 723 274.39**	**383 390.14**	**334 344.10**	**85 367.73**	**3 215.52**	**6 294.37**	**4 535 886.23**
1. Energy	**3 492 839.50**	**75 474.25**	**32 045.90**				**3 600 359.64**
A. Fuel Combustion (Sectoral Approach)	3 470 207.31	18 631.77	31 942.79				3 520 781.87
1. Energy Industries	1 385 243.40	3 314.37	9 550.38				1 398 108.15
2. Manufacturing Industries and Construction	535 400.13	1 620.43	5 651.77				542 672.34
3. Transport	883 669.15	2 321.13	16 147.74				902 138.02
4. Other Sectors	IE	IE	IE				IE,
5. Other	665 894.63	11 375.83	592.89				677 863.36
B. Fugitive Emissions from Fuels	22 632.19	56 842.47	103.11				79 577.77
1. Solid Fuels	2880.80	19 498.78	IE				22 379.58
2. Oil and Natural Gas	19 751.39	37 343.70	IE				57 095.09
2. Industrial Processes	**220 570.70**	**1 081.84**	**12 854.71**	**85 367.73**	**3 215.52**	**6 294.37**	**329 384.86**
A. Mineral Products	113 699.15	25.65495247	NE				113 724.81
B. Chemical Industry	43 647.86	811.25	12801.09				57 260.21
C. Metal Production	61 560.17	209.35	41.08		IE	IE	61 810.60
D. Other Production	38.06913526	0.00	0.00				38.06913526
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	1 625.44	35.58264897	12.536865	IE	IE	IE	1 673.56
3. Solvent and Other Product Use	**6724.14**		**3114.1886**				**9838.33**
4. Agriculture		**192 657.16**	**272 058.33**				**464 715.49**
A. Enteric Fermentation		146 780.43					146 780.43
B. Manure Management		42 506.56	28 937.90				71 444.46
C. Rice Cultivation		2 708.55					2 708.55
D. Agricultural Soils(3)		9.229780507	242 939.89				242 949.12
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		652.39	180.54				832.93
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**3 140.05**	**114 176.88**	**14 270.97**				**131 587.91**
A. Solid Waste Disposal on Land	1.64	97 095.56	0.00				97 097.19
B. Waste-water Handling		15 813.11	12 849.14				28 662.25
C. Waste Incineration	3 119.02	78.20	191.26				3 388.48
D. Other	19.39	1 190.02	1 230.57				2439.981921
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**
Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**
Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry							4 535 886.23
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry							NE,

Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

.2 Achievement of Kyoto targets for the first commitment period

Under the Kyoto Protocol (KP), the EU-15 has committed to a common emission reduction target of –8 % compared to base year levels, to be achieved over a five-year commitment period (from 2008 to 2012). Within this overall target, differentiated emission limitation or reduction targets have been agreed for each of the 15 pre-2004 Member States under an EU accord known as the Burden-Sharing Agreement. The EU-28 does not have a Kyoto target: the protocol was ratified before 2004, and 13 countries became EU Member States afterwards. 11 of these EU-13

Member States have individual targets under the KP, while Cyprus and Malta do not have such targets.

To achieve their Kyoto targets, countries must balance their emissions with an emission budget depending on their target. Such balance can be achieved by limiting or reducing domestic emissions and by increasing the emission budget for the 2008-2012 period (assigned amount) through the use of flexible mechanisms and LULUCF activities. To ensure that the EU-15 reaches its common target, all of its Member States must achieve their respective burden-sharing target. Excess Kyoto units resulting from overachievement by some countries might not be available to achieve EU-15 compliance at the end of the first commitment period.

Total emissions from sectors included in the EU ETS are capped for the period 2008–2012, meaning that EU compliance with the Kyoto targets will be largely determined by the performance of non-ETS sectors, i.e. those sectors for which data are only available on a t–2 timeline.

With this report, preliminary estimates for GHG emissions in the year 2012 – the last year of the first commitment period under the Kyoto Protocol become available which allows an assessment of the progress towards the Kyoto targets in terms of emission reductions. The EEA estimates are based on publicly available datasets at the national, European and international levels, disaggregated by major source categories in all sectors reported under the UNFCCC and the Kyoto Protocol. Some countries provided their own proxy greenhouse gas estimates (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Spain, Slovenia, Sweden, the United Kingdom, Norway and Switzerland). Where relevant, the EEA used these estimates to assess current progress in relation to greenhouse gas emission targets and to verify its own calculations.

It is obvious that in some countries the use of flexible mechanisms and the contributions of LULUCF activities will decide on the achievement of the Kyoto targets for the first commitment period. Nevertheless the complete contributions are not finally determined until the end of the true-up period in 2015 cannot yet be finally determined at this stage. A detailed assessment of the EU's achievement was performed for the EEA report "Greenhouse gas emission trends and projections in Europe 2013" (EEA 2013).

.3 Uncertainties

National GHG inventories are required to fulfil certain principles as laid out in the UNFCCC reporting guidelines for GHG inventories: inventories must be transparent, consistent, comparable, complete and accurate (TCCCA). The IPCC Good Practice Guidance recommends Parties to perform QA/QC procedures that are important information to enable continuous improvement to inventory estimates. Through the quantification of uncertainty at the source level and for the inventory as a whole, improvements can be prioritised. Thus Parties may change methodologies in order to improve their greenhouse gas estimates at source level (e.g. moving from Tier 2 to Tier 3). Such methodological changes at MS level cannot be captured in the calculation of the approximated GHG inventory for the EU. On-going quality improvements in Member States' inventories to take effect in next year's official submissions to UNFCCC are therefore a source of uncertainty for the proxy inventory.

In this section on one hand the deviations between the previous proxy estimates and the subsequent official inventory submissions are assessed. On the other hand, the uncertainty estimate for the present 2012 proxy estimate is presented, which is calculated based on the past deviation for the year 2011. As Croatia only joined the EU 1st July 2013, Croatia was not covered in the previous EEA reports on proxy emission estimates for the EU. Thus the following analyses focus on the EU-27 instead of the EU-28.

For the proxy inventory for the year 2011, there was an underestimation of the emissions decline at EU level compared to the official data submitted to UNFCCCC in 2013. For the EU-15 the approximated 2011 GHG emissions were 0.9 % (32.6 Mt CO_2eq) higher than the real GHG inventory submissions and for the EU-27 1.0 % higher (47.8 Mt CO_2eq). Compared to the previous year's analysis, the deviations between the approximated GHG inventory and the real inventory submissions rose: For 2010 the approximated GHG inventory had overestimated the EU-15 GHG emissions by 0.4 % and the EU-27 GHG emissions by 0.1%. One of the key reasons for the higher deviations for the year 2011 was the lack of a complete energy balance by final uses, affecting mainly the consumption of heat in the residential and commercial sectors. Due to the higher deviations for 2011, the uncertainty calculation was revised for the estimates of this year's prediction.

Referring to the 2010 to 2011 trend in GHG emission data, the 2012 approximated EU GHG inventory report estimated a -3.5 % decrease in GHG emissions for the EU-15 (-134 Mt CO_2eq) and a -2.5 % decrease for the EU-27 (-120 Mt CO_2eq)[11]. Greenhouse gas emissions in 2010 and 2011, as officially reported to UNFCCC in 2013, however, showed a decrease in emissions of -4.2 % for the EU-15 (-160 Mt CO_2eq) and of -3.3 % for the EU-27 (-154 Mt CO_2eq).

It can be concluded that the proxy estimates last year underestimated the average decrease officially reported to UNFCCC this year. The deviations for the EU-15 were 0.9 % in emission level and 0.9 %-points in emission trend, for EU-27 1.0 % in emission level and 1.0 %-points in emission trend. The deviations in emission level were actually beyond the uncertainty ranges estimated in 2012 proxy report (i.e. +/-0.4 % for EU-15 and +/-0.1 % for EU-27). Based on these results, the methodology used in previous years for estimating the uncertainties of the approximated emissions appears being too optimistic and was changed for the present report:

The uncertainty for the approximated 2012 GHG emissions presented in this analysis is estimated as a simple metric based on the absolute deviation between last year's proxy estimates for each Member State and the subsequent reported emissions. Since emissions for each source category are estimated using different methodologies for each sector in Member State, as a first

[11] The decrease in GHG emissions 2010/2011 of 3.5 % for EU-15 and 2.5 % for EU-27 as given with the proxy estimates last year and as published by EEA in 2012 (http://www.eea.europa.eu/pressroom/newsreleases/eu-greenhouse-gas-emissions-estimated) was based on the GHG inventory submission in 2012 (for the year 2010). With the GHG inventory submissions in 2013, all Member States carried out recalculations of their data for the year 2010. 2010 GHG emissions for both EU-15 and EU-27 GHG as reported 2013 were slightly lower compared to the data reported in 2012, resulting in a slightly lower decrease than published before.

step the uncertainty for each Member State was calculated as a weighted average of all sectoral deviations. [12] In a second step, the uncertainty for the EU was calculated as the weighted mean of the Member States' deviations to total EU-15 and EU-27 emissions. As Croatia only joined the EU on 1st July 2013 it is not possible to calculate an uncertainty in this way for that new Member State. Thus, for EU-28 emission estimates the uncertainty range calculated for EU-27 as explained above was used. The uncertainties for approximated 2012 GHG emissions are shown in the far right-hand column in Table 4. Next to the uncertainty ranges for the total GHG emissions of EU-15 and EU-27/EU-28, uncertainty ranges for the sectoral EU-15 and EU-27/EU-28 2012 GHG emission approximations were calculated following the same methodology. The results on source category level are depicted in Table 5.

It has to be taken into account that any recent national improvements of GHG reporting methodologies could not be considered for the calculation of the approximated GHG inventory, as the 2012 estimates for the 2011 proxy inventory were based on the national methodologies used for 2012 inventory submissions (covering emissions until 2010). This is especially the case for those source categories for which linear trend extrapolation was performed, in particular for the source categories Chemical Industry, fluorinated gases, Solvent and Other Product Use and some subcategories in the sector Agriculture and Waste (see below). Thus, revised methodologies and parameters at MS level will always result in deviations between the final inventory and the proxy inventory.

The main factors explaining the change in emissions in 2011 compared to 2010 were further analysed in the 2013 EU GHG inventory submitted to the UNFCCC and underpinning analysis paper 'Why did greenhouse gas emissions decrease in the EU in 2011?' (EEA, 2013b).

[12] The deviation assessment was performed at the levels of the sectors '1 Energy', '2 Industrial Processes', '3 Solvent and Other Product Use', '4 Agriculture' and '6 Waste'.

Table 4 Deviation between the approximated GHG inventory estimated for 2011 and the real 2011 inventory submission at Member States' level and for the EU

MS	UNFCCC 2011 (Submission 2013)	Proxy 2011	Deviation 2011		Recalculations 2012 for 2010	Deviation 2011 cleared of impact of recalculations	uncertainty of 2012 proxy emissions
	Gg CO_2eq		Gg CO_2eq	%	%	%	%
AT	82 842	82 663	-179	-0.2%	0.5%	0.3%	2.1%
BE	120 172	121 339	1 167	1.0%	-0.5%	0.5%	3.9%
BG	66 133	67 930	1 797	2.7%	-1.7%	1.0%	4.8%
CY	9 154	9 450	295	3.2%	-12.9%	-9.6%	25.3%
CZ	133 496	141 100	7 604	5.7%	-1.2%	4.4%	6.3%
DE	916 495	919 329	2 834	0.3%	0.7%	1.1%	1.6%
DK	57 011	56 480	-531	-0.9%	1.4%	0.5%	1.8%
EE	20 956	20 887	-69	-0.3%	-2.6%	-2.9%	1.9%
EL	115 045	116 750	1 705	1.5%	-0.9%	0.6%	2.0%
ES	350 484	356 162	5 678	1.6%	-2.0%	-0.4%	2.0%
FI	67 019	68 413	1 394	2.1%	0.0%	2.1%	2.3%
FR	485 543	498 203	12 661	2.6%	-1.6%	1.0%	2.6%
HU	66 148	65 637	-511	-0.8%	0.4%	-0.4%	1.2%
IE	57 512	57 909	396	0.7%	0.3%	1.0%	1.2%
IT	488 792	490 259	1 467	0.3%	-0.2%	0.1%	0.4%
LT	21 612	21 396	-215	-1.0%	1.5%	0.5%	17.0%
LU	12 098	11 862	-236	-2.0%	1.5%	-0.5%	2.3%
LV	11 494	12 148	654	5.7%	-0.4%	5.3%	5.7%
MT	3 021	2 912	-109	-3.6%	0.3%	-3.3%	9.1%
NL	194 379	197 500	3 121	1.6%	-0.4%	1.2%	1.9%
PL	401 474	405 910	4 436	1.1%	0.5%	1.6%	2.5%
PT	69 992	69 977	-14	0.0%	1.1%	1.1%	3.9%
RO	123 346	123 711	366	0.3%	-3.9%	-3.6%	8.6%
SE	61 449	62 826	1 377	2.2%	-1.1%	1.1%	2.4%
SI	19 509	19 784	274	1.4%	-0.2%	1.2%	3.0%
SK	45 297	45 927	630	1.4%	-0.2%	1.2%	1.9%
UK	552 594	554 384	1 790	0.3%	0.6%	0.9%	1.1%
EU-15	**3 631 425**	**3 664 056**	**32 631**	**0.9%**	**-0.2%**	**0.7%**	**1.7%**
EU-27	**4 553 064**	**4 600 848**	**47 784**	**1.0%**	**-0.3%**	**0.8%**	**2.3%**

Source: EEA's proxy GHG emissions based on the 2013 and 2012 EU greenhouse gas inventories to UNFCCC for 2010 and 2011

Table 5 Uncertainties of the EU approximated GHG inventory for 2012

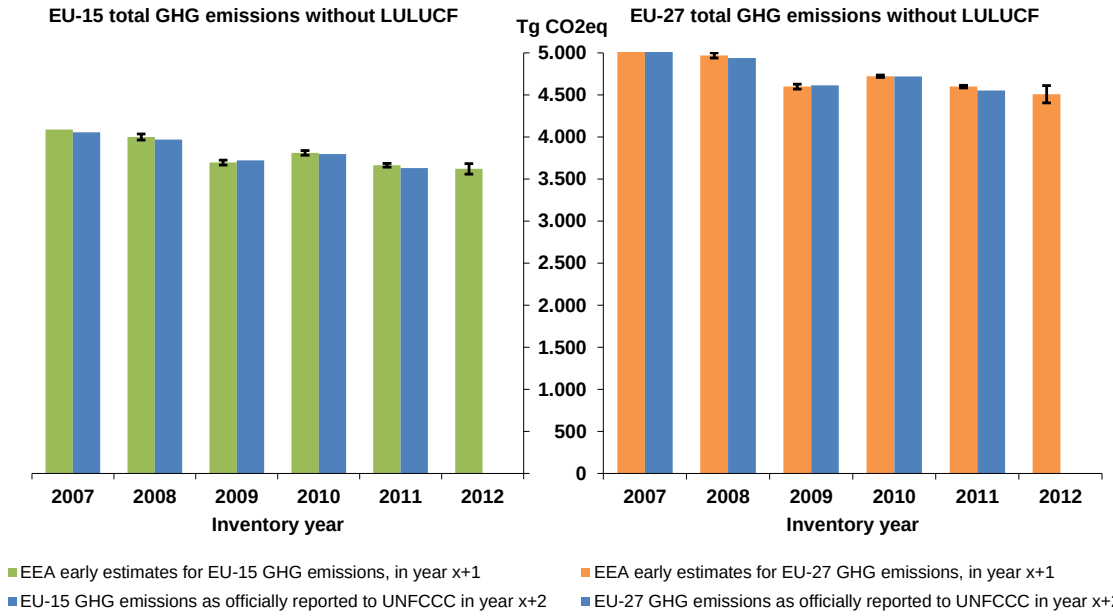
Sector	Uncertainty range for 2012 proxy emissions	
	EU-15	EU-27 / EU-28
	%	%
1 Energy	0.7%	1.2%
2 Industrial Processes	6.2%	6.9%
3 Solvent and Other Product Use	22.9%	19.3%
4 Agriculture	2.4%	3.5%
6 Waste	15.2%	14.9%
Total	**1.7%**	**2.3%**

Source: EEA's proxy GHG emissions

Figure 9 shows the timeline of EEA proxy estimates of EU-15 and EU-27 GHG emission inventories for 2007 through 2012, as published in the years 2008 through 2013. The uncertainty esti-

mates as given in the respective reports are indicated. For comparison, the emissions as officially reported to the UNFCCC one year later in 2009 through 2013 are shown.

Figure 9 Timeline of EEA proxy y estimates and official UNFCCC submissions for EU-15 and EU-27 GHG emissions without LULUCF



Note: For the 2008 EEA proxy estimate of 2007 GHG emissions, no uncertainty range was estimated.
Source: EEA's proxy emissions for the years 2007 to 2011 and EU greenhouse gas inventories to UNFCCC for 2007 to 2011

Despite exceeding the over-optimistic uncertainty ranges as proposed in the 2012 proxy report, the use of the data sources and methodologies for the proxy estimates published last year and the results mirrored rather well the decreasing trend in official emissions as reported to the UNFCCC this year. The deviations given in Table 4 arise from several factors: the less precise methodologies and data used for the approximated GHG inventories (compared to official GHG inventories); the lack of updated (t-1) activity data for some key emission sources; and, from Member States' own recalculations of GHG estimates and methodological improvements which cannot be reflected in the approximated data where constant methodologies and emission factors are assumed.

The largest deviations in relative terms occurred for Czech Republic and Latvia (Proxy 6 % higher), followed by Malta (Proxy -4 % lower), Cyprus, Bulgaria and France (Proxy 3 % higher). In absolute terms the deviations were highest for France (overestimate by Proxy of 13 Mt CO_2eq), Czech Republic (overestimate by Proxy of 8 Mt CO_2eq) and Spain (overestimate by Proxy of 6 Mt CO_2eq). By comparing the percentage changes in emission levels 2010/2011 as derived from the 2012 Proxy inventory on the one hand and from the 2013 official GHG inventory submissions to UNFCCC on the other, the deviations are in the same order of magnitude, see Figure 10.

Figure 10 Deviation between the approximated GHG inventory estimated for 2011 and the real 2011 inventory submission and deviation between percentage change in emission levels 2010/2011 derived from the approximated GHG inventory and from official GHG inventory submissions for Member States, EU-15 and EU-27

Note: As Croatia only joined the EU on 1st July 2013, this analysis is not available for Croatia.

Source: EEA's proxy inventory and MS greenhouse gas inventory to UNFCCC for 2010 and 2011

Compared to the approximated GHG emissions that have been calculated last year, deviations could be reduced for 17 of 27 Member States[13]. For twelve Member States the deviations were lower than 1 % (Austria, Belgium, Denmark, Estonia, Germany, Hungary, Ireland, Italy, Lithuania, Portugal, Romania and United Kingdom), whereas for four Member States the deviations were higher than 3 % (Cyprus, Czech Republic, Latvia and Malta). New Member States (i.e. EU accession 2004 and later) still show larger percentage deviations, because in particular for the small Baltic and Mediterranean countries the available data basis used is not very accurate.

Member States' recalculations of GHG estimates and methodological improvements played an important role for the deviations of the 2011 proxy emission estimates compared to 2011 emissions officially reported in 2013. In the following sections country-specific deviations are further explained for some Member States with high deviations in absolute terms (France, Czech Republic, Spain) and/or in relative terms (Czech Republic, Latvia) (see also columns on the right hand side in Table 4):

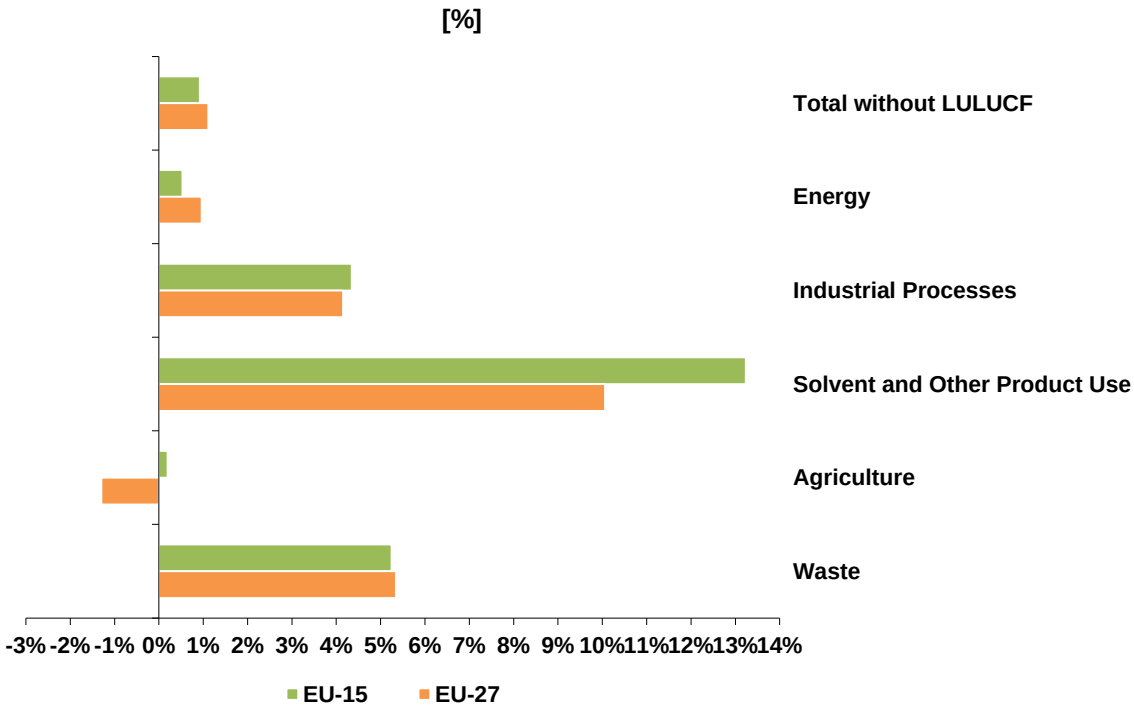
- France: French 2011 GHG emissions were overestimated by the 2012 proxy inventory by 12.6 Mt CO_2eq (2.6 %). 55 % of the overestimation can be attributed to the waste sector. 60 % of that overestimation can be explained by a recalculation of CH_4 emissions for solid waste disposal on land. Another 30 % of the overestimation is due to CH_4 emissions from manure management. Here, recalculations explain three quarters of the overestimation.
- Czech Republic: Czech 2011 GHG emissions were overestimated by the 2012 proxy inventory by 7.6 Mt CO_2eq (5.7 %). 90% of the overestimation took place the energy combustion sector. Only 25% of the overestimation can be explained by recalculations. In retrospective, a bottom-up approach for estimating CO_2 emission for the 1A Fuel combustion sector (cf. sectoral results, section .1.1) would have significantly better met the actual emission development than the approach based on Eurostat data as chosen in 2012.
- Spain: Spanish 2011 GHG emissions were overestimated by the 2012 proxy inventory by 5.7 Mt CO_2eq (1.6 %). Approximately 60 % of the overestimation can be attributed to fuel combustion sector. This overestimation can be fully explained by recalculations of CO_2 emissions for fuel combustion, mostly in the source category 1A2 Manufacturing Industries and Construction. Without these recalculations, fuel combustion emissions would have been met with a deviation of 0.2 %. Another 30 % of the overestimation is due to CH_4 emissions from waste-water handling. Here, recalculations explain the half of the overestimation.
- Latvia: Latvian 2011 GHG emissions were overestimated by the 2012 proxy inventory by 0.7 Mt CO_2eq (5.7 %). 80 % of that overestimation is due to fuel combustion emissions. In retrospective, a use of preliminary national energy statistics for estimating CO_2 emission for the 1A Fuel combustion sector (cf. sectoral results, section .1.1) would have halved the observed deviation compared to approach based on Eurostat data as chosen in 2012.

[13] Croatia was not covered in the previous report.

- Malta: Maltese 2011 GHG emissions were underestimated by the 2012 proxy inventory by -0.1 Mt CO_2eq (-3.6 %). That underestimation can almost fully be attributed to fuel combustion emissions. In retrospective, a use of trends in Eurostat data for estimating CO_2 emission for the 1A Fuel combustion sector (cf. sectoral results, section .1.1) would have significantly better met the actual emission development than the approach based on absolute Eurostat data as chosen in 2012.

Figure 11 and Figure 12 present the deviations for 2011 at sectoral level for the EU-15 and for the EU-27 in different graphical layout.

Figure 11 Deviation between the approximated GHG inventory estimated for 2011 and the real 2011 inventory submission at sectoral level for EU-15 and EU-27



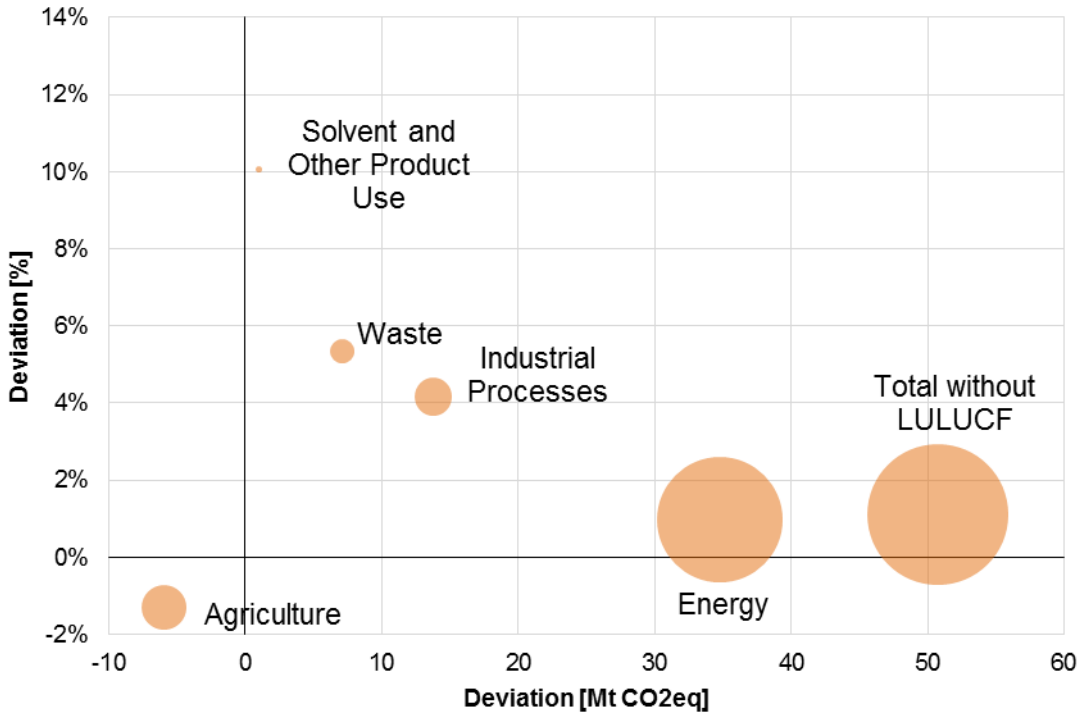
Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 2011

Relative deviations at sectoral level have increased compared to the EEA's 2011 proxy estimate of 2010 emissions. However, for most sectors, deviations are still below the levels of the 2010 proxy estimate for 2009 emissions. In the 2012 proxy inventory for 2011, the largest relative deviations occurred in the Solvent and Other Product Use sector and were 13 % for the EU-15 and 10 % for the EU-27. These overestimations can almost fully be attributed to recalculations. In absolute terms, however, that sector is nearly negligible. For Waste and Industrial Processes sectors, the relative deviations were approximately 5 % for both the EU-15 and the EU-27. For the Waste sector, approximately 60 % of the overestimations were due to recalculations for both EU-15 and EU-27. For the Industrial Processes sector, recalculations played an important role, as well: Their contribution to the overestimations was one third for the EU-15 and more than the half for the EU-27. The most important sector in absolute terms (approximately 80 % of total

net emissions without LULUCF) is the Energy sector. Here, the overestimations were 0.5 % for the EU-15 (compared to 0.3 % in the previous proxy) and 1.0 % for the EU-27 (compared to -0.2 % underestimation in the previous proxy). 2011 agriculture emissions (approx. 10 % of 2011 EU-15 and EU-27 emission levels without LULUCF) were met in the 2012 proxy report with a 0.2 % overestimation for the EU-15 and with a -1.3 % underestimation for the EU-27.

A detailed analysis of the EU-27 deviations at source category level showed that the approximated results matched rather well for 1A Fuel Combustion (0.9 % higher), 1A1 Energy Industries (-1.8 % lower), 1A2 Manufacturing Industries (2.6 % higher) as well as 1A3 Transport (0.5 % higher). Nevertheless, for some Member States the deviations could not entirely be explained by recalculations.

Figure 12 Relative sectoral GHG emissions and deviation between the approximated GHG inventory for 2011 and the subsequent 2011 inventory submission for EU-27



Note: The size of each bubble is in proportion to the total amount of greenhouse gases (as CO_2eq), emitted in each sector in 2011. For each sector (except LULUCF), the relative and absolute deviation between the previous approximated GHG inventory estimated for 2011 and the subsequent 2011 inventory submission is shown by position of the centre of each bubble on the *x* and y axis respectively.

Source: EEA's proxy and real Member States' GHG inventories based on the 2013 EU greenhouse gas inventory submission to UNFCCC for the year 2011.

Within the Industrial Processes sector, significant overestimations for 2B Chemical Industry (10 %), Fluorinated gases emissions (2E & 2F) and 2C Metal Production (each approx. 5 %) were only partly offset by a -2 % underestimation for 2A Mineral Products, resulting in a 4 % overestimation for that sector. For 2B Chemical Industry and 2F Consumption of Halocarbons and SF_6,

no recent data sources are available for the approximated GHG inventory and emissions were extrapolated from past trends. Extrapolation methods cannot reflect sudden changes that can occur in these source categories due to rapidly changing demand patterns, technological improvements and more drastic changes in production levels than in other source categories. Compared to the previous year's report, relative deviations in the 2C Metal Production were approximately halved. For 2A Mineral Products the estimates make use of EUTL data[14] for 2012: the relative deviations were -2.1 % for the EU-27 and almost equal to the respective deviations in the previous report (-1.7 %).

In the agricultural sector the difference between the approximated EU-27 GHG inventory and real EU-27 inventory data amounted to -6 Mt CO_2eq which represents a -1.3 % underestimation. The absolutely highest deviations occurred in the subsectors 4D Agricultural Soils (-6.58 Mt CO_2eq / -2.7 % underestimation), 4B Manure Management (3.5 Mt CO_2eq / 4.8 % overestimation) and 4A Enteric Fermentation (-2.9 Mt CO_2eq / -1.3 % underestimation). Compared to the previous year's report, the deviations for 4 Agriculture were in the same range.

The estimates for the waste sector show a 5.3 % overestimation for the EU-27 which is approximately the threefold value of the previous year's deviation. However, that overestimation was mainly triggered by recalculations which could not be foreseen in the EEA's 2012 proxy inventory for 2011. On subsectoral level, the 6.8 % overestimation in 6A Solid Waste Disposal on Land is most relevant in absolute terms and complemented by a 1.7 % overestimation for 6B Wastewater Handling.

.4 Member States' activities and results related to preliminary 2012 GHG emissions

Eighteen Member States also calculated preliminary GHG inventories or at least some parts of the GHG emissions for the year 2012 and made these results available to the authors of this report. Austria, Belgium, Croatia, Denmark, Germany, Finland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain and Sweden estimated complete emissions in the form of CRF summary table 2, similar to the approach in this report. France, Greece, and the United Kingdom provided emission estimates for 2012 as national total only, or in different sectoral disaggregations or not disaggregated to the different greenhouse gases. Some Member States published their own approximated greenhouse gas emissions for 2012 and the list below provides the links to these sources for individual EEA member countries:

- *Austria*
  www.umweltbundesamt.at/aktuell/presse/lastnews/news2013/news_130809
- *Finland:*
  www.stat.fi/til/khki/2012/khki_2012_2013-05-16_tie_001_en.html

[14] EUTL = European Union central Transaction Log, run by the European Commission, which checks and records all transactions taking place within the trading system

- *Germany:* www.umweltbundesamt.de/uba-info-presse/2013/pd13-009_treibhausgasausstoss_im_jahr_2012_um_1_6_prozent_gestiegen.htm
- *France:* www.citepa.org/fr/inventaires-etudes-et-formations/inventaires-des-emissions/secten
- *Spain:* www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/Avance_Emisiones_GEI_2012_tcm7-285604.pdf
- *Sweden:* www.naturvardsverket.se/Sa-mar-miljon/Klimat-och-luft/Klimat/utslapp-av-vaxthusgaser/rekordlaga-utslapp-ar-2012/
- *United Kingdom:* www.gov.uk/government/publications/provisional-uk-emissions-estimates

These preliminary data estimated by Member States were very useful for QA/QC purposes of the approximated EU inventory and for the refinement of methodologies. In general the preliminary estimates from both sources matched well with differences smaller than ± 1-2 %, except for Belgium (difference -3.1 %), Croatia (-2.5), Luxembourg (-3.7%) and Poland (2.6 %) (see Table 6).

Table 6 Comparison of approximated GHG inventories calculated in this report from MS own preliminary emission estimates for 2012 (total GHG emissions without LULUCF)

Member State	Category	EEA proxy 2012 kt CO2eq	MS proxy 2012 kt CO2eq	Difference absolute kt CO2eq	Difference relative %	Comment
Austria	**Total GHG emissions without LULUCF**	**80 362**	**79 997**	**364**	**0.5%**	
	Energy	59 679	59 425	254	0.4%	
	Industrial processes	11 191	11 045	146	1.3%	
	Agriculture	7 576	7 580	-4	0.0%	
	Waste	1 598	1 624	-26	-1.6%	
Belgium	**Total GHG emissions without LULUCF**	**117 357**	**120 988**	**-3 631**	**-3.1%**	
	Energy	94 915	98 977	-4 062	-4.3%	
	Industrial processes	11 255	10 916	339	3.0%	
	Agriculture	9 371	9 366	5	0.1%	
	Waste	1 605	1 518	87	5.4%	
Croatia	**Total GHG emissions without LULUCF**	**25 507**	**26 149**	**-642**	**-2.5%**	No ETS data available for Croatia for 2011 and 2012, therefore some of the methods in the IP sector could not be applied.
	Energy	19 211	18 790	421	2.2%	
	Industrial processes	2 020	2 950	-930	-46.0%	
	Agriculture	3 332	3 171	162	4.9%	
	Waste	846	1 098	-251	-29.7%	
Denmark	**Total GHG emissions without LULUCF**	**52 305**	**51 397**	**908**	**1.7%**	
	Energy	39 603	38 862	741	1.9%	
	Industrial processes	1 825	1 816	9	0.5%	
	Agriculture	9 733	9 582	150	1.5%	
	Waste	977	969	8	0.8%	

Member State	Category	EEA proxy 2012 kt CO2eq	MS proxy 2012 kt CO2eq	Difference absolute kt CO2eq	Difference relative %	Comment
Spain	**Total GHG emissions without LULUCF**	**347 201**	**346 062**	**1 139**	**0.3%**	
	Energy	268 120	268 361	-241	-0.1%	
	Industrial processes	26 152	25 563	590	2.3%	
	Agriculture	37 082	36 940	141	0.4%	
	Waste	14 498	13 951	547	3.8%	
Germany	**Total GHG emissions without LULUCF**	**928 910**	**931 114**	**-2 204**	**-0.2%**	
	Energy	775 134	777 142	-2 008	-0.3%	
	Industrial processes	68 235	68 789	-554	-0.8%	
	Agriculture	70 714	69 603	1 111	1.6%	
	Waste	13 008	13 822	-814	-6.3%	
Finland	**Total GHG emissions without LULUCF**	**61 908**	**61 356**	**553**	**0.9%**	
	Energy	48 811	48 470	341	0.7%	
	Industrial processes	5 130	4 969	161	3.1%	
	Agriculture	5 844	5 782	62	1.1%	
	Waste	2 059	2 063	-4	-0.2%	
France	**Total GHG emissions without LULUCF**	**489 152**	**485 101**	**4 051**	**0.8%**	
Greece	**Total GHG emissions without LULUCF**	**116 455**	**115 154**	**1 301**	**1.1%**	MS proxy only F-gases are in IP sector remaining IP emissions in energy. Thus sectoral estimates for energy and IP not comparable
	Energy	92 128	71 441	20 687	22.5%	
	Industrial processes	10 167	3 800	6 367	62.6%	
	Agriculture	9 071	8 962	109	1.2%	
	Waste	4 772	4 960	-188	-3.9%	
Italy	**Total GHG emissions without LULUCF**	**464 350**	**464 553**	**-204**	**0.0%**	
	Energy	383 161	382 817	343	0.1%	
	Industrial processes	29 459	29 571	-112	-0.4%	
	Agriculture	33 469	32 989	480	1.4%	
	Waste	16 757	17 517	-760	-4.5%	
Ireland	**Total GHG emissions without LULUCF**	**57 724**	**58 295**	**-571**	**-1.0%**	
	Energy	36 735	37 308	-574	-1.6%	
	Industrial processes	1 971	2 009	-39	-2.0%	
	Agriculture	17 901	17 918	-18	-0.1%	
	Waste	1 045	985	60	5.7%	
Luxembourg	**Total GHG emissions without LULUCF**	**11 724**	**12 157**	**-433**	**-3.7%**	
	Energy	10 348	10 793	-445	-4.3%	
	Industrial processes	648	620	28	4.4%	
	Agriculture	655	670	-15	-2.3%	
	Waste	58	59	-1	-1.7%	
Malta	**Total GHG emissions without LULUCF**	**3 141**	**3 134**	7	0.2%	MS omitted Energy sub-sectors: Manufacturing, Transport and Other, as well as Industrial Processes and Solvent and Other Product Use. These are filled with EEA data.
	Energy	2 787	2 787	0	0.0%	
	Industrial processes	145	145	0	0.0%	
	Agriculture	71	68	3	4.1%	
	Waste	137	133	4	3.1%	

Member State	Category	EEA proxy 2012 kt CO2eq	MS proxy 2012 kt CO2eq	Difference absolute kt CO2eq	Difference relative %	Comment
Netherlands	**Total GHG emissions without LULUCF**	**195 152**	**192 672**	2 480	1.3%	
	Energy	165 118	163 292	1 826	1.1%	
	Industrial processes	10 223	9 532	691	6.8%	
	Agriculture	16 098	15 942	156	1.0%	
	Waste	3 559	3 691	-132	-3.7%	
Poland	**Total GHG emissions without LULUCF**	**387 108**	**377 095**	**10 013**	**2.6%**	
	Energy	315 113	305 116	9 997	3.2%	
	Industrial processes	27 300	27 734	-434	-1.6%	
	Agriculture	34 096	33 711	384	1.1%	
	Waste	9 811	9 745	66	0.7%	
Slovenia	**Total GHG emissions without LULUCF**	**19 047**	**19 113**	**-66**	**-0.3%**	
	Energy	15 596	15 588	8	0.1%	
	Industrial processes	1 002	1 017	-15	-1.5%	
	Agriculture	1 888	1 873	15	0.8%	
	Waste	512	574	-63	-12.2%	
Sweden	**Total GHG emissions without LULUCF**	**59 065**	**58 260**	**805**	**1.4%**	
	Energy	43 392	43 109	283	0.7%	
	Industrial processes	6 076	5 992	84	1.4%	
	Agriculture	7 768	7 593	175	2.2%	
	Waste	1 541	1 566	-25	-1.7%	
United Kingdom	**Total GHG emissions without LULUCF**	**569 967**	**571 045**	**-1 077**	**-0.2%**	

Source: Member States' preliminary data provided to EEA for the purposes of this report, own calculations

Note: Negative values indicate that the EEA proxy inventory is lower than the MS' own estimates; positive values indicate that the EEA proxy inventory is higher.

