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Approximated EU GHG inventory:

Proxy GHG emission estimates for 2014

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Abbreviations

AD	Activity data
AR	Activity rate
AR4	IPCC Fourth Assessment Report: Climate Change 2007
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
ESD	Effort Sharing Decision
ETC/ACM	European Topic Centre on Air Pollution and Climate Change Mitigation
ETS	Emissions Trading System
EU	European Union
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
EU plus Iceland	'EU plus Iceland' refers to the EU plus Iceland. In figures and tables this may be abbreviated to EU + IS. The attribution 'EU-28' is used in contexts where Iceland is not included.
GDP	Gross domestic product
GHG	Greenhouse gas
GWP	Global warming potential
HDD	Heating degree days
HFCs	Hydrofluorocarbons
IEA	International Energy Agency
IEF	Implied emission factor
kt	Kilotons (thousand tons)

IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land use, land-use change and forestry
Mt	Megatons (million tons)
N_2O	Nitrous oxide
NF_3	Nitrogen triflouride
ODS	Ozone-depleting substance
PFCs	Perfluorocarbons
QA/QC	Quality assurance and quality control
QELRC	Quantified emission limitation and reduction commitment
SF_6	Sulphur Hexafluoride
UNFCCC	United Nations Framework Convention on Climate Change

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Executive Summary

Objective of the report

This report provides estimates of greenhouse gas (GHG) emissions in the European Union (EU) and its Member States for the year 2014, covering the full GHG inventory (all sectors, except land use, land-use change and forestry (LULUCF), and all gases). These estimates are also referred to as approximated ('proxy') estimates or inventories in this report as they cover the year for which no official GHG inventories have been prepared yet. The proxy inventories in this report are based on GHG emission estimates reported by Member States to the European Commission under existing EU legislation[1] and on calculations made by the European Environment Agency's (EEA) European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM) using activity and/or emissions data at country level. The official submission of 2014 inventories to the United Nations Framework Convention on Climate Change (UNFCCC) will take place in 2016. The proxy estimates greatly improve the timeliness of information on GHG emissions and are used for analysis of emission trends and progress towards EU climate targets.

Under the UNFCCC rules, the official GHG inventories for 2013, submitted in 2015, must follow the 2006 IPCC Guidelines. Unfortunately the delay in the new UNFCCC CRF Reporter software has also delayed the preparation and submission of inventories. Therefore the official GHG inventory data for the EU for the year 2013 were not available at the time of production of this report. All EU 2013 GHG emissions presented in this report have to be regarded as preliminary.

For the second commitment period of the Kyoto Protocol (2013–2020) that was established in Doha in 2012 (COP 18/CMP8), the Doha amendment includes new quantified emission limitation and reduction commitments (QELRCs) for Annex I Parties intending to take part in the second commitment period. The EU, its 28 Member States and Iceland agreed to a joint QELRC, corresponding to a -20 % reduction compared to the base year. They declared that they intended to fulfil this commitment jointly, under Article 4 of the Kyoto Protocol[2]. For this reason, the aggregates in this report will refer to the EU-28 and Iceland to the extent possible. The Doha Amendment's entry into force is subject to acceptance by at least three quarters of the Parties to the Kyoto Protocol.

The executive summary and Chapter 2 are based on proxy estimates reported by Member States as well as EEA estimates when Member States did not report proxy estimates by 31 July. The

[1] Regulation (EU) 525/2013 of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions (EU MMR).

[2] Submission by Denmark and the European Commission on behalf of the European Union and its Member States (19 April 2012). Available at: http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_eu_19042012.pdf ' Submission by Iceland (10 May 2012), available at: http://unfccc.int/resource/docs/2012/awg17/eng/misc01a01.pdf

estimates in this report are based on the IPCC 2006 Reporting Guidelines and GWPs from the IPCC Fourth Assessment Report (AR4).

Proxy GHG emission estimates for 2014 at EU level

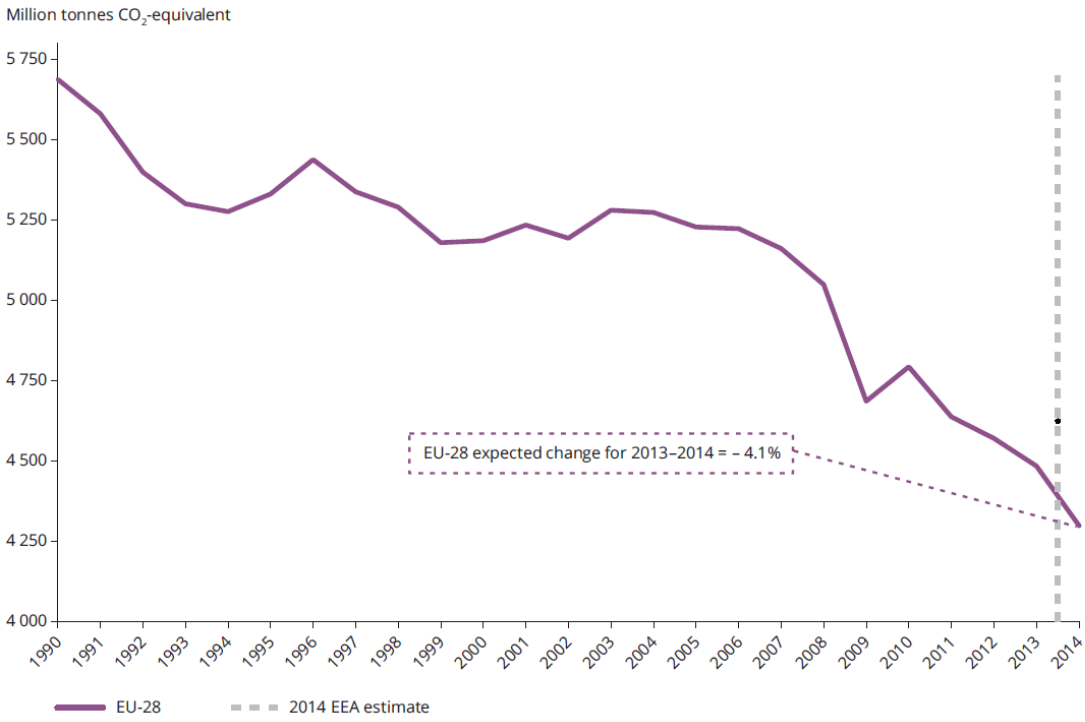
The estimates for 2014 indicate that emissions continued to decrease in 2014. Compared to preliminary 2013 emissions, the fall in emissions between 2013 and 2014 is estimated to be -185.4 million tonnes of CO_2-equivalents (Mt CO_2-eq) or -4.1 % for the EU plus Iceland[3] (total GHG emissions without LULUCF and including indirect CO_2)[4]. For EU plus Iceland, total GHG emissions in 2014 are estimated to be -24.4 % below 1990 emissions.

[3] EU plus Iceland refers to the EU-28 plus Iceland. In figures and tables this may be abbreviated to EU + IS. The attribution 'EU-28' is used in contexts where Iceland is not included.

[4] According to the UNFCCC reporting guidelines, Annex I Parties may report indirect CO2 from the atmospheric oxidation of CH4, CO and NMVOCs. For Parties that decide to report indirect CO2 the national totals shall be presented with and without indirect CO2. The EU proxy estimates are based on national totals excluding LULUCF and including indirect CO2 if reported by Member States.

Figure ES.1 shows the emission trend for total GHG emissions without LULUCF but including indirect CO_2 in the EU-28 in the period 1990–2014 ([5]).

Figure ES.1 Trends in total GHG emissions, 1990-2014



Note: Total GHG emissions without LULUCF including indirect CO_2. The diagram does not include Iceland because at the time of production of this report Iceland had not developed full inventories for all years 1990-2013.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

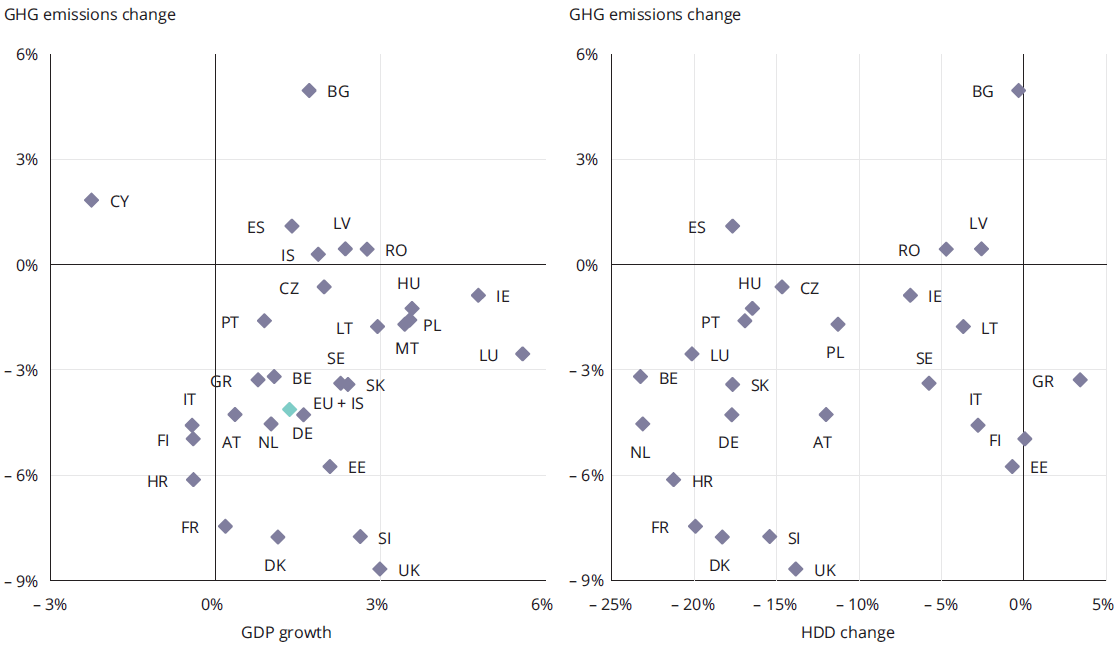
The -4.1 % emission decrease for EU plus Iceland occurred against an increase in gross domestic product (GDP) of +1.4 % on average in 2014 compared to 2013. As in 2013, notwithstanding economic developments in specific sectors and countries, there was no common pattern between GDP and GHG emissions for all EU Member States in 2014. The economic situation in the EU improved slightly during 2014 compared to 2013. The GHG emission reductions in 2014 compared to 2013 were even larger than in 2013 compared to 2012 (-4.1 % and -1.8 %, respectively).

[5] 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 fluorinated gases (F-gases) and the continuing recalculations of GHG inventories.

Most Member States achieved significant emission reductions in 2014 while also recording positive economic growth (see figure ES.2).

Analysis of emission trends needs to include climatic factors which can affect behaviour and energy demand. 2014 was the warmest year on record in Europe. Winter in Europe in 2014 was generally much warmer than it was in 2013.[6] Higher winter temperatures in most Member States led to lower heating demand and lower emissions from the residential and commercial sectors. A regional distribution of GHG emission changes is presented in figure ES.3.

Figure ES.2 GHG emissions, GDP growth and heating degree days in the EU, changes 2013-2014



Source: EEA's ETC/ACM, based on GDP from Eurostat (Gross domestic product at market prices, Chain linked volumes (2010), million euro). Heating Degree Days (HDDs), an indication of heat demand based on outdoor temperatures, produced by EEA. HDD 2014 data was not available for, MT, CY and IS.

On a sectoral basis, the largest absolute emission reduction in the EU occurred in the energy sector (i.e. all combustion activities and fugitive emissions). GHG emissions fell by -181.9 Mt CO_2-eq (-5.2 %) across the EU plus Iceland. This decrease in emissions in the energy sector reflects the decline of gross inland energy consumption in the EU plus Iceland in 2014. Within the energy sector, emissions decreased mostly in energy industries (-85.7 Mt CO_2-eq), other sectors (i.e. residential and commercial) (-85.3 Mt CO_2-eq) as well as for manufacturing industries and construction (-13.6 Mt CO_2-eq).

[6] http://cib.knmi.nl/mediawiki/index.php/2014_warmest_year_on_record_in_Europe

Primary energy consumption in the EU-28 dropped by 3.9 % in 2014 and reached the lowest level since 1985. The contribution of fossil fuels to the energy mix declined while renewables further increased (BP 2015).

Based on Eurostat monthly consumption data for solid, liquid and gaseous fuels (Eurostat, 2015), total fuel consumption in the EU fell by -5 %, with different trends for the different fossil fuel types. Consumption of natural gas dropped most significantly by -10.7 %. Consumption of solid fossil fuels fell by -4.3 % and consumption of liquid fuels was reduced by only -1.2 %. Natural gas consumption fell in all Member States between 2013 and 2014. Five Member States experienced declines in natural gas consumption of more than 15 %: Denmark by -16.4 %, Estonia by -21.5 %, Greece by -23.3 %, Slovakia by -34.4 % and Sweden by -17.0 %.

Ten Member States showed increasing solid fossil fuel consumption (including peat), most notably in Belgium by 17.1 %, followed by Bulgaria with 9.4 % and Spain with 7.5 % (Eurostat, 2015). On the other hand, solid fossil fuel consumption (including peat) decreased in 18 Member States, most notably in Denmark (-18.9 %), France (-26.3 %), Latvia (-24.2 %)[7], Lithuania (-16.6 %), Slovenia (-21.8 %) and the United Kingdom (-20.1 %). These changes in solid fossil fuel and natural gas consumption are not only related to heating-degree-day (HDD) effects as described before but also strongly connected with the trends in electricity generation.

Hydroelectric generation increased by +2 % in the EU, but also electricity production from renewable sources other than hydro increased considerably. Gross wind generation grew by almost +5 % in the EU (Eurostat, 2015). Solar consumption continued with a strong growth by +15 % (BP, 2015). Thus, the use of renewables continues to play an important role in GHG mitigation efforts by the EU and its Member States. In 2014 nuclear electricity production across the EU-28 was almost constant (-0.1 %) compared to 2013 according to the Eurostat monthly data.

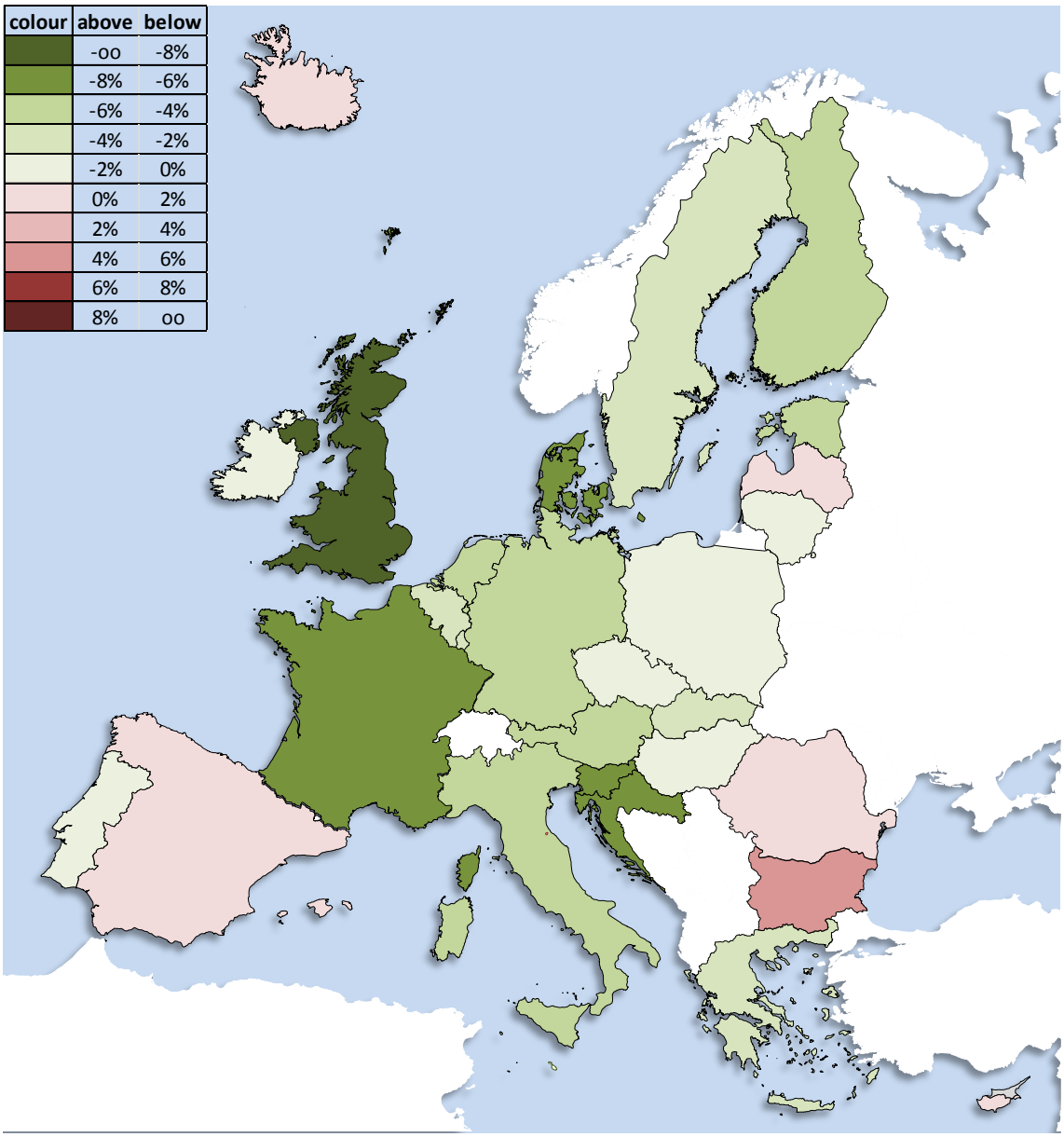
GHG emissions from industrial processes increased in 2014 compared to 2013, up by +0.9 % in the EU plus Iceland. Emissions from mineral products grew by 2.9 %. This is consistent with the increase in emissions from mineral products related activities under the EU ETS in the same period.[8] Emissions from metal production fell by -0.5 % across the EU plus Iceland. Emissions from the chemical industry remained relatively stable in the EU plus Iceland (falling by only -0.1 % between 2013 and 2014).

[7] Based on the provisional energy balance by the Central Statistical Bureau of Latvia, the reduction of solid fossil fuels excluding peat and peat briquettes was – 16.2% (– 16.9% if peat and peat briquettes are included).

[8] Production of cement clinker; production of lime, or calcination of dolomite/magnesite; manufacture of glass; manufacture of ceramics; manufacture of mineral wool; production or processing of gypsum or plasterboard

Agriculture emissions decreased slightly by -0.4 %, mainly from emission reductions from agricultural soils. The proxy inventory calculations for emissions from waste are based on extrapolation of past trends. The trend in emissions from waste continues the decrease seen in previous years with largest reduction being in emissions from solid waste disposal.

Figure ES.3 Regional trends in total GHG emissions, change 2013-2014 (displayed as ranges)



Note: Change of total GHG emissions excluding LULUCF and including indirect CO_2.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014

Change in GHG emissions in the period 1990–2014

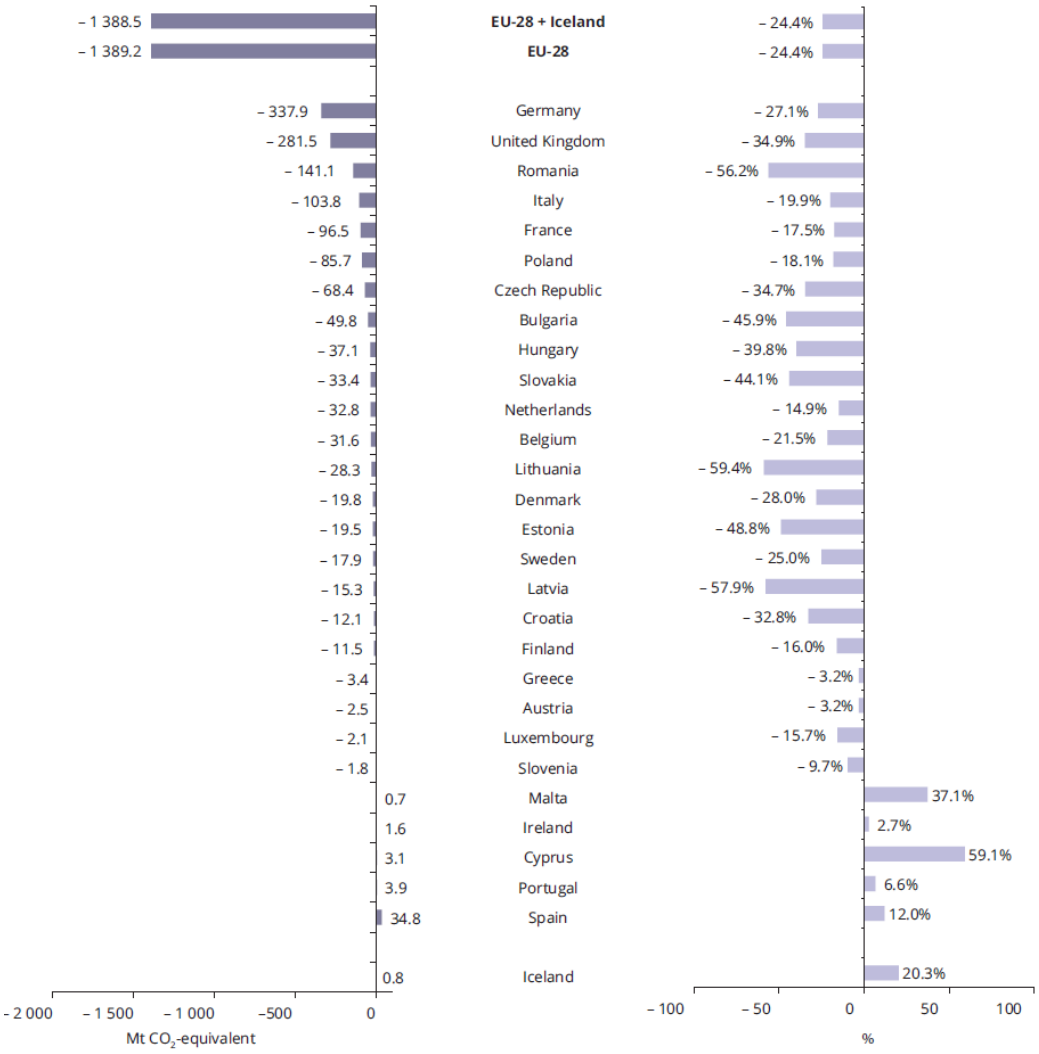
Figure ES.4 presents the estimated change in GHG emissions for each Member State between 1990 and 2014[9]. Based on these 2014 estimates, total EU plus Iceland emissions (excluding LULUCF and including indirect CO_2) in 2014 were 24.4 % below the 1990 level.

In addition to the recent economic recession, a wide range of 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[10]. The 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 GHGs such as chlorofluorocarbons. Specific polices to reduce F-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 GHG emissions from non-CO_2 gases such as methane and nitrous oxides. Further implementation of the EU's Climate and Energy Package should lead to additional reductions in emissions.

[9] The percentage change cannot be directly compared to the emission reduction obligations under the Kyoto Protocol since 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.

[10] See EEA, 'Why did GHG emissions decrease in the EU between 1990 and 2012?', www.eea.europa.eu/publications/why-are-greenhouse-gases-decreasing

Figure ES.4 Member States emissions, change 1990-2014



Note: Total GHG emissions without LULUCF including indirect CO_2, based on the preliminary 2015 MS GHG inventories submitted to the EU for the years 1990-2013 as well as proxy estimates for 2014.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

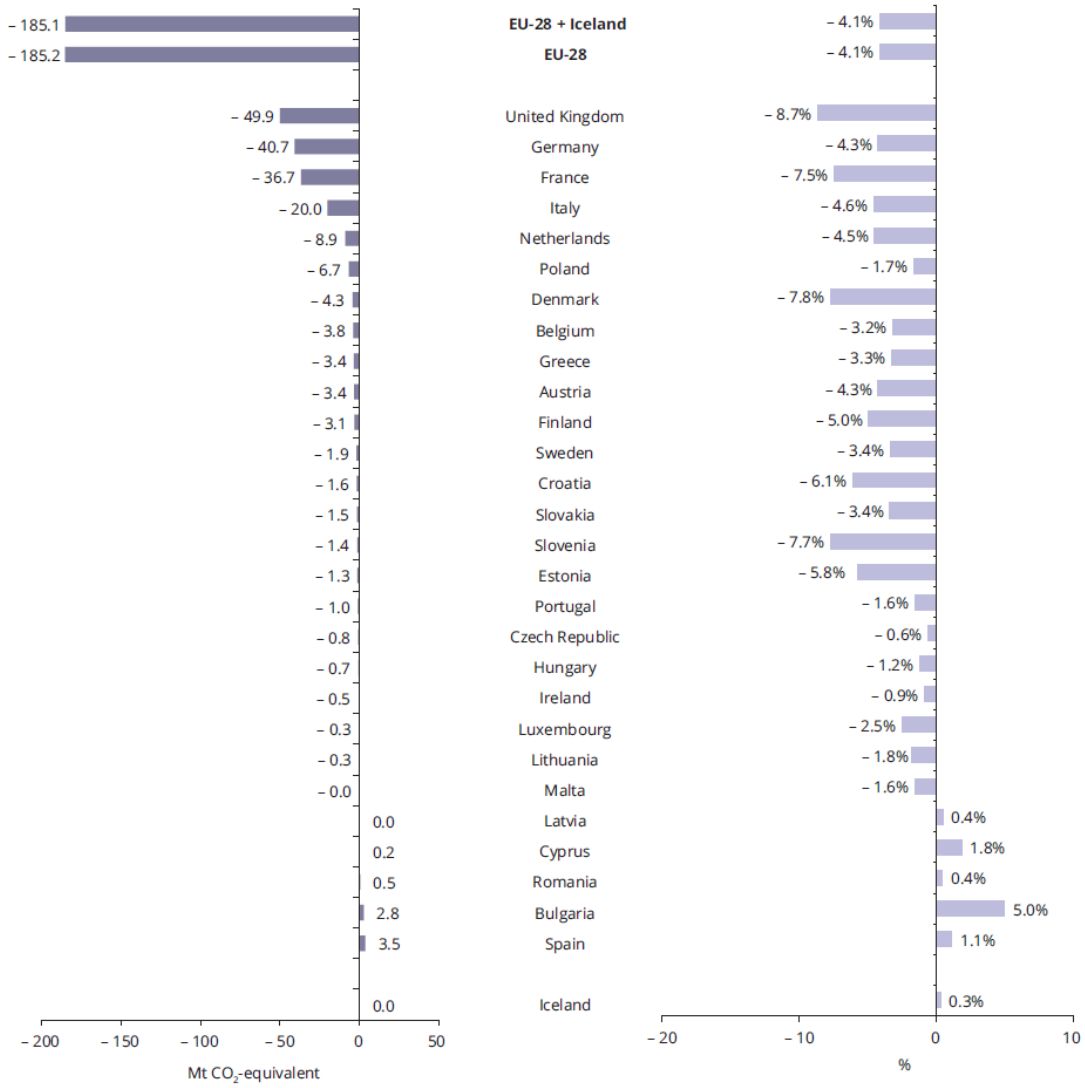
Change in GHG emissions in the period 2013–2014 at Member State level

As explained above, total GHG emissions in the EU plus Iceland decreased by over 4% in 2014 alongside an improved economic situation, with GDP increasing by 1.4% compared to 2013. The main reason for the decrease in emissions was the lower heat demand by households due to a warmer winter (2014 was the warmest year on record in the EU). Natural gas consumption fell in all Member States and consumption of solid and liquid fuels also decline significantly for the EU as a whole. Renewables continued to increase in 2014, which partly contributed to the overall decline in GHG emissions.

As Figure ES.5 illustrates, GHG emissions decreased in 23 Member States (United Kingdom, Germany, France, Italy, Netherlands, Poland, Denmark, Belgium, Greece, Austria, Finland, Sweden, Croatia, Slovakia, Slovenia, Estonia, Portugal, Czech Republic, Hungary, Ireland, Lithuania, Luxembourg and Malta). The largest absolute decrease of emissions occurred in the United Kingdom (-49.9 Mt CO_2-eq compared to 2013), Germany (-40.7 Mt CO_2-eq or -4.3 % compared to 2013), followed by France[11] (-36.7 Mt CO_2-eq) and Italy (-20.0 Mt CO_2-eq). The largest relative fall in emissions compared to the previous year also took place in the United Kingdom (-8.7 %), followed by Denmark (-7.8 %), Slovenia (-7.7 %) and France (-7.5 %). The largest absolute growth in emissions occurred in Spain (+3.5 Mt CO_2-eq) and the largest relative increase in Bulgaria (+5.0 % or +2.8 Mt CO_2-eq). Chapter 2 of the main report includes explanations for some of the change in emissions by Member State.

[11] The 2014 Proxy inventory submitted by France includes Mayotte. The inventory basis 1990-2013 is consistent with the Proxy. The official inventory submission from France does not include Mayotte for the period 1990-2013. The inclusion or exclusion of emissions from Mayotte result in a difference of less than 0.5 Mt CO2-eq, equivalent to less than 0.1 percentage points.

Figure ES.5 Member States emissions, change 2013-2014



Note: Total GHG emissions without LULUCF including indirect CO2, based on the preliminary 2015 MS GHG inventories submitted to the EU for the years 1990-2013 as well as proxy estimates for 2014.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Twenty-three Member States submitted preliminary 2014 GHG data to the European Commission and the EEA by 31 July 2014. Austria, Belgium, Croatia, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Slovenia, Spain, Sweden and the United Kingdom all submitted emissions in the form of largely complete CRF Summary 2 tables.

As Bulgaria, Cyprus, Iceland, Lithuania, Portugal and Romania did not submit preliminary GHG inventories, approximated GHG emissions calculated centrally by EEA and its ETC/ACM were used for these countries Member States.

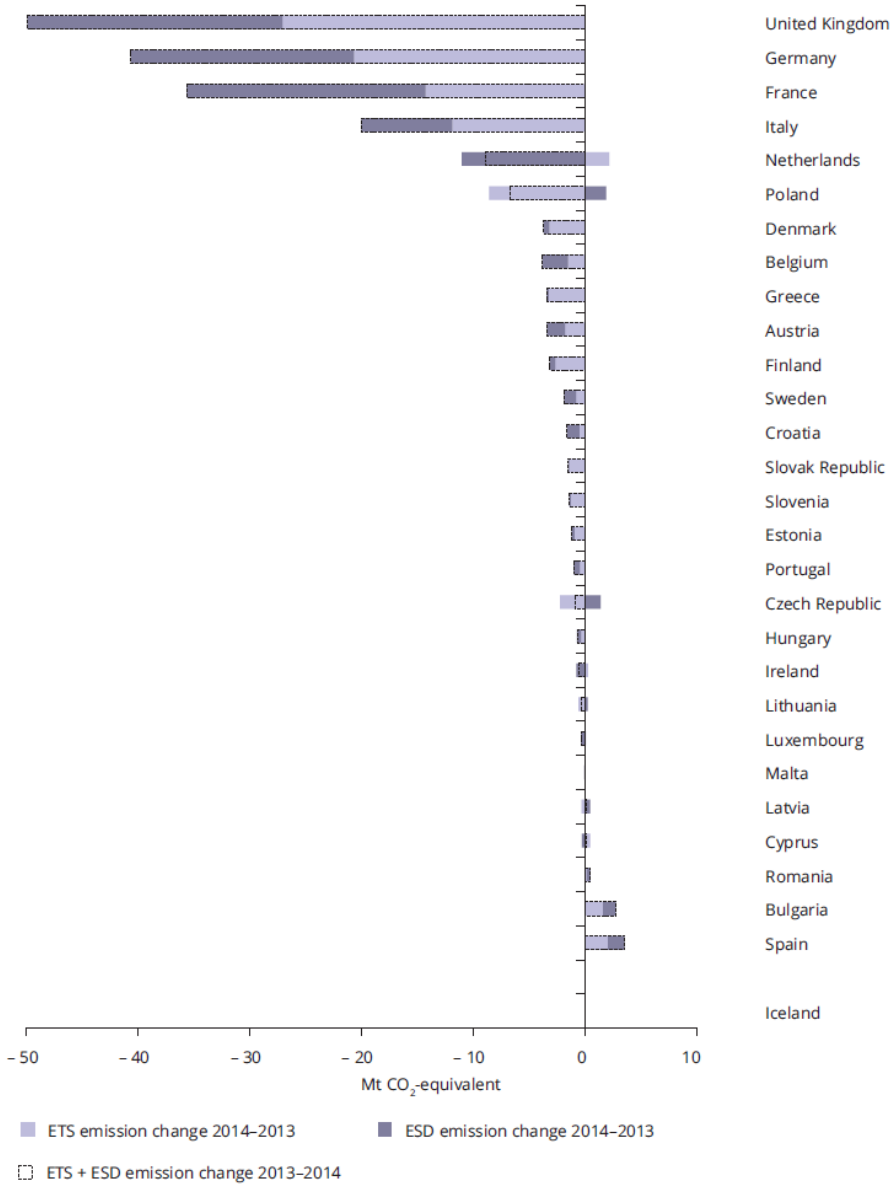
Using the available proxy emission estimates by Member States and gap-filling the missing countries with estimates calculated centrally by EEA and its ETC/ACM, the GHG emissions of EU plus Iceland are expected to decrease by -4.1 % between 2013 and 2014.