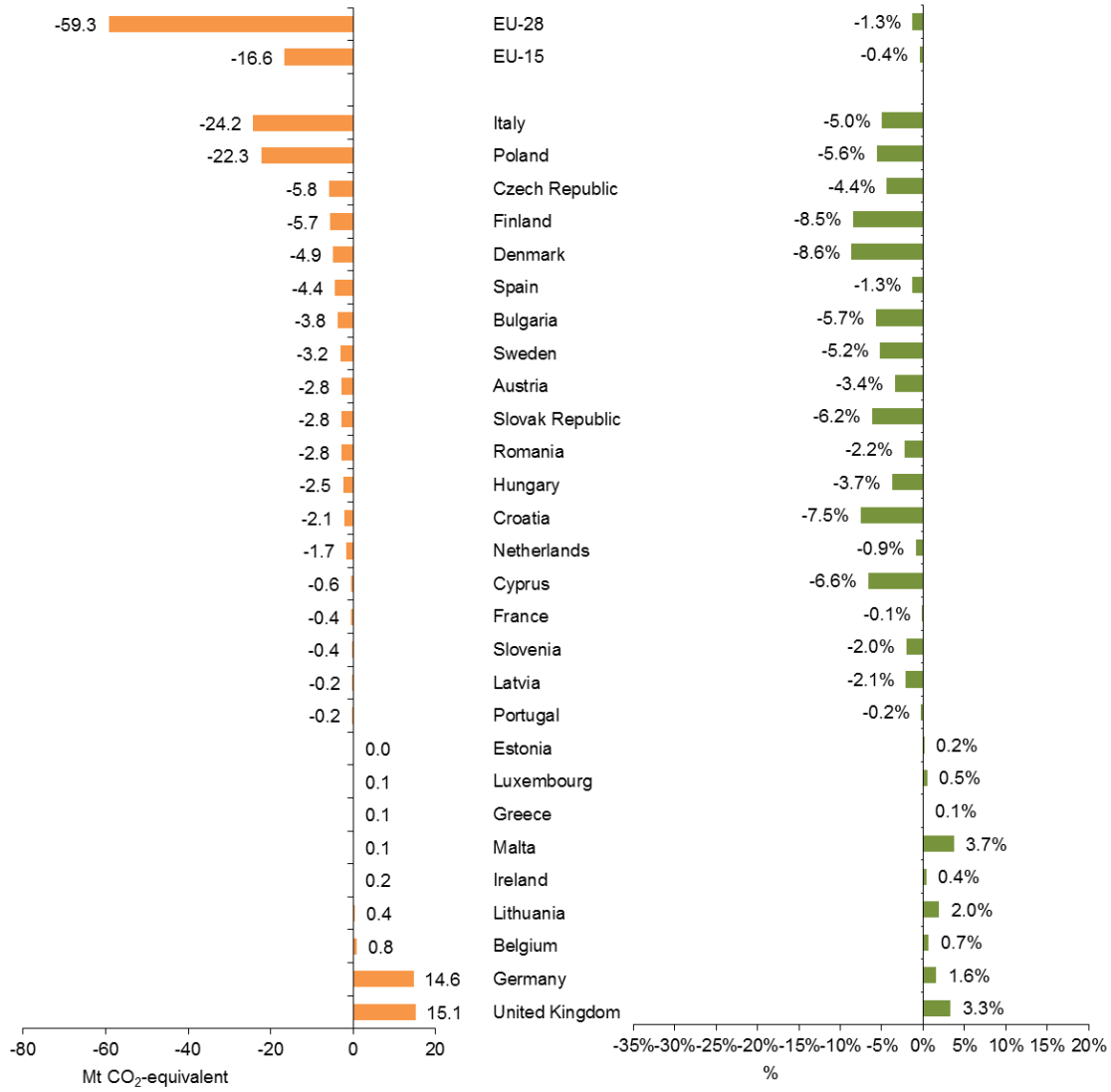
For Austria, Denmark, Finland, France, Greece, Malta, the Netherlands, Poland, Spain and Sweden, the MS own emissions estimates are below the EEA estimates. For Belgium, Croatia, Germany, Italy, Ireland, Luxembourg, Slovenia and the United Kingdom, the EEA proxy estimates are lower. Despite a small difference of only 0.8 % between the approximated emissions for France, the total emissions for 2012 result in a small increase in emissions compared to 2011 based on the calculations in this report, whereas the estimate provided by France indicates a very slight decrease of 0.1 %.

Using available Member States' own proxy emission estimates for 2012, the 2011-2012 change in emissions for the EU-28 is -1.3 %, compared to -0.9 % based on EEA estimates. For the EU-15, the 2011-2012 the GHG emission trend is -0.4 % (based on MS estimates, where available) or -0.3 % (based on EEA estimates).

For the 1990-2012 emission trends, the trend change results based on the different data sources deviate even less: The 1990-2012 emission trend for EU-28 is -19.4 % (MS estimates, where available) or -19.1 % (EEA estimates). For the EU-15, the 1990-2012 GHG emission trend is 15.0 % (MS estimates, where available) or -14.9 % (EEA estimates).

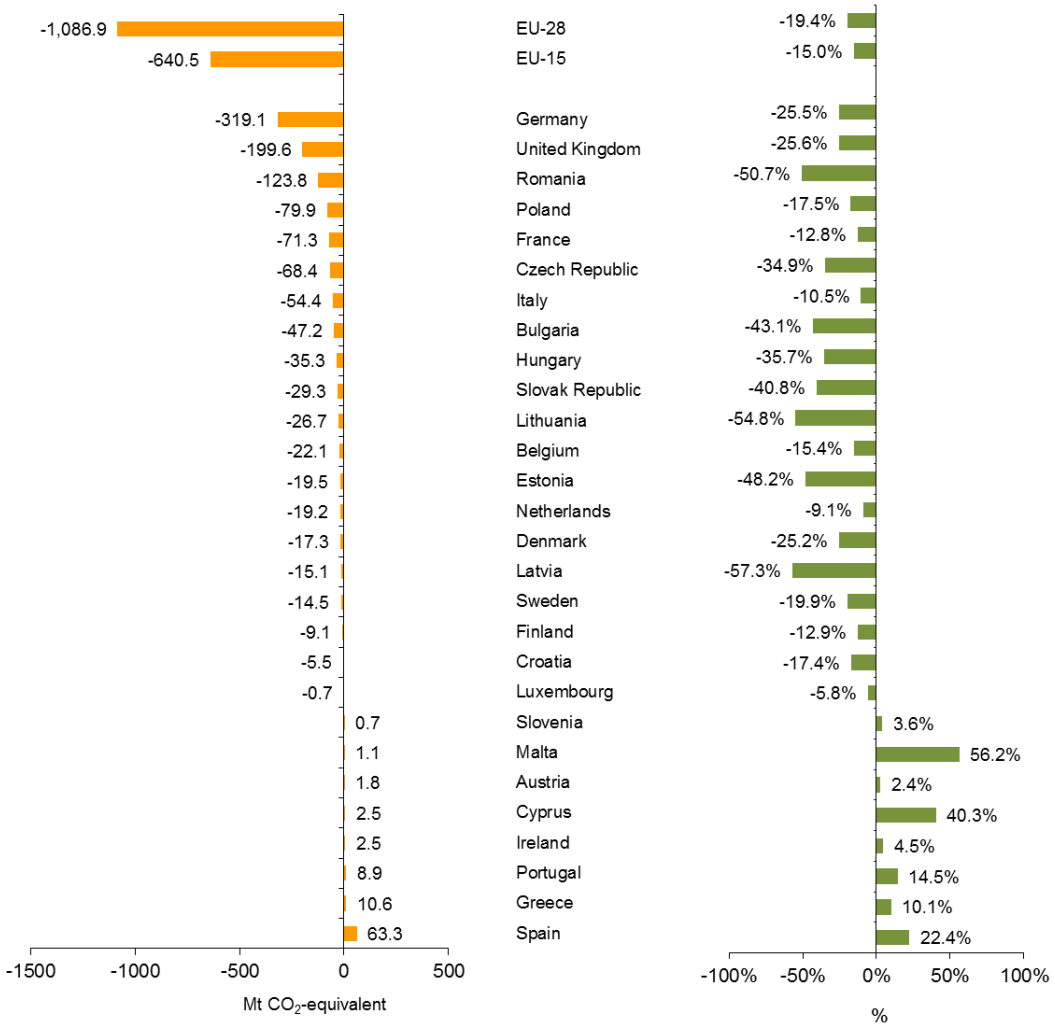
Figure 13 and Figure 14 repeat the visualisation of emission trends 2011-2012 and 1990-2012, as presented in Figure 2 and Figure 6 in section .1 above, however using Member States' own approximated 2012 emission data, where available. As the order of Member States' appearance in these graphs depends on the absolute emission trends 2011-2012 and 1990-2012, this order is slightly changed with MS own 2012 emission estimates.

Figure 13 Change in GHG emission trends in Europe for total GHG emissions without LULUCF, 2011-2012, using Member States' own approximated 2012 emission data, where available



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011, MS own proxy 2012 estimates for Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain, Sweden and the United Kingdom and EEA proxy y 2012 estimates for Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Ireland, Lithuania, Latvia, Portugal, Romania and Slovakia.

Figure 14 Change in GHG emission trends in Europe for total GHG emissions without LULUCF, 1990-2012, using Member States' own approximated 2012 emission data, where available



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011, MS own proxy 2012 estimates for Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain, Sweden and the United Kingdom and EEA proxy 2012 estimates for Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Ireland, Lithuania, Latvia, Portugal, Romania and Slovakia.

.5 Methodologies and data sources

For the estimation of approximated emissions, the following data sources for emissions or activities in the year 2012 were used:

- BP's Statistical Review of World Energy 2013[15];
- verified emissions reported under the EU-ETS and recorded in the EUTL[16];
- Eurostat Monthly Oil and Gas Questionnaires and Monthly Coal Questionnaires
- Eurostat monthly data on crude oil production (indicator code 100100, product code 3100);
- Eurostat monthly total consumption data for natural gas (indicator code 100900, product code 4100);
- Eurostat production data for natural gas (indicator code 100100, product code 4100);
- Eurostat annual data for the final energy consumption of motor spirit, automotive diesel oil and kerosene/jet fuels;
- Eurostat monthly data for the internal market deliveries of motor spirit, automotive diesel oil and kerosene/jet fuels;
- Monthly production data for crude steel production and blast furnace iron production of the World Steel Association (previously IISI International Iron and Steel Institute)[17]; this data source has only data for some of the EU MS[18];
- Eurostat annual statistics on livestock population for cattle, goats, sheep and swine.
- Eurostat: Population on 1 January by age and sex (demo_pjan).
- National preliminary energy balance data or energy statistics
- National preliminary energy balance data or energy statistics:
    - Bulgaria, 2013, Monthly statistics for liquid, solid and gaseous fuels, (http://www.nsi.bg/otrasalen.php?otr=37) accessed 13 June 2013.
    - Croatia, 2013, Short term indicators of energy statistics, first results, different issues, (http://www.dzs.hr/default_e.htm, ⇨released data ⇨⇨first releases and Statistical Report ⇨industry, energy and information society ⇨ energy, accessed 25 July 2013.

[15] BP, 2013, BP Statistical Review of World Energy 20132 (http://www.bp.com/en/global/corporate/about-bp/statistical-review-of-world-energy-2013/downloads.htmlhttp://www.bp.com/extendedsectiongenericarticle.do?categoryId=9041234&contentId=7075077) accessed by 16 June July 2013.

[16] EEA, 2011c: http://dataservice.eea.europa.eu/PivotApp/pivot.aspx?pivotid=473. The verified emissions in 2008 were corrected for the change in scope of the EU ETS between 2007 and 2008 based on a detailed analysis of all installation data.

[17] Available at http://www.worldsteel.org

[18] Pig iron/Blast furnace iron production for AT, BE, BG, CZ, DE, ES, FI+SE (only sum of both countries), FR, HU IT, NL, PL, RO, SK and UK. Crude steel production AT, BE, BG, CZ, DE, FI, FR, ES, GR, HU, IT, LU, NL, PL, RO, SI, SK and UK.

- Cyprus, 2013, Petroleum products sales and stock changes (http://www.cystat.http://www.mof.gov.cy/mof/cystat/statistics.nsf/energy_environment_81main_keyfarchive_en/) accessed 13 June 2013).
- Denmark, 2013, Monthly energy statistics, (http://www.ens.dk/en-US/Info/FactsAndFigures/Energy_statistics_and_indicators/Monthly%20Statistic/Sider/Forside.aspx) accessed 13 June 2013.
- Estonia, 2013, Energy balances derived from (http://pub.stat.ee/px-web.2001/I_Databas/Economy/07Energy/02Energy_consumption_and_production/01Annual_statistics/01Annual_statistics.asp) accessed 13 June 2013.
- Finland 2013, Energy consumption data, (http://www.stat.fi/til/ehk/index_en.html) accessed 13 June 2013.
- France, 2013, Monthly energy statistics gas, oil and coal, (http://developpement-durable.bsocom.fr/statistiques/ReportFolders/reportFolders.aspx) accessed 1 July 2013.
- Germany, 2013, Quarterly energy consumption data, (http://www.ag-energiebilanzen.de/viewpage.php?idpage=62) accessed 13 June 2013.
- Ireland, 2013, Energy balances, (http://www.seai.ie/Publications/Statistics_Publications/Energy_Balance/) accessed 13 June 2013.
- Italy, 2013, Monthly energy statistics for oil and gas (http://dgerm.sviluppoeconomico.gov.it/dgerm/ben.asp) accessed 17 May 2013.
- Latvia, 2013, Monthly data on natural gas, solid fuels and oil products, (http://data.csb.gov.lv/DATABASEEN/vide/Short%20term%20statistical%20data/Energy/Energy.asp) accessed 1 July 2013.
- Lithuania, 2013, Energy statistics, (http://db1.stat.gov.lt/statbank/default.asp?w=1280) accessed 1 July 2013.
- Netherlands, 2013, Annual energy balances, (http://statline.cbs.nl/StatWeb/dome/?LA=EN) accessed 13 June 2013.
- Portugal, 2013, Energy balances, (http://www.dgeg.pt/), accessed 13 June 2013.
- Romania, 2013, Industry statistical bulletin (http://www.insse.ro/cms/rw/pages/buletinelunare.en.do) accessed 13 June 2013.
- Slovenia 2013, Annual balance of liquid, solid and gaseous fuels, (http://pxweb.stat.si/pxweb/Database/Environment/18_energy/04_18180_fuels/04_18180_fuels.asp) accessed 1 July 2013.
- Spain, 2013, Monthly data on production and consumption of coal, petroleum and natural gas, (www.ine.es/jaxi/tabla.do?path=/t38/bme2/t04/a082/l1/&file=1202002.px&type=pcaxis&L=1), accessed 1 July 2013.

- Sweden, 2013, Quarterly energy balances (http://www.scb.se/Pages/Product___24905.aspx?Produktkod=EN0201&displaypublications=true) accessed 13 June 2013.
- United Kingdom, 2013, Digest of UK energy statistics (http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx) and Quarterly bulletin of energy statistics published in Mar, Jun, Sept, Dec, March version includes complete data for X-1 (http://www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx) and Energy statistics on a monthly, quarterly and annual basis (http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/source/source.aspx) accessed 17 May 2013 and 8 July 2013.

Based on these data sources, 2012 emission estimates were made for the following source categories:

- Energy
  - 1.A Fuel Combustion
    - 1.A.1 Energy Industries
    - 1.A.2 Manufacturing Industries and Construction
    - 1.A.3 Transport
  - 1.B Fugitive Emissions
    - 1.B.1 Solid Fuels
    - 1.B.2.a Oil and Natural Gas, Oil
    - 1.B.2.b Oil and Natural Gas, Natural Gas
    - 1.B.2.c Oil and Natural Gas, Venting and Flaring
- Industrial Processes
  - 2.A Mineral Products
  - 2.C Metal Production
- Agriculture
  - 4.A Enteric Fermentation
  - 4.B Manure Management

The alternative sources for AD and emissions listed above were only used if the resulting emissions matched well with real inventories for past years. If large discrepancies occurred for individual Member States, different approaches (trend extrapolation, constant values from previous year) were used.

For the waste sector and all other inventory source categories not listed above, no 2011 activity data was available that could be combined with IEFs from GHG inventories. These categories were extrapolated from 2012 GHG inventories, either by trend extrapolation or by taking the

constant values of the year 2011 and by following the gap filing rules in accordance with the implementing provisions under Council Decision 280/2004/EC. Constant values were used when past trends were inconsistent and strongly fluctuating; trend extrapolation was used when historic time series showed good correlations with a linear trend.

Annex 1 provides a detailed overview of methods and data sources used for each source category and Member State.

The timing of future releases will depend on the release of the underlying data sources used for the estimation. The availability of data sources is shown in Table 7. The latest data sources that became available in 2011 was the BP statistical review of World Energy which is published annually by 15 June. In July of each year updated verified emissions in the EUTL have been available in recent years. In 2012 EUTL data will be updated very late due to the establishment of the Union registry and in the preparation of the reports, updated EUTL data were not yet available. Member States' national energy statistics are released at different point in times and the national websites do not always indicate the publication data and whether the publication is regularly made available at the same date.

Table 7 Time of data availability of data sources used for the approximated inventory

Data source	Availability
EUTL verified emissions	March April, updates 20 August 2012. Data as of 22 June 2012 was used.
BP Statistical Review of World Energy	15 June
Eurostat monthly production data for hard coal and lignite	3 month after reporting period
Eurostat monthly production data on crude oil input to refineries	3 month after reporting period
Eurostat monthly production data for crude oil	3 month after reporting period
Eurostat monthly production data for natural gas	3 month after reporting period
World Steel Association monthly production data for crude steel production	two months after reporting
World Steel Associationmonthly production data for blast furnace iron production	two months after reporting
Eurostat annual statistics on livestock population for live bovine animals, swine, sheep and goats	April
CRF inventory submissions	End of May (final submitted changes)
Member States' national energy balances and national energy statistics	different publication dates

• Sectoral results

.1 Energy

.1.1 1.A Energy - Fuel combustion

2012 emissions in source category 1.A (Energy - Fuel Combustion) are mostly estimated independently of the estimates for categories 1.A.1 (Energy Industries – chapter .1.2), 1.A.2 (Manufacturing Industries and Construction – chapter .1.3) and 1.A.3 (Transport – chapter .1.4).

.1.1.1 Methods and data sources used

Four different approaches for the estimation of CO_2 emissions from Fuel Combustion based on different data sources and methods were calculated for each Member State as presented in Table 8. Subsequently, the approach that led to emission estimates closest to the Member States' inventory estimation in past years was chosen as the final value for each Member State.

Table 8 Overview of approaches used for the estimation of CO_2 emissions from 1.A fuel combustion

	Approach I	**Approach II**	**Approach III**	**Approach IV**
Data sources	BP energy review	Eurostat monthly energy statistics	EUTL data, Eurostat data for transport	Member States' national energy statistics
Method	2012 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2011	2012 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2011	detailed estimation for inventory source categories 1A1, 1A2, 1A3, constant emissions for 1A4 and 1A5	2012 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2011

Source: Öko-Institut

In Approach I, the main source for the estimation of CO_2 emissions from source category 1.A (Energy - Fuel Combustion) is the most recent BP Statistical Review of World Energy, which contains individual data for 21 EU Member States. No data are published for Cyprus, Estonia, Latvia, Luxembourg, Malta and Slovenia in this source. The share of these (small) countries in energy consumption amounts to less than 1 % of total EU emissions, with some differences regarding individual energy sources. The BP data refer to primary energy consumption and covers only commercially traded fuels.

Approach II are based on Eurostat monthly energy statistics which reflect Member States' submissions of monthly Oil and Gas Questionnaires and monthly Coal Questionnaires to Eurostat.

In contrast to all other approaches for sector 1.A (Fuel Combustion) CO2 emissions, Approach III makes use of CO2 estimates for categories 1.A.1 (Energy Industries – chapter .1.2), 1.A.2 (Manufacturing Industries and Construction – chapter .1.3) and 1.A.3 (Transport – chapter .1.4). In this 'bottom up' approach those CO2 emission estimates for 2012 are complemented with reported 2011 CO2 emissions for categories 1.A.4 (Other Sectors, i.e. Commercial/Institutional, Residential and Agriculture/Forestry/Fishing) and 1.A.5 (Other) in order to estimate 2012 CO2 emissions for 1A (Fuel Combustion) CO2 emissions.

In Approach IV, finally, early national energy statistics are used: For a considerable number of Member States, preliminary energy statistics were available (cf. chapter .5). Fuel consumption data were (if necessary) converted in energy units and aggregated to solid, liquid & gaseous fuel categories.

CO_2 emissions reported in source category 1.A (Fuel Combustion) are split up in the CRF by the fuel categories solid fuels, liquid fuels, gaseous fuels and other fuels. CO_2 emissions from other fuels cover mostly municipal or industrial waste incineration or co-incineration of secondary waste-type fuels. CO_2 emissions from the biomass fuel category are not accounted for in CRF category 1.A (Fuel Combustion) and were consequently not included in the estimation.

All data sources were used in order to derive specific information for the development of CO_2 emissions from the fuel categories solid, liquid and gaseous fuels, as defined in the CRF with source category 1.A (Fuel Combustion). For each of those fuel categories a fuel consumption trend 2011 to 2012 was derived from the respective data sources (this applies to approaches I (BP), II (Eurostat) and IV (national energy statistics)). 2012 CO_2 emissions per fuel category were then estimated by multiplying the CO_2 emissions in that fuel category of the previous year by the fuel category specific consumption trend. None of the data sources provided information on the development of CO_2 emissions from the other fuels category. Thus 2011 CO_2 emissions from other fuels in source category 1.A (Fuel Combustion) were approximated using the respective emissions as reported by the Member States in 2013[19]. For some Member States country-specific adjustments were made for other fuels, e.g. for Finland reporting peat under 'other fuels' which is included under solid fuels in BP or Eurostat statistics. The general approach to the CO_2 emission calculation for 1.A (Fuel combustion) is depicted in Equation 1 (applies to approaches I (BP), II (Eurostat) and III (national energy statistics)):

[19] In the case of Finland, CO_2 emissions from other fuels have an extraordinary high share in total 1A CO_2 emissions (18 % in 2011). This is due to the fact that Finland reports emissions from peat combustions in the other fuels category. For all other used data sources, however, peat would be classified as a solid fuel. Thus, Finnish CO_2 emissions from peat combustion in the past years were identified from the CRF submissions and transferred from "other fuels" to "solid fuels" in order to arrive at improved overall CO_2 emission estimates for category 1A Fuel Combustion.

Equation 1

$$E^{Y}_{1A,CO2} = \frac{C^{Y}_{solid}}{C^{Y-1}_{solid}} \cdot E^{Y-1}_{solid,CO2} + \frac{C^{Y}_{liquid}}{C^{Y-1}_{liquid}} \cdot E^{Y-1}_{liquid,CO2} + \frac{C^{Y}_{gaseous}}{C^{Y-1}_{gaseous}} \cdot E^{Y-1}_{gaseous,CO2} + E^{Y-1}_{other\ fuels,CO2}$$

with

$E^{Y}_{1A,CO2}$ CO_2 *emissions in source category 1A*

$C^{Y}_{solid/liquid/gaseous}$ *consumption of solid/liquid/gaseous fuels*

$C^{Y-1}_{solid/liquid/gaseous}$ *consumption of solid/liquid/gaseous fuels in the previous year*

$E^{Y-1}_{...,CO2}$ CO_2 *emissions in the respective fuel category in the previous year*

In approach III (Bottom-up: EUTL data & Eurostat data for transport) the calculation approach is as follows:

Equation 2

$$E^{Y}_{1A,CO2} = E^{Y}_{1A1,CO2} + E^{Y}_{1A2,CO2} + E^{Y}_{1A3,CO2} + E^{Y-1}_{1A4,CO2} + E^{Y-1}_{1A,5CO2}$$

with

$E^{Y}_{1A,CO2}$ CO_2 *emissions in source category 1A*

$E^{Y}_{1A1/1A2/1A3,CO2}$ CO_2 *emission estimates in source category 1A1 / 1A2 / 1A3*

$E^{Y-1}_{1A4/1A5,CO2}$ CO_2 *emissions in source category 1A4 / 1A5 in the previous year*

All approaches were calculated for the years 2009 to 2012 (for BP data longer time series were available) and were compared with Member States' final inventory emissions. Based on the analysis of the data source time series and an expert judgment of the validity of the provisional Eurostat and Member States' energy statistics, a specific approach was chosen for each Member State. In this process, the overall selection criteria for CO_2 approaches in 1A are:

- An analysis of deviations for all approaches for the previous year.
- A check how well different approaches compare and whether the selected approach seems to be an outlier.
- An analysis of the likeliness of trend change year X vs. year X-1 with different approaches
- A compare with the results of Member States' own proxy inventories

The BP data source (approach I) was chosen for Czech Republic, Hungary, Ireland, Italy, Poland and Portugal. Eurostat data (Approach II) was used for Austria, Cyprus, Estonia, Greece, Romania, Spain and the United Kingdom. The Bottom-Up approach (Approach III) relying on EUTL data, Eurostat transport data and earlier officially reported emission data was chosen for Belgium, Lithuania, Luxembourg, Malta and Slovakia. Early national energy statistics data

(Approach IV) were chosen for Bulgaria, Croatia, Denmark, Finland, France, Germany, Latvia, the Netherlands, Slovenia and Sweden.

Member States' own proxy inventories were used for QA/QC purposes and for verification of the approximated GHG estimates: For countries submitting own proxy calculations, results for 1A were compared and the method that fitted best to Member States' own proxy calculations was selected for these countries.

The estimation for CH_4 emissions from source category 1.A (Fuel Combustion) is based on the approximated trend of CO_2 emissions and depicted in Equation 3:

Equation 3

$$E^{Y}_{1A,CH4} = \left(\frac{E^{Y}_{1A,CO2}}{E^{Y-1}_{1A,CO2}}\right) \cdot E^{Y-1}_{1A,CH4}$$

with

$E^{Y}_{1A,CH4}$ CH_4 *emissions for source category 1A*

$E^{Y}_{1A,CO2}$ CO_2 *emissions for source category 1A as estimated in this report*

$E^{Y-1}_{1A,CO2}$ CO_2 *emissions for source category 1A from previous year*

$E^{Y-1}_{1A,CH4}$ CH_4 *emissions for source category 1A from previous year*

For Croatia, 2011 CH_4 emissions were used for 2012.

The estimation for N_2O emissions from source category 1.A (Fuel Combustion) is similar to CH_4 (Equation 4):

Equation 4

$$E^{Y}_{1A,N2O} = \left(\frac{E^{Y}_{1A,CO2}}{E^{Y-1}_{1A,CO2}}\right) \cdot E^{Y-1}_{1A,N2O}$$

with

$E^{Y}_{1A,N2O}$ N_2O *emissions for source category 1A*

$E^{Y}_{1A,CO2}$ CO_2 *emissions for source category 1A as estimated in this report*

$E^{Y-1}_{1A,CO2}$ CO_2 *emissions for source category 1A from previous year*

$E^{Y-1}_{1A,N2O}$ N_2O *emissions for source category 1A from previous year*

For Croatia, 2011 N_2O emissions were used for 2012.

.1.1.2 *Results for 2012*

The CO_2 emissions in category 1 A (Fuel Combustion) account for approx. 75 % of overall greenhouse gas emissions (without LULUCF) in the EU-27. As mentioned above, 2012 CO_2 emissions in this category are based on four different approximation approaches. Table 9 shows the calculation results for all Member States and highlights the approaches chosen per Member State.

Table 9 2012 CO_2 emissions for source category 1.A Fuel combustion in various approximation approaches

Gg CO2	**Approach I** BP (Trend)	**Approach II** Eurostat monthly (trend)	**Approach III** Bottom up: 1A1+1A2+1A3+ $(1A4+1A5)_{Y-1}$	**Approach IV** preliminary national energy statistics (trend)
AT	57 303	58 313	58 690	not available
BE	93 322	85 687	93 490	not available
BG	45 018	46 431	47 132	46 064
CY	not available	6 504	6 733	not available
CZ	98 378	98 350	96 619	not available
DE	756 335	749 614	740 448	756 772
DK	37 698	38 688	39 301	38 526
EE	not available	17 956	17 333	18 113
ES	264 807	260 926	262 291	261 207
FI	46 624	45 849	45 027	47 481
FR	339 092	331 521	330 006	338 460
GR	85 324	89 673	90 701	not available
HR	not available	16 931	17 980	17 244
HU	41 941	42 746	42 126	not available
IE	36 166	35 920	36 700	34 886
IT	369 744	370 855	368 480	370 591
LT	11 050	11 433	11 460	11 074
LU	not available	10 344	10 181	not available
LV	not available	7 233	7 397	7 119
MT	not available	2 831	2 767	not available
NL	156 168	153 894	153 588	160 374
PL	294 530	289 366	296 323	not available
PT	46 700	44 840	44 353	43 897
RO	72 025	72 806	71 001	72 770
SE	38 765	38 018	40 754	40 547
SI	not available	14 954	15 043	14 966
SK	30 860	28 281	27 364	not available
UK	458 829	463 755	449 745	459 923

Note: The result for the approach chosen as the best guess per Member State is highlighted in colour.

The figures presented in this table in the column 'Eurostat monthly trend' deviate from figures published by Eurostat as early CO_2 estimates from energy due to the fact that the Eurostat early estimates are based on the IPCC reference approach method and in this report a sectoral approach calculation method was performed which leads to different estimates for 2012 CO_2 emissions from the energy sector.

Source: EEA's proxy GHG emissions

Table 10, Table 11 and Table 12 show the results for the proxy inventory in 2012 compared to the inventory time series for the EU and all Member States for CO_2, CH_4 and N_2O emissions respectively.

Table 10 CO_2 emissions for source category 1.A Fuel Combustion

Source Category	1A	Fuel Combustion (Sectoral Approach)										
Gas	CO2											
Member State	Inventory data											Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg											
AT	54 070	56 228	57 824	70 586	67 426	64 255	63 541	58 923	63 150	60 597	58 313
BE	110 302	114 609	115 250	114 780	110 948	106 621	109 918	100 452	106 608	96 268	93 490
BG	72 284	50 027	40 087	44 644	45 867	49 413	48 635	42 807	44 805	49 858	46 064
CY	4 193	5 283	6 332	6 964	7 224	7 479	7 736	7 630	7 406	7 102	6 504
CZ	145 610	115 343	113 035	113 794	114 165	113 870	109 277	104 307	107 330	103 604	98 378
DE	977 713	869 889	827 825	803 248	808 296	785 639	785 832	733 401	770 554	742 030	756 772
DK	51 242	58 831	51 153	48 788	56 722	51 942	48 964	47 107	47 434	42 455	38 526
EE	35 566	17 314	14 491	15 712	15 087	17 945	16 422	13 832	17 449	18 366	17 956
ES	204 042	232 112	280 856	337 835	327 254	334 027	307 248	276 060	259 100	264 165	260 926
FI	52 954	54 532	53 018	52 582	63 842	61 768	53 293	51 296	59 003	51 950	47 481
FR	364 866	365 533	383 845	395 538	386 519	376 665	370 878	355 415	361 892	334 715	338 460
UK	563 953	525 934	531 317	535 193	535 598	525 417	515 260	469 064	485 096	446 130	463 755
GR	74 808	78 120	93 731	103 343	102 044	104 607	101 329	96 942	89 936	89 812	89 673
HU	64 776	55 965	53 431	54 182	53 415	51 649	50 612	45 903	46 085	44 435	41 941
IE	30 154	33 007	41 760	45 046	44 682	44 841	44 581	40 107	39 917	36 371	36 166
IT	400 728	413 811	433 642	457 250	452 587	444 056	435 138	391 580	401 224	390 435	369 744
LT	32 246	13 484	10 303	12 301	12 477	12 711	12 546	11 284	12 176	11 247	11 460
LU	10 327	8 213	8 045	11 437	11 247	10 670	10 561	10 124	10 660	10 518	10 181
LV	18 392	8 840	6 777	7 507	7 950	8 272	7 847	7 159	7 968	7 419	7 119
MT	1 865	2 211	2 345	2 703	2 670	2 756	2 715	2 628	2 640	2 662	2 767
NL	149 860	161 600	161 709	167 056	163 815	163 535	166 867	161 999	172 759	159 314	160 374
PL	350 669	338 775	296 090	295 615	306 887	306 635	301 188	291 900	310 173	304 568	294 530
PT	40 334	48 805	59 338	62 354	58 085	55 031	53 216	51 808	47 229	46 622	46 700
RO	155 217	106 497	79 050	83 440	87 227	85 076	84 768	72 556	69 616	76 257	72 806
SE	51 433	53 115	48 439	47 462	46 901	45 534	43 638	41 676	45 878	42 158	40 547
SI	13 646	14 078	14 237	15 528	15 678	15 790	16 816	15 228	15 312	15 339	14 966
SK	52 469	37 477	34 107	34 239	33 215	31 499	32 203	28 845	30 536	30 220	27 364
EU-15	3 136 785	3 074 338	3 147 752	3 252 499	3 235 965	3 174 608	3 110 262	2 885 954	2 960 440	2 813 538	2 811 110
EU-27	4 083 719	3 839 632	3 818 036	3 939 128	3 937 828	3 877 703	3 801 028	3 530 033	3 631 936	3 484 617	3 452 963
HR	20 594	15 034	17 347	20 281	20 347	21 573	20 496	19 362	18 690	18 475	17 244
EU-28	4 104 312	3 854 666	3 835 383	3 959 408	3 958 175	3 899 277	3 821 524	3 549 395	3 650 626	3 503 092	3 470 207

Table 11 CH_4 emissions for source category 1.A Fuel Combustion

Source Category	1A	Fuel Combustion (Sectoral Approach)									
Gas	CH4										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	22.0	20.4	15.1	13.2	12.1	11.5	11.6	10.9	11.9	10.6	10.2
BE	22.7	20.4	16.1	14.2	14.6	14.6	15.5	14.1	15.4	12.9	12.5
BG	16.8	12.0	11.8	12.9	13.6	12.7	12.8	11.8	13.2	14.3	13.2
CY	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.8	0.7	0.8	0.7
CZ	69.7	35.6	25.9	25.0	29.0	26.7	25.6	26.3	28.6	26.6	25.3
DE	212.9	92.7	76.4	93.0	104.1	113.5	122.7	123.4	147.8	145.9	148.8
DK	8.5	21.2	26.0	23.7	22.3	20.6	20.3	18.4	20.7	17.7	16.1
EE	4.7	5.7	5.4	5.0	4.8	5.8	5.9	6.2	6.5	5.7	5.6
ES	59.1	58.3	64.2	79.8	79.3	74.2	72.9	69.3	71.1	69.6	68.8
FI	14.6	14.2	13.6	14.6	14.9	14.8	14.9	15.2	16.8	15.0	13.7
FR	235.6	218.9	166.9	129.3	112.9	103.2	98.3	90.5	92.3	73.8	74.6
UK	128.4	92.3	78.5	57.7	56.0	57.2	57.5	53.2	55.6	51.8	53.9
GR	10.1	10.2	11.8	10.5	10.8	10.5	10.1	9.7	9.1	9.0	9.0
HU	34.1	17.7	10.8	14.9	15.6	13.6	13.0	13.7	16.0	16.8	15.9
IE	20.3	14.1	10.9	9.8	9.5	9.3	9.6	9.9	9.5	8.7	8.6
IT	76.7	87.9	78.7	71.6	71.0	74.1	74.4	73.8	76.8	79.4	75.2
LT	11.3	7.4	8.7	9.5	9.9	9.5	9.9	9.9	10.0	9.7	9.9
LU	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.9	0.8	0.8
LV	12.5	13.5	11.3	13.1	12.8	12.7	11.7	12.9	12.2	10.6	10.1
MT	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NL	34.8	44.3	43.5	43.8	47.9	60.8	76.0	78.2	83.2	78.1	78.6
PL	122.2	177.3	114.1	124.9	138.5	129.6	136.7	138.8	162.2	144.7	139.9
PT	22.2	21.0	19.1	16.0	15.2	14.6	13.8	13.4	12.7	13.0	13.1
RO	25.7	20.4	36.7	43.3	41.0	42.1	51.1	49.5	51.1	47.4	45.2
SE	23.8	24.6	20.5	21.4	21.0	20.7	21.5	23.2	23.1	23.4	22.5
SI	7.5	7.2	6.5	5.9	5.9	5.8	6.0	6.5	6.8	6.2	6.0
SK	2.9	2.7	2.6	3.0	2.7	2.6	3.3	2.3	2.4	2.4	2.2
EU-15	893.2	741.8	642.8	599.8	592.7	600.5	620.2	604.1	646.9	609.9	606.5
EU-27	1 201.2	1 042.1	877.2	857.9	867.4	862.7	897.3	883.0	956.8	895.3	880.8
HR	9.7	5.4	6.4	5.7	5.7	5.1	5.1	5.2	5.7	6.5	6.5
EU-28	1 210.9	1 047.5	883.5	863.6	873.1	867.8	902.4	888.2	962.5	901.8	887.2

Table 12 N_2O emissions for source category 1.A Fuel Combustion

Source Category	1A	Fuel Combustion (Sectoral Approach)									
Gas	N2O										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	1.8	2.1	2.4	2.7	2.6	2.5	2.4	2.3	2.3	2.2	2.1
BE	2.1	2.6	2.5	2.0	1.9	2.1	2.1	2.2	2.2	2.1	2.1
BG	1.1	1.4	1.2	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.8
CY	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CZ	2.4	2.3	2.8	3.7	3.8	3.9	3.8	3.7	3.7	3.7	3.5
DE	26.0	19.5	17.6	16.2	16.5	16.9	17.1	16.6	17.9	18.1	18.5
DK	1.0	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.2	1.1
EE	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ES	5.0	6.9	9.4	8.7	8.6	8.7	8.5	7.8	7.7	7.6	7.5
FI	3.2	3.2	3.2	3.1	3.4	3.3	3.1	2.9	3.3	3.1	2.8
FR	12.0	13.5	14.0	14.9	14.5	14.4	14.4	13.4	14.0	13.0	13.2
UK	19.2	18.9	16.7	15.7	15.3	14.9	14.0	12.7	12.8	12.7	13.2
GR	2.9	3.1	3.2	3.4	3.5	3.4	3.3	2.9	2.5	2.3	2.3
HU	0.9	0.9	1.1	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8
IE	0.8	1.4	1.2	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.1
IT	14.9	17.4	17.3	17.2	17.3	17.2	16.6	15.9	16.0	15.9	15.1
LT	0.4	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3
LU	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
LV	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
MT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NL	1.1	1.6	1.8	1.9	1.8	1.8	1.9	1.9	2.0	2.0	2.0
PL	5.7	6.2	5.8	6.0	6.1	6.2	6.3	6.3	6.7	6.8	6.5
PT	1.5	2.4	2.0	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.8
RO	1.2	1.0	1.1	1.5	1.5	1.6	1.7	1.6	1.6	1.7	1.6
SE	4.4	4.7	4.1	4.1	4.2	4.1	4.2	4.3	4.6	4.4	4.2
SI	0.5	0.9	1.0	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
SK	0.8	0.6	0.5	0.6	0.6	0.5	0.7	0.5	0.5	0.5	0.5
EU-15	96.0	98.6	96.8	94.8	94.8	94.3	92.5	87.5	89.8	88.0	87.4
EU-27	109.8	112.9	111.1	110.0	110.1	110.0	108.5	102.8	105.6	104.0	102.7
HR	0.3	0.2	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3
EU-28	110.1	113.1	111.6	110.5	110.5	110.4	108.8	103.2	106.0	104.3	103.0

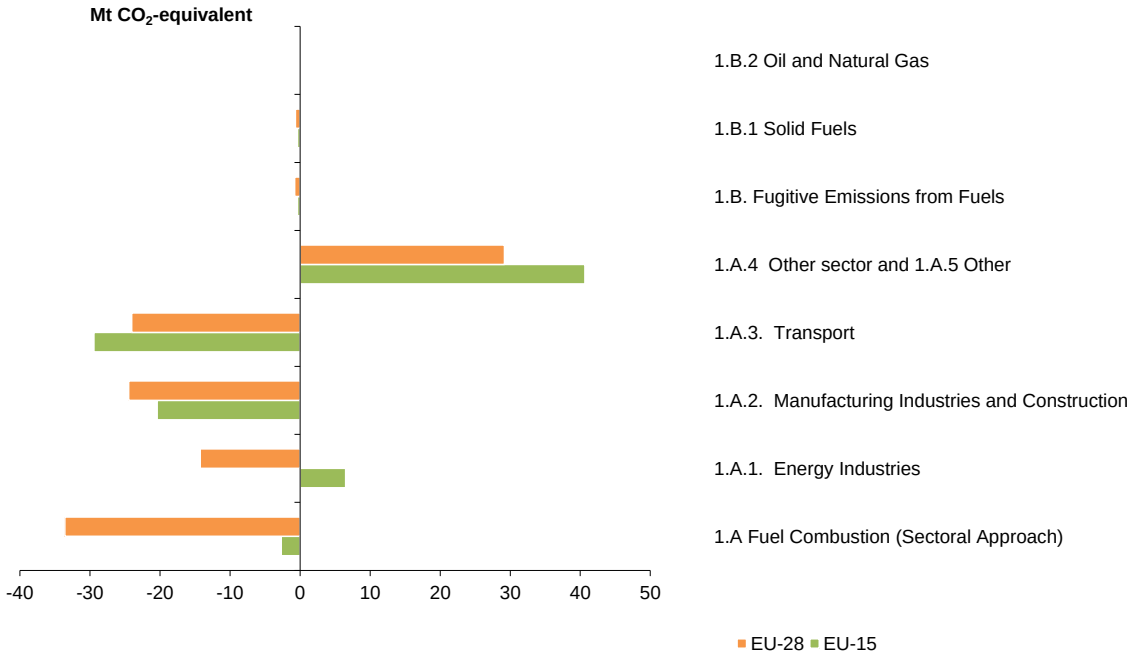
The results in the fuel combustion sector show a decrease of GHG emissions by 2.7 Mt CO_2eq or 0.1 % for EU-15 between 2011 and 2012. For the EU-27 a decrease of GHG emissions from fuel combustion by 33.6 Mt CO_2eq or 0.9 % between 2011 and 2012 is estimated. Table 13 indicates the sub-sectors contribution to this drop in emissions. Emissions from sub-sectors are estimated separately applying different methodologies as explained later. The largest decrease in fuel combustion emissions both in EU-15 and EU-28 occurred in 1.A.3 Transport and in 1.A.2 in Manufacturing Industries and Construction. Large emission increases occurred in 1.A.4 / 1.A.5 Other sectors, i.e. residential and commercial combustion. However the increases were more than offset the decreases in the other sub-sectors.

Table 13 Change in GHG emissions between 2011 and 2012 for main source categories in the energy sector

Sector Energy	**Change 2012/2011**			
	EU-15		**EU-28**	
	Mt CO_2eq	**%**	**Mt CO_2eq**	**%**
1.A Fuel Combustion (Sectoral Approach)	-2.7	-0.1%	-33.6	-0.9%
1.A.1. Energy Industries	6.5	0.6%	-14.3	-1.0%
1.A.2. Manufacturing Industries and Construction	-20.4	-4.3%	-24.5	-4.3%
1.A.3. Transport	-29.4	-3.7%	-24.0	-2.6%
1.A.4 Other sector and 1.A.5 Other	40.7	7.5%	29.2	4.5%
1.B. Fugitive Emissions from Fuels	-0.4	-0.9%	-0.8	-1.0%
1.B.1 Solid Fuels	-0.4	-5.0%	-0.7	-2.9%
1.B.2 Oil and Natural Gas	0.0	0.0%	-0.1	-0.2%

Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Figure 15 Change in GHG emissions between 2011 and 2012 for main source categories in the Energy sector



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

.1.2 1.A.1 Energy Industries

.1.2.1 Methods and data sources used

The GHG emissions for source category 1.A.1 (Energy Industries) were estimated on the basis of a separate analysis of the following source categories

- Public Electricity and Heat Production (1.A.1.a)
- Petroleum Refining (1.A.1.b)
- Manufacture of Solid Fuels and Other Energy Industries (1.A.1.c)

The main data source for the estimation of CO_2 emissions from source category 1.A.1.a (Public Electricity and Heat Production) is an analysis of the verified emissions data reported by installations covered under the EU ETS and recorded in the EUTL. Öko-Institut undertook a supplementary analysis on an installation-by-installation basis to separate the electricity generation installations from industrial combustion installations which are both reported under main activity code 1 in the ETS data (Combustion installations with a rated thermal input exceeding 20 MW). Based on these data the emissions were calculated as follows:

Equation 5

$$E^{Y}_{1A1aCO2} = \frac{E^{Y}_{CITL(1/power)}}{E^{Y-1}_{CITL(1/power)}} \cdot E^{Y-1}_{1A1aCO2}$$

with

$E^{Y}_{1A1aCO2}$ CO_2 *emissions for source category 1A1a*

$E^{Y-1}_{1A1aCO2}$ CO_2 *emissions for source category 1A1a from previous year*

$E^{Y}_{CITL(...)}$ *CITL emissions for combustion / electricity generation installations*

$E^{Y-1}_{CITL(...)}$ *CITL emissions for combustion / electricity generation installations from previous year*

Since Croatia neither in 2011 nor in 2012 participated in the EU ETS, 1A1a emissions 2012 for Croatia were calculated using MS data on gross electricity production from thermal power plants as follows:

Equation 6

$$E^{Y}_{1A1aCO2} = \frac{E^{Y}_{MS(power\,production)}}{E^{Y-1}_{MS(power\,production)}} \cdot E^{Y-1}_{1A1aCO2}$$

with

$E^{Y}_{1A1aCO2}$ CO_2 *emissions for source category 1A1a*

$E^{Y-1}_{1A1aCO2}$ CO_2 *emissions for source category 1A1a from previous year*

$E^{Y}_{MS(...)}$ *MS data on gross electricity production (thermal power plants)*

$E^{Y-1}_{MS(...)}$ *MS data on gross electricity production (thermal power plants) from previous year*

Three different approaches were used for CH_4 emissions from source category 1.A.1.a (Public Electricity and Heat Production):

1. For the Member States with no strong correlation between CO_2 and CH_4 emissions in the previous years the average 2009–2011 of the CH_4 emission data from the last inventory submissions were used.
2. For the Member States with strong growth of CH_4 emissions in previous years a linear trend extrapolation of the years 2003 to 2011.
3. For the Member States with a significant correlation for the trends of CO_2 and CH_4 emissions in the previous years, the projection of CH_4 emissions is based on the following equation:

Equation 7

$$E^{Y}_{1A1a,CH4} = \frac{E^{Y}_{1A1a,CO2}}{E^{Y-1}_{1A1a,CO2}} \cdot E^{Y-1}_{1A1a,CH4}$$

with

$E^{Y}_{1A1a,CH4}$ CH_4 *emissions for source category 1A1a*

$E^{Y-1}_{1A1a,CH4}$ CH_4 *emissions for source category 1A1a from previous year*

$E^{Y}_{1A1a,CO2}$ CO_2 *emissions for source category 1A1a (see above)*

$E^{Y-1}_{1A1a,CO2}$ CO_2 *emissions for source category 1A1a from previous year*

The second option (linear trend extrapolation) was used for Germany, the third option (estimates on the basis of trend dynamics) was chosen for Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Latvia, Malta, Netherlands and Sweden. For all other EU 27 Member States, the CH_4 emissions were estimated on averages of the reported 2009–2011 CH_4 emissions.

For N_2O emissions from source category 1.A.1.a (Public Electricity and Heat Production), two different approaches were used

1. For the Member States with no strong correlation between CO_2 and N_2O emissions in the previous years the average 2009–2011 of the N_2O emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of CO_2 and N_2O emissions in the previous years, the projection of N_2O emissions is based on the following formula:

Equation 8

$$E^{Y}_{1A1a,N2O} = \frac{E^{Y}_{1A1a,CO2}}{E^{Y-1}_{1A1a,CO2}} \cdot E^{Y-1}_{1A1a,N2O}$$

with

$E^{Y}_{1A1a,N2O}$ N_2O *emissions for source category 1A1a*

$E^{Y-1}_{1A1a,N2O}$ N_2O *emissions for source category 1A1a from previous year*

$E^{Y}_{1A1a,CO2}$ CO_2 *emissions for source category 1A1a (see above)*

$E^{Y-1}_{1A1a,CO2}$ CO_2 *emissions for source category 1A1a from previous year*

The first option was used for Belgium, Croatia, Denmark, Spain, Finland, Hungary, Italy, Lithuania, Luxembourg, Portugal, Sweden and Slovakia. For all other EU-27 Member States, the N_2O emissions were estimated on the basis of trend dynamics for CO_2 emissions (option 2).

The main source for the estimation of CO_2 emissions from source category 1.A.1.b (Petroleum Refining) is EUTL data. For Bulgaria, Poland, Romania, Slovenia and Slovakia sufficient and consistent data were not available. Therefore the average of the CO_2 emissions of the years 2009–2011 from the last inventory submission were used for these countries. Cyprus, Luxembourg, Latvia and Malta did not report emissions from source category 1.A.1.b, therefore no emissions were estimated for these countries. For all other countries the emissions were calculated as follows:

Equation 9

$$E^{Y}_{1A1b\_CO2} = \frac{E^{Y}_{CITL\ ref-inp}}{E^{Y-1}_{CITL\ ref-inp}} \cdot E^{Y-1}_{1A1b\_CO2}$$

with

$E^{Y}_{1A1b\_CO2}$ — *CO_2 emissions for source category 1A1b*

$E^{Y-1}_{1A1b\_CO2}$ — *CO_2 Emissions for source category 1A1b from previous year*

$E^{Y}_{CITL\ ref-inp}$ — *CITL emissions from input to refineries*

$AR^{Y-1}_{CITL\ ref-inp}$ — *CITL emissions from input to refineries for previous year*

For CH_4 emissions from source category 1.A.1.b (Petroleum Refining) two different approaches were used

1. For the Member States with no strong correlation between CO_2 and CH_4 emissions in the previous years the average 2009–2011 of the CH_4 emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of CO_2 and CH_4 emissions in the previous years, the projection of CH_4 emissions is based on the following formula:

Equation 10

$$E^{Y}_{1A1b,CH4} = \frac{E^{Y}_{1A1b,CO2}}{E^{Y-1}_{1A1b,CO2}} \cdot E^{Y-1}_{1A1b,CH4}$$

with

$E^{Y}_{1A1b,CH4}$ *CH_4 emissions for source category 1A1b*

$E^{Y-1}_{1A1b,CH4}$ *CH_4 emissions for source category 1A1b from previous year*

$E^{Y}_{1A1b,CO2}$ *CO_2 emissions for source category 1A1b (see above)*

$E^{Y-1}_{1A1b,CO2}$ *CO_2 emissions for source category 1A1b from previous year*

The first option was used for France, Ireland, Netherlands, Portugal and Slovakia. For all other EU-27 Member States that report CH_4 emissions, emissions were estimated on the basis of the trend dynamics for CO_2 emissions (option 2).

Two different approaches were used for N_2O emissions from source category 1.A.1.b (Petroleum Refining):

1. For the Member States with no strong correlation between CO_2 and N_2O emissions in the previous years the average 2009–2011 of the N_2O emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of CO_2 and N_2O emissions in the previous years, the projection of N_2O emissions is based on the following formula.

Equation 11

$$E^{Y}_{1A1b,N2O} = \frac{E^{Y}_{1A1b,CO2}}{E^{Y-1}_{1A1b,CO2}} \cdot E^{Y-1}_{1A1b,N2O}$$

with

$E^{Y}_{1A1b,N2O}$ *N_2O emissions for source category 1A1b*

$E^{Y-1}_{1A1b,N2O}$ *N_2O emissions for source category 1A1b from previous year*

$E^{Y}_{1A1b,CO2}$ *CO_2 emissions for source category 1A1b (see above)*

$E^{Y-1}_{1A1b,CO2}$ *CO_2 emissions for source category 1A1b from previous year*

The first option was used for Austria, Belgium, Ireland, the Netherlands, Poland, Portugal, Romania, Slovenia, and Slovakia. For all other EU-27 Member States that report N_2O emissions, the N_2O emissions were estimated on the basis of the trend dynamics for CO_2 emissions (option 2).

For the source category 1.A.1.c (Manufacture of Solid Fuels and Other Energy Industries) for CO_2, CH_4 as well as N_2O the data from the last inventory submission were used.

The total greenhouse gas emissions for source category 1.A.1 (Energy Industries) were calculated as the sum of the estimates for the source categories 1.A.1.a, 1.A.1.b and 1.A.1.c (see above).

.1.2.2 *Results for 2012*

Table 14, Table 15 and Table 16 show the results for the proxy inventory in 2011 for 1A1 Energy Industries compared to the inventory time series for the EU and all Member States for CO_2, CH_4 and N_2O emissions respectively.

Table 14 CO_2 emissions for 1.A.1 Energy Industries

Source Category	1A1	1. Energy Industries									
Gas	CO2										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	13 792	12 919	12 221	16 274	15 160	13 885	13 673	12 740	14 105	13 861	12 599
BE	29 789	29 223	28 301	29 281	27 789	27 276	25 316	25 713	26 246	21 861	20 879
BG	38 661	27 120	23 977	26 934	27 245	30 553	32 072	29 505	31 419	36 211	32 200
CY	1 765	2 168	2 959	3 472	3 653	3 802	3 967	3 992	3 868	3 710	3 529
CZ	57 702	60 465	59 288	60 867	60 320	63 914	58 767	55 907	58 603	58 120	52 704
DE	423 418	365 317	356 812	375 197	377 333	385 255	363 810	337 732	351 737	349 546	355 155
DK	26 146	32 163	25 542	22 720	30 636	26 000	23 877	23 790	23 596	19 738	16 744
EE	28 748	14 371	11 892	12 361	11 629	13 876	12 576	10 657	14 194	14 829	13 560
ES	77 354	86 058	104 705	125 276	116 324	122 281	105 161	88 994	71 835	85 803	92 684
FI	19 057	23 918	21 899	21 646	32 517	30 451	23 764	24 815	30 106	24 272	20 047
FR	63 542	54 997	61 644	66 808	63 611	63 956	62 236	60 115	60 764	52 300	52 019
UK	234 413	200 691	196 674	210 081	216 840	211 385	207 442	184 311	190 084	177 203	185 407
GR	42 993	44 770	54 629	57 940	55 766	59 232	58 019	54 480	52 037	53 838	55 500
HU	22 634	24 393	23 981	18 252	19 280	20 093	19 295	16 114	16 574	15 933	14 887
IE	11 159	13 317	16 050	15 657	14 907	14 407	14 495	12 926	13 176	11 798	12 484
IT	136 503	139 841	151 894	159 829	160 984	160 769	156 106	131 167	132 557	130 565	126 073
LT	13 518	6 355	5 038	5 627	5 174	4 713	4 810	4 783	5 288	4 419	4 428
LU	33	91	117	1 240	1 304	1 180	995	1 191	1 203	991	1 015
LV	6 267	3 418	2 476	2 048	2 073	1 944	1 917	1 865	2 248	2 072	1 794
MT	1 367	1 606	1 688	1 989	2 004	2 046	2 003	1 897	1 887	1 931	2 052
NL	52 501	61 416	63 630	67 313	62 409	65 129	65 204	64 234	66 237	62 061	59 448
PL	234 686	190 586	176 596	177 245	182 473	179 196	173 441	166 021	172 550	173 822	169 824
PT	16 261	19 808	21 490	25 331	22 383	19 743	19 172	19 345	14 422	16 385	16 979
RO	70 979	59 903	42 621	41 203	43 904	43 312	42 156	35 527	33 038	36 475	33 800
SE	9 795	11 155	8 620	10 370	10 409	9 823	9 653	10 026	12 460	10 127	9 471
SI	6 239	5 601	5 473	6 297	6 350	6 567	6 356	6 058	6 184	6 229	5 939
SK	16 819	11 601	11 490	11 628	10 872	10 246	10 282	8 387	9 356	9 395	8 295
EU-15	1 156 756	1 095 685	1 124 228	1 204 963	1 208 370	1 210 773	1 148 924	1 051 581	1 060 566	1 030 350	1 036 504
EU-27	1 656 141	1 503 272	1 491 708	1 572 886	1 583 349	1 591 034	1 516 565	1 392 294	1 415 775	1 393 495	1 379 516
HR	7 127	5 262	5 877	6 779	6 628	7 737	6 705	6 373	5 884	6 253	5 727
EU-28	1 663 267	1 508 534	1 497 585	1 579 665	1 589 978	1 598 771	1 523 270	1 398 668	1 421 659	1 399 748	1 385 243

Table 15 CH_4 emissions for 1.A.1 Energy Industries

Source Category	1A1	1. Energy Industries									
Gas	CH4										
Member	**Inventory data**										**Proxy**
State	**1990**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
	Gg										
AT	0.16	0.16	0.16	0.26	0.29	0.30	0.32	0.36	0.40	0.43	0.40
BE	0.83	0.77	0.66	0.66	0.97	1.66	1.66	1.68	1.96	1.82	1.88
BG	0.54	0.33	0.27	0.30	0.30	0.33	0.35	0.34	0.36	0.40	0.36
CY	0.07	0.09	0.12	0.14	0.14	0.14	0.15	0.15	0.15	0.14	0.14
CZ	0.67	0.72	0.76	0.80	0.83	0.90	0.93	0.98	1.06	1.08	0.98
DE	13.54	14.67	16.81	45.61	55.16	66.65	74.70	76.35	86.27	89.72	99.84
DK	0.68	11.38	14.63	12.45	11.54	9.63	10.16	8.88	11.08	9.32	9.76
EE	0.36	0.30	0.31	0.44	0.37	0.35	0.40	0.46	0.61	0.64	0.59
ES	1.16	1.26	1.95	5.43	5.90	6.04	6.48	6.25	6.04	5.91	6.12
FI	0.39	0.62	0.73	0.97	1.18	1.08	1.06	1.00	1.17	1.05	1.07
FR	6.25	2.86	2.74	2.93	2.90	2.92	2.80	2.79	2.67	2.42	2.49
UK	9.62	11.08	12.52	13.15	11.44	12.19	11.96	12.25	12.49	11.33	11.21
GR	0.60	0.65	0.79	0.83	0.84	0.90	0.89	0.79	0.73	0.74	0.77
HU	0.67	0.63	0.54	1.09	0.83	1.01	1.17	1.22	1.24	1.01	1.16
IE	0.26	0.31	0.44	0.37	0.35	0.36	0.29	0.28	0.28	0.23	0.26
IT	9.27	8.63	6.85	6.34	6.17	5.72	5.65	5.19	5.02	5.59	5.29
LT	0.42	0.22	0.19	0.35	0.37	0.36	0.41	0.46	0.46	0.42	0.44
LU	0.04	0.03	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
LV	0.27	0.23	0.22	0.18	0.20	0.19	0.19	0.19	0.21	0.20	0.17
MT	0.04	0.06	0.07	0.08	0.08	0.08	0.08	0.07	0.07	0.08	0.08
NL	2.78	3.82	4.39	5.97	5.23	4.80	4.82	5.29	5.45	5.03	4.77
PL	3.29	2.30	2.15	2.65	2.81	2.90	3.23	3.67	4.10	4.50	4.08
PT	0.21	0.25	0.30	0.38	0.37	0.34	0.37	0.39	0.37	0.39	0.38
RO	1.54	1.13	0.78	0.70	0.71	0.67	0.64	0.55	0.55	0.60	0.56
SE	1.05	1.80	2.19	3.41	3.54	3.55	3.94	4.23	4.81	4.11	4.38
SI	0.09	0.08	0.06	0.08	0.09	0.09	0.14	0.11	0.11	0.12	0.11
SK	0.25	0.17	0.16	0.18	0.17	0.17	0.17	0.19	0.28	0.30	0.26
EU-15	46.86	58.29	65.20	98.83	105.95	116.22	125.17	125.81	138.78	138.15	148.70
EU-27	55.07	64.55	70.83	105.82	112.84	123.43	133.03	134.20	147.97	147.65	157.62
HR	0.17	0.14	0.14	0.20	0.19	0.22	0.19	0.19	0.21	0.22	0.21
EU-28	55.24	64.69	70.97	106.03	113.04	123.65	133.22	134.39	148.19	147.87	157.83

Table 16 N_2O emissions for 1.A.1 Energy Industries

Source Category	1A1	1. Energy Industries										
Gas	N2O											
Member	Inventory data											Proxy
State	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Gg											
AT	0.15	0.16	0.16	0.24	0.27	0.29	0.31	0.33	0.32	0.39	0.38	0.34
BE	0.59	0.59	0.69	0.68	0.43	0.40	0.40	0.38	0.52	0.48	0.49	0.50
BG	0.42	0.32	0.29	0.33	0.33	0.34	0.39	0.40	0.36	0.39	0.45	0.40
CY	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
CZ	0.81	0.86	0.86	0.90	0.89	0.89	0.95	0.89	0.85	0.90	0.91	0.82
DE	14.10	8.57	7.95	9.07	8.82	9.01	9.41	9.14	8.88	9.20	9.29	9.45
DK	0.27	0.36	0.36	0.37	0.33	0.39	0.34	0.33	0.33	0.35	0.31	0.33
EE	0.06	0.05	0.04	0.06	0.08	0.07	0.07	0.08	0.08	0.10	0.11	0.10
ES	0.89	1.78	2.01	2.25	2.40	2.28	2.35	2.34	2.16	1.90	1.93	2.02
FI	0.39	0.61	0.66	1.00	0.82	1.07	1.06	0.99	0.94	1.16	1.08	1.05
FR	1.91	1.76	2.14	2.30	2.41	2.24	2.32	2.23	2.22	2.25	1.97	1.98
UK	6.66	5.54	4.99	5.16	5.28	5.38	4.96	4.81	4.36	4.39	4.48	4.64
GR	0.50	0.51	0.60	0.63	0.63	0.59	0.62	0.61	0.59	0.55	0.56	0.57
HU	0.23	0.24	0.24	0.23	0.26	0.22	0.25	0.26	0.26	0.26	0.23	0.25
IE	0.24	0.25	0.26	0.31	0.34	0.37	0.39	0.49	0.47	0.49	0.45	0.47
IT	1.67	1.67	1.67	1.91	1.90	1.89	1.87	1.88	1.68	1.68	1.77	1.66
LT	0.08	0.04	0.03	0.05	0.05	0.05	0.05	0.06	0.07	0.07	0.06	0.06
LU	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LV	0.05	0.04	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.03	0.02
MT	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02
NL	0.45	0.54	0.63	0.73	0.78	0.77	0.78	0.80	0.83	0.84	0.83	0.80
PL	3.43	2.78	2.56	2.58	2.62	2.70	2.67	2.61	2.59	2.70	2.76	2.69
PT	0.20	0.25	0.40	0.44	0.48	0.45	0.41	0.42	0.45	0.39	0.43	0.42
RO	0.59	0.57	0.40	0.42	0.40	0.45	0.45	0.45	0.39	0.37	0.43	0.40
SE	1.06	1.13	1.00	1.32	1.30	1.35	1.30	1.35	1.46	1.71	1.45	1.54
SI	0.08	0.08	0.07	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.08
SK	0.21	0.11	0.11	0.14	0.14	0.13	0.11	0.13	0.10	0.10	0.11	0.10
EU-15	29.08	23.74	23.52	26.41	26.20	26.48	26.54	26.09	25.23	25.79	25.40	25.77
EU-27	35.07	28.85	28.20	31.28	31.12	31.49	31.63	31.14	30.09	30.83	30.62	30.75
HR	0.04	0.03	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.05
EU-28	35.11	28.88	28.24	31.34	31.18	31.54	31.69	31.20	30.14	30.89	30.68	30.81

.1.3 1.A.2 Manufacturing Industries and Construction

.1.3.1 Methods and data sources used

The main source for the estimation of CO_2 emissions from source category 1.A.2 (Manufacturing Industries and Construction) are the verified emissions data from the EUTL. To calculate CO_2 emissions from 1.A.2, total verified emissions without power installations and refineries are used.

Based on these data the 1A2 CO_2 emissions for most EU 28 Member States were calculated as follows:

Equation 12

$$E^{Y}_{1A2,CO2} = \frac{E^{Y}_{CITL(...)}}{E^{Y-1}_{CITL(...)}} \cdot E^{Y-1}_{1A2,CO2}$$

with

$E^{Y}_{1A2,CO2}$ *CO_2 emissions for source category 1A2*

$E^{Y-1}_{1A2,CO2}$ *CO_2 emissions for source category 1A2 from previous year*

$E^{Y}_{CITL(...)}$ *CITL emissions for installations reported under different main activities*

$E^{Y-1}_{CITL(...)}$ *CITL emissions for installations reported under different main activities from previous year*

For Bulgaria, Croatia, Estonia, Latvia, Malta, Romania and Sweden, the average 2009–2011 of the CO_2 emission data from the last inventory submission were used.

For CH_4 emissions from source category 1.A.2 two different approaches were used

1. For the Member States with no strong correlation between CO_2 and CH_4 emissions in the previous years, the average 2009–2011 of the CH_4 emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of CO_2 and CH_4 emissions in the previous years, the projection of CH_4 emissions is based on the following formula:

Equation 13

$$E^{Y}_{1A2,CH4} = \frac{E^{Y}_{1A2,CO2}}{E^{Y-1}_{1A2,CO2}} \cdot E^{Y-1}_{1A2,CH4}$$

with

$E^{Y}_{1A2,CH4}$ *CH_4 emissions for source category 1A2*

$E^{Y-1}_{1A2,CH4}$ *CH_4 emissions for source category 1A2 from previous year*

$E^{Y}_{1A2,CO2}$ *CO_2 emissions for source category 1A2 (see above)*

$E^{Y-1}_{1A2,CO2}$ *CO_2 emissions for source category 1A2 from previous year*

The first option was used for Austria, Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Greece, Hungary, Italy, Latvia, Portugal, and Slovakia. For all other EU-27 Member States the CH_4 emissions were estimated on the basis of the trend dynamics for CO_2 emissions (option 2).

Two different approaches were used for N_2O emissions from source category 1.A.2:

1. For the Member States with no strong correlation between CO_2 and N_2O emissions in the previous years the average 2009–2011 of the N_2O emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of CO_2 and N_2O emissions in the previous years, the projection of N_2O emissions is based on the following formula.

Equation 14

$$E^{Y}_{1A2,N2O} = \frac{E^{Y}_{1A2,CO2}}{E^{Y-1}_{1A2,CO2}} \cdot E^{Y-1}_{1A2,N2O}$$

with

$E^{Y}_{1A2,N2O}$ — *N_2O emissions for source category 1A2*

$E^{Y-1}_{1A2,N2O}$ — *N_2O emissions for source category 1A2 from previous year*

$E^{Y}_{1A2,CO2}$ — *CO_2 emissions for source category 1A2 (see above)*

$E^{Y-1}_{1A2,CO2}$ — *CO_2 emissions for source category 1A2 from previous year*

The first option was used for Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Luxembourg, Latvia, the Netherlands, Portugal, Romania, Sweden, Slovenia, and Slovakia. For all other EU-27 Member States the N_2O emissions were estimated on the basis of the trend dynamics for CO_2 emissions (option 2).

.1.3.2 *Results for 2012*

Table 17, Table 18 and Table 19 show the results for the proxy inventory in 2011 for 1A2 Manufacturing Industries and construction compared to the inventory time series for the EU and all Member States for CO_2, CH_4 and N_2O emissions respectively.