Figure ES.6 shows the expected change in total GHG emissions in 2014 broken down by the European Emissions Trading System (ETS) and the Effort Sharing Decision (ESD) sectors by Member State. Between 2013 and 2014 emission reductions in the EU-28 were greater for the installations covered by the ETS (a decline in emissions of -5.2 %[12]) than they were in the ESD sector (where emissions decreased by -3.3 %).

Official 2014 GHG emissions for the EU will be available in the late May or early June 2016, when the EEA publishes the 1990–2014 EU GHG inventory and 2016 inventory report for submission to the UNFCCC.

[12] The European Commission announced on 18 May 2015 a reduction of ETS emissions of -4.5% for all participating countries (EU-28, Iceland, Liechtenstein and Norway). This -4.5% change was calculated on the basis of those installations having reported emissions both in 2013 and 2014. In this report the -5.2% reduction refers to the EU28 plus Iceland and is calculated on the basis of all verified emissions.

Figure ES.6 ETS and ESD emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014 and ETS data (2013 and 2014 verified emissions).

Rationale for proxy GHG emission estimates

The EU, as a Party to the UNFCCC, reports annually on GHG emissions 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*–2. For example, the data submitted on 15 April 2014 included data covering all of 2012, but not 2013. Thus, the timeliness of the data does not always allow for timely analysis of emission trends and progress towards targets.

The latest official EU data available (1990–2012) covering all countries, sectors and gases was released in May 2014 with the annual submission of the EU GHG inventory to the UNFCCC (EEA, 2014a). The inventory data include GHG emissions not controlled by the Montreal Protocol, both from sectors covered by the ETS and from non-trading sectors. However, whereas UNFCCC emissions run on a year *t*–2 basis, Kyoto registries and EU ETS information are available on a year *t*–1 basis. Verified EU ETS emissions are therefore already available for 2014 (EEA, 2015).

Due to the delays in the new UNFCCC CRF Reporter software, an official GHG inventory of the EU for the years 1990 to 2013 is not yet available. All historic emissions data presented in this report are therefore based on the sum of the preliminary GHG inventory submissions to the EU. These submissions have not undergone the regular quality assurance and quality control processes associated with the compilation of the official EU GHG inventory.

There are clear advantages in generating proxy GHG estimates for all sectors. When Member States set national emission caps for installations under the ETS for the period 2013–2020, 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.

Starting in 2014, the legal basis for the proxy GHG emission estimates is Regulation (EU) 525/2013 on a mechanism for monitoring and reporting GHG emissions (EU MMR). Article 8 requires Member States to submit to the Commission, where possible, approximated GHG inventories for the year *t*–1 by 31 July every year. These estimates are used to assess progress towards GHG emission targets.

Publishing a proxy GHG emissions report also fulfils the goals of the 'Beyond GDP' process (EU, 2014), which encourages authorities to produce data on the environment with the same frequency and timeliness as they produce data on the economy.

Methodology for proxy GHG emission estimates

This report presents the estimated GHG emissions for 2014 based on emissions estimates, submitted to EEA by 31 July 2015. The aggregated EU plus Iceland proxy 2014 GHG emission estimates are based on these submissions and gap filling where necessary.

Under the recently adopted Regulation (EU) 525/2013 on a mechanism for monitoring and reporting GHG emissions (EU MMR) and its implementing provisions, Member States are to submit, where possible, to the European Commission approximated GHG inventories by 31 July every year for the preceding year *t*–1 (in this case 2014). Where a Member State has not submitted a 'proxy' inventory, the EEA uses its own estimates for gap-filling purposes in order to have a complete approximated GHG inventory at EU level.

Member States are responsible for the methodological choice regarding their own estimates. For gap-filling, the EEA uses the latest activity data available at country level to estimate the emissions. For emission sources for which no appropriate datasets exist, emissions are extrapolated from past trends, or emissions from the previous year are kept constant if historic data do not show a clear linear trend. The emission estimates assume no change in emission factors or methodologies as compared to the latest official inventory submissions to UNFCCC for the year *t*–2. On this basis, a detailed bottom-up approach has been developed covering the full scope of emissions included in a GHG inventory submission.

The EEA has used the proxy estimates of 2014 GHG emissions produced by Member States to assess progress towards GHG emission targets in its annual *Trends and projections* report (to be published later in the autumn). In that report, the EEA's proxy estimates for 2014 were only used for countries that lack their own estimates to track progress towards national and EU targets.

Where Member States' estimates are missing, gaps are filled with estimates by EEA and its ETC/ACM. In recent years, a methodology to estimate GHG emissions using a 'bottom-up' approach has been developed (see Annex II). It uses data sources (or estimates) that were published prior to the end of July of 2014 for individual countries, sectors and gases to derive EU GHG estimates for the preceding year (*t*–1). For transparency, this report shows the country-level GHG estimates from which the EU estimates have been derived. The estimates cover total GHG emissions as reported under the Kyoto Protocol and the UNFCCC excluding the LULUCF sector but including indirect CO_2 emissions.

Estimates by the EEA and ETC/ACM 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*- 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 or the average of three preceding years was used 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 (see Chapter 2.4 and Annex II) 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.

The GHG estimates in this report have been compiled by the EEA's ETC/ACM. Chapter 2 shows the complete dataset of EU proxy GHG emission estimates, based on the submissions made by Member States and the EEA's gap-filling of the remaining Member States which did not submit, where applicable. Chapter 2.1 shows trends and general results while chapter 2.2 shows detailed

results per sector. An overview of developments in the ETS and ESD sectors is presented in chapter 2.3. An introduction into the applied methodologies for gap-filling is given in chapter 2.4. Further details on the methods and data sources developed by the EEA and its ETC/ACM are described in Annex II (chapter 4.2). The detailed results for each Member State are shown in Annex I (chapter 4.1) of this report in order to ensure complete transparency regarding the GHG estimates available.

1. Background and objective

The approximated GHG inventory is an early estimate for the GHG emissions for the year preceding the current year and is available by 30 September each year. The legal basis for the Proxy GHG emission estimates is Regulation (EU) 525/2013 of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions (EU MMR). Article 8 requires Member States to submit to the Commission approximated greenhouse gas inventories for the year *t*-1 by 31 July every year. Iceland is not an EU Member State but has to report its Proxy inventory, where possible, as any other EU Member State. Then, the European Environment Agency (EEA) assists the Commission in the compilation of the Union approximated greenhouse gas inventory. When Member States do not provide their own proxy emission estimates, the EEA produces gap-filled estimates in order to have a complete approximated GHG inventory for the European Union. Non-EU member states of the European Environment Agency are invited to submit their proxy estimates on a voluntarily basis.

The scope of the Proxy GHG estimates covers total GHG emissions, for all gases, sectors, years and Member States, as reported under the Kyoto Protocol and the UNFCCC excluding the land use, land-use change and forestry (LULUCF) sector but including indirect CO_2.

Member States are responsible for the methodological choice regarding their own estimates. For gap-filling, the EEA uses the latest activity data available at country level to estimate the emissions. For emission sources for which no appropriate datasets exist, emissions are extrapolated from past trends, or emissions from the previous year are kept constant if historic data do not show a clear trend. The emission estimates assume no change in emission factors or methodologies as compared to the latest official inventory submissions to UNFCCC for the year *t*-2. On this basis, a detailed bottom-up approach was developed covering the full scope of emissions included in a GHG inventory submission. The EEA proxy estimates are used both for gap-filling purposes, when Member States do not provide their own proxy estimates, and as verification of the estimates provided by Member States.

This report provides approximated estimates of greenhouse gas (GHG) emissions in the EU, its Member States and Iceland for the year 2014. They are also referred to as 'proxy' estimates in this report, and they are based on GHG emission estimates reported by Member States and on calculations made by the EEA using activity and/or emissions data at country level. The official submission of 2014 data to the United Nations Framework Convention on Climate Change (UNFCCC) will take place in 2016. [13]

There are clear advantages in generating proxy GHG estimates for all sectors. For the second commitment period of the Kyoto Protocol (2013–2020) that was established in Doha in 2012 (COP

[13] 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 report refers to the scope of the EU GHG inventory consistent with the inventory submitted by these countries under the EU Monitoring Mechanism Regulation.

18/CMP8), the Doha amendment includes new quantified emission limitation and reduction commitments (QELRCs) for Annex I Parties intending to take part in the second commitment period. The EU, its 28 Member States and Iceland agreed to a joint QELRC, corresponding to a 20 % reduction compared to the base year and they declared that they intended to fulfil this commitment jointly, under Article 4 of the Kyoto Protocol.[14] The Doha Amendments' entry into force is subject to acceptance by at least three quarters of the Parties to the Kyoto Protocol.

When Member States set national emission caps for installations under the ETS for the period 2013–2020, 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 has improved tracking and analysis of progress towards Kyoto targets, as it has been done in the annual EEA report on greenhouse gas emission trends and projections in Europe.

Starting in 2014, the legal basis for the proxy GHG emission estimates is Regulation (EU) 525/2013 on a mechanism for monitoring and reporting GHG emissions (EU MMR). Article 8 requires Member States to submit to the Commission, where possible, approximated GHG inventories for the year *t*–1 by 31 July every year. These estimates are used to assess progress towards GHG emission targets.

Publishing a proxy GHG emissions report also fulfils the goals of the 'Beyond GDP' process (EU, 2014), which encourages authorities to produce data on the environment with the same frequency and timeliness as they produce data on the economy.

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. Since 2013, there is an EU-wide cap on emissions from ETS installations (instead of national allocation plans as under the Kyoto Protocol) 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

[14] Submission by Denmark and the European Commission on behalf of the European Union and its Member States (19 April 2012). Available at:
http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_eu_19042012.pdf'
Submission by Iceland (10 May 2012), available at:
http://unfccc.int/resource/docs/2012/awg17/eng/misc01a01.pdf

progress to towards EU and national targets for 2020. The EEA has also used the proxy estimates of 2014 GHG emissions produced by EEA member countries to assess progress towards GHG emission targets in its annual *Trends and Projections Report*. In that report, the EEA's own proxy estimates for 2014 were only used for countries that lack their own estimates to track progress towards national and EU targets.

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 this report the methodological approach from 2013 has changed. In accordance with the reporting of approximated greenhouse gas inventories under Article 8 of the MMR, all member states will produce their own proxy greenhouse gas estimates. Since the 2014 report the approach in the way that Member States proxies are used has changed. In previous reports the analysis and calculations took advantage of available Member States proxy emission estimates for quality assurance and quality control.

This year's proxy report makes use of the Member States proxy inventories reported under the EU MMR Missing Member States proxies have been gap filled with proxy data that has been calculated with the same bottom-up country specific methods that were used in previous years.

This report provides greenhouse gas estimates one year before the official submission of national greenhouse gas inventories to UNFCCC. The estimates are based on the proxy inventories received from the member states with gap-filling where necessary. Table 1 shows an overview of different emission estimates by EU bodies. More information can be found on the EEA website 'Note on different emission estimates by EU institutions':
www.eea.europa.eu/publications/different-emission-estimates-by-eu-bodies.

Table 1 Overview of EU data sources for GHG estimates

What	Who	When	Timeliness	Geographical scope	Sectoral Scope	EU reporting obligation
EU GHG inventory to UNFCCC	EEA	15 April (draft submission) & 30 May (final submission)	*t*-2	EU and its 28 Member States	All gases and sectors (100% of emissions)	EU MMR (525/2013)
Approximated GHG inventory	EEA	30 September	*t*-1	EU and its 28 Member States, Iceland and other EEA member countries when available	All gases and sectors (100% of emissions) except LULUCF	EU MMR (525/2013)
EU ETS	DG CLIMA	Early April and May	*t*-1	EU-28, Iceland, Norway and Liechtenstein	12,000 installations (~45% of total emissions)	EU ETS Directive (2003/87/EC)
CO_2 early estimates	Eurostat	Usually April / May	*t*-1	EU and its 28 Member States	CO_2 from fossil fuel combustion (~80% of total emissions)	Eurostat's work programme
EDGAR global database	JRC	August / September	*t*-1	Global coverage	All gases and sectors (100% of emissions)	JRC's work programme

Note: 2015 is the first reporting year where IPCC 2006 Reporting Guidelines are applied for reporting of GHG inventories. Due to late the availability of updated reporting software, the EU GHG inventory for the UNFCCC and CO_2 early estimates were not published in the usual schedule.

2. European GHG emissions in 2014 using proxy data

Twenty-three Member States submitted preliminary 2014 GHG data to the European Commission and the EEA by 31 July 2014[15]. Austria, Belgium, Croatia, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Slovenia, Spain, Sweden and the United Kingdom all submitted emissions in the form of largely[16] complete CRF Summary2 tables. The methodologies used for any gap-filling are described in chapter 2.4.2.

As Bulgaria, Cyprus, Lithuania, Portugal, Romania and Iceland did not submit preliminary GHG inventories by 31 July 2014, approximated GHG emissions were calculated centrally by EEA and its ETC/ACM (see chapter 2.4.1). Approximated GHG inventories in CRF Summary2 table format are presented for the EU-28 and EU plus Iceland in chapter 2.1.3. Chapter 4.1 provides the CRF Summary2 tables for each of the 28 Member States and Iceland.

From the 2014 reporting year the new rules for inventory calculation for the second commitment period of the Kyoto Protocol apply. These changes include implementation of IPCC Reporting Guidelines 2006 and the use of the GWPs from the IPCC Fourth Assessment Report (AR4) and therefore limit direct comparisons with previously published emissions reports and data.

2.1 Trends and general results

The estimates for 2014 indicate that emissions continued to decrease in 2014. Compared to preliminary 2013 emissions, the fall in emissions between 2013 and 2014 is estimated to be -185.4 million tonnes of CO_2-equivalents (Mt CO_2-eq) or -4.1 % for the EU plus Iceland[17] (total GHG emissions without LULUCF and including indirect CO_2)[18]. For the EU plus Iceland, total GHG emissions in 2014 are estimated to be -24.4 % below 1990 emissions.

[15] Where LULUCF data was provided, this data was not used, as for the approximated GHG inventories for EU-28 and EU plus Iceland, emissions from LULUCF are not calculated.

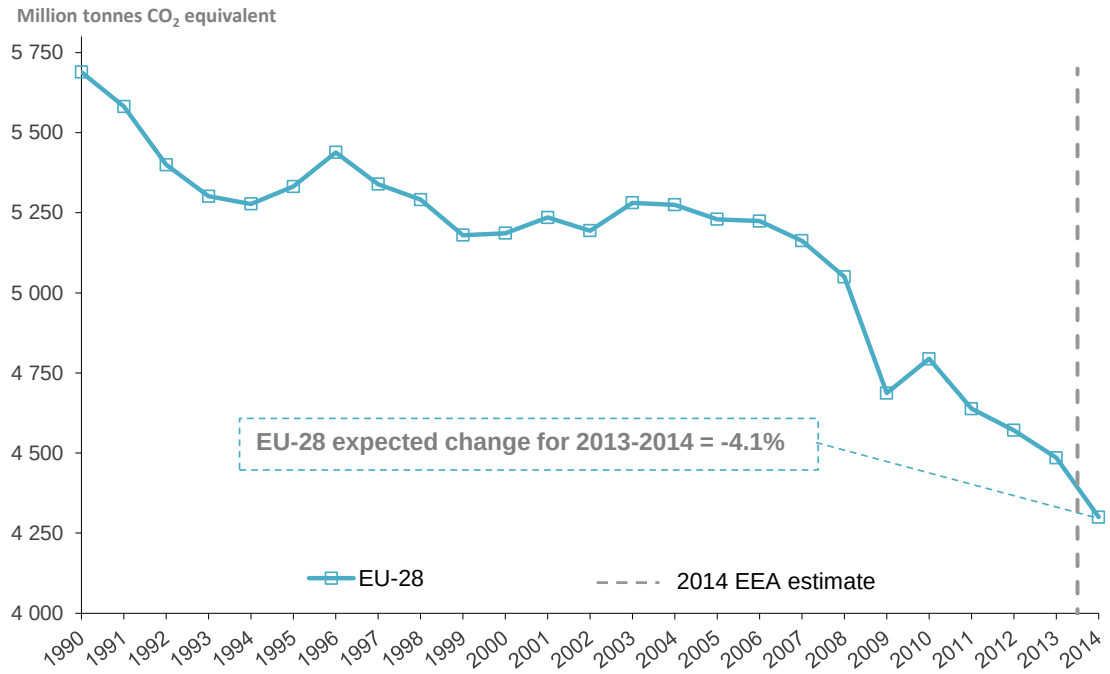
[16] While some Member States did not include in their CRF Summary2 sheets the full level of detail required by Article 17 of the Commission Implementing Regulation (EU) No 749/2014 referencing to Article 8 (1) of Regulation (EU) No 525/2013, the missing data was minor and no gap-filling was required. Denmark, Finland, Sweden and United Kingdom submitted CRF Summary2 tables which included some gaps or aggregation. For these five countries, gap-filling methodologies were applied to achieve the necessary level of detail.

[17] EU plus Iceland refers to the EU-28 plus Iceland. In figures and tables this may be abbreviated to EU + IS. The attribution 'EU-28' is used in contexts where Iceland is not included.

[18] According to the UNFCCC reporting guidelines, Annex I Parties may report indirect CO_2 from the atmospheric oxidation of CH_4, CO and NMVOCs. For Parties that decide to report indirect CO_2 the national totals shall be presented with and without indirect CO_2. The EU proxy estimates are based on national totals excluding LULUCF and including indirect CO_2 if reported by Member States.

The -4.1 % emission decrease for EU plus Iceland occurred against an increase in gross domestic Product (GDP) of +1.4 % on average in 2014 compared to 2013. As in 2013, notwithstanding economic developments in specific sectors and countries, there was no common pattern between GDP and GHG emissions for all EU Member States in 2014. The economic situation in the EU improved slightly during 2014 compared to 2013. Yet, GHG emission reductions in 2014 compared to 2013 were even larger than in 2013 compared to 2012 (-4.1 % and -1.8 %, respectively). Most Member States achieved significant emission reductions in 2014 while also recording positive economic growth.

Figure 1 Trends in total greenhouse gas emissions, 1990-2014



Note: Total GHG emissions without LULUCF including indirect CO_2. The diagram does not include Iceland because at the time of production of this report Iceland had not developed full inventories for all years 1990-2013.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Analysis of emission trends needs to include climatic factors which can affect behaviour and energy demand. 2014 was the warmest year on record in Europe. Winter in Europe in 2014 was

generally much warmer than it was in 2013.[19] Higher winter temperatures in most Member States led to lower heating demand and lower emissions from the residential and commercial sectors and also to lower energy production and therefore lower emissions in the energy industries. In most EU-28 Member States EEA data on heating degree days (HDD - a measure for heating demand), were lower in 2014 compared to 2013: Strongest decreases of HDD occurred in Croatia (-21.2 %), Luxembourg (-20.1 %) and France (-19.9 %). Further eleven Member States had HDD decreases of more than -10 %. Only in Greece and in Finland heating degree days increased in 2014 compared to 2013 (by +3.4 % each). In all analysed[20] Member States HDD were lower in 2014 compared to the long-term average 1990–2013.

On a sectoral basis, the largest absolute emission reduction in the EU occurred in the energy sector (i.e. all combustion activities and fugitive emissions). GHG emissions fell by -181.9 Mt CO_2eq (-5.2 %) across the EU plus Iceland. This decrease in emissions in the energy sector reflects the decline of gross inland energy consumption in the EU plus Iceland in 2014. Within the energy sector, emissions decreased mostly in energy industries (-85.7 Mt CO_2-eq), other sectors (i.e. residential and commercial) (-85.3 Mt CO_2-eq) as well as for manufacturing industries and construction (-13.6 Mt CO_2-eq).

Primary energy consumption in the EU-28 dropped by 3.9 % in 2014 and reached the lowest level since 1985. The contribution of fossil fuels to the energy mix declined while renewables increased further (BP 2015).

Based on Eurostat monthly consumption data for solid, liquid and gaseous fuels (Eurostat, 2015), total fuel consumption in the EU fell by -5 %, with different trends for the different fossil fuel types. Consumption of natural gas dropped most significantly by -10.7 %. Consumption of solid fossil fuels fell by -4.3 % and consumption of liquid fuels was reduced by only -1.2 %. Natural gas consumption fell in all Member States between 2013 and 2014. Five Member States experienced declines in natural gas consumption of more than -15 %: Denmark by -16.4 %, Estonia by -21.5 %, Greece by -23.3 %, Slovakia by -34.4 % and Sweden by -17.0 %.

Ten Member States showed increasing solid fossil fuel consumption (including peat), most notably in Belgium by 17.1 %, followed by Bulgaria with 9.4 % and Spain with 7.5 % (Eurostat, 2015). On the other hand, solid fossil fuel consumption (including peat) decreased in 18 Member States, most notably in Denmark (-18.9 %), France (-26.3 %), Latvia (-24.2 %)[21], Lithuania (-16.6 %), Slovenia (-21.8 %) and the United Kingdom (-20.1 %). These changes in solid fossil fuel and natural gas consumption are not only related to the heating-degree-day (HDD) effects as described before but also strongly connected with the trends in electricity generation.

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[19] http://cib.knmi.nl/mediawiki/index.php/2014_warmest_year_on_record_in_Europe

[20] HDD data for 2014 was not available for Cyprus, Malta and Iceland at the time of production of this report.

[21] Based on the provisional energy balance by the Central Statistical Bureau of Latvia, the reduction of solid fossil fuels excluding peat and peat briquettes was – 16.2% (– 16.9% if peat and peat briquettes are included).

Hydroelectric generation increased by +2 % in the EU with strong regional differences. Parts of eastern northern Europe experienced a favourable year for hydro electricity production. In Hungary gross hydro generation grew by +41 % compared to the previous year, in Slovenia by +27 %, Romania by +25 %, and in Poland by +9 % and in Finland and Sweden both by +5 % (Eurostat, 2015). Also in other parts of Europe hydroelectric generation increased strongly, in the United Kingdom by +15 %, in Portugal by +11 % and in Italy by +10 %.Central Europe faced the opposite conditions with a declining gross hydro generation, in particular in the Czech Republic (-19 %), Slovakia (-12 %), France (-8 %), Germany (-6 %) and Austria (-2 %). Latvia (-32%) and Greece (-29 %) have the strongest decreases of hydroelectric generation but do not fit into clear regional patterns.

Electricity production from renewable sources other than hydro increased considerably. Gross wind generation grew by almost +5 % in the EU (Eurostat, 2015).[22] Wind generation grew in 18 Member States in 2014, partly with very high growth rates: Croatia (+52 %), Finland (+37 %), Austria (+35 %), Poland (+28 %) and Belgium (+24 %). In seven Member States (Denmark, Germany, Ireland, Spain, Lithuania, Portugal, United Kingdom) gross wind generation contributed with more than 10 % to total gross electricity generation in 2014, with the highest share in Denmark (42 % wind generation in total gross electricity generation).

Due to the lack of data on solar generation from Eurostat for 2014 at the time of production of this report, BP data were used to evaluate the impact of solar power and total renewable generation. The consumption of renewable sources other than hydro grew by +8.5 % with a continued strong growth by +15 % for solar power (BP, 2015). In three Member States solar consumption reached a considerable share of total electricity generation: In Greece solar electricity reached a share of 8.9%, in Italy a share of 8.5% and in Germany a share of 5.7 % in total electricity generation (BP, 2015).

Thus, 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 total renewable energy consumption (without hydro) is reported for many Member States such as Austria (+12 %), Belgium (+11 %), Czech Republic (+14 %), Denmark (+13 %), France (+11 %), Greece (+11 %), Ireland (+12 %), Italy (+11 %), Lithuania (+19 %), Poland (+17 %), Romania (+22 %), Spain (+12 %) and United Kingdom (+19 %) (BP, 2015). Only Hungary (-2 %), the Netherlands (-5 %), Slovakia (-7 %) and Spain (-1 %) showed decreasing consumption of renewable energy according to BP data.

In 2014 nuclear electricity production across the EU-28 was in 2014 almost constant (-0.1%) compared to 2013 according to Eurostat monthly data. The largest increases in nuclear electricity generation occurred in the Netherlands (+42 %), Slovenia (+20 %) and Bulgaria (+12 %). The largest

[22] 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.

decreases in nuclear electricity generation were in Belgium (-21 %) and the United Kingdom (-10 %). Nuclear electricity generation changed by less than ±3% in all other countries.

Reporting under the Monitoring Mechanism Regulation requires separate detail for the EU ETS and non-ETS sectors. Between 2013 and 2014 the emission decreased by -5.2 %[23] across installations covered by the European Emissions Trading System for the EU plus Iceland, whereas emissions in the non-ETS sectors decreased by -3.3 %.

2.1.1 Change in GHG emissions in the period 2013–2014 at Member State level

Figure 2 illustrates the changes in emissions in Europe from 2013 to 2014. GHG emissions decreased in 23 Member States (United Kingdom, Germany, France, Italy, Netherlands, Poland, Denmark, Belgium, Greece, Austria, Portugal, Finland, Sweden, Croatia, Slovakia, Slovenia, Estonia, Czech Republic, Hungary, Ireland, Luxembourg, Lithuania and Malta).[24] The largest absolute decrease of emissions occurred in the United Kingdom (-49.9 Mt CO_2eq or -8.7 %), Germany (-40.7 Mt CO_2eq or -4.3 %), followed by France[25] (-36.7 Mt CO_2eq or -7.5 %) and Italy (-20.0 Mt CO_2eq or -4.6 %). The largest relative fall in emissions compared to the previous year took place in the United Kingdom (-8.7 %), followed by Denmark (-7.8 %), Slovenia (-7.7 %) and France (-7.5 %). The largest absolute growth in emissions occurred in Spain (+3.5 Mt CO_2eq or +1.1 %) and the largest relative increase in Bulgaria (2.8 Mt CO_2eq or +5.0 %).

The following section explains the emission trends for those Member States that contribute considerably to total EU emissions (Germany, United Kingdom, France, Italy, Poland and Spain)[26] as well as for those Member States (Bulgaria, Cyprus, Denmark and Slovenia) that showed pronounced positive or negative changes in emissions compared to the previous year.

Member States with decreasing emission trends

In the United Kingdom, emissions decreased by -49.9 Mt CO_2-eq or -8.7 % in 2014. This is much stronger than the previous decrease of emissions by -1.8 % in 2013. In the United Kingdom the decline in emissions is due to reduced consumption of fossil fuels, in particular coal which

[23] The European Commission announced on 18 May 2015 a reduction of ETS emissions of -4.5% for all participating countries (EU-28, Iceland, Liechtenstein and Norway). This -4.5% change was calculated on the basis of those installations having reported emissions both in 2013 and 2014. In this report the -5.2% reduction refers to the EU28 plus Iceland and is calculated on the basis of all verified emissions.

[24] Ordered by absolute contribution to the EU reduction

[25] The 2014 Proxy inventory submitted by France includes Mayotte. The inventory basis 1990-2013 is consistent with the Proxy. The official inventory submission from France does not include Mayotte for the period 1990-2013. The inclusion or exclusion of emissions from Mayotte result in a difference of less than 0.5 Mt CO2-eq, equivalent to less than 0.1 percentage points.

[26] Comments are made for these six Member States because in combination they contribute to about 70 % of total EU plus Iceland emissions and each of these Member States contributes more than 300 Mt CO_2-eq.

dropped by more than -20 % and natural gas which decreased by -8.6 % while consumption of liquid fuels was almost constant. The largest absolute emissions decrease was in sub-category 1.A.1 Energy Industries (-28.8 Mt CO_2-eq or -16.1 %), where reduction in coal and gas consumption reflects lower gross thermal electricity generation (-8.8 % lower in 2014). The emissions decrease was due to reduced electricity consumption of -4.8 %, a change in the fuel mix for electricity generation, with less use of coal, more wind generation (+18 %) and also increased electricity imports (+28 %). The next largest decrease was in the residential sector reflecting reduced heating demand. Heating degree days were -13.8 % lower in 2014 than in 2013 resulting in a emissions reduction of -15.8 Mt CO_2-eq or -15.1 % in 1.A.4 Other Sectors which include residential and commercial activities.

In Germany, there was an emissions decrease of -40.7 Mt CO_2-eq or -4.3 %, the first after increasing emissions between 2011 and 2013. There has been a particularly sharp decline in the use of natural gas and hard coal. While total solid fuel consumption decreased only slightly, hard coal declined by 8.2% but was counterbalanced by an increase in lignite. Liquid fuel consumption also decreased only slightly. Natural gas consumption saw an -11 % decrease which is consistent with the relatively warm winter. Heating degree days in 2014 were -17.7 % lower than 2013. Reduced heating demand is reflected in the -23.8 Mt CO_2-eq (-15.8 %) emission reduction in 1.A.4 Other Sectors. Gross electricity generation fell significantly by -4.7 %; mainly from conventional thermal power plants (-7.9 %) while renewable electricity in general grew with the strongest absolute increase in wind generation (+4.8 %). The emissions decrease in the 1.A.1 Energy Industries sector was -21.3 Mt CO_2-eq or -5.9 %).

France also saw a decrease in emissions in 2014: -36.7 Mt CO_2-eq or -7.5 %. The decrease in 2014 is due to decreased energy use especially in 1.A.1 Energy industries (which includes coal and gas fired electricity generation and district heating) and 1.A.4 other sectors (which includes residential). Energy statistics from Eurostat (2015) reveal that coal consumption dropped by -28 % and natural gas use decreased by -13 %. This is consistent with electricity generation from fossil fuels falling by -32.2 %, while the consumption of liquid fuels was almost constant. The decreased energy consumption reflects the warmer winter seen across Europe. Emissions from 1.A.1 Energy industries fell by -13.6 Mt CO_2-eq or -25.9 % and emissions in 1.A.4 Other sectors fell by -15.5 Mt CO_2-eq or -15.6 % in 2014. Manufacturing industries and construction decreased in 2014 by -3.1 Mt CO_2-eq (or -5.0 %), while Transport fell by -1.0 Mt CO_2-eq (or -0.8 %).

Italy is the fourth largest GHG emitter in Europe. In 2014 emissions fell by -20.0 Mt CO_2-eq or -4.6 % compared to 2013. Fossil fuel consumption showed a significant decline. Solid fuel consumption fell by -4.5 %, oil consumption by -4.0 % and gas consumption dropped by -11.6 %. The largest emission decrease was in 1.A.4 Other Sectors (-11.8 Mt CO_2-eq or -13.7 %). The next most significant decrease was in 1.A.1 Energy Industries (-8.1 Mt CO_2-eq or -7.5 %). A strong decrease in gross thermal electricity generation by -9.0 % was compensated by an increase in hydro generation of 10.3 % and increased electricity imports. Thus, Italy profited from good rainfall conditions and a general increase of renewable energy production (+4.7 %). Emission reduction could also reflect lower economic growth (there was small decrease of GDP by -0.5 %).

GHG emissions of Poland decreased in 2014 by -6.7 Mt CO_2-eq or -1.7 %. The largest part of this emission decrease was in 1.A.1 Energy Industries with a reduction of -3.4 Mt CO_2-eq or -2.0 %, related to a -6.7 % reduction of fossil fuel consumption and a -5.8 % reduction of gross electricity

generation from conventional thermal power plants. While Poland was in previous years a net exporter of electricity, it became a net importer in 2014. Also hydroelectric generation increased by 11 %. Consumption of liquid fossil fuels and natural gas was only reduced by approximately -2 % each, therefore emissions in other energy sectors only changed little. Emissions from Industrial Processes and Product Use decreased -2.3 Mt CO_2-eq or -7.5 %. This emission reduction was mainly driven by a reduction of -2.7 Mt CO_2-eq or -28.4 % of HFC emissions while other process emissions (especially from clinker, ammonia and pig iron production) increased.

Denmark saw the second largest relative emission decrease of all Member States of the European Union: Its -7.8 % or -4.3 Mt CO_2eq decrease is related to lower coal consumption for power production (decrease of -18.9 % in solid fuel consumption and of -9 % in gross thermal electricity generation) due to more than doubled net electricity imports from the Nordic electricity market. Also wind generation increased by 15 % and reached a share of 41.5 % in total gross electricity generation. Heating degree days were -18.3% compared to previous year level and are related to a decrease of natural gas consumption by -16.4 %.