Table 17 CO_2 emissions from 1.A.2 Manufacturing Industries and Construction

Source Category	1A2	2. Manufacturing Industries and Construction									
Gas	CO2										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	12 685	13 489	13 861	16 364	16 097	15 842	15 932	14 340	15 292	14 828	14 467
BE	32 605	32 492	33 148	28 689	28 828	27 595	28 138	19 798	23 389	23 346	21 456
BG	19 539	14 609	8 446	8 025	8 085	8 769	6 334	3 637	3 800	3 640	3 692
CY	1 077	1 442	1 396	904	862	854	880	741	648	509	490
CZ	46 485	27 697	27 126	23 151	22 547	20 272	20 477	19 271	19 299	17 805	17 225
DE	175 635	134 373	117 692	108 895	112 460	117 996	113 581	99 953	114 846	114 327	111 142
DK	5 385	5 853	5 965	5 461	5 586	5 395	4 951	4 003	4 372	4 361	4 189
EE	2 478	880	572	714	710	1 175	1 070	587	506	784	626
ES	46 471	53 077	59 658	73 235	71 304	68 509	64 349	55 692	58 481	57 598	54 397
FI	13 172	11 956	11 735	11 152	11 437	11 264	10 608	8 260	9 733	9 515	8 502
FR	86 349	82 802	84 263	79 278	81 683	79 532	75 706	64 828	68 370	64 448	61 838
UK	103 414	95 817	95 245	86 696	84 467	83 452	80 823	70 017	69 290	67 348	65 996
GR	9 566	9 216	9 722	10 171	10 384	10 102	9 346	7 412	6 717	5 271	6 486
HU	11 766	8 382	6 395	6 667	5 259	4 993	4 911	3 708	3 882	3 781	3 663
IE	3 943	4 330	5 618	5 988	5 881	6 120	5 622	4 407	4 546	4 175	4 316
IT	85 276	85 037	82 245	78 551	77 490	74 222	70 905	54 580	60 015	59 854	54 690
LT	5 739	1 510	985	1 251	1 469	1 442	1 277	1 014	1 115	1 156	1 253
LU	6 285	3 344	1 438	1 558	1 627	1 517	1 404	1 339	1 408	1 271	1 178
LV	3 724	1 863	1 152	1 165	1 213	1 225	1 112	883	1 069	876	943
MT	59	60	57	51	46	51	48	40	46	73	53
NL	33 008	28 840	27 345	27 406	27 871	28 006	27 539	24 942	27 227	25 744	24 506
PL	42 211	62 414	47 449	33 285	33 313	36 296	32 134	29 298	30 764	31 063	30 009
PT	9 759	10 854	12 647	10 555	10 345	10 473	9 879	8 487	9 138	8 477	7 384
RO	55 540	30 143	18 654	18 305	17 780	17 361	17 855	12 775	13 129	15 663	13 856
SE	11 511	13 011	12 083	10 826	10 974	10 433	9 831	8 145	9 617	8 983	8 915
SI	3 085	2 587	2 240	2 450	2 550	2 311	2 269	1 888	1 874	1 683	1 597
SK	18 093	13 573	10 991	10 359	11 229	10 088	9 995	9 519	9 291	9 805	9 236
EU-15	635 063	584 493	572 663	554 824	556 436	550 458	528 615	446 202	482 440	469 546	449 464
EU-27	844 859	749 653	698 127	661 152	661 499	655 296	626 977	529 564	567 864	556 382	532 106
HR	5 843	3 541	3 617	4 081	4 181	4 205	4 198	3 379	3 364	3 139	3 294
EU-28	850 702	753 194	701 744	665 233	665 681	659 500	631 175	532 943	571 227	559 521	535 400

Table 18 CH_4 emissions from 1.A.2 Manufacturing Industries and Construction

Source Category	1A2	2. Manufacturing Industries and Construction										
Gas	CH4											
Member	Inventory data											Proxy
State	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Gg											
AT	0.34	0.40	0.44	0.58	0.61	0.62	0.62	0.66	0.64	0.68	0.71	0.68
BE	3.94	3.16	3.61	3.73	3.27	3.61	3.25	3.82	2.53	3.21	2.85	2.86
BG	1.15	1.06	0.66	0.75	0.75	0.76	0.81	0.64	0.40	0.53	0.56	0.49
CY	0.06	0.07	0.06	0.07	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.04
CZ	4.31	2.88	2.72	2.34	2.57	2.58	2.42	2.46	2.38	2.40	2.36	2.28
DE	11.27	6.61	6.50	7.11	7.26	8.06	7.68	7.63	6.66	7.36	7.63	7.42
DK	0.36	0.48	1.21	1.13	0.99	0.87	0.64	0.70	0.66	0.67	0.62	0.65
EE	0.15	0.06	0.05	0.08	0.08	0.09	0.15	0.13	0.07	0.07	0.10	0.08
ES	3.90	7.32	17.11	28.38	31.28	31.11	26.89	26.17	22.76	25.36	25.27	23.87
FI	0.61	0.69	0.72	0.68	0.64	0.70	0.66	0.62	0.52	0.70	0.79	0.67
FR	11.22	10.96	11.13	11.57	10.02	8.58	10.48	8.84	6.21	7.58	7.69	7.16
UK	15.75	15.83	15.63	14.06	13.79	13.97	13.67	12.81	10.90	10.88	10.95	10.73
GR	0.43	0.42	0.48	0.42	0.49	0.46	0.45	0.49	0.42	0.42	0.42	0.42
HU	0.90	0.64	0.52	0.51	0.61	0.54	0.55	0.55	0.40	0.47	0.49	0.45
IE	0.27	0.24	0.34	0.40	0.45	0.43	0.42	0.39	0.33	0.35	0.32	0.33
IT	6.82	7.02	5.72	5.76	6.28	6.24	6.53	6.24	4.18	5.51	7.75	5.81
LT	0.31	0.10	0.10	0.23	0.23	0.25	0.25	0.22	0.17	0.20	0.21	0.22
LU	0.16	0.10	0.07	0.08	0.11	0.11	0.11	0.10	0.09	0.10	0.09	0.09
LV	0.26	0.17	0.16	0.23	0.26	0.29	0.27	0.28	0.33	0.40	0.46	0.40
MT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NL	2.76	2.74	3.03	2.64	2.64	2.67	2.65	2.67	2.58	2.62	2.51	2.39
PL	3.19	5.90	4.25	3.65	3.22	3.25	3.38	3.31	3.31	3.54	3.70	3.58
PT	1.30	1.47	1.64	1.74	1.74	1.70	1.71	1.62	1.67	1.58	1.61	1.62
RO	4.73	2.99	1.79	1.98	1.86	1.92	1.93	1.85	1.42	1.65	1.98	1.75
SE	2.18	2.70	2.01	2.10	2.06	2.33	2.23	2.24	2.22	2.37	2.25	2.23
SI	0.36	0.26	0.22	0.34	0.37	0.35	0.30	0.30	0.26	0.27	0.24	0.22
SK	0.76	0.58	0.49	0.42	0.46	0.46	0.47	0.45	0.42	0.42	0.41	0.42
EU-15	61.30	60.15	69.63	80.38	81.62	81.45	77.99	75.00	62.38	69.38	71.46	66.92
EU-27	77.48	74.86	80.66	90.97	92.07	91.98	88.56	85.24	71.58	79.37	81.99	76.86
HR	0.52	0.32	0.30	0.36	0.33	0.34	0.35	0.33	0.30	0.32	0.29	0.30
EU-28	77.99	75.18	80.97	91.33	92.40	92.32	88.91	85.57	71.87	79.69	82.28	77.16

Table 19 N_2O emissions from 1.A.2 Manufacturing Industries and Construction

Source Category	1A2	2. Manufacturing Industries and Construction										
Gas	N2O											
Member	Inventory data											Proxy
State	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Gg											
AT	0.26	0.32	0.43	0.43	0.50	0.51	0.52	0.52	0.48	0.50	0.50	0.49
BE	0.34	0.32	0.34	0.35	0.36	0.38	0.51	0.49	0.42	0.55	0.51	0.49
BG	0.15	0.10	0.06	0.08	0.08	0.08	0.08	0.06	0.04	0.06	0.06	0.05
CY	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
CZ	0.58	0.36	0.33	0.28	0.31	0.31	0.29	0.29	0.29	0.29	0.28	0.29
DE	4.48	3.09	2.50	2.30	2.27	2.33	2.42	2.47	2.22	2.52	2.59	2.52
DK	0.17	0.15	0.15	0.13	0.13	0.14	0.13	0.13	0.11	0.12	0.11	0.11
EE	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
ES	1.35	1.51	1.76	2.13	2.16	2.13	2.08	1.95	1.71	1.78	1.77	1.67
FI	0.56	0.54	0.61	0.59	0.55	0.53	0.50	0.48	0.40	0.45	0.44	0.39
FR	2.74	2.76	2.92	2.75	2.81	2.93	2.92	2.87	2.54	2.67	2.55	2.45
UK	5.23	4.83	4.36	4.20	4.37	4.13	4.26	3.99	3.32	3.30	3.09	3.03
GR	0.14	0.16	0.17	0.14	0.15	0.15	0.15	0.15	0.13	0.12	0.11	0.12
HU	0.06	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
IE	0.04	0.04	0.05	0.06	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05
IT	4.93	4.52	4.66	5.03	5.02	5.05	4.98	4.64	3.98	4.01	3.98	3.64
LT	0.04	0.01	0.01	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
LU	0.05	0.05	0.04	0.11	0.11	0.10	0.10	0.08	0.09	0.09	0.07	0.08
LV	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.05	0.06	0.05
MT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NL	0.10	0.08	0.07	0.07	0.07	0.08	0.08	0.10	0.10	0.10	0.09	0.10
PL	0.46	0.86	0.62	0.52	0.46	0.46	0.48	0.47	0.46	0.50	0.52	0.50
PT	0.22	0.24	0.28	0.29	0.29	0.30	0.31	0.30	0.28	0.31	0.31	0.30
RO	0.26	0.20	0.14	0.17	0.16	0.18	0.18	0.16	0.12	0.14	0.18	0.15
SE	1.62	1.83	1.60	1.51	1.50	1.59	1.54	1.54	1.45	1.57	1.56	1.53
SI	0.08	0.07	0.08	0.09	0.09	0.12	0.09	0.10	0.08	0.06	0.05	0.06
SK	0.15	0.11	0.08	0.06	0.07	0.07	0.07	0.06	0.07	0.05	0.07	0.06
EU-15	22.24	20.43	19.96	20.11	20.35	20.42	20.58	19.77	17.28	18.13	17.74	16.97
EU-27	24.06	22.23	21.34	21.42	21.63	21.74	21.89	21.03	18.45	19.35	19.03	18.21
HR	0.06	0.03	0.03	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.03
EU-28	24.12	22.26	21.37	21.46	21.66	21.78	21.93	21.07	18.48	19.38	19.06	18.23

.1.4 1.A.3 Transport

.1.4.1 Methods and data sources used

The main sources for the estimation of CO_2 emissions from source category 1.A.3 (Transport) are the following Eurostat data, extracted from Eurostat's database:

- Monthly data for the observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels;

Based on these data source three slightly different options to calculate the CO_2 emissions were developed. Out of these, the most suitable approach was chosen for each Member State taking into account the performance of the respective approximation approaches to reproduce the reported emissions of previous years,

Option 1 for calculating CO_2 emissions (Equation 15) was chosen for 13 Member States: Austria, Cyprus, Greece, Ireland, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovenia Spain and the United Kingdom:

Equation 15

$$E^{Y}_{1A3,CO2} = \left(\frac{E^{Y}_{MS,CO2} + E^{Y}_{AD,CO2}}{E^{Y-1}_{MS,CO2} + E^{Y-1}_{AD,CO2}}\right) \cdot E^{Y-1}_{1A3b,c,d,e,CO2} + \frac{E^{Y}_{K,CO2}}{E^{Y-1}_{K,CO2}} \cdot E^{Y-1}_{1A3a,CO2}$$

with

$E^{Y}_{1A3,CO2}$	*CO_2 emissions for source category 1A3*
$E^{Y}_{MS,CO2}$	*CO_2 emissions motor spirit (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y}_{AD,CO2}$	*CO_2 emissions automotive diesel (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y-1}_{MS,CO2}$	*CO_2 emissions motor spirit (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y-1}_{AD,CO2}$	*CO_2 emissions automotive diesel (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y-1}_{1A3b,c,d,e,CO2}$	*CO_2 emissions for source category 1A3 b,c,d,e from previous year*
$E^{Y}_{K,CO2}$	*CO_2 emissions kerosene (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y-1}_{K,CO2}$	*CO_2 emissions kerosene (monthly total of internal market deliveries) x CO_2 factor*
$E^{Y-1}_{1A3a,CO2}$	*CO_2 emissions for source category 1A3a from previous year (civil aviation)*

Country - specific CO_2 factors are calculated using net calorific values and implied emission factors based on the CRF submissions of the previous year

Option 2 (Equation 16) was chosen for 12 Member States: Belgium, Bulgaria, Croatia, Czech Republic, Germany, Denmark, Estonia, France, Hungary, Italy, Latvia, Slovakia and Sweden:

Equation 16

$$E^{Y}_{1A3,CO2} = Fw_t \cdot E^{Y-1}_{1A3,CO2}$$

with

$E^{Y}_{1A3,CO2}$ *CO_2 emissions for source category 1A3*

Fw_t *Weighted Factor*

$E^{Y-1}_{1A3,CO2}$ *CO_2 emissions for source category 1A3 from previous year*

$$Fw_t = \frac{C^{Y}_{motorspirit}}{C^{Y-1}_{motorspirit}} \cdot S^{Y}_{t,motorspirit} + \frac{C^{Y}_{automotivediesel}}{C^{Y-1}_{automotivediesel}} \cdot S^{Y}_{t,automotivediesel} + \frac{C^{Y}_{kerosene}}{C^{Y-1}_{kerosene}} \cdot S^{Y}_{t,kerosene}$$

with

$C^{Y}_{motorspirit}$ *Consumption of motor spirit (monthly total of internal market deliveries)*

$C^{Y-1}_{motorspirit}$ *Consumption of motor spirit (monthly total of internal market deliveries) previous year*

$S^{Y}_{t,motorspirit}$ *Share (mass) of motor spirit in total consumption of regarded fuels*

$C^{Y}_{automotivediesel}$ *Consumption of automotive diesel (monthly total of internal market deliveries)*

$C^{Y-1}_{automotivediesel}$ *Consumption of automotive diesel (monthly total of internal market deliveries) previous year*

$S^{Y}_{t,automotivediesel}$ *Share (mass) of automotive diesel in total consumption of regarded fuels*

$C^{Y}_{kerosene}$ *Consumption of kerosene (monthly total of internal market deliveries)*

$C^{Y-1}_{kerosene}$ *Consumption of kerosene (monthly total of internal market deliveries) previous year*

$S^{Y}_{t,kerosene}$ *Share (mass) of kerosene in total consumption of regarded fuels*

Option 3 for calculating CO_2 emissions (Equation 17) was finally chosen for Finland and Malta:

Equation 17

$$E^{Y}_{1A3,CO2} = Fw_{m} \cdot E^{Y-1}_{1A3b,c,d,e,CO2} + \frac{C^{Y}_{kerosene}}{C^{Y-1}_{kerosene}} \cdot E^{Y-1}_{1A3a,CO2}$$

with

$E^{Y}_{1A3,CO2}$ *CO_2 emissions for source category 1A3*

Fw_{m} *Weighted Factor*

$E^{Y-1}_{1A3b,c,d,e,CO2}$ *CO_2 emissions for source category 1A3 b,c,d,e from previous year*

$C^{Y}_{kerosene}$ *Consumption of kerosene (monthly total of internal market deliveries)*

$C^{Y-1}_{kerosene}$ *Consumption of kerosene (monthly total of internal market deliveries) previous year*

$E^{Y-1}_{1A3a,CO2}$ *CO_2 emissions for source category 1A3a from previous year (civil aviation)*

$$Fw_{m} = \frac{C^{Y}_{motorspirit}}{C^{Y-1}_{motorspirit}} \cdot S^{Y}_{m,\,motorspirit} + \frac{C^{Y}_{automotivediesel}}{C^{Y-1}_{automotivediesel}} \cdot S^{Y}_{m,\,automotivediesel}$$

with

$C^{Y}_{motorspirit}$ *Consumption of motor spirit (monthly total of internal market deliveries)*

$C^{Y-1}_{motorspirit}$ *Consumption of motor spirit (monthly total of internal market deliveries) previous year*

$S^{Y}_{m,\,motorspirit}$ *Share (mass) of motor spirit in total consumption of motor spirit and automotive diesel*

$C^{Y}_{automotivediesel}$ *Consumption of automotive diesel (monthly total of internal market deliveries)*

$C^{Y-1}_{automotivediesel}$ *Consumption of automotive diesel (monthly total of internal market deliveries) previous year*

$S^{Y}_{m,\,automotivediesel}$ *Share (mass) of automotive diesel in total consumption of motor spirit and automotive diesel*

The estimation for CH_4 emissions from source category 1.A.3 (Transport) is based on the approximated trend of CO_2 emissions and depicted in Equation 18:

Equation 18

$$E^{Y}_{1A3,CH4} = \left(\frac{E^{Y}_{1A3,CO2}}{E^{Y-1}_{1A3,CO2}}\right) \cdot E^{Y-1}_{1A3,CH4}$$

with

$E^{Y}_{1A3,CH4}$ *CH_4 emissions for source category 1A3*

$E^{Y}_{1A3,CO2}$ *CO_2 emissions for source category 1A3 as approximated using CO_2 options $1-3$ respectively*

$E^{Y-1}_{1A3,CO2}$ *CO_2 emissions for source category 1A3 from previous year*

$E^{Y-1}_{1A3,CH4}$ *CH_4 emissions for source category 1A3 from previous year*

The estimation for N_2O emissions from source category 1.A.3 (Transport) is similar to CH_4 (Equation 19):

Equation 19

$$E^{Y}_{1A3,N2O} = \left(\frac{E^{Y}_{1A3,CO2}}{E^{Y-1}_{1A3,CO2}}\right) \cdot E^{Y-1}_{1A3,N2O}$$

with

$E^{Y}_{1A3,N2O}$ N_2O *emissions for source category 1A3*

$E^{Y}_{1A3,CO2}$ CO_2 *emissions for source category 1A3 as approximated using* CO_2 *options* $1-3$ *respectively*

$E^{Y-1}_{1A3,CO2}$ CO_2 *emissions for source category 1A3 from previous year*

$E^{Y-1}_{1A3,N2O}$ N_2O *emissions for source category 1A3 from previous year*

.1.4.2 Results for 2012

Table 20, Table 21 and Table 22 show the results for the proxy inventory in 2012 for 1A3 Transport compared to the inventory time series for the EU and all Member States for CO_2, CH_4 and N_2O emissions respectively.

Table 20 CO_2 emissions for source category 1.A.3

Source Category	1A3	Transport									
Gas	CO2										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	13 771	15 675	18 621	24 679	23 403	23 577	22 323	21 517	22 204	21 523	21 287
BE	20 427	22 363	24 453	26 041	25 483	25 369	27 667	26 934	26 857	26 773	26 916
BG	6 578	4 370	5 492	7 579	8 197	8 025	8 408	8 084	7 860	8 036	9 269
CY	1 168	1 468	1 745	2 031	2 019	2 156	2 246	2 251	2 298	2 235	2 086
CZ	7 576	9 617	11 932	17 221	17 549	18 471	18 321	17 762	16 729	16 565	16 667
DE	162 366	175 690	180 962	160 418	156 697	153 278	153 115	152 577	153 499	155 635	152 831
DK	10 619	11 940	12 173	13 166	13 544	14 161	13 929	13 135	13 072	12 716	12 920
EE	2 418	1 540	1 627	2 105	2 269	2 394	2 278	2 100	2 222	2 237	2 650
ES	54 897	64 603	82 866	99 768	102 716	106 156	100 693	95 304	90 951	86 450	80 896
FI	12 483	11 735	12 592	13 480	13 668	14 039	13 384	12 708	13 216	13 015	12 733
FR	119 377	129 361	138 003	139 786	138 317	136 683	130 391	129 005	130 691	130 457	128 639
UK	113 342	114 960	120 932	125 547	125 774	126 789	121 595	117 180	115 639	114 166	113 680
GR	14 123	16 083	18 383	21 103	21 869	22 614	21 580	24 437	21 662	19 961	17 974
HU	8 188	7 097	8 838	11 714	12 520	12 906	12 824	12 817	11 687	11 256	10 110
IE	5 022	6 054	10 562	12 906	13 688	14 288	13 595	12 383	11 471	11 162	10 665
IT	101 269	111 445	120 101	125 825	127 145	127 209	122 273	117 897	117 481	116 428	104 624
LT	7 475	3 829	3 361	4 321	4 587	5 344	5 323	4 368	4 510	4 430	4 549
LU	2 673	3 379	4 779	6 919	6 617	6 352	6 487	5 937	6 307	6 760	6 491
LV	2 898	2 014	2 112	2 990	3 298	3 735	3 529	3 130	3 205	3 085	3 280
MT	342	437	494	554	520	550	548	562	583	553	556
NL	25 994	29 166	32 395	34 640	35 553	35 193	35 486	34 074	34 662	34 900	33 381
PL	20 178	23 013	27 155	34 598	38 370	42 408	44 575	45 003	47 426	47 988	44 795
PT	10 140	13 322	19 157	19 586	19 636	19 242	18 957	18 933	18 712	17 351	15 658
RO	11 884	8 034	9 342	12 518	13 029	13 438	15 064	14 894	14 130	14 402	14 169
SE	18 896	19 220	19 572	21 275	21 087	21 182	20 610	20 007	20 241	19 787	19 291
SI	2 665	3 617	3 631	4 346	4 568	5 147	6 069	5 263	5 204	5 633	5 716
SK	4 888	4 243	4 150	6 162	5 762	6 423	6 614	6 081	6 557	6 288	6 135
EU-15	685 397	744 997	815 549	845 139	845 198	846 133	822 085	802 028	796 665	787 084	757 984
EU-27	761 656	814 275	895 429	951 277	957 886	967 130	947 882	924 343	919 076	909 791	877 967
HR	4 019	3 405	4 464	5 553	5 908	6 330	6 178	6 182	5 963	5 826	5 703
EU-28	765 675	817 681	899 893	956 831	963 794	973 460	954 061	930 526	925 040	915 617	883 669

Table 21 CH_4 emissions for source category 1.A.3

Source Category	1A3	Transport									
Gas	CH4										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	3.1	3.1	1.9	1.3	1.2	1.0	0.9	0.8	0.7	0.6	0.6
BE	6.1	6.0	3.2	1.8	1.5	1.3	1.1	0.9	0.9	0.9	0.9
BG	3.9	2.1	1.2	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.7
CY	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
CZ	1.4	1.7	1.7	1.6	1.5	1.5	1.5	1.4	1.3	1.2	1.2
DE	53.3	33.6	21.3	12.8	11.5	10.2	8.9	8.3	7.6	7.3	7.2
DK	2.3	2.3	1.8	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.7
EE	0.9	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2
ES	15.2	15.0	12.1	7.9	7.1	6.5	5.6	5.3	4.7	4.3	4.0
FI	4.7	3.9	3.2	2.4	2.2	2.1	1.9	1.8	1.8	1.8	1.7
FR	40.2	32.7	24.9	17.3	15.5	14.2	12.3	11.1	10.2	9.1	8.9
UK	30.2	23.2	14.4	8.2	7.5	6.7	5.8	4.3	3.7	3.3	3.2
GR	5.1	5.2	5.8	5.7	5.6	5.4	5.1	4.9	4.4	3.8	3.5
HU	2.4	1.8	1.5	2.0	2.1	2.0	1.7	1.4	1.3	1.2	1.1
IE	1.8	1.8	1.7	1.3	1.3	1.2	1.1	1.0	0.9	0.9	0.8
IT	39.2	43.5	33.3	21.7	20.0	18.1	16.9	16.0	14.9	14.0	12.6
LT	1.8	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6
LU	0.9	0.8	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3
LV	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2
MT	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NL	7.6	5.6	3.6	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1
PL	4.6	6.0	4.5	4.6	5.0	5.1	5.1	5.0	5.1	5.0	4.7
PT	4.1	4.4	3.8	2.5	2.3	2.1	1.8	1.8	1.6	1.4	1.3
RO	2.2	1.2	1.5	2.8	2.5	2.3	2.1	2.1	1.8	1.7	1.7
SE	8.9	7.4	5.2	3.5	3.3	3.0	2.9	2.7	2.7	2.4	2.3
SI	1.2	1.4	0.9	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4
SK	1.2	1.2	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6
EU-15	222.6	188.6	137.1	91.2	83.2	75.9	68.2	62.3	57.3	52.9	50.2
EU-27	237.2	203.2	148.8	103.1	95.2	87.8	79.7	73.2	67.9	62.9	59.7
HR	1.6	1.2	1.4	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6
EU-28	461.4	393.1	287.3	195.1	179.3	164.6	148.8	136.3	125.9	116.4	110.5

Table 22 N_2O emissions for source category 1.A.3

Source Category	1A3	Transport									
Gas	N2O										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	0.6	0.9	1.0	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.7
BE	0.8	1.3	1.1	0.9	0.8	0.8	0.9	0.9	0.8	0.8	0.8
BG	0.4	1.0	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CZ	0.5	0.8	1.3	2.2	2.3	2.4	2.3	2.3	2.2	2.1	2.2
DE	4.0	5.6	5.3	3.4	3.4	3.5	3.7	3.9	4.2	4.5	4.4
DK	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
EE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES	1.7	2.5	4.5	3.0	3.0	3.1	3.0	2.8	2.8	2.7	2.6
FI	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
FR	3.2	4.7	4.6	4.9	4.8	4.8	4.8	4.1	4.3	4.5	4.4
UK	4.0	5.6	4.8	3.8	3.7	3.6	3.1	2.9	2.9	3.0	3.0
GR	1.0	1.4	1.3	1.4	1.5	1.5	1.4	1.3	1.0	0.8	0.8
HU	0.3	0.4	0.8	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3
IE	0.2	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3
IT	3.3	5.6	5.3	3.8	4.1	4.0	3.7	3.6	3.6	3.6	3.3
LT	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1
LU	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3
LV	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NL	0.3	0.8	0.9	0.8	0.8	0.8	0.9	0.8	0.9	0.9	0.8
PL	0.6	0.7	1.0	1.2	1.4	1.5	1.7	1.7	1.9	1.9	1.8
PT	0.3	1.1	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5
RO	0.1	0.1	0.1	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4
SE	0.7	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SI	0.1	0.6	0.7	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
SK	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.2
EU-15	21.2	32.3	32.0	26.2	26.2	26.1	25.1	23.8	24.0	24.3	23.4
EU-27	23.6	35.4	36.3	31.0	31.1	31.5	30.5	29.0	29.2	29.6	28.5
HR	0.1	0.1	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
EU-28	44.9	67.8	68.6	57.6	57.5	57.8	55.9	53.0	53.4	54.1	52.1

.1.5 1.A.4 Other Sectors and 1.A.5 Other Fuel Combustion

No near-term data were identified which could be used to develop a real-time projection for the source categories 1.A.4 (Other Sectors) and 1.A.5 (Other Fuel Combustion) based on activity or emission data.

Therefore, the only option was to calculate approximated emissions for the total of source category 1A4 (which represents a significant share in total emissions) and 1.A.5 (which represents only a minor share in total emissions) by a subtraction approach. Based on the real-time projection for the source categories 1.A, 1.A.1, 1.A.2 and 1.A.3, the emissions for the total of source categories 1.A.4 and 1.A.5 were calculated based on the following formula:

Equation 20

$$E^{Y}_{1A4+5} = E^{Y}_{1A} - E^{Y}_{1A1} - E^{Y}_{1A2} - E^{Y}_{1A3}$$

with

E^{Y}_{1A4+5} *Emissions for source category 1A4 and 1A5*

E^{Y}_{i} *Emissions for source category i*

Thus, the approximated emissions from these source categories cannot be further disaggregated and are not based on real data for 2011.

For Belgium, Lithuania, Luxembourg, Malta and Slovakia the 'Bottom-Up' approach (Approach III) was chosen for estimating overall CO_2 emissions from fuel combustion (1.A), i.e. relying on EUTL data for 1.A.1 and 1.A.2, Eurostat transport data for 1.A.3 (cf. chapter .1.1.1). Here, the emissions of the previous year in categories 1.A.4 and 1.A.5 were used.

As a result, the emissions from 1.A.4 and 1.A.5 have higher uncertainties than the other source categories in the energy sector.

.1.6 1.B Fugitive Emissions from Fuels

.1.6.1 Methods and data sources used

The CO_2 and CH_4 emissions for source category 1.B (Fugitive Emissions from Fuels) were estimated on the basis of a separate analysis of the following source categories:

- Solid Fuels (1.B.1);
- Oil and Natural Gas, Oil (1.B.2.a);
- Oil and Natural Gas, Natural Gas (1.B.2.b);
- Oil and Natural Gas, Venting and Flaring (1.B.2.c).

The estimates for CO_2 emissions for source category 1.B.1 (Solid Fuels) are based on the monthly production data for hard coal and lignite from Eurostat. Two different approaches were used for CO_2 emissions from source category 1.B.1 (Solid Fuels):

1. For the Member States with no strong correlation between CO_2 emissions and monthly production data for hard coal or lignite from Eurostat in the previous years the average 2009–2011 of the CO_2 emission data from the last inventory submissions were used.
2. For the Member States with a significant correlation for the trends of CO_2 and CH_4 emissions in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 21

$$E^{Y}_{1B1,CH4} = \frac{AR^{Y}_{coal-prod}}{AR^{Y-1}_{coal-prod}} \cdot E^{Y-1}_{1B1,CO2}$$

with

$E^{Y}_{1B1,CO2}$	*CO_2 emissions for source category 1B1*
$E^{Y-1}_{1B1,CO2}$	*CO_2 emissions for source category 1B1 from previous year*
$AR^{Y}_{coal-prod}$	*Hard coal or lignite production*
$AR^{Y-1}_{coal-prod}$	*Hard coal or lignite productionfor previous year*

For Czech Republic where hard coal production is the main determinant for CO_2 emissions from source category 1.B.1, the primary hard coal production (Eurostat indicator code 100100, Eurostat product code 2111) was used for the projection of CO_2 emissions arising from this

source category. For Slovenia where lignite production is the main determinant for CO_2 emissions from source category 1.B.1, the primary lignite production (Eurostat indicator code 100100, Eurostat product code 2210) was used for the projection of CO_2 emissions arising from this source category. For all other Member states that report CO_2 emissions from 1B1, the inventory data, average 2009-2011, from the last available submission were used. The estimates for CH_4 emissions for source category 1.B.1 (Solid Fuels) are based on the monthly production data for hard coal and lignite from Eurostat. Two different approaches were used for CH_4 emissions from source category 1.B.1 (Solid Fuels):

1. For the Member States with no strong correlation between CH_4 emissions and monthly production data for hard coal and lignite from Eurostat in the previous years the average 2009–2011 of the CH_4 emission data from the last inventory submissions were used.
2. For the Member States with a significant correlation for the trends of CO_2 and CH_4 emissions in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 22

$$E^{Y}_{1B1,CH4} = \frac{AR^{Y}_{coal-prod}}{AR^{Y-1}_{coal-prod}} \cdot E^{Y-1}_{1B1,CH4}$$

with

$E^{Y}_{1B1,CH4}$	*CH_4 emissions for source category 1B1*
$E^{Y-1}_{1B1,CH4}$	*CH_4 emissions for source category 1B1 from previous year*
$AR^{Y}_{coal-prod}$	*Hard coal or lignite production*
$AR^{Y-1}_{coal-prod}$	*Hard coal or lignite productionfor previous year*

For Poland where hard coal production is the main determinant for CH_4 emissions from source category 1.B.1, the primary hard coal production (Eurostat indicator code 100100, Eurostat product code 2111) was used for the projection of CH_4 emissions arising from this source category. Even for Czech Republic, Germany and United Kingdom the primary hard coal production was used, as the 2011 data for lignite production did not correlate with CRF emissions. For countries with a dominant lignite production (Bulgaria, Greece, Romania and Slovakia), the primary production data for lignite (Eurostat indicator code 100100, Eurostat product code 2210) were used. For all other Member states that report CH_4 emissions from 1B1, the inventory data, average 2009–2011, from the last available submission were used.

For calculating CO_2 and CH_4 emissions from 1B2a, 1B2b, 1B2c the correlation of several trends has been reviewed.

- Eurostat crude oil production (Indicator code 100100, product code 3100);
- Eurostat gas consumption (Indicator code 100900, product code 4100);
- Eurostat gas production (Indicator code 100100, product code 4100);

- EUTL main activity code 2 (refineries):

For the Member States with a significant correlation of CO_2 or CH_4 emissions with one of the trends in the previous years, the projection of emissions is based on the following formula.

Equation 23

$$E^{Y}_{1B2a,b,c\ CO2\ or\ CH4} = \frac{E^{Y}_{CITL}\ or\ AR^{Y}_{Eurostat}}{E^{Y\text{-}1}_{CITL}\ AR^{Y-1}_{Eurostat}} \cdot E^{Y-1}_{1B2a,b,c\ CO2\ or\ CH4}$$

with

$E^{Y}_{1B2a,b,c\ CO2\ or\ CH4}$ *CO_2 or CH_4 emissions for source category 1B2a,b,c*

$E^{Y-1}_{1B2a,b,c\ CO2\ or\ CH4}$ *CO_2 or CH_4 emissions for source category 1B2a,b,c from previous year*

$AR^{Y}_{Eurostat}$ *Crude oil production, Gas production or Gas consumption*

$AR^{Y-1}_{Eurostat}$ *Crude oil production, Gas production or Gas consumption for previous year*

For Member States with no strong correlation between one of the trends and CO_2 or CH_4 emissions in the previous years, the emission data from the last inventory submission were used.

Table 23 Best fit trends for calculating CO_2 and CH_4 emissions from 1B2a, 1B2b and 1B2c

	1B2a CO2	1B2a CH4	1B2b CO2	1B2b CH4	1B2c venting CO2	1B2c venting CH4	1B2c flaring CO2	1B2c flaring CH4
Crude Oil Production	AT, CZ, HU, RO	FR, HU, LT, PL, RO			CZ, FR, HR, IT, LT	CZ, FR IT, LT, RO	CZ, IT, LT, RO	CZ, LT
CITL Refineries	BE, DE, FI, FR, LT, SE	CZ, DE, DK, FI, IT, PT, SE			ES		DE	IT, RO
Gas Production		AT, SK	DE, NL, RO	HR, HU, RO	RO	HR	HU	
Gas Consumption		ES	IT, LU	FR, IT, LU, PL				

For all other member states that report CO_2 and CH_4 emissions from 1.B.2 either the value for 2011 or the average of 2009–2011 CO_2 or CH_4 emissions from the last inventory submission was used.

For all N_2O emissions from source category 1.B (Fugitive Emissions from Fuels) the emissions data from the last inventory submissions were used.

.1.6.2 *Results for 2012*

Table 24 and Table 25 show the results for the proxy inventory in 2012 for 1B1 Fugitive Emissions from Solid Fuels compared to the inventory time series for the EU and all Member States for CO_2 and CH_4 emissions respectively.

Table 24 CO_2 emissions from 1.B.1 Fugitive Emissions from Solid Fuels

Source Category	1B1	1. Solid Fuels									
Gas	CO2										
Member State	**Inventory data**										**Proxy**
	1990	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
	Gg										
AT	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO
BE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
BG	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
CY	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
CZ	456	356	315	301	325	293	288	250	259	255	259
DE	11	13	15	2	0	0	0	1	1	3	2
DK	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
EE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ES	18	13	15	90	125	94	43	14	37	44	32
FI	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
FR	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
UK	856	226	102	112	138	198	236	149	220	258	209
GR	NO	NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
HU	7	2	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO
IE	NE,NO	NE,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
IT	0	0	0	0	0	0	0	0	0	0	0
LT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
LU	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
MT	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
NL	403	517	422	599	566	319	710	547	972	637	719
PL	2 611	1 423	2 689	1 851	2 122	2 130	1 524	1 000	1 625	2 097	1 574
PT	9	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
RO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SE	5	6	6	5	5	5	4	15	5	6	8
SI	98	86	79	81	81	82	82	80	81	82	78
SK	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
EU-15	1 301	775	560	808	835	615	994	725	1 236	948	970
EU-27	4 474	2 642	3 643	3 041	3 362	3 120	2 888	2 055	3 200	3 383	2 881
HR	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EU-28	4 474	2 642	3 643	3 041	3 362	3 120	2 888	2 055	3 200	3 383	2 881

Table 25 CH_4 emissions from 1.B.1 Fugitive Emissions from solid Fuels

Source Category	1B1	1. Solid Fuels									
Gas	CH4										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	0.52	0.28	0.27	0.00	0.00	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO
BE	15.70	0.83	0.63	0.56	0.57	0.50	0.30	0.19	0.29	0.28	0.25
BG	82.77	75.95	48.93	33.93	29.61	36.55	37.92	37.98	41.10	50.92	45.88
CY	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
CZ	361.93	276.64	197.25	171.96	180.29	164.83	168.08	152.54	155.69	156.32	158.76
DE	963.81	706.21	590.51	274.05	234.74	194.28	183.32	133.17	133.02	125.50	111.95
DK	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
EE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ES	86.55	69.96	59.41	44.71	44.27	42.07	32.97	29.63	25.53	29.97	28.38
FI	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
FR	193.59	198.06	114.42	15.59	10.87	2.88	2.90	2.47	2.50	2.11	2.36
UK	871.72	601.19	323.37	154.81	140.84	111.75	111.00	106.98	99.56	95.06	86.34
GR	52.16	57.95	64.21	69.74	64.84	66.80	66.05	65.22	56.80	58.96	64.09
HU	31.39	16.31	14.83	1.04	1.02	1.00	0.93	0.66	0.56	0.46	0.56
IE	NE,NO	NE,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
IT	6.03	3.12	3.55	3.33	2.57	4.09	3.52	2.17	3.16	3.40	2.91
LT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
LU	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
MT	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
NL	1.59	1.60	1.06	1.12	1.08	1.09	1.04	0.84	1.01	0.99	0.95
PL	634.69	607.64	529.64	463.12	446.90	415.37	392.25	353.62	349.58	342.04	358.37
PT	3.14	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
RO	155.97	128.93	127.73	97.16	85.90	55.22	49.94	43.03	36.26	41.87	40.17
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SI	14.42	12.96	12.01	12.17	12.12	12.12	12.11	11.87	11.87	12.06	11.94
SK	27.20	29.70	28.82	16.17	14.67	13.52	15.95	16.92	15.23	16.18	15.61
EU-15	2 194.81	1 639.20	1 157.42	563.90	499.78	423.45	401.09	340.66	321.87	316.28	297.22
EU-27	3 503.19	2 787.32	2 116.63	1 359.45	1 270.29	1 122.07	1 078.29	957.29	932.15	936.13	928.51
HR	2.32	1.10	NO	NO	NO	NO	NO	NO	NO	NO	NO
EU-28	3 505.51	2 788.42	2 116.63	1 359.45	1 270.29	1 122.07	1 078.29	957.29	932.15	936.13	928.51

Table 26 and Table 27 show the results for the proxy inventory for 2012 for 1B1 Fugitive Emissions from Oil and Natural Gas compared to the inventory time series for the EU and all Member States for CO_2 and CH_4 emissions respectively.

Table 26 CO_2 emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas

Source Category	1B2	2. Oil and Natural Gas									
Gas	CO2										
Member	**Inventory data**										**Proxy**
State	**1990**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
	Gg										
AT	102	127	165	205	232	237	212	265	237	233	239
BE	84	84	165	104	131	115	117	117	103	93	105
BG	4	5	3	25	24	14	11	2	5	20	9
CY	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO
CZ	4	11	14	24	20	19	19	17	14	13	12
DE	1 742	2 113	2 214	2 087	2 061	1 902	1 759	1 649	1 459	1 393	1 325
DK	325	449	720	543	532	544	392	265	357	256	292
EE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ES	1 656	1 800	2 114	2 062	2 189	2 386	2 142	2 087	2 177	2 537	2 267
FI	219	171	128	127	114	131	139	114	137	121	122
FR	4 123	4 172	3 971	3 631	3 955	3 701	3 891	3 691	3 153	2 925	2 657
UK	5 778	8 429	5 684	5 851	4 951	5 084	4 302	4 490	4 424	4 103	4 339
GR	70	39	24	9	9	7	5	8	11	9	9
HU	289	317	227	136	140	126	211	210	220	215	212
IE	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
IT	3 344	3 178	2 588	2 117	2 194	2 181	2 264	2 170	2 322	2 315	2 275
LT	1	10	25	17	14	12	10	9	9	9	8
LU	0	0	0	0	0	0	0	0	0	0	0
LV	0	0	0	0	0	0	0	0	0	0	0
MT	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO
NL	775	441	267	1 074	1 069	1 128	920	1 066	1 022	900	996
PL	46	82	180	1 315	1 362	1 155	1 299	1 283	1 181	1 724	1 737
PT	267	739	700	1 006	959	942	988	1 013	1 019	988	1 015
RO	1 213	1 068	962	901	919	767	724	682	652	646	633
SE	304	299	350	309	846	883	888	898	882	879	933
SI	0	0	0	0	0	0	0	0	0	0	0
SK	0	0	0	0	0	0	0	0	0	0	0
EU-15	18 789	22 042	19 090	19 127	19 241	19 241	18 019	17 833	17 303	16 751	16 574
EU-27	20 346	23 535	20 500	21 546	21 722	21 335	20 294	20 037	19 383	19 379	19 185
HR	640	869	739	780	790	751	659	595	562	577	566
EU-28	20 986	24 405	21 239	22 326	22 511	22 086	20 953	20 632	19 945	19 956	19 751

Table 27 CH_4 emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas

Source Category	1B2	2. Oil and Natural Gas									
Gas	CH4										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	9.41	10.47	9.76	10.44	10.71	10.85	10.70	11.13	11.52	11.42	11.75
BE	25.16	25.06	21.57	19.75	19.60	19.58	18.66	18.80	20.92	19.14	19.62
BG	38.42	33.45	29.65	33.64	33.91	33.88	32.53	23.37	25.29	32.02	26.89
CY	0.04	0.06	0.08	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO
CZ	42.74	31.87	33.11	32.38	33.09	33.14	30.32	32.26	33.92	31.72	32.58
DE	385.34	345.94	318.34	293.21	297.15	269.02	281.07	283.13	272.97	277.13	277.16
DK	2.07	3.39	4.10	5.21	6.51	6.29	6.06	5.65	5.33	5.28	5.72
EE	8.62	4.11	4.63	5.58	5.66	5.65	5.40	3.70	3.96	3.58	3.75
ES	29.21	37.33	34.92	40.67	26.84	23.95	24.28	25.20	25.79	25.85	25.55
FI	0.53	3.81	2.62	3.05	2.64	2.44	2.33	2.19	1.90	1.73	1.92
FR	70.67	59.44	55.71	49.67	49.87	50.33	51.04	50.30	55.03	52.34	50.73
UK	493.26	445.49	322.59	278.00	261.73	271.57	251.95	250.62	247.58	243.05	247.08
GR	4.36	2.64	6.54	6.90	7.42	7.62	7.93	8.35	8.96	9.02	8.78
HU	73.21	93.47	97.50	97.49	98.04	98.39	96.54	98.71	101.36	99.96	101.59
IE	6.25	5.45	4.07	2.71	2.25	2.85	2.46	1.69	1.51	1.32	1.51
IT	347.54	324.64	302.32	267.86	243.14	234.66	237.77	233.81	243.67	238.47	229.33
LT	7.11	8.65	10.66	11.70	11.75	11.70	11.99	12.38	12.41	12.41	12.32
LU	0.77	1.00	1.20	2.11	2.22	2.07	1.98	2.00	2.16	1.87	1.90
LV	15.39	12.99	10.51	7.94	6.93	6.98	6.43	6.62	6.71	4.54	5.91
MT	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NE,NO
NL	78.24	77.89	38.58	36.09	33.40	36.31	37.87	36.51	34.43	35.93	35.62
PL	147.39	151.77	168.40	205.68	210.80	209.50	209.88	201.94	212.44	214.16	227.60
PT	1.83	2.20	9.15	19.89	7.58	9.15	21.66	30.67	27.85	7.78	22.12
RO	817.12	537.60	433.23	421.14	400.88	369.13	372.50	342.95	334.88	334.55	330.38
SE	3.58	3.56	4.34	4.78	4.96	5.04	5.27	5.20	5.26	5.19	5.25
SI	2.76	2.60	2.06	1.57	1.52	1.48	1.44	1.40	1.39	1.38	1.39
SK	24.45	29.13	34.06	31.96	32.13	35.45	34.91	37.77	34.68	36.03	36.36
EU-15	1 458.23	1 348.30	1 135.82	1 040.35	976.00	951.74	961.03	965.25	964.89	935.51	944.02
EU-27	2 635.49	2 254.00	1 959.71	1 889.43	1 810.71	1 757.04	1 762.96	1 726.35	1 731.94	1 705.87	1 722.78
HR	57.25	54.75	52.97	63.42	70.14	77.09	72.75	70.17	72.74	67.98	55.49
EU-28	2 692.74	2 308.75	2 012.67	1 952.85	1 880.86	1 834.13	1 835.70	1 796.52	1 804.68	1 773.84	1 778.27

.2 Industrial processes

.2.1 2.A Mineral Products

.2.1.1 Methods and data sources used

The emissions from 2.A Mineral products are based on CO_2 emission data for Cement (2.A.1) Lime (2.A.2) and Glass Production (2.A.7) from the EUTL data Main activity code 6 and 7 data which were used as an index of the evolution of the emissions from the production of cement clinker, lime or glass production.

Emissions for 2.A.1 and 2.A.2 were calculated using EUTL data Main activity code 6 and a scaling factor based on comparison inventory data - EUTL data for 2011.

In this approach CO_2 emissions from 2.A1 (Cement) and 2.A.2 (Lime) were calculated as follows:

Equation 24

$$E_{2Ax}^{Y} = \frac{E_{CITL}^{Y}}{E_{CITL}^{Y-1}} \cdot E_{2Ax}^{Y-1}$$

with

E_{2Ax}^{Y} *Emissions for source category 2A1 or 2A2*

E_{2Ax}^{Y-1} *Emissions for source category 2A1 or 2A2 from previous year*

E_{CITL}^{Y} *CITL emissions for the production of cement clinker and lime production*

E_{CITL}^{Y-1} *CITL emissions for the production of cement clinker and lime production from previous year*

Malta did not report 2.A.1 emissions for 2011 therefore no emissions were estimated. Luxembourg, Malta and Netherlands did not report 2.A.2 emissions for 2011 therefore no emissions were estimated.

Since Croatia neither in 2011 nor in 2012 participated in the EU ETS, 2.A.1 and 2.A.2 emissions 2012 for Croatia were calculated by linear trend extrapolation via minimum square deviation of the emissions of the years 2007–2011.

Two different approaches were used to estimate CO_2 emissions from 2.A.7 (Glass production):

1. For the Member States with no strong correlation between CO_2 emissions and EUTL data Main activity code 7 in the previous years the average 2009–2011 of the CO_2 emission data from the last inventory submissions were used.
2. For the Member States with a significant correlation between CO_2 emissions and EUTL data Main activity code 7 in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 25

$$E_{2A}^{Y} = \frac{E_{EUTL}^{Y}}{E_{EUTL}^{Y-1}} \cdot E_{2A7}^{Y-1}$$

with

E_{2A}^{Y} *Emissions for source category 2A7*

E_{2A}^{Y-1} *Emissions for source category 2A7 from previous year*

E_{EUTL}^{Y} *EUTL emissions for the production of glass production*

E_{EUTL}^{Y-1} *EUTL emissions for the production of glass production from previous year*

Croatia and Malta did not report 2.A.7 emissions for glass production therefore no emissions were estimated.

The total CO_2 emissions for source category 2.A.7 were calculated from the estimates for source category 2.A.7 glass production and the CO_2 emission data from all other sub-categories of source category 2.A.7 from the last inventory submissions.

.2.1.2 *Results for 2012*

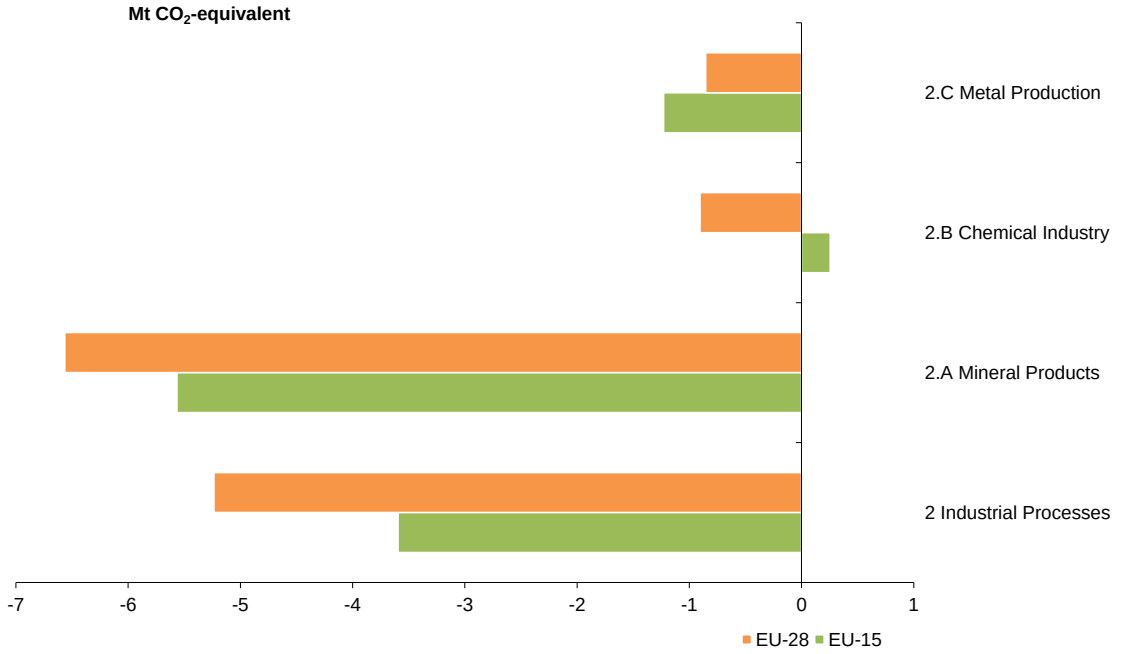
GHG emissions from Industrial Processes decreased by -0.4 Mt CO_2eq for the EU-15 and increased by 2.2 Mt CO_2eq for the EU-27 in 2012 compared to 2011. Table 28 indicates the sub-sector contribution to this trend in emissions.

Table 28 Change in GHG emissions between 2011 and 2012 for Industrial Processes emissions

Industrial Processes	**Change 2012/2011**			
	EU-15		**EU-28**	
	Mt CO_2eq	**%**	**Mt CO_2eq**	**%**
2 Industrial Processes	-3.6	-1.4%	-5.2	-1.6%
2.A Mineral Products	-5.6	-6.2%	-6.6	-5.5%
2.B Chemical Industry	0.3	0.6%	-0.9	-1.6%
2.C Metal Production	-1.2	-2.9%	-0.9	-1.4%

Source: EEA's ETC/ACM based on the 2012 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Figure 16 Change in GHG emissions between 2011 and 2012 for Industrial Processes emissions



Source: EEA's proxy GHG emissions based on the 2012 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

Table 29 shows the CO_2 emissions for the proxy inventory in 2011 for 2A Mineral Products compared to the inventory time series for the EU and all Member States.

Table 29 CO_2 emissions from 2.A Mineral Products

Source Category	2A	Mineral Products									
Gas	CO2										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	3 274	2 863	2 966	3 133	3 307	3 518	3 531	2 916	2 936	3 030	3 024
BE	5 750	6 192	6 143	5 765	6 046	5 899	5 961	4 691	4 805	5 096	4 827
BG	3 907	3 240	2 120	2 809	2 940	3 460	3 474	2 206	2 468	2 721	3 159
CY	728	805	811	893	903	893	894	722	586	570	552
CZ	4 830	3 602	4 166	3 855	3 975	4 364	4 130	3 449	3 425	3 824	3 574
DE	22 667	23 094	22 234	19 479	19 909	21 196	20 260	17 895	18 324	19 498	19 097
DK	1 069	1 404	1 611	1 542	1 604	1 604	1 318	879	792	973	960
EE	628	367	402	416	463	649	648	282	339	453	873
ES	15 427	15 887	19 121	21 906	22 120	21 945	18 831	14 661	14 547	12 999	11 995
FI	1 268	929	1 124	1 257	1 334	1 351	1 298	932	1 216	1 308	1 197
FR	16 525	13 943	13 856	14 145	14 400	14 469	13 628	11 584	12 308	12 249	11 579
UK	10 413	9 400	9 458	9 211	9 363	9 600	8 413	6 099	6 321	6 640	5 800
GR	6 681	7 073	7 366	7 790	7 502	7 342	6 963	5 325	4 925	3 116	3 810
HU	3 278	2 317	2 263	2 262	2 356	2 391	2 270	1 615	1 413	1 231	1 320
IE	1 117	1 084	1 909	2 553	2 539	2 580	2 302	1 485	1 299	1 167	1 370
IT	21 303	20 976	21 455	23 481	23 536	24 027	21 729	17 466	17 553	16 980	14 232
LT	2 142	425	357	445	598	600	521	305	326	382	455
LU	623	519	580	505	501	496	466	440	453	473	442
LV	586	155	165	238	266	282	280	242	509	632	649
MT	0	2	0	0	0	0	0	0	0	0	0
NL	1 172	1 733	1 411	1 447	1 412	1 416	1 460	1 274	1 254	1 295	1 227
PL	8 460	9 031	8 310	7 786	8 930	10 169	9 851	8 433	9 222	10 711	9 323
PT	3 493	3 949	4 461	4 754	4 661	4 884	4 757	3 862	4 000	3 503	3 184
RO	8 173	5 596	4 778	5 597	6 278	6 978	6 621	4 710	4 608	4 881	4 900
SE	1 722	1 763	1 879	2 004	2 152	2 081	2 131	1 810	2 050	2 072	2 091
SI	725	609	682	761	823	865	895	663	629	585	570
SK	2 966	2 305	2 524	2 970	3 019	3 049	3 145	2 456	2 303	2 681	2 498
EU-15	112 504	110 808	115 574	118 971	120 386	122 408	113 049	91 319	92 782	90 400	84 835
EU-27	148 928	139 261	142 153	147 002	150 935	156 109	145 777	116 401	118 610	119 071	112 708
HR	1 305	749	1 413	1 755	1 885	1 915	1 829	1 439	1 410	1 192	992
EU-28	150 233	140 010	143 565	148 757	152 820	158 024	147 606	117 841	120 021	120 263	113 699

.2.2 2.C Metal Production

.2.2.1 *Methods and data sources used*

The estimates for CO_2 emissions for source category 2.C (Metal Production) are based on separate estimates for source category 2.C.1 (Iron and Steel Production) and the remaining subcategories of source category 2.C.

For calculating CO_2 emissions from 2.C.1 the correlation of several trends has been analysed. The estimates are based on monthly production data from the World Steel Association or on EUTL data. The following trends have been used:

1. Crude steel production data from the World Steel Association;
2. Blast furnace iron production data from the World Steel Association;
3. EUTL main activity code 3 (Coke ovens) and 5 (Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting) and including those power plants in the EUTL that where identified to use waste gases from the iron and steel industry;
4. EUTL main activity code 3 (Coke ovens), 4 and 5 (Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting) and including those power plants in the EUTL that where identified to use waste gases from the iron and steel industry;

The estimates for CO_2 emissions for source category 2.C.1 (Iron and Steel Production) are based on the formula:

Equation 26

$$E^{Y}_{2C1ÇO2} = \frac{AR^{Y}_{steel}}{AR^{Y-1}_{steel}} \cdot E^{Y-1}_{2C1ÇO2}$$

with

$E^{Y}_{2C1ÇO2}$	*CO_2 emissions for source category 2C1*
$E^{Y-1}_{2C1ÇO2}$	*CO_2 emissions for source category 2C1 from previous year*
AR^{Y}_{steel}	*Crude steel or blast furnace iron production or EUTL data*
AR^{Y-1}_{steel}	*Crude steel or blast furnace iron production or EUTL data for previous year*

This equation and the World Steel Association monthly crude steel production data was used for Croatia and Italy. For Poland the World Steel Association monthly blast furnace iron production data was used. For Austria, Finland, Germany and Hungary emission trends from EUTL data were used for the calculation.

For Member States with no strong correlation between one of the trends and CO_2 emissions in the previous years, the emission data average 2009–2011 from the last inventory submission were used. This includes Belgium, Bulgaria, the Czech Republic, Spain, France, Greece, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, Romania, Slovakia, Slovenia and the United Kingdom. Cyprus, Denmark, Estonia, Ireland, Malta did not report emissions in 2.C.1 therefore no emissions were estimated.

The total CO_2 emissions for source category 2.C (Metal Production) were calculated from the estimates for source category 2.C.1 (Iron and Steel Production) and the CO_2 emission data from all other sub-categories of source category 2.C from the last inventory submissions.

.2.2.2 *Results for 2011*

Table 30 shows the CO_2 emissions for the proxy inventory in 2011 for 2C Metal Production compared to the inventory time series for the EU and all Member States.

Table 30 CO_2 emissions from 2.C Metal Production

Source Category	2C	C. Metal Production									
Gas	CO2										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	3 725	3 942	4 221	5 015	5 213	5 503	5 828	4 597	5 481	5 789	5 675
BE	2 022	1 975	1 879	1 701	1 791	1 650	1 656	859	899	540	766
BG	1 383	3 138	2 388	2 100	2 306	1 998	1 018	80	55	68	66
CY	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
CZ	12 533	7 530	7 027	6 687	7 572	7 757	7 151	5 298	5 919	5 623	5 614
DE	24 153	19 225	21 152	21 821	22 079	20 022	19 928	13 866	17 861	16 947	16 334
DK	28	39	41	16	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
EE	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
ES	3 384	2 247	2 919	3 512	3 820	3 541	3 511	2 650	3 475	3 060	3 302
FI	1 936	2 047	2 351	2 372	2 438	2 460	2 524	1 945	2 408	2 359	2 019
FR	4 524	5 637	4 349	4 708	4 278	4 241	4 007	3 445	4 614	3 813	3 954
UK	2 309	1 938	1 985	2 456	2 125	2 657	3 063	1 234	1 682	1 384	1 426
GR	940	963	946	1 203	1 192	1 254	1 110	685	860	1 129	1 129
HU	3 208	2 578	2 108	2 058	2 026	2 088	1 993	1 898	2 243	2 236	2 125
IE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
IT	3 878	3 403	1 754	1 922	1 942	1 925	1 875	1 307	1 465	1 610	1 545
LT	21	5	7	7	7	7	5	4	4	4	3
LU	985	465	146	153	210	203	169	129	134	124	129
LV	13	4	8	12	13	15	9	10	11	0	7
MT	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
NL	2 661	1 908	1 519	1 476	1 243	1 949	1 214	1 076	998	1 548	1 315
PL	5 549	3 655	2 844	5 699	6 680	7 027	7 412	4 406	5 537	6 006	5 974
PT	170	213	238	122	136	126	102	65	64	72	67
RO	6 737	7 186	5 046	6 276	7 554	7 831	5 444	3 606	3 367	3 008	3 350
SE	3 078	3 352	3 158	3 100	2 958	3 108	2 981	1 686	3 136	3 252	2 735
SI	285	211	186	275	261	255	188	85	109	166	159
SK	4 499	4 135	3 762	3 980	4 528	4 380	4 267	3 576	4 248	3 649	3 858
EU-15	53 794	47 353	46 656	49 576	49 425	48 640	47 970	33 543	43 076	41 625	40 397
EU-27	88 022	75 795	70 033	76 670	80 374	79 996	75 455	52 507	64 569	62 385	61 552
HR	252	36	18	11	13	12	24	11	27	29	8
EU-28	88 274	75 831	70 051	76 681	80 387	80 009	75 479	52 518	64 596	62 414	61 560

.2.3 Other source categories covering industrial processes, solvent and other product use

For all other source categories covering industrial processes (CRF 2) and solvent and other product use (CRF 3), 2012 activity data from alternative data sources are lacking. These categories were extrapolated from 2011 GHG inventories, either by linear trend extrapolation via minimum square deviation of the emissions of the years 2007–2011 or by taking the constant values of the year 2011. Constant values were used when past trends were inconsistent and strongly fluctuating and trend extrapolation were used when the historic time series showed good correlations with a linear trend (i.e. if the coefficient of determination R^2 of the trend 2007–2011 is greater than or equal to 0.80).

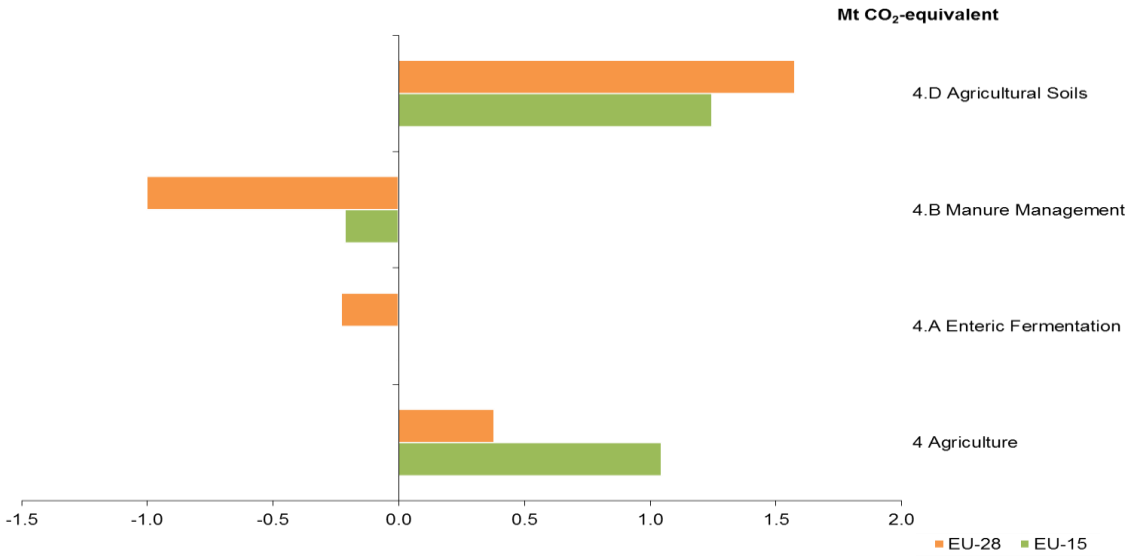
Annex 1 provides a detailed overview of methods and data sources used for each source category and Member State.

.3 Agriculture

Agriculture contributes about 10% of EU GHG emissions excluding LULUCF/LUCF. The main gases from agricultural activities are N_2O from soils and CH_4 from livestock. The small increase in Agriculture sector emissions this year reflects higher emissions from Agricultural Soils. This is due to a rise in N_2O from soils and is consistent with increase in fertilizer use[20].

Compared to 2011, GHG emissions from agriculture slightly increased in 2012 by 0.3 % for the EU-15 and by 0.1 % for the EU-27. Table 31 and Figure 17 show the sub-sector contribution to this trend in CH_4 and N_2O emissions quantified with the greenhouse warming potential (GWP) and converted into Mt CO_2 equivalents (Mt CO2eq).

Figure 17 Change in GHG emissions in Mt CO_2 eq. from 2011 to 2012 in the agricultural sector



Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

[20] Eurostat has time series data on inorganic fertilizers [aei_fm_usefert], with consistent data for 16 MS.

Table 31 Change in GHG emissions between 2011 and 2012 (change of 2012/2011 absolute emissions in Mt CO_2eq. and in percentage) in the agricultural sector

Agriculture	Change 2011/2012			
	EU-15		EU-27	
	Mt CO_2eq	%	Mt CO_2eq	%
4 Agriculture	1.0	0.3%	0.4	0.1%
4.A Enteric Fermentation	0.0	0.0%	-0.2	-0.2%
4.B Manure Management	-0.2	-0.4%	-1.0	-1.4%
4.D Agricultural Soils	1.2	0.7%	1.6	0.7%

Source: Based on 2013 EU 1990-2011 UNFCCC greenhouse gas inventories and proxy estimates for 2012.

Note: The sub-sectors 4.C Rice Cultivation and 4.F Field Burning of Agricultural Residues contribute to less than 1% of EU Agricultural emissions and are not shown.

.3.1 4.A Enteric fermentation

Until this year changes in emissions from Enteric Fermentation and Manure Management have driven a declining emission trend in Europe's agriculture sector. This is largely because of the on-going decrease in the number of dairy cattle. In the Enteric Fermentation sector Luxembourg (-0.4 Gg, -3%), Spain (-12 Gg, -2%), and Finland (-2 Gg, -2%) showed the strongest decline of CH_4 emissions among the EU-15 MS.

Across the EU-28 the largest absolute decrease of CH_4 emissions was in Poland (-20 Gg, -4.5 %), while the United Kingdom and Romania had the largest absolute increases of CH_4 emissions (9 Gg, 1.3 %) and (7 Gg, 2.0 %) respectively. Overall the EU-28 had an 11 Gg decrease of CH_4 emissions from Enteric Fermentation. Table 32 presents the CH_4 emissions for the proxy inventory in 2012 for 4A Enteric Fermentation compared to the inventory time series for the EU and all Member States.

.3.1.1 Methods and data sources used

Emissions from the source category 4A were calculated using agriculture activity data and implied emission factors. Livestock data were obtained from the Eurostat annual statistics on agriculture and fisheries, as well as from the annual inventory data in CRF format and the National Inventory Reports (NIR) submitted to the EU and to the UNFCCC. Annual animal population Eurostat data was used for live bovine animals (dairy cattle, non-dairy cattle and buffalo), goats, swine and sheep.

Buffalo are counted within the Eurostat *A2000 Live bovine animals* category and are included in the emissions calculations for Non-Dairy Cattle. Separate calculations were not conducted for Buffalo and emissions from this class are reported as IE. While there are differences in the emissions factors for buffalo and other non-dairy cattle, the total herd size is low – even in Italy which has the highest number of buffalo in Europe.

Livestock surveys do not include poultry as Eurostat only provides livestock surveys for laying hens without broilers and hens. Horses, mules and asses are also not covered by Eurostat ani-

mal production data. Therefore, the emissions of the corresponding animal categories were updated using data of previous years via trend extrapolation of UNFCCC inventory data. The proxy CH_4 emissions for source category 4A were calculated based on the following equation:

Equation 27

$$E_{4A}^{Y} = \sum_{i} AF_i^{Y-1} \cdot IEF_i^{Y-1} \cdot AR_i^{Y} + E_{other}^{Y-1}$$

with

E_{4A}^{Y}	*Emissions for source category 4A*
AF_i^{Y-1}	*Adjustment factor for animal category i from previous year(s)*
IEF_i^{Y-1}	*Implied emission factor for animal category i from previous year(s)*
AR_i^{Y}	*Activity rate (livestock) for animal category i*
E_{other}^{Y-1}	*Emissions for other animals for source category 4A from previous year(s)*

Activity rates provided by Eurostat encompass two animal livestock surveys in May/June and in December for the year Y-1. For each Member State how well the respective livestock surveys correspond with the data used in national GHG inventories was analysed. The results of the best fits differed for each MS and also for animal categories. For the estimation of approximated 2012 emissions, the animal population surveys were chosen which best corresponded with the livestock data reported in GHG inventories for past years. For some Member States and animal categories Eurostat livestock population tended to show a constant deviation over the time series compared to the animal population reported in GHG inventories. In such cases, a scaling factor was applied to achieve a 2011 data set comparable to animal population reported in GHG inventories. The scaling factor was derived on the basis of the most recent inventory data and the best fitting Eurostat dataset. For some Member States (Romania, Belgium, France, Ireland and Spain) country-specific adjustments were made by applying a percentage trend of the activity data (source: EUROSTAT time series) to the emissions of the previous year 2011.

In general, implied emission factors for each animal category were derived from the national inventory data, which Member States submitted to the EU and the UNFCCC for the year Y-2.

Table 32 CH_4 emissions in Gg from 4.A Enteric Fermentation

Source Category	4A	A. Enteric Fermentation									
Gas	CH4										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	178.73	172.08	162.71	153.74	153.23	153.84	153.52	155.49	155.06	153.08	151.61
BE	196.08	196.30	183.16	167.33	165.72	169.54	167.83	167.99	168.73	165.85	163.94
BG	181.46	91.93	83.23	73.36	71.38	67.30	66.04	62.80	61.26	62.36	59.50
CY	7.65	8.56	8.39	8.59	8.26	8.40	8.45	8.43	8.84	9.07	8.80
CZ	200.92	125.33	106.71	99.72	98.30	99.22	100.14	97.48	95.18	95.38	94.22
DE	1,407.68	1,191.29	1,102.75	1,015.02	990.62	990.21	1,008.80	1,009.41	1,000.16	985.37	987.26
DK	154.62	149.22	136.25	130.33	130.47	133.57	134.78	134.42	136.28	135.25	138.15
EE	48.43	24.88	19.21	19.49	19.55	19.23	19.27	18.99	19.31	19.56	19.90
ES	529.54	521.47	568.12	559.88	554.98	561.66	535.51	531.50	521.11	500.73	488.61
FI	92.05	80.80	78.92	76.33	76.38	75.34	74.72	75.32	76.74	75.90	74.12
FR	1,457.69	1,420.37	1,446.87	1,348.62	1,352.57	1,363.45	1,381.85	1,366.67	1,359.92	1,339.68	1,338.07
UK	885.37	868.81	836.10	775.61	769.99	754.89	737.68	724.61	726.99	723.32	732.66
GR	154.58	151.58	154.31	156.48	156.17	155.58	154.20	153.84	153.52	153.53	156.70
HU	152.01	90.31	85.81	77.85	75.42	75.20	73.85	72.79	71.91	71.13	74.42
IE	455.91	460.89	452.14	430.07	430.92	424.04	422.59	416.07	406.80	401.85	408.90
IT	584.69	587.98	583.14	519.73	509.48	528.51	523.60	524.14	511.05	512.44	507.99
LT	153.65	75.63	56.58	61.03	63.02	64.47	62.12	58.96	57.17	56.46	57.59
LU	12.45	12.23	11.84	11.09	10.98	11.38	11.63	11.73	11.96	11.63	11.23
LV	102.29	41.51	30.89	32.10	31.75	33.21	32.04	31.79	32.01	32.10	32.73
MT	1.60	1.70	1.79	1.74	1.67	1.71	1.61	1.52	1.41	1.37	1.39
NL	364.44	353.99	313.33	303.56	302.87	306.81	312.83	314.74	316.64	311.64	313.40
PL	741.03	512.58	462.76	425.98	436.40	442.92	443.04	438.12	439.39	442.22	422.36
PT	129.01	138.43	147.79	143.67	142.99	140.85	141.32	137.07	134.97	132.58	130.77
RO	758.77	531.72	423.17	426.01	431.01	441.71	437.91	428.83	375.96	375.03	382.42
SE	140.51	141.60	131.61	127.60	127.86	125.30	124.49	123.68	123.27	122.75	121.88
SI	31.05	30.65	32.96	31.44	31.52	32.98	32.28	32.04	31.71	31.09	31.08
SK	95.90	67.71	50.82	45.53	44.79	44.51	43.13	41.20	40.81	40.82	41.11
EU-15	6,743.33	6,447.04	6,309.04	5,919.06	5,875.23	5,894.97	5,885.36	5,846.68	5,803.18	5,725.61	5,725.31
EU-27	9,218.09	8,049.55	7,671.35	7,221.90	7,188.31	7,225.82	7,205.26	7,139.64	7,038.14	6,962.20	6,950.84
HR	59.14	36.20	33.28	38.36	39.10	38.00	39.26	38.81	38.48	38.28	38.71
EU-28	9,277.23	8,085.75	7,704.63	7,260.26	7,227.41	7,263.82	7,244.52	7,178.45	7,076.62	7,000.48	6,989.54

.3.2 4.B Manure Management

.3.2.1 Methods and data sources used

For the estimation of CH_4 emissions from Manure Management the same Eurostat data were used as for the calculation of CH_4 emissions from Enteric Fermentation. Data from livestock surveys provided by Eurostat were used according presented to Table 81, Annex 1. The emission estimation follows a similar equation than the one for 4.A because of the same proxy methodology:

Equation 28

$$E_{4B}^{Y} = \sum_{i} AF_{i}^{Y-1} \cdot IEF_{i}^{Y-1} \cdot AR_{i}^{Y} + E_{other}^{Y-1}$$

with

E_{4B}^{Y}	*Emissions for source category 4B*
AF_{i}^{Y-1}	*Adjustment factor for animal category i from previous year(s)*
IEF_{i}^{Y-1}	*Implied emission factor for animal category i from previous year(s)*
AR_{i}^{Y}	*Activity rate (livestock) for animal category i*
E_{other}^{Y-1}	*Emissions for other animals for source category 4B from previous year(s)*

Implied emission factors for each animal category for category 4.B were derived from the national inventory data submitted to the EU and the UNFCCC for the year Y-2.

.3.2.2 *Results for 2012*

Table 33 and Table 34 present the CH_4 and N_2O emissions for the proxy inventory in 2012 for 4B Manure Management compared to the inventory time series for the EU and all Member States. Among the EU-15 MS there were small increases in CH_4 emissions from five MS with the largest two being Germany (2 Gg, 1%) and Portugal (1 Gg, 3%). Across the EU-28 there was a 31 Gg (2%) decline in CH_4 missions in the Manure Management sector. Bulgaria (-5 Gg, -15%), Italy (-6 Gg, -6%) and Poland (-17Gg, -12%) had the largest CH_4 emission reductions.

Table 33 CH_4 emissions in Gg from 4.B Manure Management

Source Category	4B	B. Manure Management									
Gas	CH4										
Member	Inventory data										Proxy
State	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	20.52	19.50	17.42	16.12	15.94	16.03	15.70	15.83	15.78	15.49	15.36
BE	68.06	70.95	70.93	63.04	62.83	64.40	64.57	65.12	66.54	65.96	66.75
BG	202.36	73.77	21.89	29.15	32.67	34.03	32.35	31.36	30.70	29.86	25.26
CY	4.19	5.45	5.64	5.86	5.98	5.97	6.12	6.07	6.10	5.88	5.41
CZ	47.68	31.78	27.34	22.55	22.22	22.11	21.16	19.43	18.91	18.04	17.21
DE	318.96	289.34	283.35	269.80	261.21	259.00	257.77	254.64	244.18	237.28	239.24
DK	47.29	52.53	56.39	62.07	60.85	61.57	60.63	60.45	61.93	62.30	61.53
EE	3.60	1.76	1.25	1.76	1.81	1.95	1.97	2.03	2.24	2.16	2.20
ES	246.30	268.75	310.40	324.16	335.83	338.09	322.94	321.87	312.62	314.82	312.99
FI	11.76	12.92	13.56	14.57	14.55	14.52	14.62	14.23	14.31	14.28	13.79
FR	394.46	409.10	459.98	466.26	467.76	478.35	488.92	478.08	476.08	472.12	469.07
UK	163.31	154.07	130.51	126.69	129.27	124.87	121.67	119.17	120.47	120.07	119.37
GR	16.74	16.61	16.45	16.43	16.36	16.03	15.81	15.62	15.56	15.53	15.75
HU	159.19	93.30	90.87	74.56	72.88	73.93	69.41	64.48	63.76	62.45	62.19
IE	112.08	112.64	110.18	107.85	107.29	104.68	104.48	103.75	102.51	101.55	102.46
IT	164.86	156.48	156.10	149.93	144.20	145.43	140.99	136.79	122.25	100.67	94.91
LT	52.08	28.48	21.55	26.35	26.78	25.26	24.83	24.10	24.75	23.11	23.51
LU	3.74	4.42	4.94	4.66	4.58	4.30	4.37	4.43	4.56	4.59	4.41
LV	13.04	5.11	3.23	3.66	3.93	4.07	4.00	4.05	4.23	4.23	4.20
MT	1.36	1.28	1.58	1.45	1.44	1.49	1.34	1.30	1.28	1.04	1.04
NL	145.36	151.83	137.93	126.05	125.96	127.09	130.07	140.01	137.89	125.41	125.17
PL	157.65	148.20	133.67	154.55	161.76	161.62	146.57	141.29	140.92	133.77	117.15
PT	56.42	58.90	56.61	49.68	50.32	50.50	50.74	50.79	50.36	49.74	50.98
RO	80.49	31.82	19.07	34.29	46.38	41.45	38.54	35.06	28.96	28.31	28.33
SE	11.13	12.38	11.55	15.05	14.86	14.53	14.41	14.03	14.10	14.34	14.10
SI	22.52	20.24	20.44	20.41	20.81	21.50	20.10	20.42	20.09	19.27	18.58
SK	17.56	13.25	9.52	7.66	7.49	6.84	5.85	5.94	5.67	5.10	5.40
EU-15	1,781.00	1,790.43	1,836.30	1,812.35	1,811.82	1,819.37	1,807.69	1,794.82	1,759.13	1,714.15	1,705.86
EU-27	2,542.72	2,244.88	2,192.36	2,194.60	2,215.98	2,219.60	2,179.92	2,150.36	2,106.74	2,047.36	2,016.33
HR	10.89	7.50	7.37	7.41	8.57	7.95	7.61	8.21	7.96	7.99	7.79
EU-28	2,553.61	2,252.38	2,199.73	2,202.00	2,224.55	2,227.54	2,187.53	2,158.56	2,114.70	2,055.35	2,024.12

For N_2O emissions for 4B Manure Management the largest increase was from Italy (0.2 Gg, 1%) and the largest decrease was seen in Poland (-0.6 Gg,-4%). N_2O emissions decreased by about 1Gg (-1%) for the EU-28 (Table 34).