Slovenia is one of the smaller countries in the European Union but saw in 2014 an emission decrease of -1.4 Mt CO_2-eq which is equal to -7.7 %. While consumption of liquid fossil fuels was almost constant, solid fossil fuels (mainly hard coal) consumption fell by -21.2 % and natural gas consumption by -9.4 %. The largest part of this emission reduction (-1.0 Mt CO_2-eq or -17.2 %) was in 1.A.1 Energy Industries which reflects the decreased gross electricity generation from conventional thermal power plants (-22 %) and increased generation from both nuclear (+20 %) and hydroelectric (+27 %) power plants. The sharp decrease in heating degree days (-15.4 %) explains most of the emission reduction in 1.A.4 Other Sectors (-18.7 %).

Member States with increasing emission trends

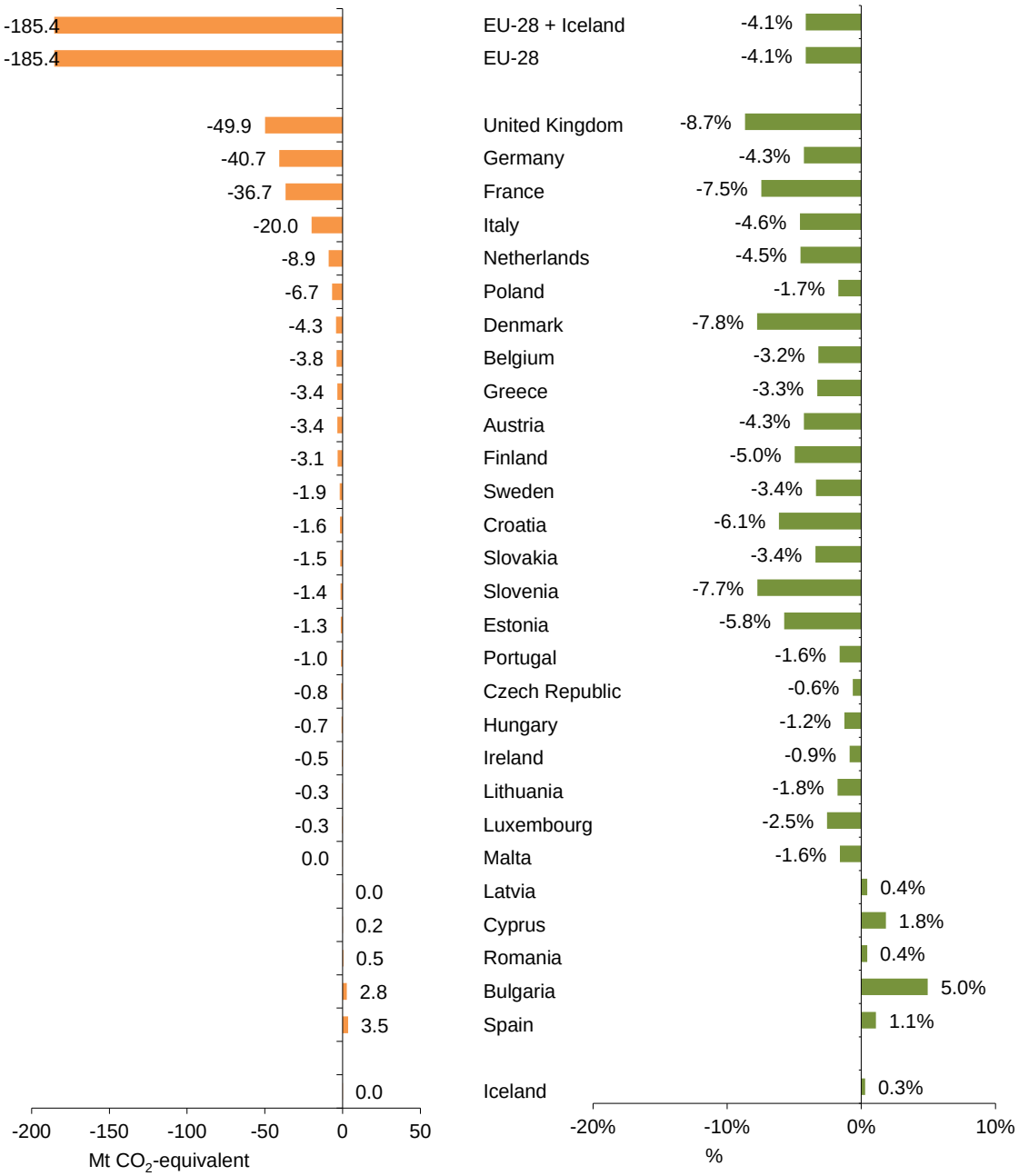
Spain experienced the largest absolute emission increase of all Member States: Emissions were +3.5 Mt CO_2eq or +1.1 % higher in 2014 compared to 2013. While total fossil energy consumption fell by -3.9 %, the increase in emissions reflects a change to more emissions intensive fuel mix. Liquid fossil fuel consumption decreased by -1.7 % and natural gas consumption by -9.3 %, however solid fossil fuel consumption increased by +8.0 %. The largest increase in energy emissions were in 1.A.1 Energy Industries. According to Spain's own reported information, this increase is related to increased coal (+7 %) and natural gas (+17 %) in the electricity generation mix and increased emissions from refineries. Emissions in the Industrial Processes and Product Use sector increased by 1.7 Mt or 6.2 %, mainly from a +17 % increase in the cement industry. Emissions from Agriculture increased by +1.7 Mt CO_2-eq or +4.4 % due to cattle rise.

Bulgaria had the largest relative emissions increase of all Member States in 2014: Emissions increased by +5.0 % or +2.8 Mt CO_2eq compared to 2013. In Bulgaria solid fuel consumption showed a strong increase of +9.6 % and oil consumption increased by +4.9 % while gas consumption only changed slightly (-0.9 %). The largest contributor to the emissions increase was 1.A.1 Energy Industries with a +1.5 Mt CO_2-eq or +5.7 %. Electricity consumption was almost constant, therefore increased gross generation in conventional power plants (+6 %) and nuclear power plants (+12 %) led to a 53 % increase of net electricity exports which account now for 20 % of total electricity

generation. Larger hydro generation (+4 %) compensated lower wind generation (-4 %). The second largest contributor to emission increase in Bulgaria was 1.A.3 Transport where emission increased by +0.6 Mt or +7.5 %. This explains most of the increased consumption of liquid fuels.

Cyprus had the second largest relative emission increase of all Member States: +1.8 % or +0.15 Mt CO_2-eq. Main driver for this emission increase was an increase of +0.22 Mt CO_2-eq or +27.8 % in 2.A.1 Cement Production which corresponds to the ETS emissions trend for the activity code 29 Production of cement clinker. This increase of process emissions was much stronger than the -0.09 Mt (-1.5 %) emission decrease from 1.A Fuel Combustion. Within the energy sector there were also opposing emission trends: Emissions in the 1.A.3 Transport sector decreased strongly (-0.27 Mt CO_2-eq or -14.5 %) while emissions from 1.A.1 Energy Industry increased significantly (+0.11 Mt CO_2-eq or +3.9 %).

Figure 2 Member States emissions, change 2013-2014

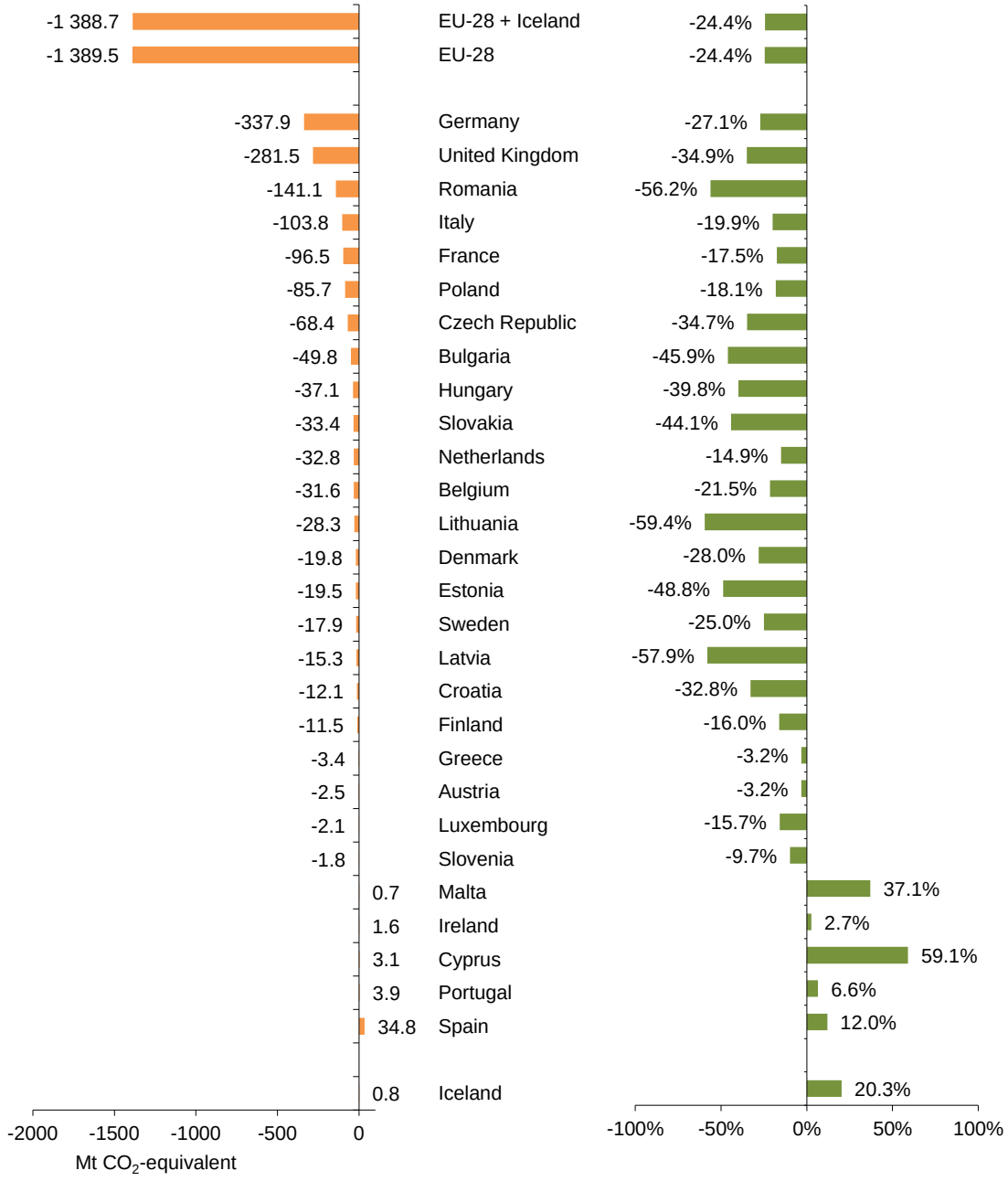


Note: Total GHG emissions without LULUCF including indirect CO_2, based on the preliminary 2015 MS GHG inventories submitted to the EU for the years 1990-2013 as well as proxy estimates for 2014.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

2.1.2 Change in GHG emissions in the period 1990–2014 at Member State level

Figure 3 Member States emissions, change 1990-2014



Note: Total GHG emissions without LULUCF including indirect CO_2, based on the preliminary 2015 MS GHG inventories submitted to the EU for the years 1990-2013 as well as proxy estimates for 2014.

Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Figure 3 shows the emission trend for total GHG emissions without LULUCF and including indirect CO_2 between the years 1990 and 2014. For EU plus Iceland, total GHG emissions in 2013 are estimated to be -24.4 % below 1990 emissions.

2.1.3 Detailed results for EU-28 and EU plus Iceland

Table 2 and Table 3 show the detailed results for the EU-28 and the EU plus Iceland. Annex 4.1 includes summary tables for 2014 for each Member State as submitted by the Member States or by EEA for Member States which did not submit their own approximated emissions.

Table 2 Summary table of approximated GHG emissions for 2014 for EU-28 (total emissions without LULUCF including indirect CO_2)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Estimate 2014
Proxy Inventory 2015
EUROPEAN UNION (EU-28) v Proxy 1.1

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	3 432 233.77	449 779.77	241 194.20	102 099.70	3 554.44	6 212.97	579.82	70.84	4 297 127.15		
1. Energy	3 188 730.26	86 000.65	29 548.60						3 344 155.92		
A. Fuel combustion (sectoral approach)	3 162 958.33	22 840.59	29 448.22						3 254 238.93		
1. Energy industries	1 225 586.15	3 324.92	7 855.52						1 246 726.13		
2. Manufacturing industries and construction	476 656.04	1 714.21	4 416.72						490 608.97		
3. Transport	862 212.20	1 273.40	8 849.25						890 318.79		
4. Other sectors	592 992.68	16 166.24	7 848.54						620 046.48		
5. Other	6 498.13	25.37	87.19						6 755.28		
B. Fugitive emissions from fuels	25 771.93	63 260.06	100.55						89 816.99		
1. Solid fuels	3 672.94	24 891.93	0.04						28 568.08		
2. Oil and natural gas	22 098.99	38 368.12	95.99						61 244.40		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	231 449.82	2 111.90	10 990.91	102 099.70	3 554.44	6 212.97	579.82	70.84	364 114.79		
A. Mineral industry	106 811.54								108 786.63		
B. Chemical industry	49 660.75	1 414.04	7 940.63	488.86	1 995.85	0.00	0.00	NA, NO	62 003.95		
C. Metal industry	63 235.45	610.99	57.64	40.37	367.58	195.12	NA, NO	NA, NO	67 439.22		
D. Non-energy products from fuels and solvent use	10 885.39	2.02	3.29						11 453.29		
E. Electronic Industry				49.97	499.84	159.77	NO	70.79	784.88		
F. Product uses as ODS substitutes				101 507.86	342.79	NA, NO	NA, NO	NA, NO	102 721.53		
G. Other product manufacture and use	629.80	80.95	3 014.02	10.84	345.48	5 719.70	483.11	0.00	10 421.49		
H. Other	226.89	4.32	0.00	1.72	2.91	20.68	0.00	NA, NO	357.77		
3. Agriculture	8 657.80	229 060.89	189 007.35						439 805.73		
A. Enteric fermentation		181 245.05							184 271.77		
B. Manure management		45 331.45	21 726.60						67 552.49		
C. Rice cultivation		3 013.18							3 013.18		
D. Agricultural soils		NA, NE, NO	169 975.13						173 057.28		
E. Prescribed burning of savannas		NO	NO						NO		
F. Field burning of agricultural residues		1 074.55	320.36						1 394.91		
G. Liming	5 521.92								5 605.99		
H. Urea application	3 192.18								3 193.07		
I. Other carbon-containing fertilizers	74.95								74.95		
J. Other	0.00	1 318.32	334.75						1 673.07		
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	3 395.89	132 606.33	11 647.34						149 050.71		
A. Solid waste disposal	0.00	108 947.67							110 338.18		
B. Biological treatment of solid waste		3 673.74	3 076.37						6 894.01		
C. Incineration and open burning of waste	3 379.93	93.47	175.01						3 705.61		
D. Waste water treatment and discharge		19 854.10	8 275.96						28 337.25		
E. Other	15.97	8.47	130.00						148.57		
6. Other *(as specified in summary 1.A)*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2[3]	2 725.68										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**4 296 872.51**	**1 784 010.26**	**2 510 814.16**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**4 299 598.19**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Source: Member States' proxy estimates, gap filled with EEA's proxy estimates

Table 3 Summary table of approximated GHG emissions for 2014 for EU plus Iceland (total emissions without LULUCF including indirect CO_2)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Estimate 2014
Proxy Inventory 2015
EUROPEAN UNION (EU-28) + ICELAND v Proxy 1.1

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]	3 435 549.09	450 320.99	241 507.44	102 290.55	3 642.15	6 216.01	579.82	70.84	4 301 578.54		
1. Energy	3 190 385.97	86 013.41	29 578.90						3 345 854.71		
A. Fuel combustion (sectoral approach)	3 164 447.02	22 849.28	29 478.53						3 255 766.62		
1. Energy industries	1 225 588.37	3 324.92	7 855.53						1 246 728.36		
2. Manufacturing industries and construction	476 814.44	1 717.36	4 427.11						490 780.89		
3. Transport	863 047.35	1 277.81	8 869.17						891 178.27		
4. Other sectors	593 485.60	16 167.37	7 848.54						620 540.54		
5. Other	6 498.13	25.37	87.19						6 755.28		
B. Fugitive emissions from fuels	25 938.96	63 264.13	100.55						89 988.09		
1. Solid fuels	3 672.94	24 891.93	0.04						28 568.08		
2. Oil and natural gas	22 266.02	38 372.20	95.99						61 415.50		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	233 104.11	2 113.28	10 993.70	102 290.55	3 642.15	6 216.01	579.82	70.84	366 054.86		
A. Mineral industry									108 787.21		
B. Chemical industry	49 660.75	1 414.04	7 940.63	488.86	1 995.85	0.00	0.00	NA, NO	62 003.95		
C. Metal industry	64 884.77	612.37	57.64	40.37	455.29	195.12	NA, NO	NA, NO	69 177.63		
D. Non-energy products from fuels and solvent use	10 889.78	2.02	3.29						11 457.68		
E. Electronic Industry				49.97	499.84	159.77	NO	70.79	784.88		
F. Product uses as ODS substitutes				101 698.71	342.79	NA, NO	NA, NO	NA, NO	102 912.39		
G. Other product manufacture and use	629.80	80.95	3 016.80	10.84	345.48	5 722.75	NA, NO	NA, NO	10 427.32		
H. Other	226.89	4.32	0.00	1.72	2.91	20.68	0.00	0.00	357.77		
3. Agriculture	8 657.88	229 376.26	189 278.09						440 391.92		
A. Enteric fermentation		181 521.99							184 548.70		
B. Manure management		45 369.88	21 790.36						67 654.68		
C. Rice cultivation		3 013.18							3 013.18		
D. Agricultural soils		NA, NE, NO	170 182.11						173 264.26		
E. Prescribed burning of savannas		NA, NE, NO	NA, NE, NO						0.00		
F. Field burning of agricultural residues		1 074.55	320.36						1 394.91		
G. Liming	5 521.94								5 606.01		
H. Urea application	3 192.25								3 193.13		
I. Other carbon-containing fertilizers	74.95								74.95		
J. Other	0.00	1 318.32	334.75						1 673.07		
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	3 401.12	132 818.04	11 656.75						149 277.05		
A. Solid waste disposal	0.00	109 153.52							110 544.04		
B. Biological treatment of solid waste		3 675.24	3 077.71						6 896.84		
C. Incineration and open burning of waste	3 385.15	93.52	175.18						3 711.06		
D. Waste water treatment and discharge		19 858.40	8 283.86						28 349.46		
E. Other	15.97	8.47	130.00						148.57		
6. Other *(as specified in summary 1.A)*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Memo items:[(2)]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2 [(3)]	2 725.68										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**4 301 323.90**	**1 785 765.20**	**2 513 510.61**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**4 304 049.58**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive
(2) See footnote 7 to table Summary 1.A.
(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Source: Member States' proxy estimates, gap filled with EEA's proxy estimates

2.2 Sectoral results

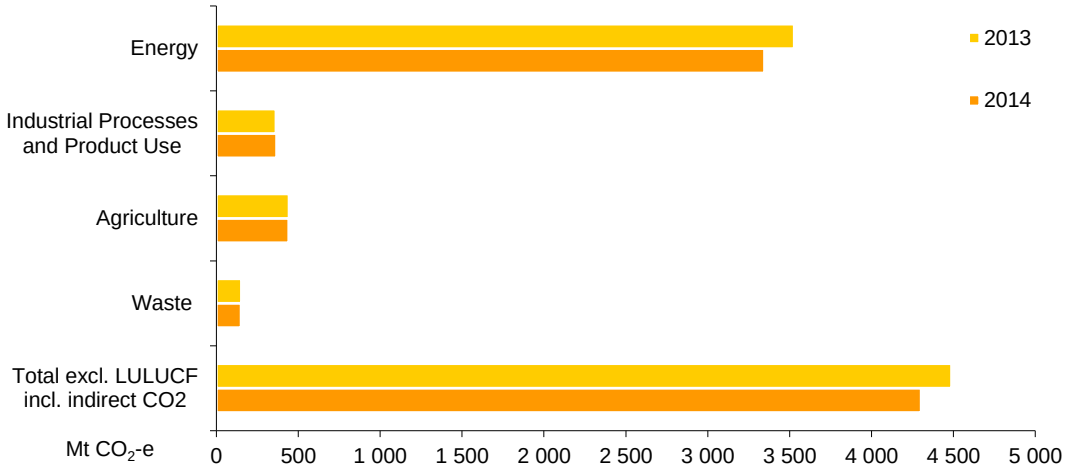
Table 4 and Figure 4 show the changes between 2013 and 2014 at sectoral level for the EU plus Iceland.

Table 4 Emissions by sector, change 2013-2014

Change 2013 / 2014	**EU plus Iceland**	
	Mt CO_2eq	**%**
Energy	-181.9	-5.2%
Industrial Processes and Product Use	3.4	0.9%
Agriculture	-2.0	-0.4%
Waste	-3.1	-2.0%
Total excl. LULUCF incl. indirect CO_2	**-185.4**	**-4.1%**

Source: EEA's ETC/ACM based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Figure 4 Emissions by sector, EU plus Iceland, 2013 and 2014



Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

On a sectoral basis, the largest absolute emission reduction occurred in the Energy sector (i.e. all combustion activities and fugitive emissions from energy). GHG emissions fell by -181.9 Mt CO_2eq (-5.2 %) across the EU plus Iceland. More detailed explanations for the trends in the energy sector are provided below in section 2.2.1 Energy.

The greenhouse gas emissions from Industrial Processes and Product Use increased by 3.4 Mt CO_2eq (+0.9%). The agricultural sector has experienced a decrease of -2.0 Mt CO_2-eq (-0.4 %) Waste sector emissions with a reduction of -3.1 Mt CO_2eq (-2.0%) the second largest contribution to the emission decrease of the EU plus Iceland.

2.2.1 Energy

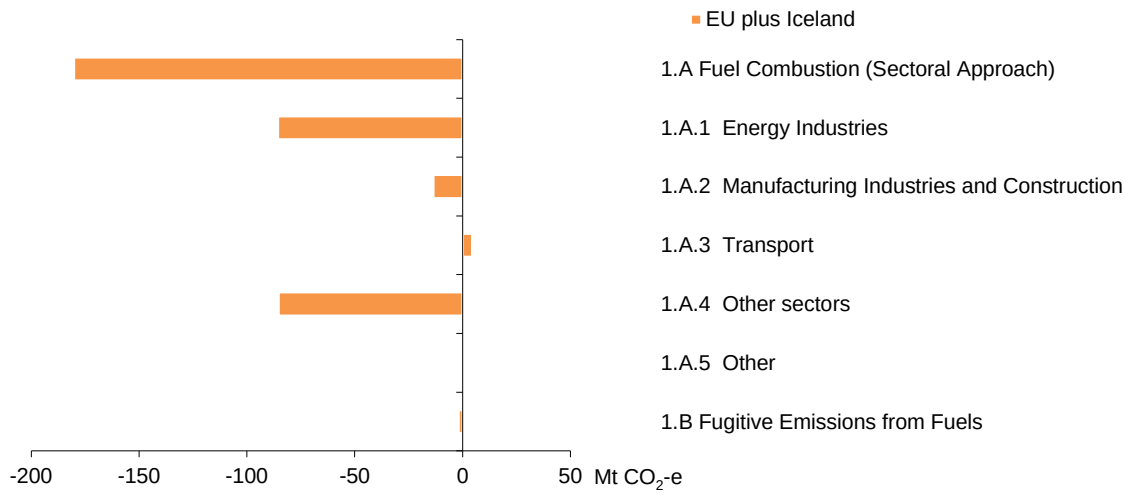
Emissions from the energy sector contributed about 78 % of total EU plus Iceland emissions in 2014. Emissions from fuel combustion show a decrease of -180.2 Mt CO_2eq or -5.2 % since 2013. Table 5 shows that the largest decrease in fuel combustion emissions occurred in 1.A.1 Energy Industries (-85.7 Mt CO_2eq) and 1.A.4 Other Sectors (-85.3 Mt CO_2eq). The later sector mainly consists of residential and commercial activities. While the absolute decrease in these two sectors was nearly identical, the relative decrease in 1.A.4 Other Sectors (-12.1 %) was almost twice that of 1.A.1 Energy Industries (-6.4 %). Emissions in 1.A.2 Manufacturing industries and Construction decreased by -13.6 Mt CO_2-eq or -2.7 %. Emissions in the 1.A.3 Transport sector only increased slightly by +4.5 Mt CO_2eq (+0.5 %). Emissions in 1.A.5 Other stayed almost constant (+0.1 Mt CO_2-eq or +0.8 %). The increase in emissions from Transport and Other were more than offset by the decreases in the other sub-sectors. 1.B Fugitive Emissions from Fuels decreased by -1.8 Mt CO_2eq (-2.0 %).

Table 5 Energy sector emissions, change 2013-2014

Change 2013 / 2014	**EU plus Iceland**	
	Mt CO_2eq	**%**
1.A Fuel Combustion (Sectoral Approach)	-180.2	-5.2%
1.A.1 Energy Industries	-85.7	-6.4%
1.A.2 Manufacturing Industries and Construction	-13.6	-2.7%
1.A.3 Transport	4.5	0.5%
1.A.4 Other sectors	-85.3	-12.1%
1.A.5 Other	0.1	0.8%
1.B. Fugitive Emissions from Fuels	-1.8	-2.0%

Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Figure 5 Energy sector emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

The largest emissions decrease for 1.A Fuel Combustion on Member States level was in the United Kingdom (-46.7 Mt CO_2-eq) followed by Germany (-41.3 Mt CO_2-eq) and France (-33.3 Mt CO_2-eq). Emissions from Fuel Combustion decreased in all Member States except Bulgaria (+2.5 Mt CO_2-eq), Latvia (+0.07 Mt CO_2-eq) and Iceland (+0.016 Mt CO_2-eq).

Going to more detail, in the sub category 1.A.1 Energy Industries, largest reduction was in the United Kingdom (-28.8 Mt CO_2-eq), followed by Germany (-21.4 Mt CO_2-eq) and France (-13.6 Mt CO_2-eq). Largest increases were in the Netherlands (+2.8 Mt CO_2-eq) followed by Spain (+2.7 Mt CO_2-eq) and the Czech Republic (+1.6 Mt CO_2-eq).

Emissions changes in the sector 1.A.2 Manufacturing Industries and Construction were significantly smaller. The largest decrease was in France (-3.2 Mt CO_2-eq) and the largest increase in Spain (+0.9 Mt CO_2-eq).

On the EU plus Iceland level, emissions changes in 1.A.3 Transport were relatively small, but on Member State level quite substantial changes occurred. The largest increases were in Germany (+5.0 Mt CO_2-eq), Italy (+2.3 Mt CO_2-eq) and Spain (+1.1 Mt CO_2-eq), while largest decreases were in the Netherlands (-2.3 Mt CO_2-eq), Denmark (-1.1 Mt CO_2-eq) and Romania (-1.0 Mt CO_2-eq).

In 1.A.4 Other Sectors (which include residential and commercial) emissions decreased in 24 Member States. The largest decreases occurred in Germany (-23.6 Mt CO_2-eq), the United Kingdom (-15.8 Mt CO_2-eq) and France (-15.5 Mt CO_2-eq). The largest increases were in Romania (+3.6 Mt CO_2-eq) and Bulgaria (+0.3 Mt CO_2-eq). The increases in Cyprus, Latvia and Iceland were less than +0.1 Mt CO_2-eq.

Emission changes in the sector 1.A.5 Other are in all Member States are less than ±0.2 Mt CO_2-eq.

1.B Fugitive Emissions from fuels decreased in most Member States. The largest decrease was in Portugal (-0.5 Mt CO_2-eq) and the largest increase in Czech Republic (+0.1 Mt CO_2-eq).

2.2.2 Industrial Processes and Product Use

Industrial Processes and Product Use (IPPU) contribute to about 8.5 % of total EU plus Iceland emissions and are the third most important source after emissions from energy use and agriculture. In 2014, GHG emissions from Industrial Processes increased by 3.4 Mt CO_2eq for the EU plus Iceland (+0.9%). Table 6 and Figure 6 show the sub-sector contribution to this trend in emissions. The increase is dominated by the 2.A Mineral Products subsector.

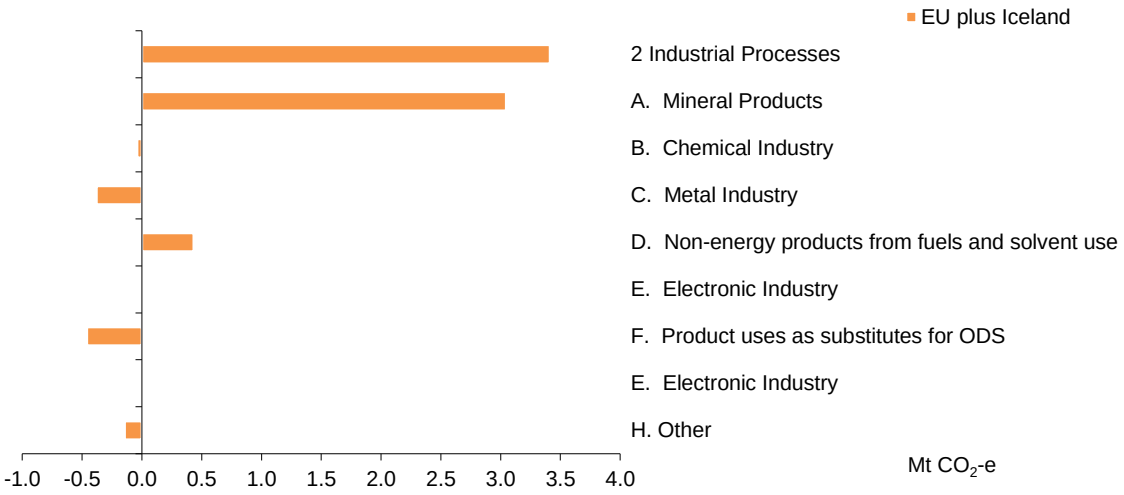
Table 6 Industrial Processes and Product Use emissions, change 2013-2014

Change 2013 / 2014	**EU plus Iceland**	
	Mt CO_2eq	**%**

2 Industrial Processes	3.4	0.9%
A. Mineral Products	3.0	2.9%
B. Chemical Industry	0.0	-0.1%
C. Metal Industry	-0.4	-0.5%
D. Non-energy products from fuels and solvent use	0.4	3.9%
E. Electronic Industry	0.0	-0.9%
F. Product uses as substitutes for ODS	-0.5	-0.4%
G. Other Product Manufacture and Use	0.8	8.5%
H. Other	-0.1	-28.9%

Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Figure 6 Industrial Processes and Product Use emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

The largest increase of emissions from Industrial Processes and Product Use was in Spain (+1 674 kt CO_2-eq) followed by Romania (+1 329 kt CO_2-eq) and Greece (+904 kt CO_2-eq) while the largest decreases were in Poland (-2 257 kt CO_2-eq) followed by the Czech Republic (-634 kt CO_2-eq) and the Netherlands (-485 kt CO_2-eq).

The increase of emissions from 2.A Mineral Products (+3 047 kt CO_2-eq or +2.9 % on the EU plus Iceland level) dominates the trend of the total IPPU emissions. This is consistent with the increase in emissions from mineral products related activities under the EU ETS in the same period.[27] In 18 Member States emissions increased in this sector, largest emission increase of Mineral

[27] Production of cement clinker; production of lime, or calcination of dolomite/magnesite; manufacture of glass; manufacture of ceramics; manufacture of mineral wool; production or processing of gypsum or plasterboard

Products was in Spain (1 358 kt CO_2-eq). Only eight Member States decreased their emissions from Mineral Products, largest decrease was in Italy (-320 kt CO_2-eq).

Emissions from 2.B Chemical Products were almost constant on the EU plus Iceland level (-39 kt CO_2-eq or -0.1 %). The largest increase was in Romania (+768 kt CO_2-eq) while the largest decrease was in the Slovakia (-354 kt CO_2-eq).

Emissions from 2.C Mineral Industry decreased slightly for whole the EU plus Iceland (-380 kt CO_2-eq or -0.5 %) with the largest increase in Germany (+296 kt CO_2-eq) and largest decrease in the Czech Republic (-699 kt CO_2-eq).

The second source category in IPPU with increasing emissions for the EU plus Iceland is 2.D Non-energy Products from Fuels and Solvent Use (+433 kt CO_2-eq). This is mainly due to an increase of +422 kt CO_2-eq in France. The second largest increase was in Spain with only +21 kt CO_2-eq while the largest decrease was in the United Kingdom (-33 kt CO_2-eq).