Table 34 $N2O_4$ emissions in Gg from 4.B Manure Management

Source Category	4B	B. Manure Management									
Gas	N2O										
Member State	Inventory data										Proxy
	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
	Gg										
AT	3.01	3.08	2.98	2.93	2.93	2.96	2.97	3.00	3.02	2.98	3.02
BE	3.10	3.20	2.88	2.57	2.51	2.49	2.49	2.50	2.53	2.48	2.50
BG	5.03	2.79	2.34	2.17	2.12	2.06	1.95	1.83	1.75	1.73	1.61
CY	0.41	0.46	0.51	0.49	0.45	0.48	0.47	0.46	0.48	0.48	0.48
CZ	5.51	3.47	3.13	2.46	2.42	2.41	2.37	2.26	2.20	2.14	2.08
DE	12.64	10.38	9.85	9.60	9.43	9.47	9.49	9.48	9.29	9.07	9.07
DK	1.93	1.83	1.73	1.65	1.54	1.55	1.47	1.36	1.36	1.30	1.24
EE	0.99	0.51	0.39	0.35	0.34	0.33	0.34	0.33	0.33	0.34	0.33
ES	4.34	4.69	5.13	5.44	5.33	5.51	5.34	5.18	5.34	5.34	5.27
FI	1.57	1.43	1.41	1.36	1.34	1.33	1.31	1.36	1.37	1.37	1.38
FR	19.82	19.33	18.24	15.90	15.62	15.56	15.58	15.47	15.45	15.15	15.19
UK	6.32	6.71	6.74	6.00	5.90	5.75	5.59	5.43	5.37	5.31	5.13
GR	0.98	0.85	0.86	0.91	0.91	0.90	0.87	0.88	0.88	0.88	0.87
HU	5.65	3.48	3.45	3.08	2.94	2.87	2.81	2.72	2.70	2.69	2.60
IE	1.40	1.51	1.53	1.56	1.52	1.49	1.51	1.50	1.44	1.41	1.41
IT	12.65	12.20	12.46	11.96	11.61	12.19	12.18	12.30	11.94	11.99	12.16
LT	2.86	1.26	0.90	0.98	1.01	1.01	0.96	0.90	0.89	0.87	0.83
LU	0.13	0.10	0.08	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.09
LV	1.84	0.75	0.52	0.50	0.47	0.48	0.45	0.45	0.42	0.39	0.39
MT	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NL	3.81	3.76	3.26	2.97	2.87	3.08	3.18	3.22	3.24	3.39	3.39
PL	25.52	20.94	18.81	17.69	18.30	18.24	17.37	16.66	16.79	16.48	15.89
PT	1.70	1.55	1.53	1.18	1.12	1.06	1.01	0.99	0.96	0.96	0.90
RO	6.84	4.52	2.89	4.70	4.43	4.71	4.91	4.51	3.98	3.90	3.88
SE	2.36	2.06	1.93	1.60	1.60	1.57	1.57	1.47	1.48	1.44	1.41
SI	0.84	0.68	0.64	0.53	0.51	0.53	0.49	0.49	0.45	0.43	0.42
SK	3.47	2.31	1.60	1.34	1.31	1.28	1.24	1.22	1.21	1.19	1.16
EU-15	75.78	72.67	70.61	65.69	64.32	64.99	64.64	64.21	63.76	63.16	63.03
EU-27	134.75	113.84	105.81	100.00	98.63	99.41	98.01	96.05	94.97	93.81	92.72
HR	1.23	0.78	0.70	0.72	0.75	0.72	0.68	0.68	0.66	0.66	0.63
EU-28	135.98	114.62	106.51	100.72	99.38	100.13	98.69	96.73	95.63	94.47	93.35

.3.3 4.D Agricultural Soils

.3.3.1 Methods and data sources used

Emissions from 4.D Agricultural Soils include CH_4 and N_2O produced as a result of applying fertilizers, manure, and other agricultural practices. For all but one MS the reported 4.D Agricultural Soils emissions are 0 – only Austria reports CH_4 emissions from soils.

Previous proxy calculations of N_2O emissions for 4.D Agricultural Soils, summed trend estimates of the sub-sectors within the 4.D.1 Direct Soil Emissions category, i.e. from: 4.D.1.1 Synthetic Fertilizers, 4.D.1.2 Animal Manure applied to Soils, 4.D.1.3 N-fixing crops, 4.D.1.4 Crop residue, 4.D.1.5 Cultivation of Histosols and 4.D.1.6 Other Direct Emissions. For each MS and each subsector the estimates were based on either trend extrapolation or taking the previous year's value. Analysis of this detailed approach against subsequently reported emissions shows no appreciable gain in accuracy. This was also the case for the other categories: 4.D.2. Pasture, Range and Paddock Manure; 4.D.3. Indirect Emissions and 4.D.4. Other.

Emissions from Synthetic Fertilizers (4.D.1.1) typically contribute 25% of soil related emissions. While there is some Eurostat data for fertiliser use, only 16 MS have data for the year 2012. Based on totals for 2007 to 2009, the volume of reported artificial nitrogen fertiliser used by these 16 was about 85% of the EU total use. Although this data could not be used for proxy cal-

culations, the trend in artificial nitrogen fertiliser use broadly matches the time series for total EU27 emissions from 4.D Agricultural Soils.

For meaningful trend extrapolation, time series data needs to be reasonably smooth so that the underlying trend is apparent. At the top level the trend for 4.D Agricultural Soils is rather consistent for the three years after the global financial crisis, with an average annual increase of 0.9% between 2009 and 2011. The method adopted for this year's proxy was to extrapolate aggregate EU 4D emissions and allocate the change by proportion among the EU-28.

.3.3.2 *Results for 2012*

Table 35 presents the N_2O emissions for the proxy inventory in 2012 for 4D Agricultural Soils alongside the inventory time series for the EU and all Member States.

Table 35 N_2O emissions in Gg from 4.D Agricultural Soils

Source Category	4D	D. Agricultural Soils										
Gas	N_2O											
Member State	Inventory data											Proxy
	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Gg											
AT	11.06	12.04	10.30	9.41	9.45	9.61	9.75	10.23	9.99	9.46	10.01	10.07
BE	15.51	15.44	13.88	12.73	12.31	12.09	11.97	11.64	11.90	11.94	12.02	12.10
BG	27.23	12.32	10.49	11.53	10.69	10.27	10.25	11.10	10.77	11.54	11.42	11.49
CY	0.92	1.06	0.93	0.99	0.90	0.87	0.86	0.83	0.81	0.84	0.86	0.86
CZ	30.01	19.22	17.13	17.14	16.30	16.03	16.47	17.10	16.06	15.76	16.19	16.30
DE	154.14	134.05	141.48	136.36	133.77	131.24	127.69	135.75	129.46	126.95	135.07	135.95
DK	24.85	21.89	18.98	17.35	17.08	16.64	17.12	17.35	16.38	16.21	16.51	16.62
EE	5.68	2.46	2.09	2.06	1.97	1.96	2.13	2.51	2.21	2.26	2.29	2.30
ES	60.67	55.29	71.44	66.09	60.13	62.11	64.21	55.38	55.65	60.68	57.19	57.56
FI	12.87	11.80	11.31	11.24	11.28	11.30	11.38	11.73	11.17	11.67	11.44	11.51
FR	175.40	163.21	172.51	160.46	158.64	153.96	154.55	161.03	151.81	149.76	155.68	156.70
UK	107.84	106.19	101.03	95.11	94.92	90.48	87.63	86.67	85.53	86.90	87.10	87.67
GR	24.04	20.56	19.24	18.70	17.71	17.22	17.95	16.84	15.93	17.06	16.07	16.17
HU	23.04	14.02	15.29	17.54	16.23	16.69	16.79	16.85	15.61	15.60	16.48	16.59
IE	23.46	25.17	24.80	23.60	22.83	22.41	21.67	21.32	21.13	22.10	21.56	21.70
IT	62.85	62.64	62.39	60.34	58.39	57.89	57.79	54.45	50.01	48.84	49.59	49.91
LT	16.41	6.79	8.18	9.29	9.43	9.32	10.46	9.46	9.63	9.64	9.81	9.87
LU	1.17	1.14	1.11	1.06	0.98	0.97	0.96	0.97	0.99	0.98	0.96	0.97
LV	9.71	3.62	3.46	3.86	4.08	4.09	4.27	4.26	4.38	4.62	4.61	4.64
MT	0.07	0.09	0.09	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05
NL	34.42	33.65	26.98	23.09	22.61	22.64	21.49	20.91	19.89	19.64	18.70	18.83
PL	73.69	53.82	51.88	51.87	51.89	55.13	57.41	59.25	57.56	55.29	57.09	57.46
PT	11.16	10.85	11.99	10.21	9.54	9.06	9.84	9.43	9.34	9.37	9.32	9.38
RO	54.10	34.62	26.38	29.02	31.16	30.05	27.57	29.27	29.24	28.61	29.27	29.46
SE	16.39	15.64	15.19	14.74	14.40	14.32	14.30	14.55	13.99	14.32	14.34	14.44
SI	2.41	2.46	2.62	2.42	2.42	2.46	2.47	2.29	2.39	2.34	2.29	2.30
SK	11.83	6.27	5.59	5.27	5.29	5.20	5.66	5.54	5.44	5.64	5.75	5.79
EU-15	735.82	689.56	702.63	660.48	644.05	631.93	628.29	628.24	603.15	605.90	615.56	619.58
EU-27	990.91	846.28	846.76	811.55	794.47	784.08	782.71	786.76	757.33	758.09	771.67	776.71
HR	8.16	6.11	6.65	7.32	7.40	7.31	7.80	7.39	6.99	6.73	6.93	6.97
EU-28	999.07	852.39	853.41	818.87	801.87	791.39	790.51	794.15	764.32	764.82	778.60	783.68

.3.4 Other source categories in the agricultural sector

No near-term data were identified which could be used to develop a real-time projection for the other source categories in the agricultural sector, or at least not for all parts necessary for the emission estimation. Therefore, simple approaches were chosen for all remaining agricultural source categories. Either a linear trend extrapolation was used if the past data showed a consistent linear trend. Where the past trend was fluctuating, the emissions from the latest year were kept constant. The detailed methodologies used are documented in the tables in Annex I.

.4 Waste

.4.1 6.A Solid Waste Disposal

The most important source category in the waste sector is CH_4 emissions from source category 6.A. Solid Waste Disposal. For this source category, most Member States use higher tier methods, i.e. a first order decay approach that uses a number of activity data on certain types of waste deposited on landfills and a number of country-specific parameters. For the EU inventory 2012, among the EU-27 all MS except Cyprus used higher tier methodologies for estimating emissions from this source category (EU NIR 2012). The first order decay approach is challenging for the proxy estimation because an estimation method would not only need to use updated activity data, but would also need to mirror the chosen model approach for CH_4 emissions from landfills in each MS. The original idea in the feasibility study was the development of approximate first order decay models for each Member State based on submitted inventory data since 1990.[21] Such a model with specific results for each Member State was already developed by the European Topic Centre on Resource and Waste Management; however results were checked for 2007 and were less accurate than the extrapolation approach used in 2007 because a number of parameters are harmonized in this model that reflect MS estimates in a less accurate way.

In the absence of a detailed approach reflecting the first order decay assumptions, a simple approach was used to estimate CH_4 emissions from Solid Waste Disposal on land. A linear extrapolation of the trend of previous years was used if the past data tended to show a consistent linear trend. If the past trend was fluctuating, the emissions from the latest year were kept constant. The detailed approach for each Member State is provided in Table 91.

.4.1.1 Results for 2012

GHG emissions from the Waste sector decreased by -0.8 Mt CO_2eq for the EU-15 and by -0.7 Mt CO_2eq for the EU-27 in 2012 compared to 2011. Table 36 indicates the sub-sector contribution to this trend in emissions.

[21] Matthes, F. C., Herold, A., Ziesing, H.J. 2007

Table 36 Change in GHG emissions from 2011 and 2012 in the Waste sector

Waste	Change 2012/2011			
	EU-15		EU-27	
	Mt CO2eq	%	Mt CO2eq	%
6 Waste	-3.2	-3.1%	-2.9	-2.2%
6.A Solid Waste Disposal on Land	-2.7	-3.6%	-2.3	-2.3%
6.B Waste-water Handling	-0.5	-2.4%	-0.7	-2.5%
6.C Waste Incineration	0.0	1.3%	0.0	1.2%
6.D Other	0.0	0.3%	0.0	1.7%

Source: EEA's proxy GHG emissions based on the 2013 EU greenhouse gas inventory to UNFCCC for 1990-2011 and proxy estimates for 2012

.4.2 Other categories in the waste sector

The other source categories in the Waste sector are not very significant for total GHG emissions in the EU. Total emissions from 6.B. Wastewater Handling were 0.56 % of EU-15 total emissions in 2012 and total emissions from 6.C Waste Incineration contributed to 0.07 % to total EU-15 emissions in that year. For EU 27 the share from 6.B Wastewater Handling were 0.65% of EU-27 total emissions. 6.C Waste Incineration contributed to 0.07% to total EU-27 emissions in 2012.

Therefore, simple approaches were chosen for these source categories. Either a linear trend extrapolation was used if the past data tended to show a consistent linear trend. If the past trend was fluctuating, the emissions from the latest year were kept constant. This approach was used for CO_2 emissions from 6.A. Solid waste disposal on land, for N_2O and CH_4 emissions from 6.B. Wastewater handling and for CO_2, CH_4 and N_2O emissions from 6.C Waste incineration as well as for emissions from 6.D Other.

.5 Other source categories

For all other source categories, no 2012 activity data was available that could be combined with IEFs from GHG inventories. These categories were extrapolated from 2011 GHG inventories, either by trend extrapolation or by taking the constant values of 2011. Constant values were used when past trends were inconsistent and strongly fluctuating; trend extrapolation was used when historic time series showed good correlations with a linear trend.

For some source categories, updated data was only partly available, but the inventory estimation methodology was too complex to be replicated in an approximated way, e.g. for N_2O emissions from soils.

Annex 1 provides a detailed overview of methods and data sources used for each source category and Member State.

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    - Eurostat monthly total consumption data for natural gas (indicator code 100900, product code 4100);
    - Eurostat production data for natural gas (indicator code 100100, product code 4100);
    - Eurostat annual data for the final energy consumption of motor spirit, automotive diesel oil and kerosene/jet fuels;
    - Eurostat monthly data on production of nuclear energy (indicator code 100100, product code 5100)
    - Eurostat monthly data for the internal market deliveries of motor spirit, automotive diesel oil and kerosene/jet fuels;
    - Monthly production data for crude steel production and blast furnace iron production of the World Steel Association;
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• Annex 1 – Detailed overview of methods and data sources used

Table 37 Methods and data used for CO_2 emissions from 1.A Fuel combustion

Source Category	1A	Fuel Combustion (Sectoral Approach)	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission differentials from other sources	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
BE	Emissions calculation based on activity data	Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5	1A4 & 1A5 from previous year
BG	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
CY	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
CZ	Emissions calculation based on activity data	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
DE	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
DK	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
EE	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
ES	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
FI	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
FR	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
UK	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
GR	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
HU	Emissions calculation based on activity data	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
IE	Emissions calculation based on activity data	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
IT	Emission differentials from other sources	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
LT	Emissions calculation based on activity data	Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5	1A4 & 1A5 from previous year
LU	Emissions calculation based on activity data	Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5	1A4 & 1A5 from previous year
LV	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
MT	Emission differentials from other sources	Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5	1A4 & 1A5 from previous year
NL	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
PL	Emissions calculation based on activity data	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
PT	Emissions calculation based on activity data	BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2013	trend to consumption data of previous year
RO	Emissions calculation based on activity data	Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels	trend to consumption data of previous year
SE	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
SI	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year
SK	Emissions calculation based on activity data	Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5	1A4 & 1A5 from previous year
HR	Emissions calculation based on activity data	Early national energy statistics (annual data)	trend to consumption data of previous year

Table 38 Methods and data used for CH4 and N2O emissions from 1.A Fuel combustion

Source Category	1A	Fuel Combustion		
Gas	CH4	N2O		
Member State	**Projection Approach**		**Data Sources**	**Notes**
AT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
BE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
BG	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
CY	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
CZ	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
DE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
DK	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
EE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
ES	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
FI	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
FR	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
GB	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
GR	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
HU	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
IE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
IT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LU	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LV	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
MT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
NL	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
PL	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
PT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
RO	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SI	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SK	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
HR	Data from previous years		UNFCCC 2013 submission	

Table 39 Methods and data used for CO_2, CH_4 and N_2O emissions for 1.A.1 Energy industries

Source Category	1A1	1. Energy Industries	
Gas	CO2	CH4	N2O
Member State	**Projection Approach**		**Data Sources**
AT	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
BE	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
BG	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
CY	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
CZ	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
DE	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
DK	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
EE	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
ES	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
FI	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
FR	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
UK	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
GR	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
HU	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
IE	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
IT	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
LT	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
LU	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
LV	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
MT	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
NL	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
PL	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
PT	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
RO	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
SE	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
SI	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
SK	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c
HR	Total from other source categories		Proxy-inventory source categories 1A1a, 1A1b and 1A1c

Table 40 Methods and data used for CO_2 emissions from 1A1a Public electricity and heat production

Source Category	1A1a	a. Public Electricity and Heat Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
BG	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
CY	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
EE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
LU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
LV	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
MT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
NL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
PL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
RO	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
SE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
SI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	identification of power sector by Öko-Institut's analysis
SK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL activity code 1
HR	Emission trends (dynamics) from other sources	MS data on electricity generation	Total gross production from thermal power plants

Table 41 Methods and data used for CH_4 emissions from 1A1a Public electricity and heat production

Source Category	1A1a	a. Public Electricity and Heat Production	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
CY	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
CZ	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
DE	Data from previous years	UNFCCC 2013 submission	Extrapol. 2003-2011
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LV	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
MT	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
NL	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
PL	Data from previous years	UNFCCC 2013 submission	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 42 Methods and data used for N_2O emissions from 1A1a Public electricity and heat production

Source Category	1A1a	a. Public Electricity and Heat Production	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
CY	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
CZ	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
DE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
UK	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
GR	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LV	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
MT	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
NL	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
PL	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1a for CO2	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 43 Methods and data used for CO_2 emissions from 1A1b Petroleum refining

Source Category	1A1b	b. Petroleum Refining	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
EE	Data from previous years	UNFCCC 2013 submission	
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
RO	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 44 Methods and data used for CH_4 emissions from 1A1b Petroleum refining

Source Category	1A1b	b. Petroleum Refining	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
EE	Data from previous years	UNFCCC 2013 submission	
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
RO	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity Code 2
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 45 Methods and data used for N_2O emissions from 1A1b Petroleum refining

Source Category	1A1b	b. Petroleum Refining	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	
BG	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
DE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
DK	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
EE	Data from previous years	UNFCCC 2013 submission	
ES	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
FI	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
GR	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
HU	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
IE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IT	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
LT	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
SE	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
SI	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
SK	Emission trends (dynamics) from other sources	Proxy-inventory source categories 1A1b for CO2	
HR	Data from previous years	UNFCCC 2013 submission	

Table 46 Methods and data sources used for CO_2, CH_4 and N_2O emissions from 1A1c Manufacture of solid fuels and other energy industries

Source Category	1A1c	c. Manufacture of Solid Fuels and Other Energy Industries
Gas	CO2	
Member State	**Projection Approach**	**Data Sources**
AT	Data from previous years	UNFCCC 2013 submission
BE	Data from previous years	UNFCCC 2013 submission
BG	Data from previous years	UNFCCC 2013 submission
CY	Data from previous years	UNFCCC 2013 submission
CZ	Data from previous years	UNFCCC 2013 submission
DE	Data from previous years	UNFCCC 2013 submission
DK	Data from previous years	UNFCCC 2013 submission
EE	Data from previous years	UNFCCC 2013 submission
ES	Data from previous years	UNFCCC 2013 submission
FI	Data from previous years	UNFCCC 2013 submission
FR	Data from previous years	UNFCCC 2013 submission
UK	Data from previous years	UNFCCC 2013 submission
GR	Data from previous years	UNFCCC 2013 submission
HU	Data from previous years	UNFCCC 2013 submission
IE	Data from previous years	UNFCCC 2013 submission
IT	Data from previous years	UNFCCC 2013 submission
LT	Data from previous years	UNFCCC 2013 submission
LU	Data from previous years	UNFCCC 2013 submission
LV	Data from previous years	UNFCCC 2013 submission
MT	Data from previous years	UNFCCC 2013 submission
NL	Data from previous years	UNFCCC 2013 submission
PL	Data from previous years	UNFCCC 2013 submission
PT	Data from previous years	UNFCCC 2013 submission
RO	Data from previous years	UNFCCC 2013 submission
SE	Data from previous years	UNFCCC 2013 submission
SI	Data from previous years	UNFCCC 2013 submission
SK	Data from previous years	UNFCCC 2013 submission
HR	Data from previous years	UNFCCC 2013 submission

Table 47 Methods and data used for CO_2 emissions from 1.A.2 Manufacturing industries and construction

Source Category	1A2	2. Manufacturing Industries and Construction	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
BG	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
CY	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
EE	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
LU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
LV	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
MT	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
NL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
PL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
RO	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
SE	Data from previous years	UNFCCC 2011 submission	Average 2009-2011
SI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
SK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-20012	Main activity codes 1 (w/o power), 3, 4, 5, 6, 7, 8, 9, 99
HR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011

Table 48 Methods and data used for CH_4 emissions from 1.A.2 Manufacturing industries and construction

Source Category	1A2	2. Manufacturing Industries and Construction	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CZ	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
DE	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
ES	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
LU	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
LV	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
MT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
NL	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
PL	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
SE	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
SI	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011

Table 49 Methods and data used for N_2O emissions from 1.A.2 Manufacturing industries and construction

Source Category	1A2	2. Manufacturing Industries and Construction	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CZ	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DE	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
DK	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
EE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
ES	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
FI	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
FR	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
UK	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
IE	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
IT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
LT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
LU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LV	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
MT	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Emission trends (dynamics) from other sources	Proxy inventory source categories 1A2 for CO2	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011

Table 50 Methods and data used for CO_2 emissions from 1.A.3 Transport

Source Category	1A3 Transport		
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
BE	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
BG	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	missing values for Dec 2012 (all fuels) replaced own guess (constant extrapolation)
CY	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	missing values for Dec 2012 (all fuels) replaced own guess (constant extrapolation)
CZ	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
DE	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
DK	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
EE	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	missing values for Dec 2012 (all fuels) and zero value for Oct 2012 (aviation fuels) replaced own guess (constant extrapolation)
ES	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
FI	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
FR	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
UK	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
GR	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
HU	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
IE	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
IT	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
LT	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
LU	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
LV	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
MT	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	zero values (aviation fuels) for May-July 2012 replaced own guess (constant extrapolation)
NL	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
PL	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
PT	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
RO	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
SE	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
SI	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	zero value (motor gasoline) for July 2012 replaced own guess (constant extrapolation)
SK	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	
HR	Emissions calculation based on activity data	Eurostat monthly data on observed gross inland deliveries of motor gasoline, transport diesel and aviation fuels	

Table 51 Methods and data used for CH_4 and N_2O emissions from 1.A.3 Transport

Source Category	1A3	Transport		
Gas	CH4	N2O		
Member State	**Projection Approach**		**Data Sources**	**Notes**
AT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
BE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
BG	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
CY	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
CZ	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
DE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
DK	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
EE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
ES	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
FI	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
FR	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
UK	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
GR	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
HU	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
IE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
IT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LU	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
LV	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
MT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
NL	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
PL	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
PT	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
RO	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SE	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SI	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
SK	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	
HR	Emission trends (dynamics) calculated for CO2 in same source category		CO2 projection in this report	

Table 52 Methods and data used for CO_2 emissions from 1.B.1 Fugitive emissions from solid fuels

Source Category	1B1	1. Solid Fuels	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	
BG	Data from previous years	UNFCCC 2013 submission	
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Primary Hard Coal Production (monthly data)	Indicator code 100100, product code 2111
DE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DK	Data from previous years	UNFCCC 2013 submission	
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	
FR	Data from previous years	UNFCCC 2013 submission	
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	
HU	Data from previous years	UNFCCC 2013 submission	
IE	Data from previous years	UNFCCC 2013 submission	
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Data from previous years	UNFCCC 2013 submission	
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Data from previous years	UNFCCC 2013 submission	
RO	Data from previous years	UNFCCC 2013 submission	
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Activity trends (dynamics) from other sources	Eurostat Primary Lignite Production (monthly data)	Indicator code 100100, product code 2210
SK	Data from previous years	UNFCCC 2013 submission	
HR	Data from previous years	UNFCCC 2013 submission	

Table 53 Methods and data used for CH_4 emissions from 1.B.1 Fugitive emissions from solid fuels

Source Category	1B1	1. Solid Fuels	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Activity trends (dynamics) from other sources	Eurostat Primary Lignite Production (monthly data)	Indicator code 100100, product code 2210
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Primary Hard Coal Production (monthly data)	Indicator code 100100, product code 2111
DE	Activity trends (dynamics) from other sources	Eurostat Primary Hard Coal Production (monthly data)	Indicator code 100100, product code 2111
DK	Data from previous years	UNFCCC 2013 submission	
EE	Activity trends (dynamics) from other sources	UNFCCC 2013 submission	
ES	Activity trends (dynamics) from other sources	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Activity trends (dynamics) from other sources	Eurostat Primary Hard Coal Production (monthly data)	Indicator code 100100, product code 2111
GR	Activity trends (dynamics) from other sources	Eurostat Primary Lignite Production (monthly data)	Indicator code 100100, product code 2210
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Data from previous years	UNFCCC 2013 submission	
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Data from previous years	UNFCCC 2013 submission	
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Activity trends (dynamics) from other sources	Eurostat Primary Hard Coal Production (monthly data)	Indicator code 100100, product code 2111
PT	Data from previous years	UNFCCC 2013 submission	
RO	Activity trends (dynamics) from other sources	Eurostat Primary Lignite Production (monthly data)	Indicator code 100100, product code 2210
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Activity trends (dynamics) from other sources	Eurostat Primary Lignite Production (monthly data)	Indicator code 100100, product code 2210
HR	Data from previous years	UNFCCC 2013 submission	

Table 54 Methods and data used for CO_2 emissions from 1B2a Fugitive emissions from oil

Source Category	1B2a	a. Oil	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
BE	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
DE	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
DK	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
FR	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
IE	Data from previous years	UNFCCC 2013 submission	
IT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LT	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
SE	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
SI	Data from previous years	UNFCCC 2013 submission	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 55 Methods and data used for CH_4 emissions from 1B2a Fugitive emissions from oil

Source Category	1B2a	a. Oil	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
DE	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
DK	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
EE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
ES	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
FI	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
FR	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
IE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IT	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
LT	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
PT	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	Main activity code 2
RO	Activity trends (dynamics) from other sources	Eurostat Primary Crude Oil Production (monthly data)	Indicator code 100100, product code 3100
SE	Data from previous years	CITL data (operator holding accounts) 2008-2012	Main activity code 2
SI	Data from previous years	UNFCCC 2013 submission	
SK	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
HR	Data from previous years	UNFCCC 2013 submission	

Table 56 Methods and data used for CO2 emissions from 1B2b Fugitive emissions from gas

Source Category	1B2b	b. Natural Gas	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DE	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
LT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LU	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
LV	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
MT	Data from previous years	UNFCCC 2013 submission	
NL	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 57 Methods and data used for CH_4 emissions from 1B2b Fugitive emissions from gas

Source Category	1B2b	b. Natural Gas	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
IE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IT	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
LT	Data from previous years	UNFCCC 2013 submission	
LU	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
LV	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Consumption (monthly data)	Indicator code 100900, product code 4100
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 58 Methods and data used for CO_2 emissions from 1B2c Venting

Source Category	1B2c	c. Venting	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
DE	Data from previous years	UNFCCC 2013 submission	
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	
ES	Emission trends (dynamics) from other sources	CITL data (operator holding account) 2008-2012	Main activity code 2
FI	Data from previous years	UNFCCC 2013 submission	
FR	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Data from previous years	UNFCCC 2013 submission	
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
SE	Data from previous years	UNFCCC 2013 submission	
SI	Data from previous years	UNFCCC 2013 submission	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 59 Methods and data used for CH_4 emissions from 1B2c Venting

Source Category	1B2c	c. Venting	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
DE	Data from previous years	UNFCCC 2013 submission	
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	
FR	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
SE	Data from previous years	UNFCCC 2013 submission	
SI	Data from previous years	UNFCCC 2013 submission	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 60 Methods and data used for CO_2 emissions from 1B2c Flaring

Source Category	1B2c c. flaring		
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
DE	Emission trends (dynamics) from other sources	CITL data (operator holding account) 2008-2012	Main activity code 2
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	
PT	Data from previous years	UNFCCC 2013 submission	
RO	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 61 Methods and data used for CH_4 emissions from 1B2c Flaring

Source Category	1B2c	c. flaring	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	
BE	Data from previous years	UNFCCC 2013 submission	
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
DE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
LT	Activity trends (dynamics) from other sources	Eurostat Crude Oil production Production (monthly data)	Indicator code 100100, product code 3100
LU	Data from previous years	UNFCCC 2013 submission	
LV	Data from previous years	UNFCCC 2013 submission	
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Data from previous years	UNFCCC 2013 submission	
PT	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	Eurostat Total Natural Gas Production (monthly data)	Indicator code 100100, product code 4100
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Data from previous years	UNFCCC 2013 submission	

Table 62 Methods and data used for CO_2 emissions from 2.A.1 Cement Production

Source Category	2A1	Cement Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
BG	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
CY	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
EE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
LU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
LV	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
MT	Data from previous year	UNFCCC 2013 Submission	Value of 2011
NL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
PL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
RO	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
HR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation

Table 63 Methods and data used for CO_2 emissions from 2.A.2 Lime Production

Source Category	2A2	Lime Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
BE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
BG	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
CY	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
CZ	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
DE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
DK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
EE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
ES	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
FR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
UK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
GR	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
IE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
IT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
LT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
LU	Data from previous year	UNFCCC 2013 Submission	Value of 2011
LV	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
MT	Data from previous year	UNFCCC 2013 Submission	Value of 2011
NL	Data from previous year	UNFCCC 2013 Submission	Value of 2011
PL	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
PT	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
RO	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SE	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
SK	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL data Main activity code 6 + scaling factor based on comparison inventory data - CITL data for 2005-2011
HR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation

Table 64 Methods and data used for CH_4 emissions from 2.A Mineral products

Source Category	2A	Mineral Products	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE			
DK			
EE			
ES			
FI			
FR			
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR			
HU			
IE			
IT			
LT			
LU			
LV			
MT			
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO			
SE			
SI			
SK			
HR			

Table 65 Methods and data used for CO_2 emissions from 2.B.1 Ammonia Production

Source Category	2B1	Ammonia Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU			
LV			
MT			
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT			
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE			
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous year	UNFCCC 2013 Submission	Value of 2011

Table 66 Methods and data used for N_2O emissions from 2.B.2 Nitric Acid Production

Source Category	2B2	Nitric Acid Production	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU			
LV			
MT			
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI			
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous year	UNFCCC 2013 Submission	Value of 2011

Table 67 Methods and data used for N_2O emissions from 2.B.3 Adipic Acid Production

Source Category	2B3	Adipic Acid Production	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES			
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK			
GR			
HU			
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT			
LU			
LV			
MT			
NL			
PL			
PT			
RO			
SE			
SI			
SK			
HR			

Table 68 Methods and data used for CH_4 emissions from 2.C Metal production

Source Category	2.C	2.C Metal Production	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG			
CY			
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT			
LU			
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT			
NL			
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT			
RO			
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI			
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR			

Table 69 Methods and data used for CO_2 emissions from 2.C Metal production

Source Category	2C	C. Metal Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
BE	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
BG	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
CY	Data from previous years	CRF 2C	
CZ	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
DE	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
DK	Data from previous years	CRF 2C	
EE	Data from previous years	CRF 2C	
ES	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
FI	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
FR	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
UK	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
GR	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
HU	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
IE	Data from previous years	CRF 2C	
IT	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
LT	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
LU	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
LV	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
MT	Data from previous years	CRF 2C	
NL	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
PL	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
PT	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
RO	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
SE	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
SI	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
SK	Complex calculation	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year
HR	Data from previous years	CRF 2C and CRF 2C1 proxy	CRF 2C1 proxy + (CRF 2C - CRF 2C1)previous year

Table 70 Methods and data used for N_2O emissions from 2.C Metal production

Source Category	2.C	2.C Metal Production	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR			
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR			
HU			
IE			
IT			
LT			
LU			
LV			
MT			
NL			
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT			
RO			
SE			
SI			
SK			
HR			

Table 71 Methods and data used for CO_2 emissions from 2.C.1 Iron and steel production

Source Category	2C1	1. Iron and Steel Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL categories coke, ore,iron, bf-gas
BE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
BG	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
CY	Data from previous years	UNFCCC 2013 submission	
CZ	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
DE	Activity trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL categories coke, ore,iron, bf-gas
DK	Data from previous years	UNFCCC 2013 submission	
EE	Data from previous years	UNFCCC 2013 submission	
ES	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
FI	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL categories coke, ore,iron, bf-gas
FR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
UK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
GR	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HU	Emission trends (dynamics) from other sources	CITL data (operator holding accounts) 2008-2012	CITL categories iron and bf-gas
IE	Data from previous years	UNFCCC 2013 submission	
IT	Activity trends (dynamics) from other sources	World Steel Association crude steel production (monthly data)	
LT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LU	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
LV	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
MT	Data from previous years	UNFCCC 2013 submission	
NL	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
PL	Activity trends (dynamics) from other sources	World Steel Association blast furnace production (monthly data)	
PT	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
RO	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SE	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SI	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
SK	Data from previous years	UNFCCC 2013 submission	Average 2009-2011
HR	Activity trends (dynamics) from other sources	World Steel Association crude steel production (monthly data)	

Table 72 Methods and data used for CO_2 emissions from 2.D Other production

Source Category	2.D	2.D Other Production	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ			
DE			
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE			
ES			
FI			
FR			
UK			
GR			
HU			
IE			
IT			
LT			
LU			
LV			
MT			
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO			
SE			
SI			
SK			
HR			

Table 73 Methods and data used for SF6 emissions

Source Category	2 2. Industrial Processes		
Gas	SF6		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
BE	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
BG	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
CY	Data from previous years	UNFCCC 2011 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2011 submission	Value of 2011
DE	Data from previous years	UNFCCC 2011 submission	Value of 2011
DK	Data from previous years	UNFCCC 2011 submission	Value of 2011
EE	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
ES	Data from previous years	UNFCCC 2011 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
FR	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
UK	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
GR	Data from previous years	UNFCCC 2011 submission	Value of 2011
HU	Data from previous years	UNFCCC 2011 submission	Value of 2011
IE	Data from previous years	UNFCCC 2011 submission	Value of 2011
IT	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
LT	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
LV	Data from previous years	UNFCCC 2011 submission	Value of 2011
MT	Data from previous years	UNFCCC 2011 submission	Value of 2011
NL	Data from previous years	UNFCCC 2011 submission	Value of 2011
PL	Data from previous years	UNFCCC 2011 submission	Value of 2011
PT	Data from previous years	UNFCCC 2011 submission	Value of 2011
RO	Data from previous years	UNFCCC 2011 submission	Value of 2011
SE	Data from previous years	UNFCCC 2011 submission	Value of 2011
SI	Data from previous years	UNFCCC 2011 submission	Value of 2011
SK	Extrapolation from previous years	UNFCCC 2011 submission	linear trend projection via minimum square deviation
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 74 Methods and data used for HFC emissions

Source Category	2 2. Industrial Processes		
Gas	HFC		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE	Data from previous years	UNFCCC 2013 submission	Value of 2011
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation

Table 75 Methods and data used for PFC emissions

Source Category	2 2. Industrial Processes		
Gas	PFC		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE	Data from previous years	UNFCCC 2013 submission	Value of 2011
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 76 Methods and data used for CO_2 emissions from 2.G Other

Source Category	2.G	2.G Other	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ			
DE			
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE			
ES			
FI			
FR			
UK			
GR			
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT			
LT			
LU			
LV			
MT			
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT			
RO			
SE			
SI			
SK			
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 77 Methods and data used for CH_4 emissions from 2.G Other

Source Category	2.G	2.G Other		
Gas	CH4	N2O		
Member State	**Projection Approach**		**Data Sources**	**Notes**
AT				
BE				
BG				
CY				
CZ				
DE				
DK				
EE				
ES				
FI				
FR				
UK				
GR				
HU				
IE				
IT				
LT				
LU				
LV				
MT				
NL	Data from previous years		UNFCCC 2013 submission	Value of 2011
PL				
PT				
RO				
SE				
SI				
SK				
HR				

Table 78 Methods and data used for N_2O emissions from 2.G Other

Source Category	2.G 2.G Other		
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT BE BG CY CZ DE DK EE ES FI FR UK GR HU IE IT LT LU LV MT NL PL PT RO SE SI SK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HR			

Table 79 Methods and data used for CO_2 emissions from 3 Solvent and other product use

Source Category	3 3. Solvent and Other Product Use		
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
DK	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
IT	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT			
NL	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
SI			
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation

Table 80 Methods and data used for N_2O emissions from 3 Solvent and other product used

Source Category	3 3. Solvent and Other Product Use		
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY			
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO			
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 81 Methods and data used for CH_4 emissions from 4.A. Enteric fermentation and from 4.B Manure management

Source Category	4.A, 4.B A. Enteric Fermentation, 4.B Manure Management:		
Gas	CH4	Dairy cows, Live bovine animals, Sheep, Goats, Swine	
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Emissions calculation based on activity data	Livestock activity data (Live bovine animals, Dairy Cows, Sheep, Goats, Swine) from Eurostat, IEF from UNFCCC 2011 inventories	Live bovine animals, Dairy Cows, Sheep, Goats, Swine: Eurostat December survey
BE			Dairy cows: Eurostat December survey; Live bovine animals, Goats, Swine: Eurostat June survey; Sheep: Eurostat June survey plus adjustment factor
BG			Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey
CY			Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey plus adjustment factor
CZ			Dairy cows, Live bovine animals: Eurostat December survey plus adjustment factor; Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey with extrapolation for 2010 plus adjustment factor for Goats
DE			Dairy cows, Live bovine animals, Sheep: Eurostat June survey; Swine: Eurostat December survey plus adjustment factor; Goats: Eurostat December survey extrapolation for 2010
DK			Dairy cows, Swine: Eurostat June survey; Live bovine animals: Eurostat December survey; Sheep: Eurostat December survey with extrapolation for 2010 plus adjustment factor, Goats: no population data available, extrapolation of UNFCCC CH4 emissions
EE			Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey with extrapolation for 2010 plus adjustment factor
ES			Dairy cows: Eurostat June survey; Live bovine animals, Sheep, Goats, Swine: Eurostat December survey
FI			Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey with extrapolation for 2010 plus adjustment factor for Sheep
FR			Dairy cows, Sheep, Goats: Eurostat December survey; Live bovine animals, Swine: Eurostat June survey plus adjustment factor for Swine
UK			Dairy cows, Live bovine animals, Swine: Eurostat June survey; Sheep: Eurostat December survey plus adjustment factor; Goats: no population data available, extrapolation of UNFCCC CH4 emissions
GR			Dairy cows, Live bovine animals, Goats, Sheep Eurostat December survey; Swine Eurostat December survey plus adjustment factor;
HU			Dairy cows, Live bovine animals, Sheep, Swine: Eurostat December survey; Goats: Eurostat December survey plus adjustment factor
IE			Dairy cows: Eurostat December survey; Live bovine animals: Eurostat June survey; Swine, Sheep, Goats: Eurostat June survey
IT			Dairy cows, Sheep, Goats, Swine: Eurostat December survey; Live bovine animals: Eurostat June survey
LT			Dairy cows, Live bovine animals, Goats, Sheep, Swine: Eurostat December survey
LU			Dairy cows: Eurostat December survey plus adjustment factor; Live bovine animals, Swine, Sheep, Goats: Eurostat December survey
LV			Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey with extrapolation for 2010 for Goats
MT			Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey
NL			Dairy cows, Swine: Eurostat June survey; Live bovine animals, Sheep: Eurostat December survey; Goats: Eurostat December survey plus adjustment factor
PL			Dairy cows: Eurostat June survey; Live bovine animals, Goats, Swine: Eurostat December survey; Sheep: Eurostat December survey plus adjustment factor;
PT			Dairy cows, Live bovine animals, Sheep, Swine, Goats: Eurostat December survey
RO			Dairy cows, Live bovine animals, Sheep, Swine, Goats: Eurostat December survey
SE			Dairy cows, Live bovine animals, Swine: Eurostat June survey; Sheep: Eurostat December survey plus adjustment factor; Goats: no population data available, extrapolation of UNFCCC CH4 emissions
SI			Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey with extrapolation for 2010
SK			Dairy cows, Live bovine animals: Eurostat December survey plus adjustment factor; Swine, Sheep, Goats: Eurostat December survey
HR			Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey

Table 82 Methods and data used for CH_4 emissions from 4.A Enteric Fermentation, Horses

Source Category	4.A	A. Enteric Fermentation; Horses	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
MT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
NL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 83 Methods and data used for CH_4 emissions from 4.B Manure Management, Horses

Source Category	4.B	B. Manure Management; Horses	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE	Data from previous years	UNFCCC 2013 submission	Value of 2011
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 84 Methods and data used for CH_4 emissions from 4.A Enteric Fermentation, Mules and Asses

Source Category	4.A	A. Enteric Fermentation; Mules and Asses	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE	Data from previous years	UNFCCC 2013 submission	Value of 2011
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV			
MT			
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE			
SI			
SK			
HR			

Table 85 Methods and data used for CH_4 emissions from 4.B Manure Management, Mules and Asses

Source Category	4.B	B. Manure Management, Mules and Asses	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Data from previous years	UNFCCC 2013 submission	Value of 2011
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV			
MT			
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE			
SI			
SK			
HR			

Table 86 Methods and data used for CH_4 emissions from 4.A Enteric Fermentation, Poultry

Source Category	4.A	A. Enteric Fermentation; Poultry	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG			
CY			
CZ			
DE			
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE			
ES			
FI			
FR			
UK			
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT			
LT			
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV			
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL			
PL			
PT			
RO			
SE			
SI			
SK			
EU-27			

Table 87 Methods and data used for CH4 emissions from 4.B Manure Management, Poultry

Source Category	4.B	B. Manure Management; Poultry	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 88 Methods and data used for CH_4 emissions from 4.A Enteric Fermentation, Other

Source Category	4.A	A. Enteric Fermentation; Other	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG			
CY			
CZ			
DE			
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES			
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR			
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR			
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2012
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV			
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO			
SE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SI			
SK			
HR			

Table 89 Methods and data used for CH_4 emissions from 4.B Manure Management, Other

Source Category	4.B	B. Manure Management; Other	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG			
CY			
CZ			
DE			
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR			
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR			
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV			
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO			
SE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SI			
SK			
HR			

Table 96 Methods and data used for N_2O emissions from 4.B Manure management

Source Category	4.B	B. Manure Management	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
MT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HR	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011

Table 97 Methods and data used for CH_4 emissions from 4.C Rice cultivation

Source Category	4.C	C. Rice cultivation	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY			
CZ			
DE			
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU			
LV			
MT			
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SE			
SI			
SK			
HR			

Table 98 Methods and data used for CH_4 emissions from 4.D Agricultural soils

Source Category	4.D	D. Agricultural Soils	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT BE BG CY CZ DE DK EE ES FI FR UK GR HU IE IT LT LU LV MT NL PL PT RO SE SI SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR			

Table 99 Methods and data used for N_2O emissions from 4.D Agricultural soils

Source Category	4.D.	D. Agricultural Soils	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			by MS fraction of EU-28
BE			by MS fraction of EU-28
BG			by MS fraction of EU-28
CY			by MS fraction of EU-28
CZ			by MS fraction of EU-28
DE			by MS fraction of EU-28
DK			by MS fraction of EU-28
EE			by MS fraction of EU-28
ES			by MS fraction of EU-28
FI			by MS fraction of EU-28
FR			by MS fraction of EU-28
UK			by MS fraction of EU-28
GR			by MS fraction of EU-28
HU			by MS fraction of EU-28
IE			by MS fraction of EU-28
IT			by MS fraction of EU-28
LT			by MS fraction of EU-28
LU			by MS fraction of EU-28
LV			by MS fraction of EU-28
MT			by MS fraction of EU-28
NL			by MS fraction of EU-28
PL			by MS fraction of EU-28
PT			by MS fraction of EU-28
RO			by MS fraction of EU-28
SE			by MS fraction of EU-28
SI			by MS fraction of EU-28
SK			by MS fraction of EU-28
HR			by MS fraction of EU-28

Table 108 Methods and data used for CH_4 emissions from 4.F Field burning of agricultural residues

Source Category	4.F	F. Field Burning of Agricultural Residues	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ			
DE			
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR			
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU			
IE			
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT			
LU			
LV			
MT			
NL			
PL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE			
SI			
SK			
HR			

Table 109 Methods and data used for N_2O emissions from 4.F Field burning of agricultural residues

Source Category	4.F	F. Field Burning of Agricultural Residues	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE			
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ			
DE			
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK			
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU			
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU			
LV			
MT			
NL			
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE			
SI			
SK			
HR			

Table 90 Methods and data used for CO_2 emissions from 6.A Solid waste disposal on land

Source Category	6A	A. Solid Waste Disposal on Land		
Gas	CO2			
Member State	**Projection Approach**		**Data Sources**	**Notes**
AT BE BG CY CZ DE DK EE ES FI FR UK GR HU IE IT LT LU LV MT NL PL PT RO SE SI SK	Data from previous years		UNFCCC 2013 submission	constant value (trend extrapolation would lead to a negative value)
HR				

Table 91 Methods and data used for CH_4 emissions from 6.A Solid waste disposal on land

Source Category	6A	A. Solid Waste Disposal on Land	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CY	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
CZ	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
NL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PL	Data from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 92 Methods and data used for CH_4 emissions from 6.B Wastewater handling

Source Category	6B	B. Waste Water Handling	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Data from previous years	UNFCCC 2013 submission	Value of 2011
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 93 Methods and data used for N_2O emissions from 6.B Wastewater handling

Source Category	6B	B. Waste Water Handling	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY	Data from previous years	UNFCCC 2013 submission	Value of 2011
CZ	Data from previous years	UNFCCC 2013 submission	Value of 2011
DE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
ES	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 94 Methods and data used for CO_2 emissions from 6.C Waste incineration

Source Category	6C	C. Waste Incineration	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
DE			
DK			
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	Value of 2011
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU			
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL			
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO	Data from previous years	UNFCCC 2013 submission	Value of 2011
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR	Data from previous years	UNFCCC 2013 submission	Value of 2011

Table 95 Methods and data used for CH_4 emissions from 6.C Waste incineration

Source Category	6C	C. Waste Incineration	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG			
CY			
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE			
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU			
LV			
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL			
PL			
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO			
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI			
SK			
HR			

Table 96 Methods and data used for N_2O emissions from 6.C Waste incineration

Source Category	6C	C. Waste Incineration	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG			
CY			
CZ	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
DE			
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE			
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI			
FR	Data from previous years	UNFCCC 2013 submission	Value of 2011
UK	Data from previous years	UNFCCC 2013 submission	Value of 2011
GR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT	Data from previous years	UNFCCC 2013 submission	Value of 2011
LU			
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT	Data from previous years	UNFCCC 2013 submission	Value of 2011
NL			
PL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
RO			
SE	Data from previous years	UNFCCC 2013 submission	Value of 2011
SI	Data from previous years	UNFCCC 2013 submission	Value of 2011
SK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
HR			

Table 97 Methods and data used for CO_2 emissions from 6.D Other

Source Category	6D	D. Other	
Gas	CO2		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT			
BE			
BG			
CY			
CZ			
DE			
DK	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
EE			
ES			
FI			
FR			
UK			
GR			
HU			
IE			
IT			
LT			
LU			
LV			
MT			
NL			
PL			
PT			
RO			
SE			
SI			
SK			
HR			

Table 98 Methods and data used for CH_4 emissions from 6.D Other

Source Category	6D	D. Other	
Gas	CH4		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Data from previous years	UNFCCC 2013 submission	Value of 2011
BE	Data from previous years	UNFCCC 2013 submission	Value of 2011
BG			
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK			
GR			
HU			
IE			
IT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
LT			
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT			
NL	Data from previous years	UNFCCC 2013 submission	Value of 2011
PL			
PT			
RO			
SE			
SI			
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR			

Table 99 Methods and data used for N_2O emissions from 6.D Other

Source Category	6D	D. Other	
Gas	N2O		
Member State	**Projection Approach**	**Data Sources**	**Notes**
AT	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
BE			
BG	Data from previous years	UNFCCC 2013 submission	Value of 2011
CY			
CZ			
DE	Data from previous years	UNFCCC 2013 submission	Value of 2011
DK	Data from previous years	UNFCCC 2013 submission	Value of 2011
EE	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
ES	Data from previous years	UNFCCC 2013 submission	Value of 2011
FI	Data from previous years	UNFCCC 2013 submission	Value of 2011
FR	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
UK			
GR	Data from previous years	UNFCCC 2013 submission	Value of 2011
HU	Data from previous years	UNFCCC 2013 submission	Value of 2011
IE			
IT			
LT			
LU	Data from previous years	UNFCCC 2013 submission	Value of 2011
LV	Data from previous years	UNFCCC 2013 submission	Value of 2011
MT			
NL	Extrapolation from previous years	UNFCCC 2013 submission	linear trend projection via minimum square deviation
PL			
PT	Data from previous years	UNFCCC 2013 submission	Value of 2011
RO			
SE			
SI			
SK	Data from previous years	UNFCCC 2013 submission	Value of 2011
HR			

- **Annex 2 – Detailed results**

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**68 056.18**	**5 204.18**	**5 305.95**	**1 423.62**	**60.07**	**311.71**	**80 361.70**
1. Energy	**58 551.89**	**461.78**	**665.46**				**59 679.13**
A. Fuel Combustion (Sectoral Approach)	58 312.72	215.00	665.46				59 193.18
1. Energy Industries	12 599.19	8.34	104.34				12 711.87
2. Manufacturing Industries and Construction	14 466.73	14.21	151.06				14 631.99
3. Transport	21 286.59	13.22	210.97				21 510.79
4. Other Sectors	IE	IE	IE				IE,
5. Other	9 960.21	179.24	199.08				10 338.54
B. Fugitive Emissions from Fuels	239.17	246.78	IE,NA				485.94
1. Solid Fuels	IE,NA,NO	IE,NA,NO	IE				IE,NA,NO,
2. Oil and Natural Gas	239.17	246.78	IE				485.94
2. Industrial Processes	**9 329.07**	**18.45**	**47.80**	**1 423.62**	**60.07**	**311.71**	**11 190.72**
A. Mineral Products	3 023.98	NA	NE				3 023.98
B. Chemical Industry	629.64	18.36	47.80				695.80
C. Metal Production	5 675.45	0.09	NA		IE	IE	5 675.53
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**173.19**		**145.3057748**				**318.49**
4. Agriculture		**3 516.22**	**4 059.57**				**7 575.79**
A. Enteric Fermentation		3 183.77					3 183.77
B. Manure Management		322.57	936.70				1 259.28
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		9.229780507	3 122.73				3 131.96
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		0.65	0.14				0.79
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**2.03**	**1 207.72**	**387.81**				**1 597.57**
A. Solid Waste Disposal on Land	NA,NO	1 130.37	0.00				1 130.37
B. Waste-water Handling		23.30	265.97				289.27
C. Waste Incineration	2.03	0.00	0.01				2.04
D. Other	NA	54.05	121.84				175.8949561
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	80 361.70
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Austria provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4**.**

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
BELGIUM

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**101 657.15**	**6 315.07**	**7 077.75**	**2 063.76**	**116.69**	**126.47**	**117 356.90**
1. Energy	**93 595.13**	**679.78**	**640.06**				**94 914.97**
A. Fuel Combustion (Sectoral Approach)	93 489.64	262.40	640.06				94 392.09
1. Energy Industries	20 878.52	39.56	153.62				21 071.69
2. Manufacturing Industries and Construction	21 456.33	60.13	152.62				21 669.08
3. Transport	26 915.76	18.90	257.00				27 191.66
4. Other Sectors	IE	IE	IE				IE,
5. Other	24 239.03	143.81	76.82				24 459.67
B. Fugitive Emissions from Fuels	105.49	417.39	IE,NA,NO				522.88
1. Solid Fuels	NO	5.33	IE				5.33
2. Oil and Natural Gas	105.49	412.06	IE				517.55
2. Industrial Processes	**7 536.74**	**11.85**	**1 399.88**	**2 063.76**	**116.69**	**126.47**	**11 255.40**
A. Mineral Products	4 826.74	NA,NO	NE				4 826.74
B. Chemical Industry	1 944.22	1.79	1399.88				3 345.89
C. Metal Production	765.78	10.06	NO		IE	IE	775.84
D. Other Production	IE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**NA**		**210.7706058**				**210.77**
4. Agriculture		**4 844.51**	**4 526.62**				**9 371.14**
A. Enteric Fermentation		3 442.84					3 442.84
B. Manure Management		1 401.68	774.66				2 176.34
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA	3 751.96				3 751.96
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**525.28**	**778.92**	**300.43**				**1 604.63**
A. Solid Waste Disposal on Land	NA,NO	660.52	0.00				660.52
B. Waste-water Handling		92.82	300.37				393.19
C. Waste Incineration	525.28	NA	0.06				525.34
D. Other	NA	25.58	NA				25.57763591
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	117 356.90
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Belgium provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
BULGARIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**49 872.60**	**7 276.85**	**4 757.86**	**451.92**	**0.05**	**15.77**	**62 375.05**
1. Energy	**46 072.77**	**1 806.11**	**261.20**				**48 140.08**
A. Fuel Combustion (Sectoral Approach)	46 063.68	277.80	261.19				46 602.67
1. Energy Industries	32 199.78	7.52	124.49				32 331.79
2. Manufacturing Industries and Construction	3 692.33	10.39	15.83				3 718.56
3. Transport	9 268.86	15.56	91.47				9 375.89
4. Other Sectors	IE	IE	IE				IE,
5. Other	902.71	244.33	29.39				1 176.43
B. Fugitive Emissions from Fuels	9.09	1 528.31	0.01				1 537.41
1. Solid Fuels	NA,NO	963.56	IE				963.56
2. Oil and Natural Gas	9.09	564.74	IE				573.83
2. Industrial Processes	**3 767.89**	**0.00**	**234.44**	**451.92**	**0.05**	**15.77**	**4 470.07**
A. Mineral Products	3 158.63	NO	NE				3 158.63
B. Chemical Industry	543.61	0.00	234.44				778.04
C. Metal Production	65.66	NA,NO	NA		IE	IE	65.66
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**22.28**		**17.47907164**				**39.76**
4. Agriculture		**1 922.06**	**4 072.78**				**5 994.84**
A. Enteric Fermentation		1 249.54					1 249.54
B. Manure Management		530.37	497.75				1 028.12
C. Rice Cultivation		117.85					117.85
D. Agricultural Soils(3)		NA,NO	3 563.19				3 563.19
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		24.29	11.85				36.14
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**9.66**	**3 548.69**	**171.96**				**3 730.31**
A. Solid Waste Disposal on Land	NO	2 868.15	0.00				2 868.15
B. Waste-water Handling		673.50	160.54				834.04
C. Waste Incineration	9.66	NO	3.64				13.30
D. Other	NO	7.03	7.78				14.812422
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	62 375.05
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy y estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
CYPRUS

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**7 056.07**	**904.84**	**458.07**	**126.63**	**NA,NE,NO,**	**0.00**	**8 545.61**
1. Energy	**6 504.08**	**15.15**	**16.97**				**6 536.20**
A. Fuel Combustion (Sectoral Approach)	6 504.08	15.15	16.97				6 536.20
1. Energy Industries	3 528.81	2.87	8.47				3 540.15
2. Manufacturing Industries and Construction	489.82	0.76	1.93				492.52
3. Transport	2 085.86	8.23	5.60				2 099.68
4. Other Sectors	IE	IE	IE				IE,
5. Other	399.59	3.29	0.98				403.86
B. Fugitive Emissions from Fuels	NA,NE,NO,	NA,NE,NO,	NA,NO				NA,NE,NO,
1. Solid Fuels	NA,NO	NA,NO	IE				IE,NA,NO,
2. Oil and Natural Gas	NA,NE,NO	NA,NE,NO	IE				IE,NA,NE,NO,
2. Industrial Processes	**551.99**	**0.00**	**0.00**	**126.63**	**NA,NO**	**0.00**	**678.62**
A. Mineral Products	551.99	NA,NE	NE				551.99
B. Chemical Industry	0.00	0.00	0.00				0.00
C. Metal Production	NA,NO	NA,NO	NA		IE	IE	IE,NA,NO,
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**NE**		**NE**				**NE,**
4. Agriculture		**299.04**	**417.25**				**716.29**
A. Enteric Fermentation		184.84					184.84
B. Manure Management		113.67	149.74				263.41
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		NA,NE	267.02				267.02
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		0.53	0.48				1.01
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**NA,NE,NO,**	**590.65**	**23.85**				**614.50**
A. Solid Waste Disposal on Land	NA,NE,NO	565.38	0.00				565.38
B. Waste-water Handling		25.27	23.85				49.12
C. Waste Incineration	NA	NA	NA				NA,
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	8 545.61
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
CZECH REPUBLIC

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**108 803.91**	**10 289.33**	**7 373.95**	**1 130.42**	**29.43**	**34.55**	**127 661.58**
1. Energy	**98 649.59**	**4 548.97**	**1 077.26**				**104 275.82**
A. Fuel Combustion (Sectoral Approach)	98 377.98	530.78	1 077.22				99 985.98
1. Energy Industries	52 703.91	20.56	255.55				52 980.02
2. Manufacturing Industries and Construction	17 224.57	47.96	89.40				17 361.93
3. Transport	16 667.19	25.35	669.74				17 362.27
4. Other Sectors	IE	IE	IE				IE,
5. Other	11 782.32	436.91	62.53				12 281.76
B. Fugitive Emissions from Fuels	271.61	4 018.19	0.04				4 289.84
1. Solid Fuels	259.44	3 334.03	IE				3 593.47
2. Oil and Natural Gas	12.17	684.16	IE				696.33
2. Industrial Processes	**9 740.24**	**83.43**	**157.62**	**1 130.42**	**29.43**	**34.55**	**11 175.68**
A. Mineral Products	3 573.79	3.419027806	NE				3 577.21
B. Chemical Industry	552.95	24.02	157.62				734.59
C. Metal Production	5 613.50	55.98	NA		IE	IE	5 669.49
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**226.71**		**232.5**				**459.21**
4. Agriculture		**2 339.93**	**5 698.23**				**8 038.16**
A. Enteric Fermentation		1 978.52					1 978.52
B. Manure Management		361.40	646.32				1 007.73
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA,NE	5 051.90				5 051.90
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**187.37**	**3 317.00**	**208.34**				**3 712.71**
A. Solid Waste Disposal on Land	NA,NO	2 800.94	0.00				2 800.94
B. Waste-water Handling		516.06	204.54				720.59
C. Waste Incineration	187.37	0.00	3.81				191.17
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	127 661.58
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
GERMANY

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**811 716.27**	**47 333.67**	**57 214.43**	**9 176.67**	**152.99**	**3 315.68**	**928 909.70**
1. Energy	**758 098.88**	**11 296.79**	**5 738.31**				**775 133.97**
A. Fuel Combustion (Sectoral Approach)	756 772.21	3 125.62	5 738.10				765 635.93
1. Energy Industries	355 155.49	2 096.64	2 928.49				360 180.61
2. Manufacturing Industries and Construction	111 142.08	155.72	781.88				112 079.68
3. Transport	152 830.79	150.89	1 365.18				154 346.85
4. Other Sectors	IE	IE	IE				IE,
5. Other	137 643.85	722.37	662.56				139 028.78
B. Fugitive Emissions from Fuels	1 326.67	8 171.17	0.20				9 498.04
1. Solid Fuels	1.65	2 350.87	IE				2 352.51
2. Oil and Natural Gas	1 325.02	5 820.30	IE				7 145.32
2. Industrial Processes	**52 111.34**	**5.23**	**3 472.74**	**9 176.67**	**152.99**	**3 315.68**	**68 234.64**
A. Mineral Products	19 097.00	NA	NE				19 097.00
B. Chemical Industry	16 680.45	0.57	3457.18				20 138.20
C. Metal Production	16 333.89	4.65	15.56		IE	IE	16 354.11
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**1506.05**		**313.2123363**				**1819.26**
4. Agriculture		**25 756.48**	**44 957.46**				**70 713.94**
A. Enteric Fermentation		20 732.50					20 732.50
B. Manure Management		5 023.98	2 812.34				7 836.32
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA,NO	42 145.12				42 145.12
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**NO,**	**10 275.17**	**2 732.72**				**13 007.89**
A. Solid Waste Disposal on Land	NO	9 678.00	0.00				9 678.00
B. Waste-water Handling		60.94	2 409.61				2 470.55
C. Waste Incineration	NO	NO	NO				NO,
D. Other	NO	536.23	323.11				859.345528
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	928 909.70
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Germany provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
DENMARK

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**39 985.46**	**5 486.47**	**6 004.83**	**743.53**	**11.06**	**73.19**	**52 304.54**
1. Energy	**38 818.16**	**457.94**	**327.01**				**39 603.12**
A. Fuel Combustion (Sectoral Approach)	38 526.38	337.92	326.45				39 190.74
1. Energy Industries	16 743.79	205.02	101.92				17 050.72
2. Manufacturing Industries and Construction	4 189.48	13.59	34.07				4 237.13
3. Transport	12 920.33	13.75	138.05				13 072.13
4. Other Sectors	IE	IE	IE				IE,
5. Other	4 672.78	105.56	52.42				4 830.75
B. Fugitive Emissions from Fuels	291.78	120.03	0.56				412.37
1. Solid Fuels	NA,NO	NA,NO	IE				IE,NA,NO,
2. Oil and Natural Gas	291.78	120.03	IE				411.81
2. Industrial Processes	**997.28**	**0.00**	**0.00**	**743.53**	**11.06**	**73.19**	**1 825.06**
A. Mineral Products	959.89	IE,NA	NE				959.89
B. Chemical Industry	2.20	0.00	0.00				2.20
C. Metal Production	NA,NO	NA,NO	NO		IE	IE	IE,NA,NO,
D. Other Production	2.013	0.00	0.00				2.013
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	33.18	NA	NA	IE	IE	IE	33.18
3. Solvent and Other Product Use	**150.62**		**16.32993912**				**166.95**
4. Agriculture		**4 195.23**	**5 537.37**				**9 732.60**
A. Enteric Fermentation		2 901.09					2 901.09
B. Manure Management		1 292.07	385.65				1 677.71
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA,NE	5 151.13				5 151.13
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		2.07	0.59				2.66
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**19.39**	**833.30**	**124.12**				**976.82**
A. Solid Waste Disposal on Land	NA,NE,NO	672.85	0.00				672.85
B. Waste-water Handling		76.10	79.46				155.56
C. Waste Incineration	NO	0.01	0.27				0.29
D. Other	19.39	84.33	44.39				148.1186945
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	52 304.54
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Denmark provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
ESTONIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**18 842.79**	**972.74**	**1 023.18**	**159.38**	**NA,NE,NO,**	**2.13**	**21 000.22**
1. Energy	**17 955.78**	**196.27**	**97.55**				**18 249.60**
A. Fuel Combustion (Sectoral Approach)	17 955.78	117.61	97.55				18 170.94
1. Energy Industries	13 560.28	12.38	30.14				13 602.79
2. Manufacturing Industries and Construction	625.60	1.65	3.25				630.50
3. Transport	2 650.44	5.19	21.96				2 677.59
4. Other Sectors	IE	IE	IE				IE,
5. Other	1 119.46	98.39	42.20				1 260.05
B. Fugitive Emissions from Fuels	NO,	78.66	NO				78.66
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	NO	78.66	IE				78.66
2. Industrial Processes	**873.05**	**0.00**	**0.00**	**159.38**	**NA,NE,NO**	**2.13**	**1 034.56**
A. Mineral Products	873.05	NO	NE				873.05
B. Chemical Industry	0.00	0.00	0.00				0.00
C. Metal Production	NA,NO	NA,NO	NA		IE	IE	IE,NA,NO,
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**13.95**		**4.90234**				**18.86**
4. Agriculture		**464.10**	**818.03**				**1 282.13**
A. Enteric Fermentation		417.91					417.91
B. Manure Management		46.19	103.66				149.85
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NO	714.37				714.37
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**NO,**	**312.37**	**102.70**				**415.07**
A. Solid Waste Disposal on Land	NO	245.10	0.00				245.10
B. Waste-water Handling		5.98	34.85				40.83
C. Waste Incineration	NO	NO	NO				NO,
D. Other	NO	61.29	67.85				129.1414549
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	21 000.22
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Note: Estonia corrected its energy statistics in September and emissions in non-ETS sectors appear to be overestimated in the current report as a result. The EEA has not been able to incorporate Estonia's late data revision in the Proxy GHG estimates.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
SPAIN

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**280 033.40**	**33 394.05**	**24 038.83**	**9 026.63**	**313.45**	**394.35**	**347 200.71**
1. Energy	**263 224.94**	**2 577.21**	**2 318.34**				**268 120.49**
A. Fuel Combustion (Sectoral Approach)	260 926.42	1 444.68	2 318.32				264 689.42
1. Energy Industries	92 684.11	128.42	625.05				93 437.58
2. Manufacturing Industries and Construction	54 397.45	501.18	517.72				55 416.36
3. Transport	80 895.84	83.85	791.05				81 770.74
4. Other Sectors	IE	IE	IE				IE,
5. Other	32 949.02	731.23	384.50				34 064.74
B. Fugitive Emissions from Fuels	2 298.52	1 132.53	0.02				3 431.07
1. Solid Fuels	31.67	595.95	IE				627.62
2. Oil and Natural Gas	2 266.86	536.58	IE				2 803.43
2. Industrial Processes	**16 059.05**	**59.48**	**299.16**	**9 026.63**	**313.45**	**394.35**	**26 152.13**
A. Mineral Products	11 994.53	NA	NE				11 994.53
B. Chemical Industry	762.63	45.83	298.56				1 107.03
C. Metal Production	3 301.89	13.65	0.60		IE	IE	3 316.14
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**744.63**		**604.0058569**				**1348.64**
4. Agriculture		**17 530.95**	**19 550.65**				**37 081.60**
A. Enteric Fermentation		10 260.80					10 260.80
B. Manure Management		6 572.73	1 634.17				8 206.91
C. Rice Cultivation		300.39					300.39
D. Agricultural Soils(3)		IE,NA	17 844.01				17 844.01
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		397.03	72.46				469.49
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**4.78**	**13 226.40**	**1 266.67**				**14 497.85**
A. Solid Waste Disposal on Land	1.64	12 487.54	0.00				12 489.18
B. Waste-water Handling		706.57	1 258.66				1 965.24
C. Waste Incineration	3.14	0.53	7.97				11.63
D. Other	NA	31.76	0.04				31.80100719
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	347 200.71
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Spain provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**51 569.51**	**4 081.27**	**5 200.20**	**1 025.91**	**1.38**	**29.88**	**61 908.14**
1. Energy	**47 602.90**	**328.62**	**879.54**				**48 811.07**
A. Fuel Combustion (Sectoral Approach)	47 481.35	288.41	878.82				48 648.58
1. Energy Industries	20 047.34	22.43	326.87				20 396.64
2. Manufacturing Industries and Construction	8 501.98	14.13	122.23				8 638.34
3. Transport	12 733.32	36.13	172.31				12 941.76
4. Other Sectors	IE	IE	IE				IE,
5. Other	6 198.71	215.72	257.41				6 671.84
B. Fugitive Emissions from Fuels	121.55	40.22	0.72				162.49
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	121.55	40.22	IE				161.77
2. Industrial Processes	**3 929.22**	**8.95**	**134.97**	**1 025.91**	**1.38**	**29.88**	**5 130.31**
A. Mineral Products	1 197.27	NO	NE				1 197.27
B. Chemical Industry	712.66	0.00	134.97				847.64
C. Metal Production	2 019.29	8.95	NO		IE	IE	2 028.24
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**37.39**		**26.63334**				**64.02**
4. Agriculture		**1 846.49**	**3 997.48**				**5 843.96**
A. Enteric Fermentation		1 556.62					1 556.62
B. Manure Management		289.53	427.90				717.43
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NE,NO	3 569.48				3 569.48
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		0.33	0.10				0.43
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**IE,NO,**	**1 897.20**	**161.57**				**2 058.77**
A. Solid Waste Disposal on Land	NO	1 716.19	0.00				1 716.19
B. Waste-water Handling		116.46	96.52				212.98
C. Waste Incineration	IE	IE	IE				IE,
D. Other	NO	64.55	65.05				129.6003459
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	61 908.14
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Finland provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
FRANCE

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**361 042.86**	**50 774.56**	**59 995.22**	**16 690.85**	**182.23**	**465.89**	**489 151.61**
1. Energy	**341 116.59**	**2 682.08**	**4 108.11**				**347 906.79**
A. Fuel Combustion (Sectoral Approach)	338 460.01	1 567.23	4 089.14				344 116.39
1. Energy Industries	52 019.11	52.25	613.98				52 685.35
2. Manufacturing Industries and Construction	61 838.20	150.31	759.20				62 747.71
3. Transport	128 639.20	187.71	1 378.47				130 205.38
4. Other Sectors	IE	IE	IE				IE,
5. Other	95 963.50	1 176.96	1 337.49				98 477.95
B. Fugitive Emissions from Fuels	2 656.58	1 114.85	18.97				3 790.40
1. Solid Fuels	NA,NO	49.57	IE				49.57
2. Oil and Natural Gas	2 656.58	1 065.28	IE				3 721.86
2. Industrial Processes	**17 487.87**	**52.97**	**1 244.35**	**16 690.85**	**182.23**	**465.89**	**36 124.16**
A. Mineral Products	11 579.08	NA	NE				11 579.08
B. Chemical Industry	1 954.60	51.45	1244.35				3 250.40
C. Metal Production	3 954.19	1.52	NA		IE	IE	3 955.71
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**1032.93**		**87.91737974**				**1120.85**
4. Agriculture		**38 092.31**	**53 294.91**				**91 387.22**
A. Enteric Fermentation		28 099.56					28 099.56
B. Manure Management		9 850.54	4 709.27				14 559.82
C. Rice Cultivation		119.28					119.28
D. Agricultural Soils(3)		NA	48 576.78				48 576.78
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		22.93	8.85				31.78
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**1 405.46**	**9 947.19**	**1 259.93**				**12 612.59**
A. Solid Waste Disposal on Land	NA,NO	8 544.21	0.00				8 544.21
B. Waste-water Handling		1 209.63	766.84				1 976.48
C. Waste Incineration	1 405.46	23.03	66.81				1 495.30
D. Other	NA	170.32	426.28				596.6028093
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	489 151.61
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

France provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
GREECE

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**95 521.58**	**9 881.50**	**7 034.19**	**3 934.53**	**77.69**	**5.15**	**116 454.64**
1. Energy	**89 682.55**	**1 718.68**	**726.55**				**92 127.78**
A. Fuel Combustion (Sectoral Approach)	89 673.38	188.46	726.52				90 588.36
1. Energy Industries	55 499.53	16.10	177.72				55 693.35
2. Manufacturing Industries and Construction	6 486.03	8.79	36.76				6 531.58
3. Transport	17 973.70	72.77	232.72				18 279.19
4. Other Sectors	IE	IE	IE				IE,
5. Other	9 714.12	90.80	279.32				10 084.24
B. Fugitive Emissions from Fuels	9.18	1 530.22	0.03				1 539.42
1. Solid Fuels	IE,NO	1 345.93	IE				1 345.93
2. Oil and Natural Gas	9.18	184.29	IE				193.47
2. Industrial Processes	**5 673.74**	**0.42**	**475.47**	**3 934.53**	**77.69**	**5.15**	**10 167.00**
A. Mineral Products	3 809.74	NA,NO	NE				3 809.74
B. Chemical Industry	734.63	0.00	475.47				1 210.10
C. Metal Production	1 129.37	0.42	NA		IE	IE	1 129.79
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**162.29**		**155.2628524**				**317.56**
4. Agriculture		**3 776.93**	**5 293.76**				**9 070.69**
A. Enteric Fermentation		3 290.74					3 290.74
B. Manure Management		330.75	268.85				599.61
C. Rice Cultivation		123.90					123.90
D. Agricultural Soils(3)		NE,NO	5 012.73				5 012.73
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		31.54	12.18				43.71
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**2.99**	**4 385.48**	**383.14**				**4 771.61**
A. Solid Waste Disposal on Land	NA,NO	3 335.61	0.00				3 335.61
B. Waste-water Handling		1 047.56	379.78				1 427.35
C. Waste Incineration	2.99	0.03	0.85				3.87
D. Other	NA,NO	2.27	2.51				4.7833011
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	116 454.64
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Greece provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
HUNGARY