2.2.3 Agriculture

Agriculture (excluding LULUCF) contributes to about 10 % of European emissions. The largest greenhouse gas emitting activities within the sector are CH_4 from livestock and N_2O from soils. Enteric fermentation and soils contributed about 42 % and 39 % of the of the sector's emissions respectively. As shown in Table 7 and Figure 7 the decrease in emissions is largely due to reduced emissions from these two sub-sectors. Manure management which contributes to about 15 % of agricultural emissions saw a very small reduction.

Table 7 and Figure 7 show the sub-sector contributions with CH_4 and N_2O emissions shown as CO_2 equivalents (Mt CO_2eq).

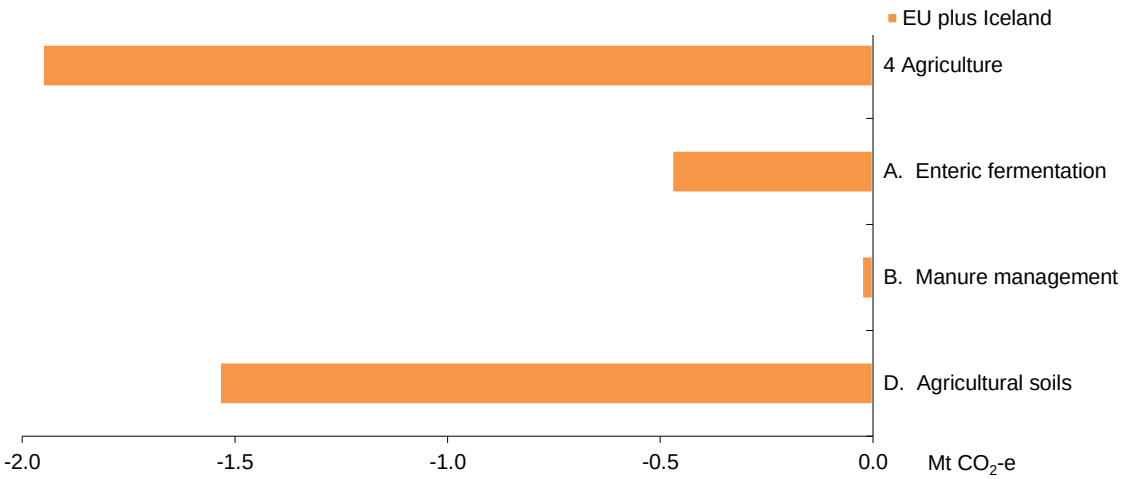
Table 7 Agriculture sector emissions, change 2013-2014

Change 2013 / 2014	**EU plus Iceland**	
	Mt CO_2eq	**%**
4 Agriculture	-2.0	-0.4%
A. Enteric fermentation	-0.5	-0.3%
B. Manure management	0.0	0.0%
C. Rice cultivation	0.0	-1.2%
D. Agricultural soils	-1.5	-0.9%
E. Prescribed burning of savannas	-	-
F. Field burning of agricultural residues	0.2	13.2%
G. Liming	-0.1	-1.1%
H. Urea application	0.1	2.0%
I. Other carbon-containing fertilizers	0.0	-5.4%
J. Other	0.0	-0.5%

Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Total emissions from agriculture decreased due largely to lower emissions from soils and enteric fermentation.

Figure 7 Agriculture sector emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Note: Although sub-sectors C. Rice cultivation, F. Field burning of agricultural residues, G. Liming, H. Urea application, I. Other carbon containing fertilizers and J. Other are shown in Table 7, they contribute to less than 4% of EU Agricultural emissions and have barely changed since 2013 so they are not shown in Figure 7.

Emissions from Enteric Fermentation continue a declining emission trend across the EU plus Iceland's agriculture sector with reductions of -1 465kt CO_2-eq or -1 %. The largest reductions were in the United Kingdom (-1 008 kt CO_2-eq or -4%) and Italy (-621 kt CO_2-eq or -4%). The largest increases were in Romania (+237 kt CO_2-eq, +2 %), the Czech Republic (+373 kt CO_2-eq, +15 %).

While CH_4 and N_2O from manure management contribute to about 15 % of EU plus Iceland's agriculture sector emissions they have changed very little since 2013 (-26 kt CO_2-eq, -0.04 %), with decreases being balanced by increases. The largest decrease was in the United Kingdom (-176 kt CO_2-eq, -3 %). The largest increase was in Spain (+119 kt CO_2-eq, +1 %).

Agricultural soils contribute to about 39 % of the emissions from agriculture and have decreased very little (-1.5 Mt CO_2-eq or -0.9%) since 2013. The greatest decreases were for France (-2 594 kt CO_2-eq, -7 %), and the United Kingdom (-289 kt CO_2-eq, -1 %). The greatest increases were for Spain (+1 414 kt CO_2-eq, +8 %) and Germany (+221 kt CO_2-eq, +1 %).

2.2.4 Waste

The Waste sector contributes about 3 % of European emissions. Waste related emissions continue to decrease reflecting the large relative proportion of emissions from solid waste disposal (74 % of Waste emissions are from Solid waste disposal) and the ongoing effect of restrictions on land-filling of organic degradable waste implemented decades ago.

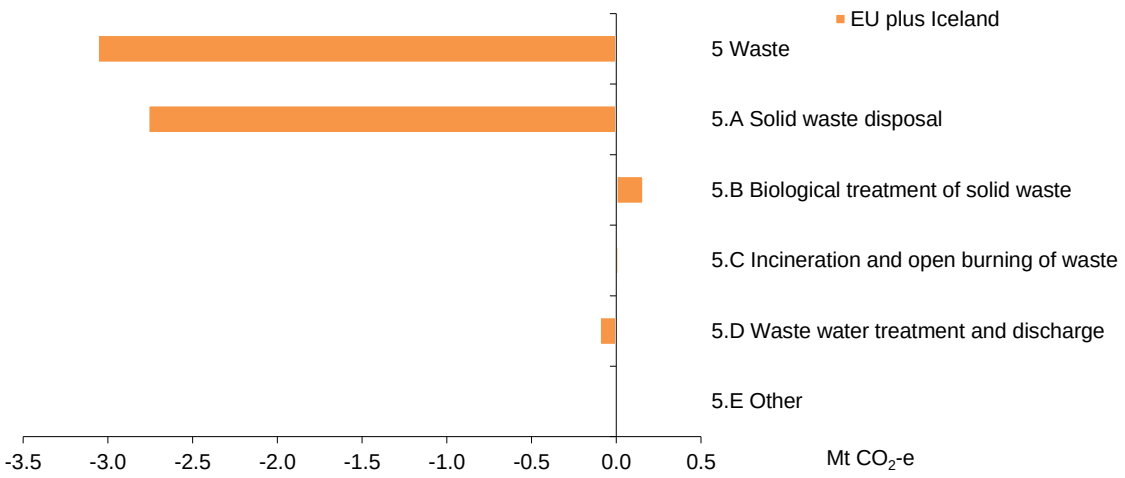
Emissions from the Waste sector decreased by -3.1 Mt CO_2eq compared to 2013. Table 8 and Figure 8 show the sub-sector contributions to this trend in emissions.

Table 8 Waste sector emissions, change 2013-2014

Change 2013 / 2014	EU plus Iceland	
	Mt CO_2eq	%
5 Waste	-3.1	-2.0%
5.A Solid Waste Disposal	-2.8	-2.4%
5.B Biological Treatment of Solid Waste	0.2	2.4%
5.C Incineration and Open burning of Waste	0.0	0.4%
5.D Waste Water Treatment and Discharge	-0.1	-0.3%
5.E Other	0.0	-2.0%

Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Figure 8 Waste sector emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014.

Strongest decrease of waste emissions on Member States level occurred in the United Kingdom (-884 kt CO_2-eq), followed by Italy (-690 kt CO_2-eq) and Germany (-620 kt CO_2-eq) while strongest increases were in Greece (+170 kt CO_2-eq), followed by Spain (+117 kt CO_2-eq). The trends of 5.A Solid Waste emissions dominated the waste sector. Sixteen Member States decreased their emissions (largest decrease in the United Kingdom with -718 kt CO_2-eq) while only six Member States had increasing emissions (largest the Czech Republic with +266 kt CO_2-eq).

2.3 ETS versus non-ETS emissions

Within the European Union there are two policy instruments for achieving the GHG emission reductions: One part is covered by the EU Emissions Trading System (ETS) while the non-ETS sector is regulated by the Effort Sharing Decision (ESD). ETS emissions were used as submitted in the MS proxy inventories. For those MS which did not include ETS data in their proxy submission and also for the proxy estimates calculated centrally by EEA and its ETC/AM, the ETS data were taken from the 'EU Emissions Trading System (ETS) data viewer' (EEA, 2015).

Table 9 shows the total proxy emissions for 2014, ETS emissions and ESD emissions together with the respective relative changes in emissions.

Table 9 ETS and non-ETS 2013 emissions and 2014 proxy emissions

MS	2013 GHG emissions			Estimated 2014 GHG emissions			Change 2014 versus 2013		
	Total	ETS	ESD	Total	ETS	ESD	Total	ETS	ESD
AT	79 599	29 858	49 676	76 196	28 055	48 075	-4.3%	-6.0%	-3.2%
BE	119 363	45 231	74 100	115 553	43 691	71 830	-3.2%	-3.4%	-3.1%
BG	55 843	32 696	23 110	58 613	34 305	24 271	5.0%	4.9%	5.0%
CY	8 323	4 025	4 270	8 476	4 469	3 980	1.8%	11.0%	-6.8%
CZ	129 522	67 712	59 550	128 698	65 447	60 941	-0.6%	-3.3%	2.3%
DE	950 673	480 958	467 630	910 000	460 267	447 648	-4.3%	-4.3%	-4.3%
DK	55 172	21 602	32 840	50 891	18 389	32 360	-7.8%	-14.9%	-1.5%
EE	21 759	15 923	5 821	20 507	14 968	5 523	-5.8%	-6.0%	-5.1%
ES	322 003	122 808	196 544	325 549	124 847	198 052	1.1%	1.7%	0.8%
FI	63 224	31 497	31 452	60 085	28 800	31 010	-5.0%	-8.6%	-1.4%
FR	491 650	114 467	371 097	454 975	100 197	349 695	-7.5%	-12.5%	-5.8%
GR	105 102	58 633	46 469	101 656	55 362	46 293	-3.3%	-5.6%	-0.4%
HR	26 353	8 786	17 136	24 738	8 272	16 035	-6.1%	-5.8%	-6.4%
HU	56 807	19 133	37 672	56 097	18 751	37 345	-1.2%	-2.0%	-0.9%
IE	58 819	15 686	43 057	58 305	15 952	42 275	-0.9%	1.7%	-1.8%
IT	437 268	164 523	270 763	417 255	152 610	262 662	-4.6%	-7.2%	-3.0%
LT	19 690	7 464	12 224	19 342	6 864	12 476	-1.8%	-8.0%	2.1%
LU	11 374	1 847	9 527	11 085	1 917	9 167	-2.5%	3.8%	-3.8%
LV	11 026	2 650	8 261	11 075	2 330	8 694	0.4%	-12.1%	5.2%
MT	2 779	1 697	1 082	2 735	1 655	1 080	-1.6%	-2.5%	-0.1%
NL	195 934	86 852	109 042	187 042	89 011	97 991	-4.5%	2.5%	-10.1%
PL	394 892	205 734	189 007	388 172	197 129	190 892	-1.7%	-4.2%	1.0%
PT	64 773	24 645	39 572	63 734	24 167	39 011	-1.6%	-1.9%	-1.4%
RO	109 530	42 415	66 980	110 011	42 575	67 300	0.4%	0.4%	0.5%
SE	55 774	20 143	35 105	53 888	19 345	34 018	-3.4%	-4.0%	-3.1%
SI	18 166	7 390	10 775	16 758	6 115	10 642	-7.7%	-17.2%	-1.2%
SK	43 893	21 832	22 056	42 394	20 418	21 971	-3.4%	-6.5%	-0.4%
UK	575 696	225 188	348 527	525 768	198 100	325 687	-8.7%	-12.0%	-6.6%
EU-28	**4 485 006**	**1 881 393**	**2 583 343**	**4 299 598**	**1 784 010**	**2 496 923**	**-4.1%**	**-5.2%**	**-3.3%**
IS	4 438	1 780	2 638	4 451	1 755	2 676	0.3%	-1.4%	1.4%
EU-28+IS	**4 489 444**	**1 883 173**	**2 585 981**	**4 304 050**	**1 785 765**	**2 499 599**	**-4.1%**	**-5.2%**	**-3.3%**

Source: EEA's ETC/ACM, based on the preliminary 2015 MS greenhouse gas inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014 and ETS data (2013 and 2014 verified emissions).

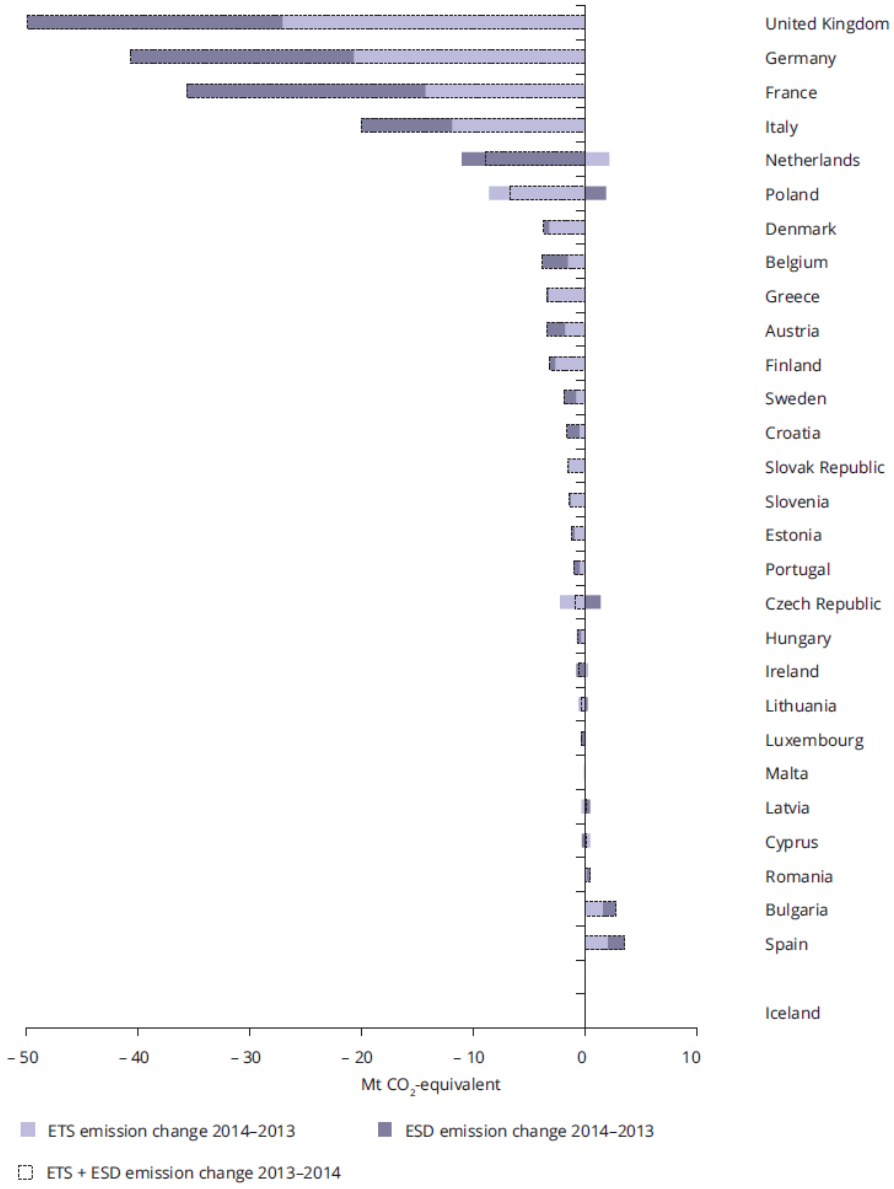
In total, emissions changed by -4.1 % for EU plus Iceland. Figure 9 presents a differentiation of the emission trend change between ETS emissions and ESD emissions. Between 2013 and 2014, emissions in the ETS sectors strongly decreased by -5.2%, while emissions in the ESD sector decreased only by -3.3 %. In absolute terms, the total emission reduction in the EU plus Iceland was -185.2 Mt CO_2eq. In the ETS sector, emissions were reduced by -97.4 Mt CO_2eq and in the ESD sector emissions by -86.1 Mt CO_2eq.

At Member State level the trend change in emissions separated between ETS and ESD looks quite different. ETS emissions only increased in Bulgaria, Cyprus, Spain, Ireland, Luxembourg, the Netherlands and Romania. The largest absolute increase ETS emissions was in the Netherlands (+2.2 Mt CO_2eq), and the largest relative increase (+4.9 %) was in Bulgaria. The largest ETS absolute decrease was in the United Kingdom (-27.1 Mt CO_2eq) and largest relative decrease was in Slovenia (-17.2%).

ESD emissions increased in Bulgaria, the Czech Republic, Spain, Lithuania, Latvia, Poland, Romania and Iceland. Largest non-ETS absolute increase was occurred in Spain (+1.5 Mt CO_2eq), and largest relative increase was in Bulgaria (+5.0 %). The largest ESD absolute decrease occurred in the United Kingdom (-22.8 Mt CO_2eq) and largest relative decrease was in the Netherlands (-10.1%).

Bulgaria, Romania and Spain were the only three countries, where emissions increased both in the ETS and ESD sector. In seventeen Member States (Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Malta, Portugal, Sweden, Slovakia, Slovenia and the United Kingdom) emission decreased both in ETS and ESD sector. In Cyprus, Ireland, Luxembourg and the Netherlands emissions in the ETS sector increased while emissions in the ESD sector decreased. A contrasting development has shown in the Czech Republic, Lithuania, Latvia, Poland and Iceland where ETS emissions decreased and ESD emissions increased.

Figure 9 ETS and ESD emissions, change 2013-2014



Source: EEA's ETC/ACM, based on the preliminary 2015 Member States' GHG inventory submitted to the EU for the years 1990-2013 and proxy estimates for 2014 and ETS data (2013 and 2014 verified emissions).

2.4 Gap filling

This report presents the estimated GHG emissions for 2014 based on emissions estimates, submitted to EEA by 31 July 2015. The aggregated EU plus Iceland proxy 2014 GHG emission estimates are based on these submissions and gap filling where necessary.

Under the recently adopted Regulation (EU) 525/2013 on a mechanism for monitoring and reporting GHG emissions (EU MMR) and its implementing provisions, Member States are to submit, where possible, to the European Commission approximated GHG inventories by 31 July every year for the preceding year *t*–1 (in this case 2014). Where a Member State has not submitted a 'proxy' inventory, the EEA uses its own estimates for gap-filling purposes in order to have a complete approximated GHG inventory at EU level.

Member States are responsible for the methodological choice regarding their own estimates. For gap-filling, the EEA uses the latest activity data available at country level to estimate the emissions. For emission sources for which no appropriate datasets exist, emissions are extrapolated from past trends, or emissions from the previous year are kept constant if historic data do not show a clear linear trend. The emission estimates assume no change in emission factors or methodologies as compared to the latest official inventory submissions to UNFCCC for the year *t*–2. On this basis, a detailed bottom-up approach has been developed covering the full scope of emissions included in a GHG inventory submission.

Where Member States' estimates are missing, gaps are filled with estimates by EEA and its ETC/ACM. In recent years, a methodology to estimate GHG emissions using a 'bottom-up' approach has been developed (see Annex II). It uses data sources (or estimates) that were published prior to the end of July of 2014 for individual countries, sectors and gases to derive EU GHG estimates for the preceding year (*t*–1). For transparency, this report shows the country-level GHG estimates from which the EU estimates have been derived. The estimates cover total GHG emissions as reported under the Kyoto Protocol and the UNFCCC excluding the LULUCF sector but including indirect CO_2 emissions.

Estimates by the EEA and ETC/ACM 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*- 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 or the average of three preceding years was used 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. Missing approximated greenhouse gas inventories were calculated for Bulgaria, Cyprus, Lithuania, Portugal, Romania and Iceland with the same bottom-up country specific methods that were used in previous years.

Gap filling for incomplete approximated greenhouse gas inventories was required for Belgium, Denmark, Finland, Sweden and the United Kingdom.

2.4.1 Methodologies and data sources for gap-filling MS without MS proxies

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. For the estimation of approximated emissions, the following data sources for emissions or activities in the year 2014 were used:

- BP's Statistical Review of World Energy 2015[28];
- verified emissions reported under the EU-ETS and recorded in the EUTL[29];
- 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 monthly gross inland deliveries data for total fuel oil, heating and other gas oil (indicator code 100520, product codes 3270A and 3266);
- 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;
- Eurostat annual data on GDP and main components (output, expenditure and income) [nama_10_gdp] (Gross domestic product at market prices, Chain linked volumes (2010), million euro)
- Eurostat annual data on livestock population for cattle, goats, sheep and swine.
- Monthly production data for crude steel production and blast furnace iron production of the World Steel Association (previously IISI International Iron and Steel Institute)[30]; this data source has only data for some of the EU Member States[31];
- National preliminary energy balance data or energy statistics:

[28] BP, 2015, BP Statistical Review of World Energy 2015 (www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy/statistical-review-downloads.html) accessed by 11 June 2015.

[29] EEA 2015: www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer

[30] Available at www.worldsteel.org, accessed by 15 May 2015.

[31] Pig iron/Blast furnace iron production: AT, BE, CZ, DE, ES, FR, HU, IT, NL, PL, SK and UK. Crude steel production: AT, BE, BG, CZ, DE, ES, FI, FR, GR, HR, HU, IT, LU, NL, PL, SI, SE, SK and UK.

- Bulgaria, 2014, Monthly statistics for liquid, solid and gaseous fuels, www.nsi.bg/en/content/5019/production-and-deliveries-energy-products, accessed 03 August 2015.
- Cyprus, 2014, Monthly statistics Petroleum products sales and stock changes, www.mof.gov.cy/mof/cystat/statistics.nsf/energy_environment_81main_keyfarchive_en/energy_environment_81main_keyfarchive_en?OpenForm&yr=2014380DDB90F3C58213004E0A12E623A895&n=2014, accessed 23 July 2015.
- Lithuania, 2014, Fuel and energy resources, http://osp.stat.gov.lt/ (⇨ Environment and Energy ⇨ Energy ⇨ Monthly energy indicators ⇨ fuel and energy resources), accessed 28 July 2015.
- Portugal, 2014, Energy balances, www.dgeg.pt/, (search for: "BALANÇO ENERGÉTICO"), accessed 28 July 2015.
- Romania, 2014, Industry statistical bulletin, www.insse.ro/cms/en/content/statistical-bulletins (⇨ Products ⇨ statistical publications ⇨ statistical bulletins ⇨ industry bulletin), accessed 16 July 2015.

Based on these data sources, 2014 emission estimates were made for the following source categories:

- 1. Energy
  - 1.A Fuel Combustion
    - 1.A.1 Energy Industries
    - 1.A.2 Manufacturing Industries and Construction
    - 1.A.3 Transport
    - 1.A.4 Other sectors
  - 1.B Fugitive Emissions
    - 1.B.1 Solid Fuels
    - 1.B.2.a Oil
    - 1.B.2.b Natural Gas
    - 1.B.2.c Venting and Flaring
- 2. Industrial Processes and Product Use
  - 2.A Mineral Industry
    - 2.A.1 Cement Production
    - 2.A.2 Lime Production
    - 2.A.3 Glass Production
  - 2.B Chemical Industry
    - 2.B.1 Ammonia Production
    - 2.B.2 Nitric Acid Production
    - 2.B.7 Soda Ash Production
  - 2.C Metal Production
    - 2.C.1 Iron and Steel Production
- 3. Agriculture
  - 3.A Enteric fermentation
  - 3.B Manure management

- 3.D Agricultural soils

The alternative sources for activity data 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.

Values for Energy 1.A.5 and combined missing IPPU categories were filled by a subtraction from each sector's total. For the waste sector and all other inventory source categories not listed above, no 2014 activity data was available that could be combined with IEFs from GHG inventories. Values these were extrapolated from preliminary 2014 GHG inventories, either by trend extrapolation or by taking the constant values of the year 2013 or by taking the average of 2011 to 2013 emissions and by following the gap filing rules in accordance with the implementing provisions under Council Decision 280/2004/EC. Constant values or averages 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 I provides a detailed overview of methods and data sources used for each source category and Member State.

The timing of these calculations depends on the release of the underlying data sources. The availability of data sources (including the MS GHG inventories) is shown in Table 10. The latest data source that became available in 2015 was the BP statistical review of World Energy which is published annually around 15 June. In July of each year updated verified emissions in the EUTL have been available in recent years. 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 10 Time of availability of data used for the proxy inventory

Data source	Availability
EUTL verified emissions	Data as of 14 July 2015 was used for EEA proxy.
BP Statistical Review of World Energy	11 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 Association monthly 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-May
CRF inventory submissions	Preliminary data as of July 2015[32]
Member States' national energy balances and national energy statistics	different publication dates
Member States' own preliminary inventories	31 July

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 Member States 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.

It has to be taken into account that any recent national improvements of GHG reporting methodologies could not be considered for approximated GHG inventories calculated centrally by EEA and its ETC/ACM, as the 2014 estimates for the 2013 proxy inventory were based on the national methodologies used for 2014 inventory submissions (covering emissions until 2013). This is especially the case for those source categories for which linear trend extrapolation was performed.

[32] 2015 is the first reporting year where IPCC 2006 Reporting Guidelines are applied for reporting of GHG inventories. Due to late availability of updated reporting software CRF inventory submissions were not published in the usual schedule.

Thus, revised methodologies and parameters at Member States level will always result in deviations between the final inventory and the proxy inventory.

2.4.2 Methodologies and data sources for gap-filling MS with incomplete MS proxies

The approximated GHG emissions data are submitted by Member States in form of CRF Summary2 tables. However, these tables were not always submitted with a complete dataset. Where disaggregated emission data needed to be estimated the following gap-filling methodologies were applied per case:

2.4.2.1 Belgium

Belgium included ETS emissions per sector but did not provide a total of ETS emissions. This was gap-filled with the sum of the sectoral ETS emissions.

2.4.2.2 Denmark

The Danish CRF Summary2 table with approximated GHG inventory data for 2014 contains GHG estimates for source category 1.A (Fuel Combustion), but not disaggregated into subcategories. To gap-fill these subcategories 1.A emission estimate for 2014 was split into the subcategories using year 2013 shares of the respective subcategories given in Table 11.

Table 11 Shares of 1.A Fuel Combustion in Denmark in year 2013

Source category	Share of total
1.A.1 Energy Industries	46.8%
1.A2 Manufacturing Industries and Construction	10.3%
1.A.3 Transport	29.4%
1.A.4 Other Sectors	12.9%
1.A.5 Other	0.6%

Source: Preliminary DK 2015 submission to EU for 2013

Denmark did not report ETS emissions with its approximated GHG inventory data for 2014. This was gap-filled with data from the 'EU Emissions Trading System (ETS) data viewer' (EEA, 2015).

2.4.2.3 Finland

The Finnish CRF Summary2 table of approximated GHG inventory data for 2014 contains detailed GHG estimates for subsectors 3.A to 3.H of sector 3 (Agriculture) for all relevant gases (CO_2, CH_4 and N_2O) but total emissions cells for these subsectors are missing. To gap-fill these subsectors emission estimate of individual gases were added up. GWP conversions were not needed as all data in the CRF Summary2 table are already shown in CO_2 equivalents.

2.4.2.4 Sweden

The Swedish CRF Summary2 table with approximated GHG inventory data for 2014 contains for source categories 1 (Energy), 2 (Industrial Processes and Product Use), 3 (Agriculture) and 5 (Waste) only total GHG estimates but emission estimates are not disaggregated into subcategories. To gap-fill these subcategories emission estimates for 2014 were split into the subcategories using year 2013 shares of the respective subcategories given in Table 11.

Table 12 Shares of Energy, Industrial Processes and Product Use, Agriculture and Waste in Sweden in year 2013

Source category	**Share of Energy**
1.A Fuel Combustion	98.0%
1.A.1 Energy Industries	24.8%
1.A.2 Manufacturing Industries and Construction	19.8%
1.A.3 Transport	45.4%
1.A.4 Other Sectors	7.6%
1.A.5 Other	0.4%
1.B Fugitive Emissions from Fuels	2.0%
Source category	**Share of Industrial Processes and Product Use**
2.A Mineral Industry	29.6%
2.B Chemical Industry	2.8%
2.C Metal Industry	42.5%
2.D Non-energy Products from Fuels and Solvent Use	8.4%
2.F Product Uses as ODS Substitutes	13.0%
2.G Other Product Manufacture and Use	2.1%
2.H Other	1.5%
Source category	**Share of Agriculture**
3.A Enteric Fermentation	45.3%
3.B Manure Management	7.4%
3.D Agricultural Soils	46.1%
3.G Liming	1.3%
3.H Urea Application	>0.0%
Source category	**Share of Waste**
5.A Solid Waste Disposal	73.8%
5.B Biological Treatment of Solid Waste	7.8%
5.C Incineration and Open Burning of Waste	3.9%
5.D Waste Water Treatment and Discharge	14.5%

Note: Interpretation of ">0.0%": A number greater than zero but too small to appear with one decimal.

Source: Preliminary SE 2015 submission to EU for 2013

Sweden did not report ETS emissions with its approximated GHG inventory data for 2014. This was gap-filled with data from the 'EU Emissions Trading System (ETS) data viewer' (EEA, 2015).

2.4.2.5 *United Kingdom*

In United Kingdom's CRF Summary2 table of approximated GHG inventory data for 2014 only for CO_2 emissions are given as detailed emissions per source category. Estimates for all other GHG emissions are only given as totals per gas. To gap-fill the CH_4 and N_2O for the relevant source categories total CH_4 and N_2O emission estimate for 2014 was split into the subcategories using year 2013 shares of the respective subsectors as shown in Table 13.

Table 13 Shares of CH_4 and N_2O emissions in United Kingdom in year 2013

Source category	**Share of CH_4**	**Share of N_2O**
1. Energy	14.9%	13.7%
1.A Fuel Combustion	1.8%	13.6%
1.A.1 Energy Industries	0.4%	4.9%
1.A2 Manufacturing Industries and Construction	0.1%	2.8%
1.A.3 Transport	0.1%	3.6%
1.A.4 Other Sectors	1.2%	2.2%
1.A.5 Other	>0.0%	0.1%
1.B Fugitive Emissions Form Fuels	13.1%	0.1%
2. Industrial Processes and Product Use	0.2%	0.3%
2.B Chemical Industry	0.2%	0.2%
2.C Metal Industry	>0.0%	0.2%
2.D Non-energy Products from Fuels and Solvent Use	>0.0%	>0.0%
2.G Other Product Manufacture and Use	NO	>0.0%
2.H Other	>0.0%	NO
3. Agriculture	48.0%	77.2%
3.A Enteric Fermentation	41.5%	0.0%
3.B Manure Management	6.1%	6.6%
3.D Agricultural Soils	NE	70.3%
3.J Other	0.4%	0.4%
4. Land use, land-use change and forestry	0.1%	2.6%
5. Waste	36.8%	6.2%
5.A Solid Waste Disposal	29.6%	0.0%
5.B Biological Treatment of Solid Waste	1.3%	2.2%
5.C Incineration and Open Burning of Waste	0.0%	0.2%
5.D Waste Water Treatment and Discharge	6.0%	3.8%

Note: Interpretation of ">0.0%": A number greater than zero but too small to appear with one decimal.

Source: Preliminary UK 2015 submission to EU for 2013

UK did not fill *Total CO_2 equivalent emissions without land use, land-use change and forestry* in the designated field of the template. As UK mentioned in the description box below the MS proxy summary2 table CH_4 and N_2O from LULUCF emissions were included in the CH_4 and N_2O net emission totals. This was gap-filled by subtracting approximated CH_4 and N_2O emissions calculated with the method described above from the total net emissions of CH_4 and N_2O.

In line with the methodology for elaborating full proxy inventory for some Member States (see chapter 4.2.2.3) total F-gases emission of UK were allocated to source category 2 (Industrial Processes and Product Use) but not split into the individual subcategories.

Also UK included ETS emissions per sector but did not provide a total of ETS emissions. This was gap-filled with the sum of the sectoral ETS emissions.

3. References

BP 2015, BP Statistical Review of World Energy 2015
www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy/statistical-review-downloads.html 11 June 2015.

EEA 2014a, *Annual European Union greenhouse gas inventory 1990–2012 and inventory report 2014,* EEA Technical Report No 8/2013
www.eea.europa.eu//publications/european-union-greenhouse-gas-inventory-2014

EEA 2014b, 'Why did GHG emissions decrease in the EU in 2012?'
www.eea.europa.eu/publications/why-did-ghg-emissions-decrease

EEA 2015, 'European Union Emissions Trading System (EU ETS) data viewer'
www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer 14 July 2015.