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**47 203.57**	**8 516.53**	**6 780.77**	**987.62**	**1.70**	**184.37**	**63 674.56**
1. Energy	**42 152.73**	**2 478.62**	**237.31**				**44 868.66**
A. Fuel Combustion (Sectoral Approach)	41 940.53	333.45	237.10				42 511.08
1. Energy Industries	14 887.34	24.34	77.42				14 989.11
2. Manufacturing Industries and Construction	3 662.74	9.54	9.99				3 682.27
3. Transport	10 109.56	22.20	100.38				10 232.14
4. Other Sectors	IE	IE	IE				IE,
5. Other	13 280.88	277.37	49.30				13 607.56
B. Fugitive Emissions from Fuels	212.20	2 145.17	0.21				2 357.58
1. Solid Fuels	IE,NA,NO	11.69	IE				11.69
2. Oil and Natural Gas	212.20	2 133.48	IE				2 345.68
2. Industrial Processes	**4 940.05**	**44.31**	**13.45**	**987.62**	**1.70**	**184.37**	**6 171.50**
A. Mineral Products	1 319.83	NA,NO	NE				1 319.83
B. Chemical Industry	543.93	39.95	13.45				597.33
C. Metal Production	2 124.74	4.36	NA		IE	IE	2 129.10
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	951.55	NO	NO	IE	IE	IE	951.55
3. Solvent and Other Product Use	**17.90**		**275.5559**				**293.46**
4. Agriculture		**2 878.99**	**5 949.64**				**8 828.63**
A. Enteric Fermentation		1 562.89					1 562.89
B. Manure Management		1 305.99	807.15				2 113.13
C. Rice Cultivation		10.12					10.12
D. Agricultural Soils(3)		NA,NO	5 142.49				5 142.49
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NA,NO	NA,NO				NA,NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**92.88**	**3 114.62**	**304.82**				**3 512.32**
A. Solid Waste Disposal on Land	NA,NO	2 830.08	0.00				2 830.08
B. Waste-water Handling		267.98	284.94				552.92
C. Waste Incineration	92.88	1.19	2.86				96.93
D. Other	NA	15.37	17.02				32.391
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	63 674.56
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**19 387.01**	**3 016.73**	**2 594.41**	**499.22**	**NA,NE,NO,**	**9.46**	**25 506.83**
1. Energy	**17 809.88**	**1 300.78**	**100.33**				**19 211.00**
A. Fuel Combustion (Sectoral Approach)	17 243.98	135.55	100.12				17 479.65
1. Energy Industries	5 727.02	4.36	16.38				5 747.76
2. Manufacturing Industries and Construction	3 293.72	6.36	8.11				3 308.19
3. Transport	5 702.53	13.64	47.62				5 763.79
4. Other Sectors	IE	IE	IE				IE,
5. Other	2 520.71	111.19	28.01				2 659.91
B. Fugitive Emissions from Fuels	565.91	1 165.23	0.21				1 731.35
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	565.91	1 165.23	IE				1 731.14
2. Industrial Processes	**1 511.42**	**0.00**	**0.00**	**499.22**	**NA,NO**	**9.46**	**2 020.10**
A. Mineral Products	991.53	NE,NO	NE				991.53
B. Chemical Industry	511.43	0.00	0.00				511.43
C. Metal Production	8.46	NE,NO	NO		IE	IE	8.46
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**65.20**		**31.80352**				**97.00**
4. Agriculture		**976.45**	**2 355.98**				**3 332.44**
A. Enteric Fermentation		812.87					812.87
B. Manure Management		163.58	195.07				358.66
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NO	2 160.91				2 160.91
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**0.51**	**739.50**	**106.29**				**846.29**
A. Solid Waste Disposal on Land	NA,NO	739.50	0.00				739.50
B. Waste-water Handling		0.00	106.29				106.29
C. Waste Incineration	0.51	NE,NO	NE,NO				0.51
D. Other	NO	NO	NO				NO,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	25 506.83
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Croatia provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
IRELAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**37 662.60**	**11 799.14**	**7 661.89**	**538.61**	**13.20**	**48.29**	**57 723.73**
1. Energy	**36 166.16**	**213.04**	**355.43**				**36 734.63**
A. Fuel Combustion (Sectoral Approach)	36 166.16	181.39	355.43				36 702.97
1. Energy Industries	12 483.85	5.51	146.36				12 635.72
2. Manufacturing Industries and Construction	4 316.13	6.97	14.76				4 337.86
3. Transport	10 664.62	17.10	105.33				10 787.05
4. Other Sectors	IE	IE	IE				IE,
5. Other	8 701.55	151.81	88.97				8 942.33
B. Fugitive Emissions from Fuels	IE,NO,	31.66	NO				31.66
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	IE,NO	31.66	IE				31.66
2. Industrial Processes	**1 370.45**	**0.00**	**0.00**	**538.61**	**13.20**	**48.29**	**1 970.56**
A. Mineral Products	1 370.45	NO	NE				1 370.45
B. Chemical Industry	0.00	0.00	0.00				0.00
C. Metal Production	NO	NO	NO		IE	IE	IE,NO,
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**72.49**		**NA,NE**				**72.49**
4. Agriculture		**10 738.63**	**7 162.15**				**17 900.78**
A. Enteric Fermentation		8 586.92					8 586.92
B. Manure Management		2 151.71	436.37				2 588.08
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NE,NO	6 725.78				6 725.78
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**53.49**	**847.47**	**144.31**				**1 045.28**
A. Solid Waste Disposal on Land	NA,NO	830.85	0.00				830.85
B. Waste-water Handling		16.62	143.75				160.37
C. Waste Incineration	53.49	0.00	0.57				54.06
D. Other	NO	NO	NO				NO,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	57 723.73
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
ITALY

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**390 595.68**	**35 299.19**	**26 711.00**	**9 956.51**	**1 454.54**	**332.77**	**464 349.69**
1. Energy	**372 019.02**	**6 457.00**	**4 684.67**				**383 160.69**
A. Fuel Combustion (Sectoral Approach)	369 744.25	1 580.03	4 673.24				375 997.52
1. Energy Industries	126 073.40	111.15	515.98				126 700.53
2. Manufacturing Industries and Construction	54 689.79	122.06	1 127.82				55 939.66
3. Transport	104 623.86	264.42	1 014.88				105 903.17
4. Other Sectors	IE	IE	IE				IE,
5. Other	84 357.20	1 082.41	2 014.56				87 454.17
B. Fugitive Emissions from Fuels	2 274.77	4 876.96	11.43				7 163.17
1. Solid Fuels	0.04	61.11	IE				61.15
2. Oil and Natural Gas	2 274.73	4 815.86	IE				7 090.59
2. Industrial Processes	**17 361.70**	**58.06**	**295.32**	**9 956.51**	**1 454.54**	**332.77**	**29 458.90**
A. Mineral Products	14 231.55	NA	NE				14 231.55
B. Chemical Industry	1 584.84	6.25	295.32				1 886.40
C. Metal Production	1 545.31	51.81	NA		IE	IE	1 597.12
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**980.44**		**523.4028375**				**1503.85**
4. Agriculture		**14 223.90**	**19 244.94**				**33 468.84**
A. Enteric Fermentation		10 667.78					10 667.78
B. Manure Management		1 993.05	3 768.69				5 761.74
C. Rice Cultivation		1 549.73					1 549.73
D. Agricultural Soils(3)		NA	15 472.01				15 472.01
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		13.34	4.24				17.58
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**234.51**	**14 560.24**	**1 962.67**				**16 757.42**
A. Solid Waste Disposal on Land	NA,NO	11 770.17	0.00				11 770.17
B. Waste-water Handling		2 733.94	1 936.74				4 670.68
C. Waste Incineration	234.51	50.59	25.93				311.03
D. Other	NA	5.54	NA				5.54179799
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	464 349.69
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Italy provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
LITHUANIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**14 253.57**	**3 155.71**	**4 380.36**	**237.50**	**NA,NE,NO,**	**9.30**	**22 036.44**
1. Energy	**11 467.88**	**466.78**	**101.46**				**12 036.12**
A. Fuel Combustion (Sectoral Approach)	11 459.88	208.08	101.43				11 769.39
1. Energy Industries	4 428.00	9.19	19.28				4 456.46
2. Manufacturing Industries and Construction	1 253.27	4.70	7.29				1 265.26
3. Transport	4 549.41	11.96	40.88				4 602.25
4. Other Sectors	IE	IE	IE				IE,
5. Other	1 229.21	182.22	33.99				1 445.42
B. Fugitive Emissions from Fuels	8.00	258.70	0.03				266.73
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	8.00	258.70	IE				266.70
2. Industrial Processes	**2 697.35**	**0.00**	**885.02**	**237.50**	**NA,NO**	**9.30**	**3 829.18**
A. Mineral Products	454.75	NA,NE,NO	NE				454.75
B. Chemical Industry	2 231.08	0.00	885.02				3 116.10
C. Metal Production	2.71	NO	NO		IE	IE	2.71
D. Other Production	8.815597451	0.00	0.00				8.815597451
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**81.34**		**3.65955**				**85.00**
4. Agriculture		**1 702.98**	**3 316.61**				**5 019.59**
A. Enteric Fermentation		1 209.36					1 209.36
B. Manure Management		493.62	255.98				749.60
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA,NE	3 060.63				3 060.63
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**6.99**	**985.95**	**73.61**				**1 066.55**
A. Solid Waste Disposal on Land	NA	883.91	0.00				883.91
B. Waste-water Handling		102.04	73.30				175.34
C. Waste Incineration	6.99	NA	0.31				7.30
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	22 036.44
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
LUXEMBOURG

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	02 equivalent (Gg)						
Total (Net Emissions) (1)	**10 762.02**	**424.54**	**460.43**	**69.15**	**0.18**	**8.18**	**11 724.50**
1. Energy	**10 180.68**	**56.40**	**110.43**				**10 347.51**
A. Fuel Combustion (Sectoral Approach)	10 180.62	16.59	110.43				10 307.64
1. Energy Industries	1 014.95	1.40	2.57				1 018.92
2. Manufacturing Industries and Construction	1 178.33	1.82	25.47				1 205.62
3. Transport	6 490.87	6.37	78.72				6 575.96
4. Other Sectors	IE	IE	IE				IE,
5. Other	1 496.47	6.99	3.67				1 507.14
B. Fugitive Emissions from Fuels	0.06	39.81	NA,NO				39.87
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	0.06	39.81	IE				39.87
2. Industrial Processes	**570.53**	**0.00**	**0.00**	**69.15**	**0.18**	**8.18**	**648.04**
A. Mineral Products	441.82	NO	NE				441.82
B. Chemical Industry	0.00	0.00	0.00				0.00
C. Metal Production	128.71	NA,NO	NA		IE	IE	128.71
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**10.81**		**5.096045387**				**15.91**
4. Agriculture		**328.38**	**326.57**				**654.94**
A. Enteric Fermentation		235.84					235.84
B. Manure Management		92.54	26.70				119.24
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		NA,NE	299.87				299.87
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**IE,NA,NO,**	**39.76**	**18.34**				**58.10**
A. Solid Waste Disposal on Land	NA,NO	29.50	0.00				29.50
B. Waste-water Handling		2.81	10.58				13.39
C. Waste Incineration	IE	IE	IE				IE,
D. Other	NO	7.45	7.76				15.21429152
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	11 724.50
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Luxembourg provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
LATVIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**7 811.64**	**1 612.66**	**1 732.46**	**82.97**	**NA,NE,NO,**	**12.45**	**11 252.19**
1. Energy	**7 118.64**	**336.83**	**115.96**				**7 571.43**
A. Fuel Combustion (Sectoral Approach)	7 118.62	212.65	115.96				7 447.24
1. Energy Industries	1 794.44	3.60	6.95				1 804.99
2. Manufacturing Industries and Construction	942.95	8.36	15.13				966.44
3. Transport	3 279.92	4.67	55.56				3 340.15
4. Other Sectors	IE	IE	IE				IE,
5. Other	1 101.32	196.02	38.32				1 335.66
B. Fugitive Emissions from Fuels	0.02	124.17	NA,NO				124.19
1. Solid Fuels	NO	NO	IE				IE,NO,
2. Oil and Natural Gas	0.02	124.17	IE				124.19
2. Industrial Processes	**656.32**	**0.02**	**0.00**	**82.97**	**NA,NO**	**12.45**	**751.76**
A. Mineral Products	649.21	IE,NA,NE,NO	NE				649.21
B. Chemical Industry	0.00	0.00	0.00				0.00
C. Metal Production	7.10	0.02	NO		IE	IE	7.12
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**36.35**		**4.96**				**41.31**
4. Agriculture		**775.36**	**1 559.69**				**2 335.05**
A. Enteric Fermentation		687.25					687.25
B. Manure Management		88.11	119.87				207.98
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA	1 439.82				1 439.82
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**0.33**	**500.46**	**51.84**				**552.62**
A. Solid Waste Disposal on Land	NA,NO	439.02	0.00				439.02
B. Waste-water Handling		59.45	49.62				109.07
C. Waste Incineration	0.33	NA,NO	0.01				0.34
D. Other	NA	1.99	2.20				4.194723
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	11 252.19
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
MALTA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**2 767.44**	**178.39**	**50.42**	**136.48**	**3.34**	**4.81**	**3 140.88**
1. Energy	**2 766.51**	**4.84**	**15.42**				**2 786.77**
A. Fuel Combustion (Sectoral Approach)	2 766.51	4.84	15.42				2 786.77
1. Energy Industries	2 052.34	1.68	4.96				2 058.98
2. Manufacturing Industries and Construction	53.08	0.04	0.13				53.25
3. Transport	556.47	2.65	9.88				569.00
4. Other Sectors	IE	IE	IE				IE,
5. Other	104.63	0.47	0.45				105.54
B. Fugitive Emissions from Fuels	NA,NE,NO,	NA,NE,NO,	NA,NO				NA,NE,NO,
1. Solid Fuels	NA,NO	NA,NO	IE				IE,NA,NO,
2. Oil and Natural Gas	NA,NE,NO	NE,NO	IE				IE,NA,NE,NO,
2. Industrial Processes	**0.25**	**0.00**	**0.00**	**136.48**	**3.34**	**4.81**	**144.87**
A. Mineral Products	0.15	NO	NE				0.15
B. Chemical Industry	0.10	0.00	0.00				0.10
C. Metal Production	NA,NO	NA,NO	NA		IE	IE	IE,NA,NO,
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**NA**		**0.7162612**				**0.72**
4. Agriculture		**51.05**	**20.36**				**71.40**
A. Enteric Fermentation		29.26					29.26
B. Manure Management		21.78	3.64				25.43
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		NA,NE	16.71				16.71
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NA,NO	NA,NO				NA,NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**0.69**	**122.50**	**13.93**				**137.11**
A. Solid Waste Disposal on Land	NA	119.53	0.00				119.53
B. Waste-water Handling		2.97	13.73				16.70
C. Waste Incineration	0.69	0.00	0.20				0.89
D. Other	NO	NO	NO				NO,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	3 140.88
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Malta provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
NETHERLANDS

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**168 525.18**	**14 978.21**	**9 186.36**	**2 132.84**	**182.85**	**146.63**	**195 152.07**
1. Energy	**162 089.14**	**2 418.52**	**610.18**				**165 117.84**
A. Fuel Combustion (Sectoral Approach)	160 374.14	1 650.60	610.18				162 634.92
1. Energy Industries	59 447.99	100.26	246.90				59 795.16
2. Manufacturing Industries and Construction	24 505.58	50.20	30.06				24 585.84
3. Transport	33 380.71	44.05	260.36				33 685.12
4. Other Sectors	IE	IE	IE				IE,
5. Other	43 039.85	1 456.09	72.87				44 568.81
B. Fugitive Emissions from Fuels	1 715.00	767.92	IE,NA,NO				2 482.92
1. Solid Fuels	718.80	19.87	IE				738.67
2. Oil and Natural Gas	996.20	748.05	IE				1 744.25
2. Industrial Processes	**6 313.48**	**281.46**	**1 165.80**	**2 132.84**	**182.85**	**146.63**	**10 223.07**
A. Mineral Products	1 227.21	NO	NE				1 227.21
B. Chemical Industry	3 446.14	245.88	1153.26				4 845.29
C. Metal Production	1 315.40	IE,NA,NO	NO		IE	IE	1 315.40
D. Other Production	18.825552	0.00	0.00				18.825552
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	305.89	35.58264897	12.536865	IE	IE	IE	354.01
3. Solvent and Other Product Use	**122.56**		**31.93558**				**154.50**
4. Agriculture		**9 209.90**	**6 888.16**				**16 098.06**
A. Enteric Fermentation		6 581.43					6 581.43
B. Manure Management		2 628.47	1 052.19				3 680.65
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NA	5 835.98				5 835.98
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**IE,NA,NO,**	**3 068.32**	**490.28**				**3 558.60**
A. Solid Waste Disposal on Land	NA,NO	2 847.79	0.00				2 847.79
B. Waste-water Handling		199.15	457.22				656.37
C. Waste Incineration	IE	IE	IE				IE,
D. Other	NA	21.38	33.06				54.439365
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	195 152.07
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The Netherlands provided its own proxy y estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
POLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**318 340.56**	**35 361.00**	**27 105.16**	**6 210.80**	**49.88**	**40.90**	**387 108.30**
1. Energy	**297 840.97**	**15 243.11**	**2 029.11**				**315 113.19**
A. Fuel Combustion (Sectoral Approach)	294 530.38	2 937.74	2 028.92				299 497.04
1. Energy Industries	169 823.62	85.68	835.30				170 744.60
2. Manufacturing Industries and Construction	30 008.87	75.10	155.00				30 238.97
3. Transport	44 794.67	98.86	554.12				45 447.65
4. Other Sectors	IE	IE	IE				IE,
5. Other	49 903.21	2 678.11	484.50				53 065.82
B. Fugitive Emissions from Fuels	3 310.59	12 305.37	0.19				15 616.15
1. Solid Fuels	1573.90	7 525.84	IE				9 099.74
2. Oil and Natural Gas	1 736.69	4 779.53	IE				6 516.22
2. Industrial Processes	**19 608.94**	**305.79**	**1 083.42**	**6 210.80**	**49.88**	**40.90**	**27 299.73**
A. Mineral Products	9 323.21	NA	NE				9 323.21
B. Chemical Industry	3 968.60	270.88	1064.65				5 304.12
C. Metal Production	5 974.11	34.91	18.78		IE	IE	6 027.80
D. Other Production	8.19907	0.00	0.00				8.19907
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	334.81	NO	NO	IE	IE	IE	334.81
3. Solvent and Other Product Use	**664.67**		**124**				**788.67**
4. Agriculture		**11 345.45**	**22 750.07**				**34 095.52**
A. Enteric Fermentation		8 869.62					8 869.62
B. Manure Management		2 460.16	4 926.75				7 386.90
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		NA	17 813.01				17 813.01
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		15.67	10.31				25.99
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**225.98**	**8 466.65**	**1 118.55**				**9 811.18**
A. Solid Waste Disposal on Land	NA,NO	7 331.94	0.00				7 331.94
B. Waste-water Handling		1 134.70	1 108.44				2 243.15
C. Waste Incineration	225.98	NA	10.11				236.08
D. Other	NO	NO	NO				NO,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	387 108.30
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Poland provided its own proxy y estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
PORTUGAL

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**51 307.78**	**12 335.42**	**4 470.47**	**1 661.43**	**0.00**	**42.89**	**69 817.99**
1. Energy	**47 715.80**	**738.78**	**564.36**				**49 018.94**
A. Fuel Combustion (Sectoral Approach)	46 700.32	274.28	561.93				47 536.52
1. Energy Industries	16 979.04	8.06	130.51				17 117.61
2. Manufacturing Industries and Construction	7 383.89	34.02	93.00				7 510.91
3. Transport	15 657.75	26.86	153.16				15 837.76
4. Other Sectors	IE	IE	IE				IE,
5. Other	6 679.64	205.34	185.27				7 070.25
B. Fugitive Emissions from Fuels	1 015.48	464.50	2.43				1 482.42
1. Solid Fuels	IE,NO	IE,NO	IE				IE,NO,
2. Oil and Natural Gas	1 015.48	464.50	IE				1 479.99
2. Industrial Processes	**3 359.81**	**40.72**	**52.41**	**1 661.43**	**0.00**	**42.89**	**5 157.26**
A. Mineral Products	3 183.89	17.05028156	NE				3 200.94
B. Chemical Industry	109.05	10.50	52.41				171.95
C. Metal Production	66.65	13.18	NO		IE	IE	79.83
D. Other Production	0.215915805	0.00	0.00				0.215915805
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**218.34**		**48.34621205**				**266.69**
4. Agriculture		**4 297.14**	**3 203.38**				**7 500.51**
A. Enteric Fermentation		2 746.19					2 746.19
B. Manure Management		1 070.65	279.76				1 350.40
C. Rice Cultivation		463.57					463.57
D. Agricultural Soils(3)		NE,NO	2 908.51				2 908.51
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		16.73	15.11				31.85
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**13.83**	**7 258.78**	**601.97**				**7 874.59**
A. Solid Waste Disposal on Land	NA	5 088.43	0.00				5 088.43
B. Waste-water Handling		2 169.98	591.31				2 761.29
C. Waste Incineration	13.83	0.37	10.64				24.84
D. Other	NO	0.00	0.03				0.027836086
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	69 817.99
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
ROMANIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**84 846.04**	**22 594.00**	**12 709.36**	**415.38**	**10.92**	**7.21**	**120 582.91**
1. Energy	**73 439.34**	**8 731.22**	**494.01**				**82 664.57**
A. Fuel Combustion (Sectoral Approach)	72 806.48	949.70	492.06				74 248.24
1. Energy Industries	33 800.28	11.77	123.02				33 935.07
2. Manufacturing Industries and Construction	13 855.72	36.82	46.12				13 938.66
3. Transport	14 169.36	35.84	136.97				14 342.17
4. Other Sectors	IE	IE	IE				IE,
5. Other	10 981.13	865.28	185.95				12 032.35
B. Fugitive Emissions from Fuels	632.86	7 781.52	1.95				8 416.33
1. Solid Fuels	NA	843.58	IE				843.58
2. Oil and Natural Gas	632.86	6 937.94	IE				7 570.80
2. Industrial Processes	**11 270.53**	**13.57**	**1 209.81**	**415.38**	**10.92**	**7.21**	**12 927.41**
A. Mineral Products	4 900.01	NA,NE	NE				4 900.01
B. Chemical Industry	3 020.38	13.57	1209.81				4 243.75
C. Metal Production	3 350.13	NA,NE	NA		IE	IE	3 350.13
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**125.61**		**NE**				**125.61**
4. Agriculture		**8 776.73**	**10 378.06**				**19 154.79**
A. Enteric Fermentation		8 030.76					8 030.76
B. Manure Management		594.98	1 202.17				1 797.15
C. Rice Cultivation		23.71					23.71
D. Agricultural Soils(3)		NA,NE	9 131.67				9 131.67
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		127.28	44.22				171.50
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**10.56**	**5 072.49**	**627.48**				**5 710.52**
A. Solid Waste Disposal on Land	NA	2 819.69	0.00				2 819.69
B. Waste-water Handling		2 252.80	627.48				2 880.28
C. Waste Incineration	10.56	NE	NE				10.56
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	120 582.91
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
SWEDEN

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**46 674.45**	**4 766.03**	**6 567.38**	**813.42**	**182.95**	**60.43**	**59 064.67**
1. Energy	**41 489.00**	**582.31**	**1 320.47**				**43 391.77**
A. Fuel Combustion (Sectoral Approach)	40 547.41	472.03	1 316.78				42 336.22
1. Energy Industries	9 470.94	92.03	477.78				10 040.75
2. Manufacturing Industries and Construction	8 915.14	46.93	473.63				9 435.71
3. Transport	19 290.99	49.25	158.74				19 498.98
4. Other Sectors	IE	IE	IE				IE,
5. Other	2 870.34	283.82	206.62				3 360.78
B. Fugitive Emissions from Fuels	941.59	110.28	3.69				1 055.55
1. Solid Fuels	8.47	0.00	IE				8.47
2. Oil and Natural Gas	933.12	110.27	IE				1 043.39
2. Industrial Processes	**4 962.09**	**8.05**	**48.65**	**813.42**	**182.95**	**60.43**	**6 075.61**
A. Mineral Products	2 090.98	NA	NE				2 090.98
B. Chemical Industry	136.35	7.88	48.65				192.87
C. Metal Production	2 734.77	0.18	NA,NO		IE	IE	2 734.94
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NO	NO	NO	IE	IE	IE	IE,NO,
3. Solvent and Other Product Use	**163.68**		**125.2555**				**288.93**
4. Agriculture		**2 855.66**	**4 912.12**				**7 767.78**
A. Enteric Fermentation		2 559.56					2 559.56
B. Manure Management		296.10	436.18				732.28
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NO	4 475.94				4 475.94
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NO	NO				NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**59.68**	**1 320.01**	**160.89**				**1 540.58**
A. Solid Waste Disposal on Land	NO	1 020.53	0.00				1 020.53
B. Waste-water Handling		299.46	155.17				454.63
C. Waste Incineration	59.68	0.02	5.72				65.42
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	59 064.67
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Sweden provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
SLOVENIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**15 779.35**	**1 894.80**	**1 101.00**	**226.94**	**28.61**	**16.54**	**19 047.24**
1. Energy	**15 043.36**	**406.33**	**146.70**				**15 596.39**
A. Fuel Combustion (Sectoral Approach)	14 965.53	126.57	146.70				15 238.80
1. Energy Industries	5 938.66	2.38	26.31				5 967.35
2. Manufacturing Industries and Construction	1 597.40	4.71	20.09				1 622.20
3. Transport	5 715.67	8.25	58.31				5 782.23
4. Other Sectors	IE	IE	IE				IE,
5. Other	1 713.80	111.23	41.98				1 867.01
B. Fugitive Emissions from Fuels	77.83	279.76	NA,NO				357.59
1. Solid Fuels	77.83	250.65	IE				328.47
2. Oil and Natural Gas	0.00	29.11	IE				29.11
2. Industrial Processes	**730.18**	**0.00**	**0.00**	**226.94**	**28.61**	**16.54**	**1 002.27**
A. Mineral Products	570.04	NA	NE				570.04
B. Chemical Industry	1.18	0.00	0.00				1.18
C. Metal Production	158.96	NA,NO	NO		IE	IE	158.96
D. Other Production	NA	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**NA,NE,NO**		**49.29**				**49.29**
4. Agriculture		**1 042.95**	**844.63**				**1 887.58**
A. Enteric Fermentation		652.72					652.72
B. Manure Management		390.23	130.53				520.76
C. Rice Cultivation		NO					NO,
D. Agricultural Soils(3)		NO	714.10				714.10
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NA,NO	NA,NO				NA,NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**5.81**	**445.52**	**60.38**				**511.71**
A. Solid Waste Disposal on Land	NA,NO	315.22	0.00				315.22
B. Waste-water Handling		130.30	60.35				190.65
C. Waste Incineration	5.81	NA,NO	0.03				5.84
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	19 047.24
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

Slovenia provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
SLOVAKIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**34 842.64**	**4 140.77**	**2 994.93**	**490.40**	**17.00**	**20.74**	**42 506.49**
1. Energy	**27 364.50**	**1 137.61**	**149.90**				**28 652.00**
A. Fuel Combustion (Sectoral Approach)	27 364.28	46.33	149.90				27 560.50
1. Energy Industries	8 294.79	5.41	32.29				8 332.49
2. Manufacturing Industries and Construction	9 236.49	8.74	20.04				9 265.28
3. Transport	6 134.86	13.23	76.91				6 225.00
4. Other Sectors	IE	IE	IE				IE,
5. Other	3 698.14	18.95	20.65				3 737.74
B. Fugitive Emissions from Fuels	0.22	1 091.28	0.00				1 091.50
1. Solid Fuels	NA,NO	327.73	IE				327.73
2. Oil and Natural Gas	0.22	763.55	IE				763.77
2. Industrial Processes	**7 373.87**	**2.11**	**421.49**	**490.40**	**17.00**	**20.74**	**8 325.62**
A. Mineral Products	2 498.39	NA	NE				2 498.39
B. Chemical Industry	1 017.51	1.48	421.49				1 440.48
C. Metal Production	3 857.96	0.64	NA		IE	IE	3 858.60
D. Other Production	NO	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**94.69**		**75.8477**				**170.54**
4. Agriculture		**976.66**	**2 154.16**				**3 130.82**
A. Enteric Fermentation		863.30					863.30
B. Manure Management		113.37	358.66				472.02
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		NO	1 795.50				1 795.50
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NA,NO	NA,NO				NA,NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**9.58**	**2 024.39**	**193.55**				**2 227.51**
A. Solid Waste Disposal on Land	NO	1 572.90	0.00				1 572.90
B. Waste-water Handling		350.63	79.45				430.09
C. Waste Incineration	9.58	NO	2.45				12.03
D. Other	NO	100.85	111.65				212.494752
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	42 506.49
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
UNITED KINGDOM

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**478 357.10**	**41 402.49**	**34 353.25**	**14 954.60**	**325.31**	**574.62**	**569 967.37**
1. Energy	**468 302.61**	**8 132.70**	**4 153.81**				**480 589.11**
A. Fuel Combustion (Sectoral Approach)	463 754.59	1 130.88	4 091.40				468 976.87
1. Energy Industries	185 406.90	235.45	1 437.73				187 080.08
2. Manufacturing Industries and Construction	65 996.44	225.27	939.15				67 160.86
3. Transport	113 680.01	68.17	936.46				114 684.65
4. Other Sectors	IE	IE	IE				IE,
5. Other	98 671.24	601.99	778.05				100 051.28
B. Fugitive Emissions from Fuels	4 548.02	7 001.82	62.41				11 612.24
1. Solid Fuels	209.01	1 813.07	IE				2 022.09
2. Oil and Natural Gas	4 339.00	5 188.74	IE				9 527.75
2. Industrial Processes	**9 786.22**	**86.97**	**212.91**	**14 954.60**	**325.31**	**574.62**	**25 940.63**
A. Mineral Products	5 800.42	5.185643111	NE				5 805.60
B. Chemical Industry	2 559.68	72.84	206.77				2 839.30
C. Metal Production	1 426.13	8.94	6.14		IE	IE	1 441.21
D. Other Production	NE	0.00	0.00				0
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	NA	NA	NA	IE	IE	IE	IE,NA,
3. Solvent and Other Product Use	**NE**		**NE,NO**				**NE,NO,**
4. Agriculture		**17 892.67**	**28 767.71**				**46 660.38**
A. Enteric Fermentation		15 385.94					15 385.94
B. Manure Management		2 506.73	1 591.16				4 097.89
C. Rice Cultivation		NA,NO					NA,NO,
D. Agricultural Soils(3)		IE,NA,NE,NO	27 176.55				27 176.55
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		NA,NO	NA,NO				NA,NO,
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**268.27**	**15 290.16**	**1 218.82**				**16 777.24**
A. Solid Waste Disposal on Land	NA,NE,NO	13 751.66	0.00				13 751.66
B. Waste-water Handling		1 536.07	1 169.79				2 705.86
C. Waste Incineration	268.27	2.43	49.03				319.72
D. Other	NA	NA	NA				NA,
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	569 967.37
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The United Kingdom provided its own proxy estimate for 2012 (see Table 6). This estimate has been used to assess progress towards targets.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
EU-15

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**2 993 467.20**	**283 475.79**	**261 282.18**	**74 212.07**	**3 074.59**	**5 936.13**	**3 621 447.96**
1. Energy	**2 828 653.45**	**38 801.63**	**27 202.73**				**2 894 657.81**
A. Fuel Combustion (Sectoral Approach)	2 811 109.59	12 735.51	27 102.26				2 850 947.36
1. Energy Industries	1 036 504.14	3 122.62	7 989.82				1 047 616.58
2. Manufacturing Industries and Construction	449 463.58	1 405.31	5 259.43				456 128.32
3. Transport	757 984.35	1 053.45	7 253.40				766 291.19
4. Other Sectors	IE	IE	IE				IE,
5. Other	567 157.52	7 154.14	6 599.60				580 911.26
B. Fugitive Emissions from Fuels	17 543.86	26 066.12	100.47				43 710.45
1. Solid Fuels	969.63	6 241.70	IE				7 211.33
2. Oil and Natural Gas	16 574.23	19 824.42	IE				36 398.65
2. Industrial Processes	**156 848.61**	**632.62**	**8 849.46**	**74 212.07**	**3 074.59**	**5 936.13**	**249 553.48**
A. Mineral Products	84 834.56	22.23592467	NE				84 856.79
B. Chemical Industry	31 257.10	461.36	8814.62				40 533.07
C. Metal Production	40 396.83	113.44	22.30		IE	IE	40 532.58
D. Other Production	21.0544678	0.00	0.00				21.0544678
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	339.07	35.58264897	12.536865	IE	IE	IE	387.19
3. Solvent and Other Product Use	**5375.42**		**2293.47426**				**7668.90**
4. Agriculture		**159 105.40**	**211 722.85**				**370 828.25**
A. Enteric Fermentation		120 231.58					120 231.58
B. Manure Management		35 823.11	19 540.60				55 363.70
C. Rice Cultivation		2 556.86					2 556.86
D. Agricultural Soils(3)		9.229780507	192 068.57				192 077.80
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		484.62	113.68				598.29
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**2 589.72**	**84 936.13**	**11 213.67**				**98 739.52**
A. Solid Waste Disposal on Land	1.64	73 564.21	0.00				73 565.85
B. Waste-water Handling		10 291.42	10 021.77				20 313.18
C. Waste Incineration	2 568.68	77.02	167.84				2 813.54
D. Other	19.39	1 003.48	1 024.07				2046.947569
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	3 621 447.96
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest for CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.

SUMMARY 2 SUMMARY REPORT FOR CO2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2013 v1.0
EU-28

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2 (1)	CH4	N2O	HFCs (2)	PFCs (2)	SF6 (2)	Total
	CO2 equivalent (Gg)						
Total (Net Emissions) (1)	**3 723 274.39**	**383 390.14**	**334 344.10**	**85 367.73**	**3 215.52**	**6 294.37**	**4 535 886.23**
1. Energy	**3 492 839.50**	**75 474.25**	**32 045.90**				**3 600 359.64**
A. Fuel Combustion (Sectoral Approach)	3 470 207.31	18 631.77	31 942.79				3 520 781.87
1. Energy Industries	1 385 243.40	3 314.37	9 550.38				1 398 108.15
2. Manufacturing Industries and Construction	535 400.13	1 620.43	5 651.77				542 672.34
3. Transport	883 669.15	2 321.13	16 147.74				902 138.02
4. Other Sectors	IE	IE	IE				IE,
5. Other	665 894.63	11 375.83	592.89				677 863.36
B. Fugitive Emissions from Fuels	22 632.19	56 842.47	103.11				79 577.77
1. Solid Fuels	2880.80	19 498.78	IE				22 379.58
2. Oil and Natural Gas	19 751.39	37 343.70	IE				57 095.09
2. Industrial Processes	**220 570.70**	**1 081.84**	**12 854.71**	**85 367.73**	**3 215.52**	**6 294.37**	**329 384.86**
A. Mineral Products	113 699.15	25.65495247	NE				113 724.81
B. Chemical Industry	43 647.86	811.25	12801.09				57 260.21
C. Metal Production	61 560.17	209.35	41.08		IE	IE	61 810.60
D. Other Production	38.06913526	0.00	0.00				38.06913526
E. Production of Halocarbons and SF6				IE	IE	IE	IE,
F. Consumption of Halocarbons and SF6 (2)				IE	IE	IE	IE,
G. Other	1 625.44	35.58264897	12.536865	IE	IE	IE	1 673.56
3. Solvent and Other Product Use	**6724.14**		**3114.188603**				**9838.33**
4. Agriculture		**192 657.16**	**272 058.33**				**464 715.49**
A. Enteric Fermentation		146 780.43					146 780.43
B. Manure Management		42 506.56	28 937.90				71 444.46
C. Rice Cultivation		2 708.55					2 708.55
D. Agricultural Soils(3)		9.229780507	242 939.89				242 949.12
E. Prescribed Burning of Savannas		NE	NE				NE,
F. Field Burning of Agricultural Residues		652.39	180.54				832.93
G. Other		NE	NE				NE,
5. Land Use, Land-Use Change and Forestry(1)	**NE**	**NE**	**NE**				**NE,**
A. Forest Land	NE	NE	NE				NE,
B. Cropland	NE	NE	NE				NE,
C. Grassland	NE	NE	NE				NE,
D. Wetlands	NE	NE	NE				NE,
E. Settlements	NE	NE	NE				NE,
F. Other Land	NE	NE	NE				NE,
G. Other	NE	NE	NE				NE,
6. Waste	**3 140.05**	**114 176.88**	**14 270.97**				**131 587.91**
A. Solid Waste Disposal on Land	1.64	97 095.56	0.00				97 097.19
B. Waste-water Handling		15 813.11	12 849.14				28 662.25
C. Waste Incineration	3 119.02	78.20	191.26				3 388.48
D. Other	19.39	1 190.02	1 230.57				2439.981921
7. Other (as specified in Summary 1.A)	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE,**

Memo Items: (4)							
International Bunkers	NE	NE	NE				NE,
Aviation	NE	NE	NE				NE,
Marine	NE	NE	NE				NE,
Multilateral Operations	**NE**	**NE**	**NE**				**NE,**
CO2 Emissions from Biomass	**NE**						**NE,**

Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	4 535 886.23
Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	NE,

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex I. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex II are shown estimates are based on a bottom up approach (by sector, gas and country). The uncertainty in the numbers increases at finer levels of detail, particularly for non-CO_2 emissions. The uncertainty is lowest CO_2 emissions from energy combustion. Sector 1A5 includes emissions from 1A4.