Eurostat 2015, Database
http://ec.europa.eu/eurostat/data/database accessed in June-August 2015, including:

- Monthly Oil and Gas Consumption
- Monthly data on crude oil production (indicator code 100100, product code 3100);
- Monthly total consumption data for natural gas (indicator code 100900, product code 4100);
- Production data for natural gas (indicator code 100100, product code 4100);
- annual data for the final energy consumption of motor spirit, automotive diesel oil and kerosene/jet fuels;
- Monthly data on production of nuclear energy (indicator code 100100, product code 5100)
- Monthly data for the internal market deliveries of motor spirit, automotive diesel oil and kerosene/jet fuels;
- Annual statistics on livestock population for cattle, sheep and swine [apro_mt_ls];
- Annual road freight transport by type;
- Annual data on GDP and main components (output, expenditure and income) [na-ma_10_gdp] (Gross domestic product at market prices, Chain linked volumes (2010), million euro);

IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories
www.ipcc-nggip.iges.or.jp/public/2006gl/

Matthes, F. C., Herold, A., Ziesing, H.J., 2007, 'A 'Proxy-Inventory' for GHG Emissions from the EU-27 Member States' – Feasibility study, ETC/ACC Technical Paper No 2007/3.

World Steel Association 2015a, Crude steel production
www.worldsteel.org/statistics/crude-steel-production.html accessed by 11 May 2015.

World Steel Association 2015b, Blast furnace iron (BFI) production
www.worldsteel.org/statistics/BFI-production.html accessed by 11 May 2015.

4. Annexes

4.1 Annex I. Detailed results for each Member State

Country	Compiled by?	Submission date
AT	Member State	30 July 2015
BE	Member State	
BG	EEA & ETC/ACM	
CY	EEA & ETC/ACM	
CZ	Member State	24 July 2015
DE	Member State	24 July 2015
DK	Member State	20 July 2015
EE	Member State	21 July 2015
ES	Member State	30 July 2015
FI	Member State	16 July 2015
FR	Member State	20 July 2015
HR	Member State	22 July 2015
GR	Member State	30 July 2015
HU	Member State	30 July 2015
IE	Member State	24 July 2015
IT	Member State	28 July 2015
LT	EEA & ETC/ACM	
LU	Member State	03 August 2015[33]
LV	Member State	30 July 2015
MT	Member State	27 July 2015
NL	Member State	30 July 2015
PL	Member State	01 July 2015
PT	EEA & ETC/ACM	
RO	EEA & ETC/ACM	
SE	Member State	26 June 2015[34]
SI	Member State	21 July 2015
SK	Member State	17 July 2015
UK	Member State	30 July 2015
EU	EEA & ETC/ACM	
IS	EEA & ETC/ACM	
EU + IS	EEA & ETC/ACM	

[33] Late submission after 30 July 2015 deadline but EEA & ETC/ACM was still able to include the proxy GHG inventory submitted by Luxembourg.

[34] Resubmission on 14 September 2015. EEA's ETC/ACM was still able to include the resubmitted proxy GHG inventory of Sweden.

4.1.1 Austria (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Proxy 2014
Submission 2015 v1
Austria

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**64 354.27**	**6 460.42**	**3 295.00**	**1 727.92**	**49.23**	**299.07**	**NO**	**9.75**	**76 195.65**		
1. Energy	**50 529.70**	**559.79**	**612.92**						**51 702.41**	**14 508.82**	**37 193.59**
A. Fuel combustion (sectoral approach)	50 278.52	279.26	612.92						51 170.70	14 508.82	36 661.88
1. Energy industries	9 506.59	12.61	101.91						9 621.11	7 693.24	1 927.87
2. Manufacturing industries and construction	10 616.29	13.95	131.18						10 761.41	6 314.10	4 447.31
3. Transport	22 056.71	11.11	189.58						22 257.40	501.48	21 755.92
4. Other sectors	8 050.97	241.56	189.29						8 481.82		8 481.82
5. Other	47.97	0.04	0.95						48.96		48.96
B. Fugitive emissions from fuels	251.18	280.53	0.00						531.71		531.71
1. Solid fuels	NO,NA	NO,NA	NO,NA						0.00		0.00
2. Oil and natural gas and other emissions from energy production	251.18	280.53	NO,NA						531.71		531.71
C. CO_2 transport and storage	NO								0.00		0.00
2. Industrial processes and product use	**13 714.67**	**49.07**	**185.04**	**1 727.92**	**49.23**	**299.07**	**NO**	**9.75**	**16 034.75**	**13 546.58**	**2 488.17**
A. Mineral industry	2 720.89								2 720.89	2 710.59	10.30
B. Chemical industry	583.39	49.07	47.53	NA	NA	NA	NO	NA	680.00	630.92	49.08
C. Metal industry	10 205.07	NO,NA,IE	NA	NA	NO	5.63	NO	NO	10 210.70	10 205.07	5.63
D. Non-energy products from fuels and solvent use	180.44	NO,NA	NO,NA						180.44		180.44
E. Electronic Industry				2.12	49.23	29.25	NO	9.75	90.35		90.35
F. Product uses as ODS substitutes				1 725.80	NO	NO	NO	NO	1 725.80		1 725.80
G. Other product manufacture and use	24.88	NA	137.51	NA	NA	264.19	NO	NA	426.58		426.58
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.00
3. Agriculture	**107.86**	**4 520.17**	**2 234.31**						**6 862.35**	**0.00**	**6 862.35**
A. Enteric fermentation		4 122.16							4 122.16		4 122.16
B. Manure management		397.44	445.25						842.69		842.69
C. Rice cultivation		NO							NO		NO
D. Agricultural soils		NO	1 788.97						1 788.97		1 788.97
E. Prescribed burning of savannahs		NO	NO						NO		NO
F. Field burning of agricultural residues		0.57	0.09						0.66		0.66
G. Liming	86.36								86.36		86.36
H. Urea application	21.51								21.51		21.51
I. Other carbon-containing fertilizers	NO								NO		NO
J. Other	NA	NA	NA						NA		NA
4. 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. Harvested wood products	NE	NE	NE						**NE**		
H. Other	NE	NE	NE						**NE**		
5. Waste	**2.03**	**1 331.38**	**262.74**						**1 596.15**		1 596.15
A. Solid waste disposal	NO,NA	1 243.77	NA						**1 243.77**		1 243.77
B. Biological treatment of solid waste		62.63	101.75						**164.38**		164.38
C. Incineration and open burning of waste	2.03	0.00	0.01						**2.04**		2.04
D. Waste water treatment and discharge		24.98	160.98						**185.96**		185.96
E. Other	NA	NA	NA						NA	NA	NA
6. Other *(as specified in summary 1.A)*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Memo items:[2]											
International bunkers											
Aviation											
Navigation											
Multilateral operations	NO	NO	NO						NO		
CO_2 emissions from biomass											
CO_2 captured	NO,NA								NO,NA		
Long-term storage of C in waste disposal sites	**32 209.18**										
Indirect N_2O			NO,NA								

Indirect CO_2 [3]	NO,NA										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**76 195.65**	**28 055.40**	**48 140.25**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**76 195.65**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
The trend of 1.A fuel combustion widely follows the trend in preliminary energy statistics (http://www.statistik.at/web_de/statistiken/energie_und_umwelt/energie/energiebilanzen/) **The most significant trends 2013-2014 in fuel consumption by type of fuel are:** Sales of transport diesel and gasoline decreased by -1.7% (approx. -0.4 Mt of CO2) Sales of gasoil and residual fuel oil decreased by -11% (approx. -0.7 Mt of CO2) (https://www.wko.at/Content.Node/branchen/oe/Mineraloelindustrie/Verbrauchsstatistik.html) Natural gas consumption decreased by -9.4% (approx. -1.2 Mt of CO2) (http://www.e-control.at/de/statistik/gas) CO2 from coal consumption of power plants decreased by -30% (approx. -1.0 Mt of CO2) **Fertilizer Use:** two-year mean value increased by 6.6% (http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.207488&280_Duengemittelstatistik.pdf) **Animals numbers:** total cattle increased by 0,1%, whereas milk cows increased by 1.5 % (and milk yield increased by 1.3%); swine number decreased by 1.0% (http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.195999&230_vz_rinder.pdf) (http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.196000&240_vz_schweine.pdf)

4.1.2 Belgium (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year Proxy 2014
Submission July 2015
Country Belgium

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**94069.19**	**8831.65**	**5820.35**	**2528.64**	**428.84**	**115.75**	**0.00**	**1.24**	**111795.66**		
1. Energy	**82154.64**	**1029.55**	**630.15**						**83814.34**	**27989.71**	**55824.63**
A. Fuel combustion (sectoral approach)	82057.03	577.95	630.15						83265.13	27989.71	55275.43
1. Energy industries	20272.14	66.06	166.35						20504.56	18155.90	2348.66
2. Manufacturing industries and construction	13117.44	53.43	96.59						13267.45	9719.84	3547.61
3. Transport	25 517.88	17.47	258.33						25793.67	44.20	25749.46
4. Other sectors	23068.61	440.91	108.04						23617.56	69.77	23547.79
5. Other	80.96646	0.09	0.85						81.90		81.90
B. Fugitive emissions from fuels	97.61	451.60	0.00						549.21	0.00	549.21
1. Solid fuels	NO,NA	4.04	NO,NA						4.04		4.04
2. Oil and natural gas and other emissions from energy production	97.61	447.56	NO,NA,IE						545.16	0.00	545.16
C. CO_2 transport and storage	NO										
2. Industrial processes and product use	**15337.07152**	**25.72617**	**1250.71**	**2 528.64**	**428.84**	**115.75**	**NO,NA**	**1.24**	**19687.98223**	**15701.78**	**3986.20**
A. Mineral industry	4618.50940								4618.50940	4604.93	13.58
B. Chemical industry	6582.34427	4.64628	1166.98402	NA	422.43	NO,NA	NA	NA	8 176.41	7010.15	1166.26
C. Metal industry	3947.78253	21.07989	NO						3 968.86	3948.66	20.21
D. Non-energy products from fuels and solvent use	25.28	NO,NA,NE	NO,NA,NE						25.28		25.28
E. Electronic Industry				1.48	4.05	2.31	NO	1.24	9.09		9.09
F. Product uses as ODS substitutes				2 527.16	2.13	NO	NO	NO	2529.28		2529.28
G. Other product manufacture and use	NO	NO	83.73	NO	0.22	113.44	NO	NO	197.39		197.39
H. Other	163.15100	NO,NA	NO,NA	NO	NO	NO	NO	NO	163.15100	138.05	25.10
3. Agriculture	**126.44**	**6 456.56**	**3 533.20**						**10116.20**		**10116.20**
A. Enteric fermentation		4 588.77							4588.77		4588.77
B. Manure management		1 867.80	729.78						2597.58		2597.58
C. Rice cultivation		NO							NO		NO
D. Agricultural soils		NA	2 803.43						2803.43		2803.43
E. Prescribed burning of savannahs		NO	NO						NO		NO
F. Field burning of agricultural residues		NO	NO						NO		NO
G. Liming	126.44								126.44		126.44
H. Urea application	NE								NE		NE
I. Other carbon-containing fertilizers	NO								NO		NO
J. Other	NO	NO	NO						NO		NO
4. Land use, land-use change and forestry[1]	**-3 855.02**	**NO**	**97.97**						**-3757.06**		
A. Forest land	-3 983.20	NO	0.04						-3983.16		
B. Cropland	-323.89	NO	51.21						-272.67		
C. Grassland	-472.25	NO	4.02						-468.23		
D. Wetlands	-5.01	NO	0.33						-4.68		
E. Settlements	593.00	NO	42.37						635.37		
F. Other land	NO	NO	NO						NO		
G. Harvested wood products	336.31	0.00	0.00						336.31		
H. Other	NO	NO	NO						NO		
5. Waste	**306.07**	**1 319.80**	**308.32**						**1934.19**		
A. Solid waste disposal	NO,NA	1079.10006	0.00						1079.10006		1079.10
B. Biological treatment of solid waste		25.52	38.93						64.45		64.45
C. Incineration and open burning of waste	306.06688	NO,NA	0.86						306.93107	224.47	82.46
D. Waste water treatment and discharge		215.19	268.53						483.71		
E. Other	NO	NO	NO						NO		
6. Other *(as specified in summary 1.A)*	**NO**	**NO**	**NO**						**NO**		

Memo items:[2]											
International bunkers	24 153.79	2.18	18.49						24 174.46		
Aviation	3 994.97	1.51	11.90						4 008.38		
Navigation	20 158.82	0.67	6.59						20 166.09		
Multilateral operations	NO	NO	NO						NO		
CO_2 emissions from biomass	12 798.80								12 798.80		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NA,NO								

Indirect CO_2 [3]	NA,NO										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**115 552.72**	
Total CO_2 equivalent emissions with land use, land-use change and forestry	**111 795.66**	
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**115 552.72**	
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**111 795.66**	

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

For Flanders, emissions in the residential and the commercial sectors (category 1A4) decreased significantly (all fuels except biomass in the commercial sector) compared to 2013. Also in the sector of Agriculture/Forestry/Fishing (category 1A4) energetic emissions decreased (all fuels except biomass).
Besides, the second biggest drop in emissions can be found in the sector of energy industries (category 1A1) where the energy consumption is decreased (solid fuels and gases as well as biomass) due to a diminishment in electricity production (-14.3% compared to 2013).
Finally also the energetic emissions in the industrial sectors (category 1A2) did decrease as a result of lower energy consumption (all fuels except for biomass).

In Wallonia, emissions in the ETS (combustion in the industrial sector) show a slight decrease compared to 2013.
For the three regions, emissions in the residential sector decreased due to a very mild winter in 2014, as 2014 is currently the warmest year on record in Belgium.

Road Transportation according reference approach in tons (annual balance from MOS transmitted to IEA and Eurostat - 04/03/15) recalculated for offroads consumption (gasoline

Gasoline (excluding offroads)	1 205 578
Diesel	6 611 000
LPG	54 000
Bioethanol (excluding offroads)	70 111
Biodiesel	317 000

4.1.3 Bulgaria (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2015 v Proxy 1.1
BULGARIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**45 352**	**8 172**	**4 060**	**1 010**	**0**	**20**	**NO**	**NO**	**58 613**		
1. Energy	**41 903**	**1 459**	**338**						**43 700**		
A. Fuel combustion (sectoral approach)	41 886	374	338						42 598		
1. Energy industries	28 825	8	112						28 945		
2. Manufacturing industries and construction	3 164	11	62						3 237		
3. Transport	7 899	26	67						7 992		
4. Other sectors	1 999	330	97						2 425		
5. Other	NO	NO	NO						NO		
B. Fugitive emissions from fuels	17	1 085	0						1 101		
1. Solid fuels	NO	877	NO						877		
2. Oil and natural gas	17	207	IE						224		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**3 397**	**0**	**159**	**1 010**	**0**	**20**			**4 586**		
A. Mineral industry	1 886								1 886		
B. Chemical industry	1 442	0	158		IE	IE	IE	IE	1 600		
C. Metal industry	50	0							50		
D. Non-energy products from fuels and solvent use	14	NO,NA,IE	NO,NA,IE						14		
E. Electronic Industry											
F. Product uses as ODS substitutes				IE	IE				IE		
G. Other product manufacture and use			1			IE			1		
H. Other	5	NO,NA,IE	NO,NA,IE						5		
3. Agriculture	**NO**	**2 416**	**3 405**						**5 821**		
A. Enteric fermentation		1 778							1 778		
B. Manure management		482	352						834		
C. Rice cultivation		109							109		
D. Agricultural soils		NO	3 040						3 040		
E. Prescribed burning of savannas											
F. Field burning of agricultural residues		47	13						59		
G. Liming	NO								NO		
H. Urea application	NO								NO		
I. Other carbon-containing fertilizers	NO								NO		
J. Other											
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	52	4 296	158						4 506		
A. Solid waste disposal	NO	3 487							3 487		
B. Biological treatment of solid waste		14	13						27		
C. Incineration and open burning of waste	52	0	0						52		
D. Waste water treatment and discharge		795	145						940		
E. Other	NO	NO	NO						NO		
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO		
other territory											
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2[3]	NO										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**58 613**	**34 305**	**24 308**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**58 613**	**34 305**	**24 308**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always
(2) See footnote 7 to table Summary 1.A.
(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 4.2. The EEA proxy 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.

4.1.4 Croatia (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2015 v1.0
Country CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**17 529.92**	**3 423.71**	**3 186.99**	**590.35**	**0.52**	**6.58**	**NA,NO**	**NA,NO**	**24 738.08**		
1. Energy	**15 509.68**	**1 250.32**	**103.16**						**16 863.16**	**5 685.16**	**9 824.51**
A. Fuel combustion (sectoral approach)	14 939.79	151.29	103.05						15 194.13	5 685.16	9 254.63
1. Energy industries	4 813.82	3.03	18.08						4 834.93	4 276.80	537.02
2. Manufacturing industries and construction	2 034.73	3.76	6.60						2 045.09	1 257.76	776.97
3. Transport	5 592.40	11.96	55.29						5 659.65	150.61	5 441.79
4. Other sectors	2 498.84	132.54	23.08						2 654.46	NO	2 654.46
5. Other	NO	NO	NO						NO	NO	NO
B. Fugitive emissions from fuels	569.89	1 099.02	0.11						1 669.02	NO	1 669.02
1. Solid fuels	NO	NO	NO						NO	NO	NO
2. Oil and natural gas and other emissions from energy production	569.89	1 099.02	0.11						1 669.02	NO	1 669.02
C. CO_2 transport and storage	NO								NO	NO	NO
2. Industrial processes and product use	**2 020.19**	**0.15**	**282.22**	**590.35**	**0.52**	**6.58**	**NA,NO**	NA,NO	**2 900.02**	**2 586.71**	**796.43**
A. Mineral industry	1 359.22								1 359.22	1 354.10	5.12
B. Chemical industry	493.00	0.15	240.46	NA	NA	NA	NA	NA	733.61	1 216.73	0.00
C. Metal industry	15.89	NA	NA	NA	NA	NA	NA	NA	15.89	15.89	NO
D. Non-energy products from fuels and solvent use	152.09	NA	NA						152.09	NO	152.09
E. Electronic Industry				NO	NO	NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				590.35	0.52	NA	NA	NA	590.87	NO	590.87
G. Other product manufacture and use	NA	NA	41.77	NA	NA	6.58	NA	NA	48.35	NO	48.35
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NO	NA
3. Agriculture	**0.01**	**1 011.14**	**2 714.34**						**3 725.50**	NO	**3 725.50**
A. Enteric fermentation		840.11							840.11	NO	840.11
B. Manure management		171.03	134.77						305.80	NO	305.80
C. Rice cultivation		NO							NO	NO	NO
D. Agricultural soils		NA	2 579.57						2 579.57	NO	2 579.57
E. Prescribed burning of savannahs		NO	NO						NO	NO	NO
F. Field burning of agricultural residues		NO	NO						NO	NO	NO
G. Liming	NO								NO	NO	NO
H. Urea application	0.01								0.01	NO	0.01
I. Other carbon-containing fertilizers	NA								NA	NO	NA
J. Other	NO	NO	NO						NO	NO	NO
4. 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. Harvested wood products	NE	NE	NE						NE		
H. Other	NE	NE	NE						NE		
5. Waste	**0.04**	**1 162.10**	**87.26**						**1 249.40**	**NO**	**1 249.40**
A. Solid waste disposal	NA	958.17	NA						958.17	NO	958.17
B. Biological treatment of solid waste		4.58	3.67						8.25	NO	8.25
C. Incineration and open burning of waste	0.04	NA	0.00						0.04	NO	0.04
D. Waste water treatment and discharge		199.35	83.59						282.94	NO	282.94
E. Other	NO	NO	NO						NO	NO	NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO						NO	NO	NO

Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								

Indirect CO_2[3]	NE										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**24 738.08**	8 271.88	15 595.84
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
1. Energy
1A1 - 89% of total CO2 emissisons is from ETS, according to 2013. It is assumed that the distribution stayed the same in 2014. For CH4 and N2O emissions is assumed that ratio CH4/CO2 and N2O/CO2 in 2014 is the same as for 2013.
1A2 - 62% of total CO2 emissisons is from ETS, according to data for 2013. It is assumed that the distribution stayed the same in 2014. For CH4 and N2O emissions is assumed that ratio CH4/CO2 and N2O/CO2 in 2014 is the same as for 2013.
1A3 - Transport, 1A4. Other Sectors, 1B2. Oil and Natural Gas all GHG were extrapolated based on emissions from 2011-2013
1B2 - all GHG are extrapolated based on emissions from 2011-2013
2. Industrial processes and product use
2.A - ETS: 99.6% CO2 emissions from 2.A.1; 2.A.2; 2.A.3; 2.A.4a; non-ETS: 0.4% CO2 emissions from 2.A.4b - emission is assessed according to data for 2013 due to the lack of the information.
2.B.1 - ETS: Natural gas consumption as fuel and feedstock in ammonia production is included, CO2 recovered is subtracted according to 2006 IPCC Guidelines. CO2 emission is assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013 (cell J21). According to ETS Guidelines, CO2 recovered is not subtracted (cell L21).
2.B.2 - ETS: The methodology used to determine N2O emission is based on the measurement. Catalytic decomposition is implemented as a measure for N2O emission reduction in nitric acid production. N2O emission is assessed according to data for 2013 due to the lack of the information.
2.B.8 - non-ETS: CH4 emission is assessed according to data for 2013 due to the lack of the information.
2.C.1 - ETS: Data for CO2 emission from steel production is included.
2.D.1; 2.D.2; 2.D.3 - non-ETS: CO2 emission is assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013.
2.E - Activities do not exist within a country.
2.F - non-ETS: HFC and PFC emissions are assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013.
2.G.1 - non-ETS: SF6 emission is assessed according to data for 2013 due to the lack of the information.
2.G.3 - non-ETS: N2O emission is assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013.
2.H.1; 2.H.2; 2.H.3 - non-ETS: Only information on CO2 emission of non-biogenic origin should be reported.
3. Agriculture
3.A-3.H. linear extrapolation is based on trend from 2009 to 2013
5. Waste
5.A .1; 5.A.2 - non-ETS: CH4 emissions are assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013.
5.B - non-ETS: CH4 and N2O emissions are assessed according to data for 2013 due to the lack of the information.
5.C.1 - non-ETS: CO2 and N2O emissions are assessed according to data for 2013 due to the lack of the information.
5.D.1- non-ETS: CH4 emission is assessed by extrapolation due to the lack of the information. Extrapolation is based on emissions trend from 2012 to 2013.
5.D.2 - non-ETS: CH4 emission is assessed according to data for 2013 due to the lack of the information.
5.D.3 - non-ETS: N2O emission is assessed according to data for 2013 due to the lack of the information.

4.1.5 Cyprus (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2015 v Proxy 1.1
CYPRUS

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**6 593**	**932**	**408**	**544**		**0**			**8 476**		
1. Energy	**5 597**	**10**	**47**						**5 654**		
A. Fuel combustion (sectoral approach)	5 597	10	47						5 654		
1. Energy industries	2 940	3	7						2 950		
2. Manufacturing industries and construction	512	1	1						514		
3. Transport	1 555	2	33						1 590		
4. Other sectors	568	4	6						578		
5. Other	21	0	0						21		
B. Fugitive emissions from fuels	NO,NE	NO,NE	NO,NE						NO,NE		
1. Solid fuels	NO	NO	NO						NO		
2. Oil and natural gas	NO,NE	NO,NE	NO,NE						NO,NE		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**996**	**NO,NE**	**63**	**544**		**0**			**1 603**		
A. Mineral industry	996								996		
B. Chemical industry	NO	NO	NO						NO		
C. Metal industry	NO	NO							NO		
D. Non-energy products from fuels and solvent use	NO,NE	NO,NE	NO,NE						NO,NE		
E. Electronic Industry											
F. Product uses as ODS substitutes				IE					IE		
G. Other product manufacture and use			63			IE			63		
H. Other											
3. Agriculture	**0**	**420**	**277**						**697**		
A. Enteric fermentation		268							268		
B. Manure management		152	248						400		
C. Rice cultivation		NO							NO		
D. Agricultural soils			29						29		
E. Prescribed burning of savannas											
F. Field burning of agricultural residues		0	0						0		
G. Liming	NO								NO		
H. Urea application	0								0		
I. Other carbon-containing fertilizers	NO								NO		
J. Other									0		
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	NO,NA	501	21						522		
A. Solid waste disposal	NO,NA	496							496		
B. Biological treatment of solid waste		0	0						0		
C. Incineration and open burning of waste	NO	NO	NO						NO		
D. Waste water treatment and discharge		4	21						25		
E. Other											
6. Other *(as specified in summary 1.A)*											
other territory											
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2[3]	NO										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**8 476**	**4 469**	**4 007**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**8 476**	**4 469**	**4 007**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 4.2. The EEA proxy 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.

4.1.6 Czech Republic (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]	**99946.24**	**13079.85**	**5909.45**	**2928.22**	**3.92**	**113.55**	**NO, IE**	**5.85**	**121987.07**		
1. Energy	**94492.82**	**4639.84**	**1014.02**						**100146.68**	**53212.11**	**46934.57**
A. Fuel combustion (sectoral approach)	94276.10	737.30	1014.01						96 027.40	**53212.11**	**42815.29**
1. Energy industries	57215.95	32.96	252.16						57 501.06	IE	IE
2. Manufacturing industries and construction	9283.50	29.59	46.79						9 359.88	IE	IE
3. Transport	15804.99	22.95	615.38						16 443.32	IE	IE
4. Other sectors	12049.07	634.73	101.83						12 785.62	IE	IE
5. Other	295.28	0.70	8.27						304.25	IE	IE
B. Fugitive emissions from fuels	216.72	3902.54	0.02						4 119.27	0	4 119.27
1. Solid fuels	210.68	3327.30	NO,NA						3 537.98	0	3 537.98
2. Oil and natural gas and other emissions from energy production	6.05	575.24	0.02						581.30	0	581.30
C. CO_2 transport and storage	NO								NO	NO	NO
2. Industrial processes and product use	**9634.78**	**494.38**	**380.19**	**2928.22**	**3.92**	**113.55**	**NO, IE**	5.84972	**13560.88**	**12234.895**	**1325.98**
A. Mineral industry	2117.07								2 117.07		
B. Chemical industry	1519.03	31.51	156.69	NO	NO	NO	NO	NO	1 707.23		
C. Metal industry	5896.35	462.86	NO	NO	NO	NO	NO	NO	6 359.21		
D. Non-energy products from fuels and solvent use	102.34	NO,NA	NO,NA						102.34		
E. Electronic Industry				NO	NO	34.98	NO	5.85	40.83		
F. Product uses as ODS substitutes				2928.22	3.92	NO	NO, IE	NO	2 932.13		
G. Other product manufacture and use	NE	NE	223.5	NO	NO	78.57	NO	NO	302.07		
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Agriculture	**136.31**	**3408.22**	**4192.16**						**7736.69**	**0**	**7736.69**
A. Enteric fermentation		2785.60							2 785.60	0	2 785.60
B. Manure management		622.62	1211.53						1 834.16	0	1 834.16
C. Rice cultivation		NO							NO	0	NO
D. Agricultural soils		NA,NE	2980.63						2 980.63	0	2 980.63
E. Prescribed burning of savannahs		NO	NO						NO	0	NO
F. Field burning of agricultural residues		NO	NO						NO	0	NO
G. Liming	135.50								135.50	0	135.50
H. Urea application	0.81								0.81	0	0.81
I. Other carbon-containing fertilizers	NO								NO	0	NO
J. Other	NO	NO	NO						NO	0	NO
4. Land use, land-use change and forestry[(1)]	**-4489.15**	**64.78**	**10.16**						**-4414.21**		
A. Forest land	-5141.14	64.78	5.31						-5071.05		
B. Cropland	69.65	NO	4.85						74.50		
C. Grassland	-322.01	NO	NO						-322.01		
D. Wetlands	29.38	NO	NO						29.38		
E. Settlements	83.16	NO	NO						83.16		
F. Other land	NO	NO	NO						NO		
G. Harvested wood products	791.82								791.82		
H. Other	NO	NO	NO						NO		
5. Waste	**171.48**	**4472.64**	**312.92**						**4957.03**	**0**	**4957.03**
A. Solid waste disposal	NE, NO	3277.25	312.92						3 590.17	0	3 590.17
B. Biological treatment of solid waste		600.74	38.74						639.48	0	639.48
C. Incineration and open burning of waste	171.48	0.00	3.11						174.59	0	174.59
D. Waste water treatment and discharge		594.65	271.06						865.71	0	865.71
E. Other	NO	NO	NO						NO	NO	NO
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[(2)]											
International bunkers	853.09	0.15	7.19						860.43		
Aviation	853.09	0.15	7.19						860.43		
Navigation	NO	NO	NO						NO		
Multilateral operations	NO	NO	NO						NO		
CO_2 emissions from biomass	11135.24								11 135.24		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	10673.86								10 673.86		
Indirect N_2O			1603.60								

Indirect CO_2 [(3)]	2296.41										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**126401.28**	**65447.01**	**60954.27**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**121987.07**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**128697.68**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**124283.48**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(2) See footnote 7 to table Summary 1.A.

(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
Approximated GHG inventory was created, using linear regression for the last 5 years and further extrapolation for year 2014. For more accurate estimations, outliers from the activity data were removed. In sectors, where such data was available, the approximation was calculated from it. Linear regression was applied on the lowest levels of sectors and subsectors. This way a better accuracy was reached. Agriculture: The increase in GHG emissions in 2014 (proxy) compared to 2013 submission is caused by increase of activity data (animal population, crop production). Animal and crop production data are provided in the official statistics (Czech Statistical Office). Other data and parameters are expert estimates based on time-series consistency or data reported in last inventory submission. The emissions from LULUCF correspond to CRF data of 2015 submission. The trend in LULUCF sector is negligible within the time step of one year. ETS and non-ETS data: The ETS data for IPPU sector is based on expert judgement since not all verified data were available at the time of processing the proxy invento

4.1.7 Germany (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS **GERMANY: 2014**

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO_2 equivalent (kt)	
Total (Net Emissions) [1]	**782 500**	**58 900**	**38 200**	**10 700**	**260**	**3 800**	**IE**	**17**	**894 300**		
1. Energy	**751 600**	**15 100**	**5 400**						**772 200**	**408 328.4**	**363 871.6**
A. Fuel Combustion (Sectoral Approach)	748 600	3 900	5 400						757 900	408 247.2	349 652.8
1. Energy Industries	335 400	2 300	2 600						340 300	324 904.7	15 395.3
2. Manufacturing Industries and Construction	124 000	240	750						125 000	82 403.5	42 596.5
3. Transport	162 600	150	1 500						164 300	595.3	163 704.7
4. Other Sectors	125 500	1 200	450						127 150	107.5	127 042.5
5. Other	1 000	1	3						1 000	236.2	763.8
B. Fugitive Emissions from Fuels	3 000	11 300	0						14 200	81.2	14 118.8
1. Solid Fuels	700	3 600	NO						4 300	NO	4 300.0
2. Oil and Natural Gas	2 300	7 700	0						9 900	81.2	9 818.8
C. CO_2 transport and storage	NO								NO	NO	NO
2. Industrial Processes	**45 600**	**510**	**1 200**	**10 700**	**260**	**3 800**	**IE**	**17**	**62 200**	**51 938.1**	**10 261.9**
A. Mineral industry	18 700								18 700	IE	NE
B. Chemical industry	9 000	470	870						10 400	IE	NE
C. Metal industry	15 300	5	13	IE	IE	IE	IE	IE	15 300	IE	NE
D. Non-energy products from fuels and solvent use	2 600	NO	2						2 600	NO	NO
E. Electronic Industry				IE	IE	IE	IE	IE	IE	NO	NO
F. Product uses as ODS substitutes				IE	IE	IE	IE	IE	IE	NO	NO
G. Other product manufacture and use	NO	35	340	IE	IE	IE	IE	IE	370	NO	NO
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO
3. Agriculture	**2 700**	**32 300**	**29 700**						**64 600**		
A. Enteric fermentation		24 800							24 800		
B. Manure management		6 400	3 900						10 300		
C. Rice cultivation		NO							NO		
D. Agricultural soils		NO	25 500						25 500		
E. Prescribed burning of savannas		NO	NO						NO		
F. Field burning of agricultural residues		NO	NO						NO		
G. Liming	1 950								1 950		
H. Urea application	730								730		
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NO	1 100	230						1 350		
4. Land use, land-use change and forestry [1]	**-17 500**	**850**	**940**						**-15 700**		
A. Forest land	-56 800	45	310						-56 500		
B. Cropland	13 700	230	310						14 200		
C. Grassland	22 200	520	20						22 800		
D. Wetlands	2 400	12	11						2 500		
E. Settlements	3 600	40	180						3 800		
F. Other land	NO	NO	NO						NO		
G. Harvested wood products	-2 600								-2 600		
H. Other		NA	105						105		
5. Waste	**NA, NO**	**10 100**	**960**						**11 000**		
A. Solid waste disposal	NA	9 250							9 250		
B. Biological treatment of solid waste		750	320						1 100		
C. Incineration and open burning of waste	NO	NO	NO						NO		
D. Waste water treatment and discharge		65	520						580		
E. Other		6	130						130		
6. Other ***(as specified in summary 1.A)***	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Memo Items: [4]											
International bunkers	33 500	5	320						**33 900**		
Aviation	26 300	2	240						26 600		
Navigation	7 200	2	85						7 300		
Multilateral operations	NE	NE	NE						**NE**		
CO_2 emissions from biomass	95 500								**95 500**		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NO								NO		
Indirect N_2O			NO						NO		
Indirect CO_2 [3]											
Total CO_2 equivalent emissions without land use, land-use change and forestry									**910 000**	**460 266.6**	**449 733.4**
Total CO_2 equivalent emissions with land use, land-use change and forestry									**894 300**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry											
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry											

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Inventory data (column B-I) are based on an approximation published in March 2015:
http://www.umweltbundesamt.de/en/press/pressinformation/ubas-2014-emissions-data-indicates-trend-reversal
All trends are explained in the Annex to this press release.

ETS data (column L) are based on work to the Emissions Trading Directive 2003/87/EC (Article 21):
http://cdr.eionet.europa.eu/de/...exact..address..will..be..provided..later...
For purposes as Non-ETS comparison all industrial processes are indicated as 'IE' and included in the sum of CRF 2.

inventory data are rounded to indicate the high degree of uncertainty.

4.1.8 Denmark (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**38 060.16**	**6 893.32**	**5 076.10**	**709.40**	**9.64**	**142.43**	**0.00**	**0.00**	**50891.05**		
1. Energy	**36 610.30**	**418.46**	**345.55**						**37374.32**		
A. Fuel combustion (sectoral approach)	36 389.22	311.07	304.42						37004.71		
1. Energy industries											
2. Manufacturing industries and construction											
3. Transport											
4. Other sectors											
5. Other											
B. Fugitive emissions from fuels	**221.08**	**107.40**	**41.13**						**369.60**		
1. Solid fuels	NA,NO	NA,NO	NA,NO						NA,NO		
2. Oil and natural gas and other emissions from energy production	221.08	107.40	41.13						369.60		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**1 187.44**	**3.37**	**18.84**	**709.40**	**9.64**	**142.43**	**0.00**	**0.00**	**2071.11**		
A. Mineral industry	995.44								995.44		
B. Chemical industry	1.35	NA,NO	NA,NO	NA	NA	NA	NA	NA	1.35		
C. Metal industry	0.16	NO	NO		NO	NO			0.16		
D. Non-energy products from fuels and solvent use	190.30	0.49	0.21						191.00		
E. Electronic Industry				NA	3.70	NA	NA	NA	3.70		
F. Product uses as ODS substitutes				709.40	5.94	NA	NA	NA	715.34		
G. Other product manufacture and use	0.19	2.87	18.63	NA	NA	142.43	NA	NA	164.13		
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3. Agriculture	**246.46**	**5 387.32**	**4 514.23**						**10148.01**		
A. Enteric fermentation		3 466.55							3466.55		
B. Manure management		1 917.62	755.28						2672.90		
C. Rice cultivation		NO							NO		
D. Agricultural soils		NE	3 757.97						3757.97		
E. Prescribed burning of savannahs		NO	NO						NO		
F. Field burning of agricultural residues		3.15	0.97						4.13		
G. Liming	243.88								243.88		
H. Urea application	0.66								0.66		
I. Other carbon-containing fertilizers	1.93								1.93		
J. Other	NO	NO	NO						NO		
4. Land use, land-use change and forestry[1]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste	**15.97**	**1 084.17**	**197.48**						1297.62		
A. Solid waste disposal	NA,NO	843.96							843.96		
B. Biological treatment of solid waste		125.67	123.31						248.98		
C. Incineration and open burning of waste	NA,NO	0.02	0.26						0.28		
D. Waste water treatment and discharge		112.71	73.91						186.62		
E. Other	15.97	1.80	NA						17.76		
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO		

Memo items:[2]											
International bunkers											
Aviation											
Navigation											
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry			
Total CO_2 equivalent emissions with land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry			

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

The short term trend in Danish greenhouse gas emissions is dominated by the trend in the energy sector. This is caused by the open electricity market and especially the import/export of electricity within the Nordic electricity market. Changes in production of renewable energy (mainly hydropower) in the Nordic countries influences directly the need for fossil power generation in Denmark.
In 2014, Denmark imported more electricity compared to 2013. This caused an decrease in coal consumption in the Danish power plants to compensate for the higher electricity import. At the same time the consumption of natural gas and oil products decreased. The overall result is a decrease in the CO2 emission from fuel combustion. More information on the preliminary energy statistics is available from the Danish Energy Agency (http://www.ens.dk/en/info/news-danish-energy-agency/lowest-danish-energy-consumption-32-years). At the time of preparation of this submission, it has not been possible to make a split between ETS and non-ETS emissions.
For industrial processes, the emissions of CO2, CH4 and N2O have been assumed constant at 2013 levels. For f-gases, the emissions of HFCs are expected to continue to decrease due to the measures in place to reduce the use of HFCs. For SF6, the emissions are expected to slightly increase, this is caused by the fact that SF6 was used in double glazed windows and according to the model the lifetime of these windows started to expire last year causing the remaining SF6 to be emitted. Hence, the emissions of SF6 will continue to increase sligthly in the coming years and then decrease again.
Emissions from agriculture and waste have been kept constant for the purpose of this proxy.

4.1.9 Estonia (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2015-proxy
Country Estonia

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**18393.50**	**1104.67**	**778.69**	**214.07**	**NO**	**2.11**	**NO**	**NO**	**20493.05**		
1. Energy	**17908.93**	**163.12**	**75.20**						**18147.26**	**14507.18**	**3640.08**
A. Fuel combustion (sectoral approach)	17908.90	144.40	75.20						18128.50	14507.18	3621.32
1. Energy industries	14219.12	14.81	30.24						14264.18	14008.43	255.75
2. Manufacturing industries and construction	734.11	2.18	3.69						739.98	488.15	251.83
3. Transport	2418.92	4.51	21.05						2444.47	2.72	2441.75
4. Other sectors	514.14	122.86	19.86						656.86	7.89	648.97
5. Other	22.62	0.03	0.37						23.02	0.00	23.02
B. Fugitive emissions from fuels	0.04	18.73	NO						18.76	0.00	18.76
1. Solid fuels	NO	NO	NO						NO	0.00	0.00
2. Oil and natural gas and other emissions from energy production	0.04	18.73	NO						18.76	0.00	18.76
C. CO_2 transport and storage	NO								NO	0.00	0.00
2. Industrial processes and product use	**465.61**	**NO**	**3.85**	**214.07**	**NO**	**2.11**	**NO**	**NO**	**685.64**	**461.19**	**224.45**
A. Mineral industry	461.42								461.42	461.19	0.23
B. Chemical industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
C. Metal industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
D. Non-energy products from fuels and solvent use	4.19	NO	NO						4.19	0.00	4.19
E. Electronic Industry				NO	NO	NO	NO	NO	NO	0.00	0.00
F. Product uses as ODS substitutes				214.07	NO	NO	NO	NO	214.07	0.00	214.07
G. Other product manufacture and use	NO	NO	3.85	NO	NO	2.11	NO	NO	5.96	0.00	5.96
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
3. Agriculture	**13.08**	**623.06**	**649.81**						**1285.95**	0.00	**1285.95**
A. Enteric fermentation		553.73							553.73	0.00	553.73
B. Manure management		69.33	72.68						142.02	0.00	142.02
C. Rice cultivation		NO							NO	0.00	0.00
D. Agricultural soils		NO	577.12						577.12	0.00	577.12
E. Prescribed burning of savannahs		NO	NO						NO	0.00	0.00
F. Field burning of agricultural residues		NO	NO						NO	0.00	0.00
G. Liming	13.08								13.08	0.00	13.08
H. Urea application	NO								NO	0.00	0.00
I. Other carbon-containing fertilizers	NO								NO	0.00	0.00
J. Other	NO	NO	NO						NO	0.00	0.00
4. 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. Harvested wood products	NE	NE	NE						NE		
H. Other	NE	NE	NE						NE		
5. Waste	**5.88**	**318.49**	**49.84**						**374.21**	0.00	**374.21**
A. Solid waste disposal	NO	231.23	NO						231.23	0.00	231.23
B. Biological treatment of solid waste		21.78	19.47						41.25	0.00	41.25
C. Incineration and open burning of waste	5.88	0.55	0.21						6.63	0.00	6.63
D. Waste water treatment and discharge		64.93	30.16						95.09	0.00	95.09
E. Other	NO	NO	NO						NO	0.00	0.00
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00

Memo items:[2]											
International bunkers	1435.07	2.28	3.87						1441.22		
Aviation	88.28	0.03	0.89						89.20		
Navigation	1346.79	2.25	2.98						1352.02		
Multilateral operations	**NO**	**NO**	**NO**						**NO**		
CO_2 emissions from biomass	**3448.18**								**3448.18**		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**2456.22**								**2456.22**		
Indirect N_2O			**NO**								

Indirect CO_2 [3]	13.77										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**20493.05**	**14968.37**	**5524.68**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**20506.82**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
1. Energy: Although GHG emissions from the Transport and Manufacturing industries and construction sectors increased in 2014 compared to 2013, the total GHG emissions from the Energy sector decreased due to the increase of imported electricity. The import of electricity increased about 38% in 2014 compared to 2013. This led to the decreased production of electricity from the oil shale that emits the largest share of GHG emissions in Estonia. 2. Industrial processes and product use: CO2 eq emission from '2.A Mineral Industries' decreased from 695 kt CO2 eq (2013) to 461, because the use of limestone for flue gas desulphurisation was reduced (emissions reduced by 233 Gg CO2). CO2 emission from Chemical Industry was 0 in 2014, because production of ammonia was temporarily discontinued during 2014. 3. Agriculture: Emissions arising from liming performed on agricultural land in 2014 have increased 45% compared to 2013. The increase could be explained by ever fluctuating areas of liming over the years, depending significantly on government subsidies. No emissions are reported in 2014 under urea application since the only factory involved in urea fertilizer production in Estonia has come to a halt. 5. Waste: Total CO2 eq emissions in 2014 have slightly increased from 369 kt CO2 eq in 2013 to 374 kt CO2 eq in 2014 (increase 1.4%). The preliminary data used for calculating the proxy emissions is under inspection by Estonian Environment Agency. CO2 eq emission from sub-category '5.A Solid waste disposal' decreased from 240 CO2 eq in 2013 to 231 CO2 eq in 2014 (decrease 3.8%) which is caused by the decrease of biodegradable waste going to landfills. CO2 eq emission from sub-category '5.B Biological Treatment of Solid Waste' increased from 34 CO2 eq in 2013 to 41 CO2 eq in 2014 (increase 17%), which is caused by the increase of solid waste treated biologically. CO2 eq emission from sub-category '5.C Incineration and Open Burning of Waste' increased from 1 CO2 eq in 2013 to 7 CO2 eq in 2014. This rapid increase is caused predominantly by a single material incinerated without energy recovery. CO2 eq emission from sub-category '5.D Wastewater Treatment and Discharge' increased from 93 CO2 eq in 2013 to 95 CO2 eq in 2014 (increase 1.78%), which is influenced by the industry production and the number of people living in the low density settlements.

4.1.10 Spain (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission Proxy2014
Country SPAIN

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]	**219 339.70**	**38 534.10**	**24 593.95**	**8 770.57**	**46.09**	**215.94**	**NA,NO**	NA,NO	**291 500.35**		
1. Energy	**234 832.21**	**2 989.16**	**2 052.94**						**239 874.31**	**107 831**	**132 043**
A. Fuel combustion (sectoral approach)	231 203.32	1 836.60	2 052.64						235 092.55		
1. Energy industries	74 318.41	201.40	508.09						75 027.90		
2. Manufacturing industries and construction	41 760.94	564.19	408.05						42 733.18		
3. Transport	79 728.63	89.93	774.74						80 593.30		
4. Other sectors	35 395.34	981.08	361.76						36 738.18		
5. Other	IE	IE	IE						IE		
B. Fugitive emissions from fuels	3 628.89	1 152.56	0.30						4 781.75		
1. Solid fuels	3.57	416.40	NA,NE						419.97		
2. Oil and natural gas and other emissions from energy production	3 625.32	736.16	0.30						4 361.78		
C. CO_2 transport and storage											
2. Industrial processes and product use	**18 755.56**	**169.76**	**863.40**	**8 770.57**	**46.09**	**215.94**	**NA,NO**	NA,NO	**28 821.33**	**17 016**	**11 805**
A. Mineral industry	11 729.71								11 729.71		
B. Chemical industry	3 305.97	152.27	474.52	242.48	NA,NO	NA,NO	NA,NO	NA,NO	4 175.24		
C. Metal industry	2 811.09	17.50	NA		43.00	NA,NO			2 871.59		
D. Non-energy products from fuels and solvent use	908.80	NA	NA						908.80		
E. Electronic Industry				NO	NO	NO	NO	NO	NO		
F. Product uses as ODS substitutes				8 528.09	3.09	NO			8 531.18		
G. Other product manufacture and use	NO	NO	388.88	NO	NA,NO	215.94	NO	NO	604.82		
H. Other	NA	NA	NA								
3. Agriculture	**39.19**	**20 526.39**	**20 166.20**						**40 731.77**	**0**	**40 732**
A. Enteric fermentation		12 112.50							12 112.50		
B. Manure management		7 760.75	1 531.72						9 292.47		
C. Rice cultivation		337.67							337.67		
D. Agricultural soils		IE	18 589.24						18 589.24		
E. Prescribed burning of savannahs		NO	NO						NO		
F. Field burning of agricultural residues		315.47	45.24						360.70		
G. Liming	39.19								39.19		
H. Urea application	NE								NE		
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NO	NO	NO						NO		
4. Land use, land-use change and forestry[(1)]	**-34 290.69**	**90.77**	**151.26**						**-34 048.66**		
A. Forest land	-34 092.88	90.77	7.44						-33 994.67		
B. Cropland	-2 558.96	NO,NE,IE	143.83						-2 415.13		
C. Grassland	1 141.39	0.00	0.00						1 141.39		
D. Wetlands	-9.16	NO	NO,NE						-9.16		
E. Settlements	1 152.13	NO	NO,NE						1 152.13		
F. Other land	76.78	NO	NO,NE						76.78		
G. Harvested wood products	NE								NE		
H. Other	NO	NO	NO						NO		
5. Waste	**3.43**	**14 758.02**	**1 360.15**						**16 121.60**	**0**	**16 122**
A. Solid waste disposal	NO,NA	13 453.59							13 453.59		
B. Biological treatment of solid waste		469.75	402.96						872.71		
C. Incineration and open burning of waste	3.43	0.03	0.39						3.85		
D. Waste water treatment and discharge		833.84	956.80						1 790.64		
E. Other	NA	0.80	NA						0.80		
6. Other *(as specified in summary 1.A)*	NA	NA	NA	NA	NA	NA					

Memo items:[(2)]											
International bunkers	38 390.25	33.11	319.75						38 743.10		
Aviation	13 618.63	0.60	128.84						13 748.06		
Navigation	24 771.62	32.51	190.91						24 995.04		
Multilateral operations	NO	NO	NO						NO		
CO_2 emissions from biomass	27 032.99								27 032.99		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O											

Indirect CO_2[(3)]	NE										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**325 549.01**	**124 847.05**	**200 701.96**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**291 500.35**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**325 549.01**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**291 500.35**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(2) See footnote 7 to table Summary 1.A.

(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
CRF1+CRF2: : Interannual rise of ETS emissions of + 1,7 %. 1A1a: Fall of electricity demand of -2 % increased participation of fossil fuels in the mix (coal: +7 % and natural gas: +17 % compared to 2013). 1A1b: increase of ETS emissions in refinery sector (+1 %). 1A1c: Reduction of emissions in coke production (-17 %). Fall of domestic coal and ga&oil production (-6 % and -23 %). 1A2: wide increase of industrial activity. 1A3: Fall of domestic flights (-1 %); rise of road fossil fuels (+2 % diesel; +1 % gasoline). 1A: Drop of final energy consumption of -2 %. 2A: increased production (+17 %) of cement industry. 3A-3B: cattle rise (between +2 and +5%).

4.1.11 Finland (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission v1
Country FI

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**25 286**	**6 083**	**5 866**	**1 612**	**10**	**31**	**0**	**0**	**38 887**		
1. Energy	**44 569**	**386**	**553**						**45 508**	**25 000**	**20 335**
A. Fuel combustion (sectoral approach)	44 490	346	552						45 389		
1. Energy industries	18 970	22	259						19 251		
2. Manufacturing industries and construction	8 650	21	134						8 805		
3. Transport	11 700	22	78						11 800		
4. Other sectors	4 070	278	73						4 421		
5. Other	1 100	3	8						1 111		
B. Fugitive emissions from fuels	79	40	1						120		
1. Solid fuels	NO	NO	NO						NO		
2. Oil and natural gas and other emissions from energy production	79	40	1						120		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**3 815**	**0.1**	**245**	**1 612**	**10**	**31**	**NO**	**NO**	**5 713**	**3 800**	**1 913**
A. Mineral industry	982								982		
B. Chemical industry	711	NO,NA	217	NO	NO	NO	NO	NO	928		
C. Metal industry	2 024	0.002	NO	NO	NO	C	NO	NO	2 024		
D. Non-energy products from fuels and solvent use	98	0.1	1						NE, IE		
E. Electronic Industry				C	C	C	NO	NO	C, NO		
F. Product uses as ODS substitutes				1 610	7	NO	NO	NO	1 618		
G. Other product manufacture and use	NO	NO	27	NO	NO	10	NO	NO	38		
H. Other	NO	NO	NO	2	3	21	NO	NO	25		
3. Agriculture	**194**	**2 669**	**3 683**						**6 546**	**0**	**6 546**
A. Enteric fermentation		2 202									
B. Manure management		465	284								
C. Rice cultivation		NO									
D. Agricultural soils		NO,NE	3 399								
E. Prescribed burning of savannahs		NO	NO								
F. Field burning of agricultural residues		2	1								
G. Liming	194										
H. Urea application	0.3										
I. Other carbon-containing fertilizers	NA										
J. Other	NO	NO	NO								
4. Land use, land-use change and forestry[1]	**-23 293**	**922**	**1 253**						**-21 118**		
A. Forest land	-29 149	848	1 124						-27 177		
B. Cropland	6 431	NO,IE	11						6 441		
C. Grassland	608	NO,NE	1						609		
D. Wetlands	2 228	74	97						2 399		
E. Settlements	947	NO	17						964		
F. Other land	NO,NA	NO	NO,NA						IE,NA,NO		
G. Harvested wood products	-4 357								-4 357		
H. Other	NO	NO	NO						NE, NO		
5. Waste	**NO**	**2 106**	**131**						**2 237**	**0**	**2 237**
A. Solid waste disposal	NO	1 857							1 857		
B. Biological treatment of solid waste		74	55						129		
C. Incineration and open burning of waste	NO,NE,IE	NO,NE,IE	NO,NE,IE						IE		
D. Waste water treatment and discharge		174	77						251		
E. Other	NO	NO	NO						NO		
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO		

Memo items:[2]											
International bunkers	2 132	4	18						2 154		
Aviation	1 863	3.0	16						1 882		
Navigation	269	0.6	2						272		
Multilateral operations	NO	NO	NO						NO		
CO_2 emissions from biomass	37 158								37 158		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			192								

Indirect CO_2 [3]	80										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**60 005**	**28 800**	**31 031**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**38 887**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**60 085**	**28 800**	**31 112**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**38 967**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
According to Statistics Finland's proxy estimate, the total emissions of greenhouse gases in 2014 corresponded with 60.1 million tonnes of carbon dioxide (CO_2 eq.). Emissions went down by approximately five per cent from the previous year. In the energy sector the need for heating energy was reduced by the warmer weather than usual. In turn, the improved water situation in the Nordic countries increased net imports of electricity. Emissions from the non-emissions trading sector went down by one per cent and were below the annual emission allocations set by the EU by 0.1 million tonnes of CO_2 equivalent. The drivers for the changes in the emissions are not fully known. The economic downturn may explain the decrease in the emissions partly, as also measures undertaken to reduce emissions. Greenhouse gas inventory: (http://www.tilastokeskus.fi/til/khki/2014/khki_2014_2015-05-22_tie_001_en.html) Energy statistics: (Preliminary data: http://www.tilastokeskus.fi/til/ehk/2014/04/ehk_2014_04_2015-03-23_tie_001_en.html) Energy authority, in Finnish only: (http://www.energiavirasto.fi/fi/-/hiilidioksidipaastot-pienenivat-suomessa-2014?redirect=http%3A%2F%2Fwww.energiavirasto.fi%2Ffi%2Fuutisarkisto%3Fp_p_id%3D101_INSTANCE_c1lTKRwQcXY6%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-1%26p_p_col_pos%3D1%26p_p_col_count%3D2)

4.1.12 France (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014 Proxy
Submission July 2015
Country FR KP (with Mayotte)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	285 356.44	60 194.41	41 965.65	19 687.74	614.13	0.00	579.82	10.63	408 408.82		
1. Energy	310 905.82	2 861.80	3 986.38						317 753.99	**83 640.36**	**234 113.64**
A. Fuel combustion (sectoral approach)	308 105.42	1 907.41	3 973.78						313 986.60	**80 608.18**	**233 378.43**
1. Energy industries	38 454.42	21.84	303.64						38 779.90	**35 019.49**	**3 760.41**
2. Manufacturing industries and construction	59 858.90	170.48	516.03						60 545.40	**44 689.23**	**15 856.18**
3. Transport	129 138.27	175.70	1 534.55						130 848.52	**457.09**	**130 391.43**
4. Other sectors	80 653.83	1 539.39	1 619.57						83 812.78	**442.36**	**83 370.41**
5. Other	0.00	0.00	0.00						0.00	**0.00**	**0.00**
B. Fugitive emissions from fuels	2 800.40	954.39	12.60						3 767.39	**3 032.18**	**735.21**
1. Solid fuels	0.00	19.56	0.00						19.56	**0.00**	**19.56**
2. Oil and natural gas and other emissions from energy production	2 800.40	934.82	12.60						3 747.83	**3 032.18**	**715.65**
C. CO_2 transport and storage	0.00								0.00	**0.00**	**0.00**
2. Industrial processes and product use	18 953.66	64.43	984.60	19 687.74	614.13	0.00	579.82	10.63	40 895.00	**16 556.28**	**24 338.72**
A. Mineral industry	11 301.44								11 301.44	**9 770.96**	**1 530.49**
B. Chemical industry	2 550.33	63.63	853.03	128.87	3.27	0.00	0.00	0.00	3 599.14	**2 802.09**	**797.04**
C. Metal industry	3 348.61	0.78	0.00	0.00	97.73	0.00	92.19	0.00	3 539.31	**3 864.63**	**-325.32**
D. Non-energy products from fuels and solvent use	1 149.29	0.02	0.01						1 149.32	**0.00**	**1 149.32**
E. Electronic Industry				6.42	78.58	0.00	4.51	10.63	100.15	**0.00**	**100.15**
F. Product uses as ODS substitutes				19 552.34	195.30	0.00	0.00	0.00	19 747.64	**0.00**	**19 747.64**
G. Other product manufacture and use	603.98	0.00	131.56	0.11	239.25	0.00	483.11	0.00	1 458.01	**0.00**	**1 458.01**
H. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
3. Agriculture	1 998.18	38 964.92	35 880.04						76 843.13	**0.00**	**76 843.13**
A. Enteric fermentation		33 221.47							33 221.47	**0.00**	**33 221.47**
B. Manure management		5 546.90	2 603.23						8 150.13	**0.00**	**8 150.13**
C. Rice cultivation		168.33							168.33	**0.00**	**168.33**
D. Agricultural soils		0.00	33 268.09						33 268.09	**0.00**	**33 268.09**
E. Prescribed burning of savannahs		0.00	0.00						0.00	**0.00**	**0.00**
F. Field burning of agricultural residues		28.22	8.72						36.94	**0.00**	**36.94**
G. Liming	905.19								905.19	**0.00**	**905.19**
H. Urea application	1 092.98								1 092.98	**0.00**	**1 092.98**
I. Other carbon-containing fertilizers	0.00								0.00	**0.00**	**0.00**
J. Other	0.00	0.00	0.00						0.00	**0.00**	**0.00**
4. Land use, land-use change and forestry[1]	-48 007.28	1 323.81	117.23						-46 566.24		
A. Forest land	-66 357.88	699.43	62.35						-65 596.10		
B. Cropland	20 766.26	157.98	37.14						20 961.38		
C. Grassland	-11 221.62	167.60	13.73						-11 040.29		
D. Wetlands	-2 195.03	9.12	0.75						-2 185.17		
E. Settlements	12 549.66	65.93	3.26						12 618.84		
F. Other land	0.16	0.00	0.00						0.16		
G. Harvested wood products	-1 652.60								-1 652.60		
H. Other	103.76	223.77	0.00						327.53		
5. Waste	1 506.07	16 979.45	997.40						19 482.92	**0.00**	**19 482.92**
A. Solid waste disposal	0.00	14 497.39							14 497.39	**0.00**	**14 497.39**
B. Biological treatment of solid waste		263.84	492.24						756.08	**0.00**	**756.08**
C. Incineration and open burning of waste	1 506.07	28.69	49.09						1 583.85	**0.00**	**1 583.85**
D. Waste water treatment and discharge		2 189.53	456.07						2 645.60	**0.00**	**2 645.60**
E. Other	0.00	0.00	0.00						0.00	**0.00**	**0.00**
6. Other *(as specified in summary 1.A)*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
Memo items:[2]											
International bunkers	**22 718.05**	**15.81**	**208.03**						**22 941.89**		
Aviation	16 539.34	1.91	160.67						16 701.92		
Navigation	6 178.71	13.91	47.36						6 239.97		
Multilateral operations	0.90								0.90		
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											
Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**454 975.06**	**100 196.64**	**354 778.42**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**408 408.82**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry			

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website. -> Cf. French document for MMR given to UE by 15 January 2015.

4.1.13 Greece (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2015
Country Greece

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]											
1. Energy									**74 292**		
A. Fuel combustion (sectoral approach)									73 062		
1. Energy industries	45 730	15	140						45 885	45 522	363
2. Manufacturing industries and construction	5 000	7	50						5 057	3 713	1 344
3. Transport	17 000	80	170						17 250		17 250
4. Other sectors	4 700	100	70						4 870		4 870
5. Other											
B. Fugitive emissions from fuels									1 230		
1. Solid fuels	NO	1 115	NA,NO						1 115		1 115
2. Oil and natural gas and other emissions from energy production	5	110	0						115		115
C. CO_2 transport and storage	NO										
2. Industrial processes and product use									**12 787**		
A. Mineral industry	4 430								4 430	4 411	19
B. Chemical industry	561		26						587	587	
C. Metal industry	1 149	0	NO		79.559				1 228	1 128	100
D. Non-energy products from fuels and solvent use	25	NA,NO	NA,NO						25		25
E. Electronic Industry				NO	NO	NO	NO	NO	NO		
F. Product uses as ODS substitutes				6260	100				6 360		6 360
G. Other product manufacture and use	NA	NA	150		NO	5.7			156		156
H. Other	NA	NA	NA								
3. Agriculture									**9 400**		
A. Enteric fermentation		4 100							4 100		4 100
B. Manure management		850	330						1 180		1 180
C. Rice cultivation		630							630		630
D. Agricultural soils			3 400						3 400		3 400
E. Prescribed burning of savannahs											
F. Field burning of agricultural residues		45	15						60		60
G. Liming	NO										
H. Urea application	30								30		30
I. Other carbon-containing fertilizers	NO										
J. Other											
4. Land use, land-use change and forestry[1]									**-3 399**		
A. Forest land	-1 950	4	1						-1 946		
B. Cropland	-300	NA,NO	0						-300		
C. Grassland	-1 050	10	1						-1 039		
D. Wetlands	5	NO	NO						5		
E. Settlements	10	NO	NA,NO						10		
F. Other land	200	NO	NA,NO						200		
G. Harvested wood products	-330								-330		
H. Other	NO	NO	NO								
5. Waste									**5 177**		
A. Solid waste disposal	NA,NO	3 200							3 200		3 200
B. Biological treatment of solid waste		20	20						40		40
C. Incineration and open burning of waste	5	1	1						7		7
D. Waste water treatment and discharge		1 600	330						1 930		1 930
E. Other	NO	NO	NO								
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO			

Memo items:[2]											
International bunkers	10 000.00	15.50	182.00						10 197.50		
Aviation	2 500.00	0.50	22.00						2 522.50		
Navigation	7 500.00	15.00	160.00						7 675.00		
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**101 655.74**	**55 362.48**	**46 292.96**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**98 256.29**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry			

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

The ETS in column L does not include aviation. The emissions from national aviation are included in column M (non-ETS).
The estimation of emissions from categories 1 (power sector, refineries and industry) and 2 is based on ETS data.
The estimation of emissions from the rest sectors is based on extrapolation of historic emissions and expert judgement.

4.1.14 Hungary (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]											
1. Energy	**37915.4**	**819.9**	**364.8**						**39100.1**	**14595.7**	**24504.4**
A. Fuel combustion (sectoral approach)	37775.5	84.5	364.5						38224.5	14573.3	23651.3
1. Energy industries	13205.8	20.8	58.6						13285.2	12748.4	536.8
2. Manufacturing industries and construction	4003.7	5.1	51.6						4060.5	1738.1	2322.4
3. Transport	10601.8	29.3	115.5						10746.7	76.2	10670.5
4. Other sectors	9964.1	29.3	138.9						10132.2	10.6	10121.6
5. Other	NO	NO	NO						NO	NO	NO
B. Fugitive emissions from fuels	140.0	735.3	0.3						875.6	22.4	853.1
1. Solid fuels	NO	55.03	NO						55.0	0	55.0
2. Oil and natural gas and other emissions from energy production	139.96	680.32	0.26						820.5	22.4	798.1
C. CO_2 transport and storage	NO								NO	0	0.0
2. Industrial processes and product use	**4303.1**	**49.8**	**449.7**	**1308.8**	**0.5**	**125.0**	**0.0**	**0.0**	**6236.8**	**4155.1**	**2081.7**
A. Mineral industry	1007.6								1007.6	1007.6	0.0
B. Chemical industry	2436.6	46.2	64.2	NO	NO	NO	NO	NO	2547.0	2299.9	247.1
C. Metal industry	847.7	3.6	NO	NO	NO	NO	NO	NO	851.3	847.7	3.6
D. Non-energy products from fuels and solvent use	11.27	NO	NO						11.3	0.0	11.3
E. Electronic Industry				NO	NO	NO	NO	NO	NO	0.0	0.0
F. Product uses as ODS substitutes				1 308.76	0.52	NO	NO	NO	1309.3	0.0	1309.3
G. Other product manufacture and use	NO	NO	385.5	NO	NO	124.99	NO	NO	510.5	0.0	510.5
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	0.0	0.0
3. Agriculture									**6491.44**	**0**	**6491.4**
A. Enteric fermentation		1910.7							1910.7	0	1910.7
B. Manure management		994.3	417.5						1411.8	0	1411.8
C. Rice cultivation		16.2							16.2	0	16.2
D. Agricultural soils		NA	3002.0						3002.0	0	3002.0
E. Prescribed burning of savannahs		NO	NO						NO	0	NO
F. Field burning of agricultural residues		NO	NO						NO	0	NO
G. Liming	12.7								12.7	0	12.7
H. Urea application	65.0								65.0	0	65.0
I. Other carbon-containing fertilizers	73.0								73.0	0	73.0
J. Other	NO	NO	NO						NO	0	NO
4. Land use, land-use change and forestry[(1)]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste	196.8	3811.1	260.6						**4268.5**	**0**	**4268.5**
A. Solid waste disposal	NO,NA	3299.9	0.0						3299.9	0	3299.9
B. Biological treatment of solid waste		126.0	30.1						156.1	0	156.1
C. Incineration and open burning of waste	196.8	0.4	2.4						199.6	0	199.6
D. Waste water treatment and discharge		384.8	228.1						612.9	0	612.9
E. Other	NO	NO	NO						NO	NO	NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO						NO		NO

Memo items:[(2)]											
International bunkers	512.66	0.09	4.08						516.83		
Aviation	512.66	0.09	4.08						516.83		
Navigation	NE,NO	NE,NO	NE,NO						NE,NO		
Multilateral operations	**NO**	**NO**	**NO**						**NO**		
CO_2 emissions from biomass	**7 362.18**								**7 362.18**		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**NE**								**NE**		
Indirect N_2O			NE								

Indirect CO_2 [(3)]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**56 096.91**	**18 750.81**	**37 346.10**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(2) See footnote 7 to table Summary 1.A.

(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
Total emissions in 2014 are expected to be lower by 1.3 per cent compared to 2013. ETS emissions decreased by 2 per cent.
ENERGY (-4%)
Domestic natural gas consumption dropped by about 9 per cent.
Electricity production decreased by 4% within which conventional thermal plants using fossil fuels produced by 10% less.
In contrast, after several years of decrease, motor gasoline and diesel oil consumption increased by 4 to 9 per cent which led to increased emissions from transport.
Import and production of natural gas have slightly increased which led to a small increase in fugitive emissions
IPPU (+11%)
Production of pig iron has increased after the radical drop of last year, therefore emissions in 2C1 Iron and steel industry are also higher
Emissions of chemical (especially petrochemical) plants are higher than last year that might be attributed to increase of the production.
AGRICULTURE (+2%)
The slightly increasing trend seems to be continuing, although the N-fertilizer use, which is the main driver of agricultural emissions, dropped by 4.7% in 2014.
The gradual recovery of livestock sector led to a rise of approximately 3% in emissions from livestock, overbalancing the lower N_2O emissions from the synthetic fertilizer use.
Additionally, the bumper crops (cereals as well as industrial crops) also contributed to the slight upward trend in agricultural emissions.
WASTE (-1%)
The decreasing trend is expected to continue,

4.1.15 Ireland (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2016
Country Ireland

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]	36492.88	13300.44	7107.18	1285.26	8.32	43.69	NO	0.90	58238.68		
1. Energy	34368.23	236.94	328.32						34933.49	14302.03	20631.47
A. Fuel combustion (sectoral approach)	34368.23	198.08	328.32						34894.63	14302.03	20592.61
1. Energy industries	11018.01	6.80	124.22						11149.03	10966.04	182.99
2. Manufacturing industries and construction	4266.29	8.92	14.97						4290.17	3305.77	984.40
3. Transport	11275.73	17.15	118.42						11411.31	6.54	11404.77
4. Other sectors	7808.20	165.20	70.71						8044.12	23.68	8020.44
5. Other	IE	IE	IE						IE		
B. Fugitive emissions from fuels	NO,IE	38.86	NO						38.86		38.86
1. Solid fuels	NO	19.79	NO						19.79		19.79
2. Oil and natural gas and other emissions from energy production	NO,IE	19.06	NO						19.06		19.06
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	1681.31	NO	41.21	1285.26	8.32	43.69	NO	0.90	3060.70	1650.45	1410.25
A. Mineral industry	1650.38								1650.38	1650.45	-0.07
B. Chemical industry	NO	NO	NO						NO		
C. Metal industry	NO	NO							NO		
D. Non-energy products from fuels and solvent use	30.93	NO	NO						30.93		30.93
E. Electronic Industry				3.39	8.32	22.01		0.90	34.63		34.63
F. Product uses as ODS substitutes				1281.87					1281.87		1281.87
G. Other product manufacture and use	NO	NO	41.21	NO	NO	21.68	NO	NO	62.89		62.89
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO		
3. Agriculture	407.40	11893.28	6606.72						18907.40		18907.40
A. Enteric fermentation		10642.47							10642.47		10642.47
B. Manure management		1250.80	521.65						1772.46		1772.46
C. Rice cultivation		NO							NO		
D. Agricultural soils		NE	6085.07						6085.07		6085.07
E. Prescribed burning of savannahs		NO	NO						NO		
F. Field burning of agricultural residues		NO	NO						NO		
G. Liming	382.32								382.32		382.32
H. Urea application	25.09								25.09		25.09
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NO	NO	NO						NO		
4. Land use, land-use change and forestry[(1)]									0.00		
A. Forest land									0.00		
B. Cropland									0.00		
C. Grassland									0.00		
D. Wetlands									0.00		
E. Settlements									0.00		
F. Other land									0.00		
G. Harvested wood products									0.00		
H. Other											
5. Waste	35.94	1170.22	130.93						1337.09		1337.09
A. Solid waste disposal	NO	1106.03							1106.03		1106.03
B. Biological treatment of solid waste		13.25	11.85						25.10		25.10
C. Incineration and open burning of waste	35.94	0.07	0.38						36.39		36.39
D. Waste water treatment and discharge		50.86	118.70						169.57		169.57
E. Other	NO	NO	NO						NO		
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO		

Memo items:[(2)]											
International bunkers											
Aviation											
Navigation											
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [(3)]	66.15										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**58 238.68**	**15 952.48** / **42 286.20**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**58 238.68**	
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**58 304.83**	
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**58 304.83**	

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(2) See footnote 7 to table Summary 1.A.

(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Proxy 2014 estimates are based on ETS data 2014 and a provisional national energy balance (7th May 2015)
Data in RED are the same as 2013 as no update is yet available.

4.1.16 Italy (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**316 428.81**	**43 150.11**	**19 230.43**	**11 988.61**	**1 609.34**	**325.63**	**0.00**	**25.70**	**392 758.62**		
1. Energy	**325 121.18**	**8 919.63**	**4 908.88**						**338 949.68**	**138 430**	**200 520**
A. Fuel combustion (sectoral approach)	322 443.25	3 124.92	4 899.30						330 467.46	134 156	196 312
1. Energy industries	99 806.46	114.81	464.53						100 385.80	100 338	48
2. Manufacturing industries and construction	47 870.55	253.44	942.45						49 066.45	32 575	16 491
3. Transport	104 470.30	275.44	964.64						105 710.38	517	105 194
4. Other sectors	69 586.77	2 480.53	2 489.93						74 557.23	726	73 831
5. Other	709.17	0.70	37.75						747.61	0.0	748
B. Fugitive emissions from fuels	2 677.93	5 794.70	9.58						8 482.22	4 274	4 208
1. Solid fuels	0.03	53.13	NA						53.16	0	53
2. Oil and natural gas and other emissions from energy production	2 677.90	5 741.57	9.58						8 429.06	4 274	4 155
C. CO_2 transport and storage									NO	0	0
2. Industrial processes and product use	**15 730.71**	**50.27**	**778.71**	**11 988.61**	**1 609.34**	**325.63**	**0.00**	**25.70**	**30 508.95**	**14 146**	**16 363**
A. Mineral industry	11 969.80								11 969.80	11 304	665
B. Chemical industry	1 281.04	6.10	227.11	NO	1 478.00	NO	NO	NA	2 992.25	1 875	1 117
C. Metal industry	1 178.86	44.16	NO	4.29	NO	NO	NO	NO	1 227.31	960	267
D. Non-energy products from fuels and solvent use	1 301.00	NO	NO						1 301.00	7	1 294
E. Electronic Industry				7.74	131.34	43.66	NO	25.70	208.44	0	208
F. Product uses as ODS substitutes				11 976.58	NO	NO	NO	NO	11 976.58	0	11 977
G. Other product manufacture and use	NO	NO	551.60	NO	NO	281.97	NO	NO	833.56	0	834
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0
3. Agriculture	**464.03**	**17 955.35**	**11 569.93**						**29 989.30**	**0**	**29 989**
A. Enteric fermentation		13 228.51							13 228.51	0	13 229
B. Manure management		3 113.02	2 162.01						5 275.03	0	5 275
C. Rice cultivation		1 598.98							1 598.98	0	1 599
D. Agricultural soils		NA	9 404.16						9 404.16	0	9 404
E. Prescribed burning of savannahs		NO	NO						0.00	0	0
F. Field burning of agricultural residues		14.84	3.76						18.60	0	19
G. Liming	13.61								13.61	0	14
H. Urea application	450.42								450.42	0	450
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NO	NO	NO						NO		
4. Land use, land-use change and forestry[1]	**-25 082.16**	**477.25**	**108.67**						**-24 496.23**		
A. Forest land	-27 952.61	222.62	0.83						-27 729.16		
B. Cropland	2 937.39	2.94	13.55						2 953.88		
C. Grassland	-7 766.29	251.69	94.29						-7 420.31		
D. Wetlands	NO	NO	NO						0.00		
E. Settlements	7 425.23	NO	NO						7 425.23		
F. Other land	NO	NO	NO						0.00		
G. Harvested wood products	274.12	NO	NO						274.12		
H. Other	NO	NO	NO						0.00		
5. Waste	**195.05**	**15 747.62**	**1 864.24**						**17 806.91**	**35**	**17 772**
A. Solid waste disposal	NA	13 102.16							13 102.16	0	13 102
B. Biological treatment of solid waste		75.94	491.33						567.28	0	567
C. Incineration and open burning of waste	195.05	52.26	21.07						268.38	35	234
D. Waste water treatment and discharge		2 517.27	1 351.84						3 869.10	0	3 869
E. Other	NO	NO	NO						NO		
6. Other ***(as specified in summary 1.A)***											

Memo items:[2]											
International bunkers	14 211.94	14.73	103.56						14 330.24		
Aviation	9 220.74	2.91	65.99						9 289.64		
Navigation	4 991.21	11.82	37.57						5 040.60		
Multilateral operations	**NE**	**NE**	**NE**						**NE**		
CO_2 emissions from biomass	**51 591.38**								51 591.38		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**NE**								**NE**		
Indirect N_2O			3.78								

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**417 254.86**	**152 610**	**264 644**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**392 758.62**	
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**417 254.86**	
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**392 758.62**	

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
Emission reduction in 2014 with respect to 2013 occurred prevalently in the Energy sector. In particular the main reduction occurs in the "Other sector" (more than 12Mt in CO2 eq), tertiary and residential, due to warm temperature in spring and autumn as can be observed in the EUROSTAT day-degrees timeseries. A further increase of renewable energy production (+4.7%), as results from the provisional National Energy Balance, together with a decrease in total energy consumption (-1.3%) and a small decrease of GDP (-0.5%) lead to a further emission reduction of the energyindustries (around 8 Mt) and manufacturing (around 1Mt).

4.1.17 Lithuania (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2015 v Proxy 1.2
LITHUANIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**12 469**	**3 409**	**3 115**	**343**	**NO**	**6**	**NO**	**0**	**19 342**		
1. Energy	**10 235**	**510**	**130**						**10 874**		
A. Fuel combustion (sectoral approach)	10 231	208	130						10 568		
1. Energy industries	3 006	12	19						3 038		
2. Manufacturing industries and construction	1 264	5	8						1 277		
3. Transport	5 065	18	83						5 166		
4. Other sectors	878	173	19						1 070		
5. Other	17	0	0						17		
B. Fugitive emissions from fuels	4	303	0						306		
1. Solid fuels	NO	NO	NO						NO		
2. Oil and natural gas	4	303	IE						306		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**2 209**	**NO**	**335**	**343**	**NO**	**6**	**NO**	**0**	**3 148**		
A. Mineral industry	453								453		
B. Chemical industry	1 669	NO	332	NO	NO	NO	NO	NO	2 256		
C. Metal industry	3	NO	NO	NO	NO	NO	NO	NO	3		
D. Non-energy products from fuels and solvent use	72	NO	NO						72		
E. Electronic Industry				NO	NO	6	NO	IE	6		
F. Product uses as ODS substitutes				343	NO	NO	NO	NO	343		
G. Other product manufacture and use	NO	NO	3	NO	NO	0	NO	NO	3		
H. Other	12	NO	NO	NO	NO	NO	NO	NO	12		
3. Agriculture	**24**	**1 853**	**2 596**						**4 474**		
A. Enteric fermentation		1 583							1 583		
B. Manure management		270	161						431		
C. Rice cultivation		NO							NO		
D. Agricultural soils		NA	2 435						2 435		
E. Prescribed burning of savannas		NO	NO						NO		
F. Field burning of agricultural residues		NO	NO						NO		
G. Liming	17								17		
H. Urea application	7								7		
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NO	NO	NO						NO		
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	1	1 045	54						1 100		
A. Solid waste disposal	NO,NA	834							834		
B. Biological treatment of solid waste		13	12						25		
C. Incineration and open burning of waste	1	0	0						1		
D. Waste water treatment and discharge		198	42						240		
E. Other	NO	NO	NO						NO		
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO		
other territory											
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2 [3]	NE,NO										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**19 342**	**6 864**	**12 478**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**19 342**	**6 864**	**12 478**
Total CO_2 equivalent emissions, including indirect CO_2, 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 4.2. The EEA proxy 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.

4.1.18 Luxembourg (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS Proxy Inventory 2014

(Sheet 1 of 1) Submission 2015v1

LUXEMBOURG

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS	ESD
	CO_2 equivalent (kt)									CO2 equivalent (Gg)		
Total (net emissions)[1]	**9910.42**	**566.54**	**536.21**	**63.18**	**NA,NO**	**8.51**	**NA,NO**	**NA,NO**	**11084.86**			
1. Energy	**9349.15**	**56.39**	**72.84**						**9478.38**	**1391.67**	**8086.71**	**8086.24**
A. Fuel combustion (sectoral approach)	9349.10	17.84	72.84						9439.78	1391.67	8048.11	8047.64
1. Energy industries	724.16	1.56	2.36						728.07	494.72	233.35	233.35
2. Manufacturing industries and construction	1038.86	2.13	13.12						1054.11	896.95	157.16	157.16
3. Transport	6059.43	1.67	47.68						6108.78	NA	6108.78	6108.31
4. Other sectors	1526.65	12.48	9.69						1548.81	NA	1548.81	1548.81
5. Other	NO	NO	NO						NO	NO	NO	NO
B. Fugitive emissions from fuels	0.05	38.55	NA,NO						38.60	NA	38.60	38.60
1. Solid fuels	NO	NO	NO						NO	NO	NO	NO
2. Oil and natural gas and other emissions from energy production	0.05	38.55	NA,NO						38.60	NA	38.60	38.60
C. CO_2 transport and storage	NE								NE	NE	NE	NE
2. Industrial processes and product use	**554.91**	**NA,NO**	**3.65**	**63.18**	**NA,NO**	**8.51**	**NA,NO**	**NA,NO**	**630.25**	**525.73**	**104.52**	**104.52**
A. Mineral industry	423.27								423.27	423.27	0.00	0.00
B. Chemical industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Metal industry	102.46	NA	NA	NA	NA	NA	NA	NA	102.46	102.46	0.00	0.00
D. Non-energy products from fuels and solvent use	29.18	NA	NA						29.18	NA	29.18	29.18
E. Electronic Industry				NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				60.61	NO	NO	NO	NO	60.61	NA	60.61	60.61
G. Other product manufacture and use	NO	NO	3.65	2.56	NO	8.51	NO	NO	14.72	NA	14.72	14.72
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Agriculture	**6.36**	**466.83**	**445.31**						**918.50**	**NA**	**918.50**	**918.50**
A. Enteric fermentation		407.33							407.33	NA	407.33	407.33
B. Manure management		59.49	38.84						98.33	NA	98.33	98.33
C. Rice cultivation		NO							NO	NO	NO	NO
D. Agricultural soils		NA	406.47						406.47	NA	406.47	406.47
E. Prescribed burning of savannahs		NO	NO						NO	NO	NO	NO
F. Field burning of agricultural residues		NO	NO						NO	NO	NO	NO
G. Liming	6.36								6.36	NA	6.36	6.36
H. Urea application	NO								NO	NO	NO	NO
I. Other carbon-containing fertilizers	NO								NO	NO	NO	NO
J. Other	NO	NO	NO						NO	NO	NO	NO
4. 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. Harvested wood products	NE	NE	NE						NE			
H. Other	NE	NE	NE						NE			
5. Waste	**NA,NO**	**43.33**	**14.41**						**57.73**	**NA**	**57.73**	**57.73**
A. Solid waste disposal	NA	31.15	NO						31.15	NA	31.15	31.15
B. Biological treatment of solid waste		8.15	6.83						14.98	NA	14.98	14.98
C. Incineration and open burning of waste	IE	IE	IE						IE	IE	IE	IE
D. Waste water treatment and discharge		4.03	7.57						11.60	NA	11.60	11.60
E. Other	NO	NO	NO						NO	NO	NO	NO
6. Other *(as specified in summary 1.A)*	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Memo items:[2]												
International bunkers									**NE**			
Aviation									NE			
Navigation									NE			
Multilateral operations									**NE**			
CO_2 emissions from biomass									**NE**			
CO_2 captured									**NE**			
Long-term storage of C in waste disposal sites									**NE**			
Indirect N_2O												

Indirect CO_2 [3]												

Total CO_2 equivalent emissions without land use, land-use change and forestry	**11 084.86**	**1917.40**	**9167.45**	**9166.99**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**			
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**NE**			
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**			
			0.00	*0.00*

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Total GHG emissions without LULUCF (and without indirect CO2 emissions) would decrease by 2.54% between 2013 and 2014.
By gas the evolution is as follows: CO2 (incl. HFC & SF6) decreases by 2.82%; wheras CH4 & N2O are rather stable: +0.29% & -0.23%.
By sector, emissions increase are obseved for 1A1a, 1A4c, 2 and 5. But these are rather modest (in % increase or weight in the total) except for 1A1a (+6.1%) & 1A4b (+3.6%).
The decrease is actually mainly driven by a 3.2% emissions reduction for 1A3b which represents 55% of the approximated 2014 emissons without LULUCF
(and without indirect CO2 emissions). An important decrease is also observed in 1A4a (-28.9%). This has to be checked because it seems too big !
Other sectors remain stable (1A2, 1A3a/c/d & 3).
As a conclusion, emissions reduction in 2014 wrt. 2013 is explained by lower road fuel sales in 2014 and by lower energy consumption in the tertiary sector. This last evolution, however,, has to be checked with the energy balance sheet data provider, STATEC, the LU NSI.

4.1.19 Latvia (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2015 v.1
Country LV

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**7372.38**	**2027.91**	**1511.01**	**107.59**	**NO,NA**	**7.92**	**NO,NA**	**NO,NA**	**11026.81**		
1. Energy	**6778.27**	**357.04**	**119.05**						**7254.37**	**1760.711075**	**5493.65942**
A. Fuel combustion (sectoral approach)	6778.27	256.04	119.05						7153.36	1760.711075	5392.65263
1. Energy industries	1858.11	9.51	14.86						1882.48	1290.883189	591.600696
2. Manufacturing industries and construction	707.58	14.77	24.08						746.44	365.0459535	381.39255
3. Transport	2888.73	4.21	42.91						2935.86	NA	2935.86
4. Other sectors	1317.40	227.54	37.14						1582.07	104.7819326	1477.29256
5. Other	6.45	0.01	0.05						6.51	NO	6.51
B. Fugitive emissions from fuels	0.01	101.00	0.00						101.01	NO	101.01
1. Solid fuels	NO,NA	NO,NA	NO,NA						NO,NA	NO,NA	NO,NA
2. Oil and natural gas and other emissions from energy production	0.01	101.00	NA						101.01	NA	101.01
C. CO_2 transport and storage	NO								NO	NO	NO
2. Industrial processes and product use	**569.89**	**0.00**	**0.01**	**107.59**	NO,NA	**7.92**	NO,NA	NO,NA	**685.40**	**568.9096354**	**116.490008**
A. Mineral industry	568.91								568.91	568.9096238	NO
B. Chemical industry	NO	NO	NO	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA
C. Metal industry	NO	0.00	NO	NO	NO	NO	NO	NO	0.00	0.000011564	NO
D. Non-energy products from fuels and solvent use	0.98	NO,NA	NO,NA						0.98	NA	0.97589753
E. Electronic Industry				NO	NO	NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				106.63	NO	NO,NA	NO	NO,NA	106.63	NA	106.632547
G. Other product manufacture and use	NA	NA	0.01	0.96	NO,NA	7.92	NA	NO,NA	8.88	NO	8.88156316
H. Other	NO,NA	NO,NA	NO,NA	NA	NA	NA	NA	NA	NO,NA	NO,NA	NO,NA
3. Agriculture	**23.76**	**962.85**	**1381.61**						**2368.22**	**NA**	**2368.22475**
A. Enteric fermentation		827.51							827.51	NA	827.513525
B. Manure management		135.34	112.73						248.06	NA	248.06432
C. Rice cultivation		NO							NO	NA	NO
D. Agricultural soils		NE	1268.88						1268.88	NA	1268.8847
E. Prescribed burning of savannahs		NO	NO						NO	NA	NO
F. Field burning of agricultural residues		NO	NO						NO	NA	NO
G. Liming	19.69								19.69	NA	19.6863333
H. Urea application	4.08								4.08	NA	4.07586667
I. Other carbon-containing fertilizers	NO								NO	NA	NO
J. Other	NO	NO	NO						NO	NA	NO
4. 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. Harvested wood products	NE	NE	NE						NE		
H. Other	NE	NE	NE						NE		
5. Waste	**0.46**	**708.02**	**10.34**						**718.82**	**NA**	**718.819779**
A. Solid waste disposal	NO,NA	499.19							499.19	NA	499.188576
B. Biological treatment of solid waste		4.00	3.58						7.58	NA	7.5831972
C. Incineration and open burning of waste	0.46	NO,NA,NE	0.01						0.47	NA	0.46934995
D. Waste water treatment and discharge		204.83	6.75						211.58	NA	211.578657
E. Other	NO	NO	NO						NO	NA	NO
6. Other *(as specified in summary 1.A)*	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Memo items:[2]											
International bunkers	1070.45	1.15	34.18						1 105.77		
Aviation	334.13	0.01	3.92						338.06		
Navigation	736.32	1.14	30.25						767.71		
Multilateral operations	NA	NA	NA						NA		
CO_2 emissions from biomass	6 512.75								**6 512.75**		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NA								NA		
Indirect N_2O			IE,NA,NO								
Indirect CO_2[3]	**48.52**										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**11 026.81**	**2329.62**	**8697.19**
Total CO_2 equivalent emissions with land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**11 075.34**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry			

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
GENERAL Latvia`s approximate GHG emissions for 2014 were estimated using available activity data or extrapolation in cases activity data were not available yet. In sectors where stable trend was not observed the emissions were left in 2013 levels. If to compare with previous inventory (Draft GHG inventory submitted on 30.06.2015) Latvia`s total GHG emissions are increased by 0.4% in 2014. The total ETS emissions in this report differ from ETS emissions reported under Article 21 of the ETS directive under 2A1 (Cement production) and 2C1 (Iron and Steel) due to methodological inconsistencies.
Energy In 1A1 sector the consumption of energy resources has decreased by 3%, especially in RFO and coal consumption. In 1A2 sector there can be seen a decrease in GHG emissions by 6% due to decrease in fuel consumption in 1A2a, 1A2b, 1A2e, 1A2g sectors. However, in 1A4 sector there can be seen an increase in GHG emissions by 4%, especially in 1A4b sector where natural gas was consumed by 11% more than in 2013. Due to unavailable data it was assumed that in 1A5 and 1B sectors the emissions are the same as in 2013. For emissions division in ETS and non ETS in Energy sector ETS emissions were taken from annual ETS reports. TRANSPORT - Total GHG emissions in transport sector have been increased in 2014 by approximately 3,9% compare to year 2013. The different changes are in place in subsectors. If in railway GHG emissions have been decreased by 4,1% then in road transport GHG emissions have been increased by 5,2%. Fuel consumption inreasing in road transport and corresponding CO2 emission increasing is the main driving forces for total GHG emission changes in transpot sector.
Industrial Processes and product use For approximated emission estimations the Annual ETS GHG report (http://www.vvd.gov.lv/izsniegtas-atlaujas-un-licences/seg-atlaujas/?company_name=cemex&org_id=&perm_date_from=&perm_date_to=&s=1) for clinker production as well as available provisional national statistics from CSB were used as activity data. Emissions from IPPU sector in 2014 have been increasing by approximate 2.4% mainly due to the fact that there are increased demand of products from Mineral products industry. Activity data for Mineral products are taken from enterprises annual Greenhouse gas inventory report that are reported for ETS. In aproximate inventory there are used last year data for Asphalt roofing, Road paving with asphalt, Urea use and Food and beverages industry due to statistics about production industry are available in each year October. There are no CO2 emissions from 2.C.1 Iron& steel production due to enterprise used very small amount of raw materials (only scrap metal) in production and they didn't content carbon. In Crude steel production sector there are calculated CO2 emissions taking into account those part of raw materials that contents carbon. Previous years metal production plant produced crude steel from scrap metal and crude iron. There were used crude iron/scrap metal ratio, but latest years there were used mainly scrap metal and in 2014 only scrap metal were used as raw material besides in small amount (only 0.12Gg). As scrap metal didn't cause CO2 emissions and there were used none carbon electrodes in 2014, there are reported "NO" as CO2 emissions under sector 2.C.1 Iron&Steel production. F GASES emission calculations in Domestic Refrigeration subsector were done taking into account updated number of population and households. As there is no data available from Chemicals Register and Reports by Opeartors using F gases, for Commercial Refrigeration the level of emissions was left as it was in 2013. For SF6 from Electrical equipment extrapolation was used taking into account average emission rates from previous 3 years. For SOLVENT USE no activity data per 2014 from Chemical Register was available. There is not a stability in trends of NMVOC emissions from Solvent use sector in later years either, therefore emissions in 2014 were assumed as reported in National Inventory Submission 2014. For N2O from product use activity data wasn't available therefore emissions were extrapolated taking into account emission rates from previous 3 years (average). There are no changes compared with the previous year. Emissions from Solvent use and Glass fibre production sectors that use NMVOCs as raw materials were reported as INDIRECT CO2 emissions.
Agriculture According to preliminary results of GHG inventory in agriculture sector, total amount of emissions from agriculture increased by 2.5% in 2014, comparing to 2013. Levels of emissions are mainly affected by fluctuation of activity data. At the end of 2014 agricultural holdings were breeding 422.0 thsd. cattle, which is 15.5 thsd. heads or 3.8% more than a year before. The number of cattle under one year and over two years of age grew by 9.1 thsd. or 8.3% and by 6.9 thsd. or 3.1%, respectively. In turn the number of cattle aged from one to two years slightly decreased - by 0.4 thsd. or 0.6%. Last year significantly grew the number of sheep by 7.7 thsd. or 9.1%. The number of dairy cows increased by 0.9 thsd. or 0.5%, and the number of suckling cows - by 5.0 thsd. or 17.3%. Other groups of livestock show the decrease of animal numbers. Over the year the number of pigs decreased by 18.1 thsd. or 4.9%, which was partially affected by the spread of African swine fever. Also decreased the number of poultry by 11.5%, but mainly relating to broilers. The number of layers remained relatively robust. In turn, the number of goats and horses keeps declining – by 0.3 thsd. or 2.4% and 0.6 thsd. or 5.6%, respectively. According to increase of number of ruminant livestock, total emissions from enteric fermentation grew by 2.9%, comparing to 2013. This was promoted also by significant increase of average milk yield per cow (+5.5%, comparing to 2013). However, methane emissions from manure management slightly decreased, mainly affected by decrease of poultry and swine that are important sources of methane emissions in manure management branch. In 2014 total sown area increased by 0.3% mainly affected by increase in the cereal cropland area. In 2014 the area of cereal cropland was 655.2 thsd. ha, which is 71.3 thsd. ha or 12.2% more than in 2013. The use of nitrogen per one ha of sown area continued to grow from 61 kg in 2013 to 63 kg in 2014. Total amount of nitrogen applied to soils with synthetic fertilizers increased by 4.6%, comparing to 2013. In 2014, 517.6 thsd. tons of organic fertilizers were used, which is 14.7% more than in 2013. Consequently, emissions from agricultural soils increased by 2.3%.
Waste CH4 Emissions from Solid waste disposal decreases due to decreasing of disposed waste amounts in waste polygons. For approximate GHG emissions calculation, recovered amount of CH4 are taken the same as in year 2013. Composted amounts rises from year to year, that explains increase of GHG emissions from composting. Emissions from incineration depend on incinerated without energy recovery amount of wastes. These amounts fluctuate year to year, accordingly fluctuate also emissions of GHG. GHG emissions from waste water sector fluctuate due to changes of number of population and industrial activities.

4.1.20 Malta (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

2014
2015
MT

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[(1)]	**1652.03**	**102.63**	**46.19**	**211.00**	**0.00**	**2.68**	**0.00**	**0.00**	**2728.71**		
1. Energy	**1654.87**	**1.94**	**5.69**						**2376.69**	**1654.87**	**721.82**
A. Fuel combustion (sectoral approach)	1654.87	1.94	5.69						2376.69	1654.87	**721.82**
1. Energy industries	1654.87	IE	IE						1654.87	1654.87	**0**
2. Manufacturing industries and construction	IE	IE	IE						0.00	0	**0.00**
3. Transport	714.19	1.94	5.69						721.82	0	**721.82**
4. Other sectors	IE	IE	IE						0	0	**0**
5. Other	IE	IE	IE						0	0	**0**
B. Fugitive emissions from fuels	0	0	0						0	0	**0**
1. Solid fuels	0	0	0						0	0	**0**
2. Oil and natural gas and other emissions from energy production	0	0	0						0	0	**0**
C. CO_2 transport and storage	0								0	0	**0**
2. Industrial processes and product use	**3.40**	**0.00**	**1.14**	**211.00**	**0**	**2.68**	**0**	**0**	**218.22**	**0**	**218.22**
A. Mineral industry	0.08								0.08	0	
B. Chemical industry	NO	NO	NO	NO,NA	NA	NA			0	0	
C. Metal industry	NO,NA	NO,NA	NA			NO,NA			0	0	
D. Non-energy products from fuels and solvent use	3.32	NA	NA						3.32	0	
E. Electronic Industry									0	0	
F. Product uses as ODS substitutes				211.00					211.00	0	
G. Other product manufacture and use			1.14			2.68			3.82	0	
H. Other									0	0	
3. Agriculture		**59.06**	**27.54**						**86.60**	**0**	**86.6**
A. Enteric fermentation		32.96							32.96	0	
B. Manure management		26.1	3.6						29.70	0	
C. Rice cultivation		NO							0.00	0	
D. Agricultural soils		NO	23.94						23.94	0	
E. Prescribed burning of savannahs		NO	NO							0	
F. Field burning of agricultural residues		NE	NE							0	
G. Liming	NO									0	
H. Urea application	NE									0	
I. Other carbon-containing fertilizers	NO									0	
J. Other	NO	NO	NO							0	
4. Land use, land-use change and forestry[(1)]	**-6.63**								**-6.63**		
A. Forest land	-1.42	NE	NE								
B. Cropland	-5.21	NE	NE								
C. Grassland	NE	NE	NE								
D. Wetlands	NE	NE	NE								
E. Settlements	NE	NE	NE								
F. Other land	NO	NO	NO								
G. Harvested wood products	NO	NO	NO								
H. Other	NO	NO	NO								
5. Waste	**0.39**	**41.63**	**11.81**						**53.83**	**0**	**53.83**
A. Solid waste disposal	NO,NA	41.63							41.63	0	
B. Biological treatment of solid waste		NA	NO,NA						0.00	0	
C. Incineration and open burning of waste	0.39	0.00	0.18						0.57	0	
D. Waste water treatment and discharge		NA,IE	11.63						11.63	0	
E. Other	NO	NO	NO						0	0	
6. Other ***(as specified in summary 1.A)***									**0**	0	
									0	0	

Memo items:[(2)]											
International bunkers	4 385.70	3.62	10.67						4 399.99		
Aviation	346.07	0.30	0.90						347.27		
Navigation	4 039.63	3.31	9.77						4 052.72		
Multilateral operations	**NO**	**NO**	**NO**						**NO**		
CO_2 emissions from biomass	**NE**								**NO**		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**NO**								**NO**		
Indirect N_2O			NE								

Indirect CO_2 [(3)]	NE										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**2 735.34**	**1 654.87**	**1 080.47**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**2 728.71**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**2 735.34**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**2 728.71**		

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(2) See footnote 7 to table Summary 1.A.

(3) In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

The total difference between this proxy and the latest t-2 inventory amounts to 70.8Gg less for the proxy. The main change occurred in emissions from Energy Industries (-42Gg). It is to note that the latest t-2 inventory is still in draft form due to ongoing issues with the CRF reporter.

4.1.21 Netherlands (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

Year 2014

(Sheet 1 of 1)

Submission

Country NLD

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**158,016.53**	**18,839.40**	**7,812.29**	**2,126.12**	**87.04**	**160.99**	**NO**	**IE**	**187,042.37**		
1. Energy	**151,007.81**	**2,295.49**	**574.62**						**153,877.93**		
A. Fuel combustion (sectoral approach)	149,310.74	1,558.64	574.62						151,444.01		
1. Energy industries	63,121.47	100.28	270.54						63,492.30		
2. Manufacturing industries and construction	22,974.82	59.50	44.54						23,078.86		
3. Transport	30,396.17	59.13	195.57						30,650.87		
4. Other sectors	32,579.95	1,339.26	60.54						33,979.75		
5. Other	238.33	0.47	3.43						242.23		
B. Fugitive emissions from fuels	1,697.07	736.85	IE,NA,NO						2,433.92		
1. Solid fuels	680.30	NA,NO	NO						680.30		
2. Oil and natural gas and other emissions from energy production	1,016.76	736.85	IE,NA,NO						1,753.62		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**6,938.32**	**462.12**	**1,288.42**	**2,126.12**	**87.04**	**160.99**	**NO**	**IE**	**11,063.01**		
A. Mineral industry	1,105.90								1,105.90		
B. Chemical industry	4,397.84	418.74	1,229.61	69.47	3.64	NO	NO	NO	6,119.30		
C. Metal industry	953.81	IE,NA,NO	NO	NO	0.28	NO	NO	NO	954.09		
D. Non-energy products from fuels and solvent use	464.47	0.30	NA,NO						464.77		
E. Electronic Industry				NO	83.13	IE	NO	IE	83.13		
F. Product uses as ODS substitutes				2,056.65	NO	NO	NO	NO	2,056.65		
G. Other product manufacture and use	0.75	43.07	58.81	NO	NO	160.99	NO	NO	263.63		
H. Other	15.55	NO	NO	NO	NO	NO	NO	NO	15.55		
3. Agriculture	**70.40**	**12,617.53**	**5,797.28**						**18,485.22**		
A. Enteric fermentation		8,259.92							8,259.92		
B. Manure management		4,357.62	435.23						4,792.85		
C. Rice cultivation		NO							NO		
D. Agricultural soils		NA	5,362.05						5,362.05		
E. Prescribed burning of savannahs		NO	NO						NO		
F. Field burning of agricultural residues		NO	NO						NO		
G. Liming	70.40								70.40		
H. Urea application	IE								IE		
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NA	NA	NA						NA		
[illegible]											
[illegible]											
[illegible]											
[illegible]											
[illegible]											
[illegible]											
[illegible]											
[illegible]											
5. Waste	**IE,NA,NO**	**3,464.25**	**151.96**						**3,616.21**		
A. Solid waste disposal	NA,NO	3,183.21							3,183.21		
B. Biological treatment of solid waste		76.29	83.13						159.41		
C. Incineration and open burning of waste	IE,NA,NO	IE,NA,NO	IE,NA,NO						IE,NA,NO		
D. Waste water treatment and discharge		204.75	68.84						273.58		
E. Other	NA	NO	NO						NA,NO		
6. Other *(as specified in summary 1.A)*	NA	NA	NA	NA	NA	NA	NA	NA	NA		

Memo items:[2]											
International bunkers	**52,518.25**	**96.44**	**412.33**						**53,027.02**		
Aviation	10,826.65	1.89	90.25						10,918.79		
Navigation	41,691.60	94.55	322.08						42,108.23		
Multilateral operations	**IE**	**IE**	**IE**						**IE**		
CO_2 emissions from biomass	**12,546.49**								**12,546.49**		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**NO**								**NO**		
Indirect N_2O											

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**187,042.37**	89,011.49 98,030.89
Total CO_2 equivalent emissions with land use, land-use change and forestry		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**187,042.37**	
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.	
1A1	increades electricity production (103 billion Kwh; 2% higher then 2014; increased export) increased coal use (20% higher than in 2013; highest used since 1991), less natural gas use (in 2014 lowest level since 1998); http://www.cbs.nl/nl-NL/menu/themas/industrie-energie/publicaties/artikelen/archief/2015/elektriciteitsproductie-vooral-toegenomen-door-record-export.htm
1A2	less production in chemical industry
1A3	less fuel sold (final energy use for transportin 2013 468 PJ and in 2014 439 PJ) and more efficient cars
1A4	decrease in natural gas use due to warm weather in winter (final use natural gas in 2013 724 PJ and 2014 618 PJ; households 2013 359 PJ and 2014 283 PJ)
2.C	closure of an aluminium plant (Andel, Delfzijl)
3A enteric fermentation	increased animal numbers (Cattle)
3B manure management	increased animal numbers (Cattle)
5A solide waste disposal	continuation of steady decrease over the years

4.1.22 Poland (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014 Proxy
Submission 2015 v.0
POLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions) [1]	277 647.23	44 614.58	20 041.19	6 872.55	14.64	39.15	NO	NO	349 229.34		
1. Energy	**298 442.04**	**18 321.88**	**2 426.22**						**319 190.13**		
A. Fuel combustion (sectoral approach)	294 171.01	3 969.61	2 425.72						300 566.34		
1. Energy industries	165 713.18	111.28	790.53						166 614.99		
2. Manufacturing industries and construction	29 839.29	103.56	172.60						30 115.45		
3. Transport	43 114.15	101.96	533.13						43 749.25		
4. Other sectors	55 504.39	3 652.81	929.45						60 086.66		
5. Other	NA	NA	NA						NA		
B. Fugitive emissions from fuels	4 271.03	14 352.26	0.49						18 623.79		
1. Solid fuels	1 900.04	12 491.12	NA						14 391.16		
2. Oil and natural gas and other emissions from energy production	2 370.99	1 861.14	0.49						4 232.63		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**20 196.27**	**63.05**	**847.84**	**6 872.55**	**14.64**	**39.15**	NO	NO	**28 033.50**		
A. Mineral industry	9 853.40								9 853.40		
B. Chemical industry	5 667.94	48.28	728.64	NO	NO	NO	NO	NO	6 444.86		
C. Metal industry	2 544.26	14.77	NA	NA	NA,NO	4.15	NO	NO	2 563.17		
D. Non-energy products from fuels and solvent use	2 130.68								2 130.68		
E. Electronic Industry							NO	NO	NO		
F. Product uses as ODS substitutes				6872.55	14.64		NO	NO	6 887.19		
G. Other product manufacture and use			119.2			35.01	NO	NO	154.21		
H. Other				NO	NO	NO	NO	NO	NO		
3. Agriculture	**905.41**	**13 640.90**	**15 372.46**						**29 918.77**		
A. Enteric fermentation		11 755.34							11 755.34		
B. Manure management		1 859.12	2 010.02						3 869.15		
C. Rice cultivation		NA							NA		
D. Agricultural soils		NA	13 350.58						13 350.58		
E. Prescribed burning of savannahs		NA	NA						NA		
F. Field burning of agricultural residues		26.44	11.86						38.30		
G. Liming	467.55								467.55		
H. Urea application	437.86								437.86		
I. Other carbon-containing fertilizers	NO								NO		
J. Other	NA	NA	NA						NA		
4. Land use, land-use change and forestry [1]	**-42 449.56**	**3 018.15**	**488.91**						**-38 942.51**		
A. Forest land	-41 965.43	32.46	245.36						-41 687.60		
B. Cropland	727.67	NO	237.50						965.17		
C. Grassland	309.20	2.18	0.42						311.80		
D. Wetlands	2 912.49	2 983.51	5.63						5 901.62		
E. Settlements	64.03	NA,NO	NA,NO						64.03		
F. Other land	NO	NA,NO	NA,NO						NO		
G. Harvested wood products	-4 497.52	NO	NO						-4 497.52		
H. Other	NA	NA	NA						NA		
5. Waste	**553.08**	**9 570.60**	**905.77**						**11 029.45**		
A. Solid waste disposal	NO,NA	8 547.27							8 547.27		
B. Biological treatment of solid waste		137.28	122.73						260.01		
C. Incineration and open burning of waste	553.08	0.00	44.49						597.57		
D. Waste water treatment and discharge		886.05	738.55						1 624.60		
E. Other	NO	NO	NO						NO		
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO			
	NO	NO	NO	NO	NO	NO	NO	NO			

Memo items: [2]											
International bunkers	2 202.15	1.33	20.13						2 223.61		
Aviation	1 756.53	0.30	16.62						1 773.45		
Navigation	445.62	1.03	3.51						450.17		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	36 367.05								36 367.05		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	**388 171.85**	**197 129.39**	**190 893.42**
Total CO_2 equivalent emissions with land use, land-use change and forestry	349 229.34		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	-		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	-		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
Total GHG emissions drop by about 1% between 2014 and 2013. Main drivers for decrease in GHG emissions 2014/2013: **Energy:** The main reason of decrease of GHG emission from fuel combustion in stationary sources is drop in lignite consumption by above 5% and natural gas by 2% **Transport:** Slight decrease in emissions triggered by drop in fuels use: petrol by 2% and LPG by 1% **Industrial processes:** Increase of GHG emission is mainly the result of higher production amounts of clinker (by about 9%) ammonia (by 18%) and pig iron (by 15%) **Agriculture:** Slight decrease in emissions relates mostly to the drop in nitrogen mineral fertilisers use by about 7% Emissions/removals for sectors **4. LULUCF and 5. Waste** are the same as initial values for 2013

4.1.23 Portugal (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2015 v Proxy 1.1
PORTUGAL

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**45 694**	**12 237**	**3 662**	**1 879**	**NO**	**42**	**NO**	**NO**	**63 514**		
1. Energy	**41 399**	**571**	**491**						**42 461**		
A. Fuel combustion (sectoral approach)	40 413	312	489						41 214		
1. Energy industries	13 757	13	123						13 893		
2. Manufacturing industries and construction	7 467	29	86						7 583		
3. Transport	15 573	30	147						15 750		
4. Other sectors	3 557	239	133						3 929		
5. Other	58	0	0						59		
B. Fugitive emissions from fuels	986	259	3						1 247		
1. Solid fuels	1	9	NO						10		
2. Oil and natural gas	985	249	IE						1 234		
C. CO_2 transport and storage	NO								NO		
2. Industrial processes and product use	**4 230**	**30**	**140**	**1 879**	**NO**	**42**	**NO**	**NO**	**6 321**		
A. Mineral industry	3 924								3 924		
B. Chemical industry	70	12	62	NO	NO	NO	NO	NO	144		
C. Metal industry	67	16	NO						83		
D. Non-energy products from fuels and solvent use	139	1	NO						139		
E. Electronic Industry				NO	NO	NO	NO		NO		
F. Product uses as ODS substitutes				IE	NO				IE		
G. Other product manufacture and use			78			IE			78		
H. Other	31	NO	NO						31		
3. Agriculture	**49**	**4 890**	**2 400**						**7 339**		
A. Enteric fermentation		3 476							3 476		
B. Manure management		1 232	206						1 439		
C. Rice cultivation		153							153		
D. Agricultural soils		NO	2 177						2 177		
E. Prescribed burning of savannas											
F. Field burning of agricultural residues		30	17						47		
G. Liming	12								12		
H. Urea application	37								37		
I. Other carbon-containing fertilizers	NO								NO		
J. Other											
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	17	6 746	630						7 393		
A. Solid waste disposal	NO	3 792							3 792		
B. Biological treatment of solid waste		22	16						38		
C. Incineration and open burning of waste	17	1	5						23		
D. Waste water treatment and discharge		2 931	610						3 541		
E. Other	NA	NO	NO						NA,NO		
6. Other *(as specified in summary 1.A)*											
other territory											
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2[3]	220										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**63 514**	**24 167**	**39 346**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**63 734**	**24 167**	**39 567**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 4.2. The EEA proxy 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.

4.1.24 Romania (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2015 v Proxy 1.0
ROMANIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**73 468**	**28 890**	**6 183**	**1 403**	**6**	**61**	**NO**	**NO**	**110 011**		
1. Energy	**64 042**	**11 522**	**502**						**76 067**		
A. Fuel combustion (sectoral approach)	62 961	1 096	501						64 558		
1. Energy industries	23 472	12	92						23 575		
2. Manufacturing industries and construction	12 255	28	47						12 330		
3. Transport	13 836	35	186						14 057		
4. Other sectors	12 975	1 005	172						14 152		
5. Other	423	17	4						444		
B. Fugitive emissions from fuels	1 081	10 426	2						11 509		
1. Solid fuels	NA,NO	666	NA,NO						666		
2. Oil and natural gas	1 081	9 760	IE						10 841		
C. CO_2 transport and storage											
2. Industrial processes and product use	**9 379**	**14**	**900**	**1 403**	**6**	**61**	**NO**	**NO**	**11 764**		
A. Mineral industry	4 347								4 347		
B. Chemical industry	1 528	11	897	NO	NO	NO	NO	NO	2 435		
C. Metal industry	3 380	4	NO	NO	IE	NO,NE	NO	NO	3 384		
D. Non-energy products from fuels and solvent use	124	NO,NE	NO,NE						124		
E. Electronic Industry				NO	NO	NO	NO	NO	NO		
F. Product uses as ODS substitutes				IE	NO	NO	NO	NO	IE		
G. Other product manufacture and use	NO	NO	3	NO	NO	IE	NO	NO	3		
H. Other	NO,NE	NO,NE	NO,NE	NO	NO	NO	NO	NO	NO,NE		
3. Agriculture	**37**	**12 068**	**4 228**						**16 333**		
A. Enteric fermentation		9 915							9 915		
B. Manure management		1 591	721						2 311		
C. Rice cultivation		0							0		
D. Agricultural soils		NE	3 302						3 302		
E. Prescribed burning of savannas		NO	NO						NO		
F. Field burning of agricultural residues		562	205						767		
G. Liming	10								10		
H. Urea application	27								27		
I. Other carbon-containing fertilizers	NO								NO		
J. Other											
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	10	5 285	553						5 848		
A. Solid waste disposal	NA	3 307							3 307		
B. Biological treatment of solid waste		NO	NO						NO		
C. Incineration and open burning of waste	10	NE,NO	1						11		
D. Waste water treatment and discharge		1 978	553						2 530		
E. Other											
6. Other *(as specified in summary 1.A)*											
other territory											
Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								
Indirect CO_2[3]	NE,NO										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**110 011**	**42 575**	**67 436**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**110 011**	**42 575**	**67 436**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 4.2. The EEA proxy 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.

4.1.25 Sweden (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2 014
Submission 2016 prel
Country Sweden

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]											
1. Energy									39 062.23		
A. Fuel combustion (sectoral approach)											
1. Energy industries											
2. Manufacturing industries and construction											
3. Transport											
4. Other sectors											
5. Other											
B. Fugitive emissions from fuels											
1. Solid fuels											
2. Oil and natural gas and other emissions from energy production											
C. CO_2 transport and storage											
2. Industrial processes and product use									6 676.48		
A. Mineral industry											
B. Chemical industry											
C. Metal industry											
D. Non-energy products from fuels and solvent use											
E. Electronic Industry											
F. Product uses as ODS substitutes											
G. Other product manufacture and use											
H. Other											
3. Agriculture									6 688.25		
A. Enteric fermentation											
B. Manure management											
C. Rice cultivation											
D. Agricultural soils											
E. Prescribed burning of savannahs											
F. Field burning of agricultural residues											
G. Liming											
H. Urea application											
I. Other carbon-containing fertilizers											
J. Other											
4. Land use, land-use change and forestry[1]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste									1 461.14		
A. Solid waste disposal											
B. Biological treatment of solid waste											
C. Incineration and open burning of waste											
D. Waste water treatment and discharge											
E. Other											
6. Other *(as specified in summary 1.A)*											

Memo items:[2]											
International bunkers									8 254.69		
Aviation											
Navigation											
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	53 888.10
Total CO_2 equivalent emissions with land use, land-use change and forestry	
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2 014
Submission 2016 prel
Country Sweden

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]											
1. Energy									**39 613.64**		
A. Fuel combustion (sectoral approach)											
1. Energy industries									9 120.94		
2. Manufacturing industries and construction									6 403.96		
3. Transport									16 873.89		
4. Other sectors									1 382.13		
5. Other									4 580.74		
B. Fugitive emissions from fuels									1 251.98		
1. Solid fuels											
2. Oil and natural gas and other emissions from energy production											
C. CO_2 transport and storage											
2. Industrial processes and product use									**6 125.07**		
A. Mineral industry											
B. Chemical industry											
C. Metal industry											
D. Non-energy products from fuels and solvent use											
E. Electronic Industry											
F. Product uses as ODS substitutes											
G. Other product manufacture and use											
H. Other											
3. Agriculture									**6 688.25**		
A. Enteric fermentation											
B. Manure management											
C. Rice cultivation											
D. Agricultural soils											
E. Prescribed burning of savannahs											
F. Field burning of agricultural residues											
G. Liming											
H. Urea application											
I. Other carbon-containing fertilizers											
J. Other											
4. Land use, land-use change and forestry[1]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste									**1 461.14**		
A. Solid waste disposal											
B. Biological treatment of solid waste											
C. Incineration and open burning of waste											
D. Waste water treatment and discharge											
E. Other											
6. Other *(as specified in summary 1.A)*											

Memo items:[2]											
International bunkers									8 254.69		
Aviation											
Navigation											
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [3]											

Total CO_2 equivalent emissions without land use, land-use change and forestry	53 888.10	
Total CO_2 equivalent emissions with land use, land-use change and forestry		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Key drivers for emission trend

This information is publicly available (in Swedish) at http://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-snabbstatistik-for-ar-2014/

Preliminary results of the overall greenhouse gases emissions in Sweden for 2014 have been estimated to 53.9 million tonnes of CO2-eq. Compared with 2013, the emissions have decreased by about 3%, which corresponds to about 1,6 million tonnes of CO2-eq.

Road transport accounts for one-third of total national emissions. The emission has decreased by about 1 % compared to 2013, due to the increase usage of biofuels, the low-blending into diesel is increasing which contributes to this trend, and also an increased numbers of fuel-efficient cars.

Emissions from energy industries have decreased by 10 % between 2013 and 2014. These emissions are strongly linked to variati ons in temperature and precipitation. In 2014, it was generally warmer than normally in Sweden. This led to a decreased demand for heating. Accordin g to preliminary energy statistics the contribution from hydro electrical production and wind power increased, which contributed to a reduction in emissions from th e energy industries.

The total emissions from industry have not changed between year 2013 and 2014. However, the emissions from industrial combustion have decreased with 2% while emissions from industrial processes have increased during the same period of time.

The emissions from the waste sector and agricultural sector have been estimated by using trend analysis, i.e. the emissions a re declining at the same rate as the historical trends.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Key drivers for emission trend

This information is publicly available (in Swedish) at http://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-snabbstatistik-for-ar-2014/

Preliminary results of the overall greenhouse gases emissions in Sweden for 2014 have been estimated to 53.9 million tonnes of CO2-eq. Compared with 2013, the emissions have decreased by about 3%, which corresponds to about 1,6 million tonnes of CO2-eq.

Road transport accounts for one-third of total national emissions. The emission has decreased by about 1 % compared to 2013, due to the increase usage of biofuels, the low-blending into diesel is increasing which contributes to this trend, and also an increased numbers of fuel-efficient cars.

Emissions from energy industries have decreased by 10 % between 2013 and 2014. These emissions are strongly linked to variati ons in temperature and precipitation. In 2014, it was generally warmer than normally in Sweden. This led to a decreased demand for heating. Accordin g to preliminary energy statistics the contribution from hydro electrical production and wind power increased, which contributed to a reduction in emissions from th e energy industries.

The total emissions from industry have not changed between year 2013 and 2014. However, the emissions from industrial combustion have decreased with 2% while emissions from industrial processes have increased during the same period of time.

The emissions from the waste sector and agricultural sector have been estimated by using trend analysis, i.e. the emissions a re declining at the same rate as the historical trends.

4.1.26 Slovenia (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2015
Country Slovenia

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**13 815.515**	**1 877.125**	**746.509**	**288.886**	**15.220**	**15.000**	**NO**	**NO**	**16 758.255**		
1. Energy	**13 016.122**	**278.463**	**140.305**						**13 434.890**	**5 433.478**	**8 001.412**
A. Fuel combustion (sectoral approach)	12 906.873	30.205	140.305						13 077.383	5 383.532	7 693.851
1. Energy industries	4 755.279	2.507	21.645						4 779.432	4 330.175	449.257
2. Manufacturing industries and construction	1 615.462	3.862	15.262						1 634.586	1 053.357	581.229
3. Transport	5 342.608	7.588	55.539						5 405.735		5 405.735
4. Other sectors	1 190.534	16.247	47.833						1 254.615		1 254.615
5. Other	2.990	0.001	0.025						3.016		3.016
B. Fugitive emissions from fuels	109.249	248.258	0.000						357.507	49.946	307.561
1. Solid fuels	58.951	214.493	NO,NA						273.444		273.444
2. Oil and natural gas and other emissions from energy production	50.298	33.765	0.000						84.063	49.946	34.117
C. CO_2 transport and storage	NO								NO		NO
2. Industrial processes and product use	**776.490**	**NO,NA**	**23.840**	**288.886**	**15.220**	**15.000**	**NO**	**NO**	**1 119.436**	**681.809**	**437.627**
A. Mineral industry	501.385								501.385	484.072	17.313
B. Chemical industry	46.542	NO,NA	NO	NO	NO	NO	NO	NO	46.542		46.542
C. Metal industry	210.968	NO,NA	NA	NO	15.220	NO	NO	NO	226.187	197.737	28.450
D. Non-energy products from fuels and solvent use	17.595	NA	NA						17.595		17.595
E. Electronic Industry				NO	NO	NO	NO	NO	NO		NO
F. Product uses as ODS substitutes				288.886	NO	NO	NO	NO	288.886		288.886
G. Other product manufacture and use	NO	NO	23.840	NO	NO	15.000	NO	NO	38.840		38.840
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO
3. Agriculture	**11.160**	**1 171.989**	**529.265**						**1 712.413**		**1 712.413**
A. Enteric fermentation		911.807							911.807		911.807
B. Manure management		260.182	97.218						357.400		357.400
C. Rice cultivation		NO							NO		NO
D. Agricultural soils		NO	432.046						432.046		432.046
E. Prescribed burning of savannahs		NO	NO						NO		NO
F. Field burning of agricultural residues		NO	NO						NO		NO
G. Liming	0.660								0.660		0.660
H. Urea application	10.500								10.500		10.500
I. Other carbon-containing fertilizers	NO								NO		NO
J. Other	NO	NO	NO						NO		NO
4. Land use, land-use change and forestry[1]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste	**11.743**	**426.673**	**53.100**						**491.516**		**491.516**
A. Solid waste disposal	NO,NE	332.588							332.588		332.588
B. Biological treatment of solid waste		4.761	4.256						9.017		9.017
C. Incineration and open burning of waste	11.743	NO	0.016						11.759		11.759
D. Waste water treatment and discharge		89.325	48.827						138.152		138.152
E. Other	NO	NO	NO						NO		NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO
Memo items:[2]											
International bunkers	270.966	0.284	23.722						294.972		
Aviation	72.915	0.025	0.608						73.549		
Navigation	198.051	0.259	23.115						221.424		
Multilateral operations	0.434	0.000	0.004						0.438		
CO_2 emissions from biomass	2 967.356								2 967.356		
CO_2 captured	NO								NO		
Long-term storage of C in waste disposal sites	6 823.187								6 823.187		
Indirect N_2O			NE								
Indirect CO_2 [3]	NE										
Total CO_2 equivalent emissions without land use, land-use change and forestry									**16 758.255**	**6 115.287**	**10 642.968**
Total CO_2 equivalent emissions with land use, land-use change and forestry									**NA**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									**16 758.255**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									**NA**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.	
1. Energy	**Data used**
A. Fuel Combustion	**ETS data for solid fuel, 2013 data for other fuels except for waste tyres**
1. Energy Industries	For coal combustion the actual data from ETS have been used
2. Manufacturing Industries and Construction	For coal combustion the actual data from ETS have been used
3. Transport	Preliminary statistical data about gasoline and diesel for 2014 have been used
4. Other Sectors	Preliminary statistical data about gas oil and natural gas consumption for 2014
5. Other	The same data as in 2012
B. Fugitive Emissions from Fuels	**Preliminary statistical data**
1. Solid Fuels	Coal production data for 2014
2. Oil and Natural Gas	AD (consumed / marketable gas) for 2014 has been used
2. Industrial Processes	**Mostly covered with ETS data for 2014**
A. Mineral Products	Data for 2014 for the whole category (ETS data and reports from small emitters)
B. Chemical Industry	The same data as in 2013
C. Metal Production	Data for 2014 for the whole category (ETS data and reports from small emitters)
F. Consumption of Halocarbons and SF_6	Extrapolation
D. Non-energy products from fuels and solvent use	The same data as in 2013
F. Product uses as ODS substitutes	Extrapolation
G. Other product manufacture and use	Mostly the same data as in 2013, SF6 is estimated with extrapolation
4. Agriculture	**Data on animal population and crop production are the final statistical data for 2014**
A. Enteric Fermentation	AD for 2014, EF and other parameters from 2012 inventory
B. Manure Management	AD for 2014, EF and other parameters from 2012 inventory
D. Agricultural Soils	AD for 2014, EF and other parameters from 2012 inventory
G. Liming	The same data as in 2013
H. Urea application	Extrapolation
6. Waste	**No data for 2013**
A. Solid waste disposal	FOD model has been used - the same AD as in 2013
B. Biological treatment of solid waste	The same data as in 2013
C. Incineration and open burning of waste	The same data as in 2013
D. Waste water treatment and discharge	The same data as in 2013

4.1.27 Slovakia (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission v1.1
Country SVK

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**26 639.13**	**4 433.48**	**2 845.13**	**540.39**	**11.15**	**22.97**	**NO**	**NO**	**34 492.26**		
1. Energy	**26 354.68**	**1 772.25**	**161.36**						**28 288.29**	**12 755.14**	**15 533.15**
A. Fuel combustion (sectoral approach)	26 334.95	217.47	161.36						26 713.79	12 755.14	13 958.64
1. Energy industries	7 100.75	10.06	31.74						7 142.55	6 342.78	799.78
2. Manufacturing industries and construction	7 361.87	15.60	34.69						7 412.17	6 209.00	1 203.17
3. Transport	6 668.21	15.67	66.11						6 749.99	178.08	6 571.91
4. Other sectors	5 146.15	175.47	28.62						5 350.24	25.29	5 324.95
5. Other	57.97	0.68	0.19						58.83	NO	58.83
B. Fugitive emissions from fuels	19.73	1 554.77	0.00						1 574.50	NO	1 574.50
1. Solid fuels	18.36	409.50	NO						427.86	NO	427.86
2. Oil and natural gas and other emissions from energy production	1.37	1 145.28	0.00						1 146.64	NO	1 146.64
C. CO_2 transport and storage	NO								NO	NO	NO
2. Industrial processes and product use	**8 134.06**	**1.70**	**280.10**	**540.39**	**11.15**	**22.97**	**NO**	**NO**	**8 990.37**	**7 662.64**	**1 327.73**
A. Mineral industry	2 308.61								2 308.61	2 130.12	178.49
B. Chemical industry	1 314.10	0.81	145.65	NO	NO	NO	NO	NO	1 460.56	1 121.66	338.90
C. Metal industry	4 399.78	0.89	NO	NO	11.15	NO	NO	NO	4 411.82	4 410.86	0.96
D. Non-energy products from fuels and solvent use	111.57	NO	NO						111.57	NO	111.57
E. Electronic Industry				NO	NO	NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				540.39	NO	NO	NO	NO	540.39	NO	540.39
G. Other product manufacture and use	NO	NO	134.45	NO	NO	22.97	NO	NO	157.42	NO	157.42
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Agriculture	**68.22**	**1 226.15**	**2 270.37**						**3 564.75**	**NO**	**3 564.75**
A. Enteric fermentation		1 046.79							1 046.79	NO	1 046.79
B. Manure management		179.37	446.61						625.98	NO	625.98
C. Rice cultivation		NO							NO	NO	NO
D. Agricultural soils		NO	1 823.76						1 823.76	NO	1 823.76
E. Prescribed burning of savannahs		NO	NO						NO	NO	NO
F. Field burning of agricultural residues		NO	NO						NO	NO	NO
G. Liming	16.23								16.23	NO	16.23
H. Urea application	51.99								51.99	NO	51.99
I. Other carbon-containing fertilizers	NO								NO	NO	NO
J. Other	NO	NO	NO						NO	NO	NO
4. Land use, land-use change and forestry[1]	**-7 924.47**	**9.02**	**14.16**						**-7 901.28**		
A. Forest land	-6 834.11	9.02	5.95						-6 819.13		
B. Cropland	-799.14	NO	8.21						-790.93		
C. Grassland	-204.21	NO	NO						-204.21		
D. Wetlands	NO	NO	NO						NO		
E. Settlements	95.81	NO	NO						95.81		
F. Other land	95.25	NO	NO						95.25		
G. Harvested wood products	-278.08	NO	NO						-278.08		
H. Other	NO	NO	NO						NO		
5. Waste	**6.64**	**1 424.36**	**119.13**						**1 550.12**	**NO**	**1 550.12**
A. Solid waste disposal	NO	1 032.50	NO						1 032.50	NO	1 032.50
B. Biological treatment of solid waste		75.05	67.09						142.14	NO	142.14
C. Incineration and open burning of waste	6.64	0.01	2.47						9.12	NO	9.12
D. Waste water treatment and discharge		316.80	49.56						366.36	NO	366.36
E. Other	NO	NO	NO						NO	NO	NO
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:[2]											
International bunkers	96.89	0.05	2.48						99.42		
Aviation	83.98	0.03	0.83						84.84		
Navigation	12.91	0.02	1.65						14.59		
Multilateral operations	**NO**	**NO**	**NO**						**NO**		
CO_2 emissions from biomass	**6 808.43**								**6 808.43**		
CO_2 captured	**NO**								**NO**		
Long-term storage of C in waste disposal sites	**88.36**								**88.36**		
Indirect N_2O			**NE**								
Indirect CO_2 [3]	**NE**										

Total CO_2 equivalent emissions without land use, land-use change and forestry	**42 393.54**	**20 417.78**	**21 975.75**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**34 492.26**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**42 393.54**		
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**34 492.26**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

[2] See footnote 7 to table Summary 1.A.

[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Proxy inventory 2014 is based on the EU ETS data in energy and IPPU sectors and the direct data from major operators.
Sectors agriculture and waste doesn´t expect larger changes in comparison with 2013
In sector LULUCF lower sinks are awaiting due to the dry weather and higher average temperature in 2014
Major driver for interannual decrease in EU ETS emissions is decrease in the categories 1.A.1 and 1.A.2 - electricity and heat production and refinery.
This decrease was caused by increase in biomass consumption and decrease in refinery production (oil consumption) and due to the technological reconstruction in refinery plant during 2014.

4.1.28 United Kingdom (submitted by MS)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission 2014 provisional inventory
Country United Kingdom of Great Britain and Northern Ireland.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**428 000**	**54 000**	**27 300**	**16 400**	**200**	**600**	**NO**	**0.00**	**526 500**		
1. Energy	**410 000**	**IE**	**IE**							**185 800**	**224 200**
A. Fuel combustion (sectoral approach)	406 100	IE	IE							185 800	220 300
1. Energy industries	148 700	IE	IE							137 700	11 000
2. Manufacturing industries and construction	53 500	IE	IE							35 700	17 800
3. Transport	114 500	IE	IE							10 800	103 700
4. Other sectors	87 200	IE	IE							1 600	85 600
5. Other	2 200	IE	IE							NO	2 200
B. Fugitive emissions from fuels	3 900	IE	IE							NO	3 900
1. Solid fuels	100	IE	IE							NO	100
2. Oil and natural gas and other emissions from energy production	3 800	IE	IE							NO	3 800
C. CO_2 transport and storage	NO									NO	NO
2. Industrial processes and product use	**16 700**	**IE**	**IE**	**IE**	**IE**	**IE**	**NO**	**IE**		**12 300**	**4 400**
A. Mineral industry	6 400									IE	NA
B. Chemical industry	4 500	IE	IE	IE	IE	NO	NO	NO		IE	NA
C. Metal industry	4 800	IE	IE	IE	IE	IE	NO	NO		IE	NA
D. Non-energy products from fuels and solvent use	1 000	IE	IE							NO	1 000
E. Electronic Industry				IE	NO	NO	NO	IE		NA	0
F. Product uses as ODS substitutes				IE	NO	NO	NO	NO		NA	0
G. Other product manufacture and use	NO	NO	IE	NO	IE	IE	NO	NO		NA	NO
H. Other	NO	IE	NO	NO	NO	NO	NO	NO		NA	NO
3. Agriculture	**1 000**	**IE**	**IE**							**NA**	**1 000**
A. Enteric fermentation		IE								NA	0
B. Manure management		IE	IE							NA	0
C. Rice cultivation		NO								NA	0
D. Agricultural soils		NE	IE							NA	0
E. Prescribed burning of savannahs		NO	NO							NA	0
F. Field burning of agricultural residues		NO	NO							NA	0
G. Liming	800									NA	800
H. Urea application	200									NA	200
I. Other carbon-containing fertilizers	NO									NA	NO
J. Other	NO	IE	IE							NA	NO
4. Land use, land-use change and forestry[1]											
A. Forest land											
B. Cropland											
C. Grassland											
D. Wetlands											
E. Settlements											
F. Other land											
G. Harvested wood products											
H. Other											
5. Waste	**300**	IE	IE							NA	300
A. Solid waste disposal	NE	IE								NA	NE
B. Biological treatment of solid waste		IE	IE							NA	0
C. Incineration and open burning of waste	300	IE	IE							NA	300
D. Waste water treatment and discharge		IE	IE							NA	0
E. Other	NO	NO	NO							NA	NO
6. Other *(as specified in summary 1.A)*	**NO**	NO	NO	NO	NO	NO	NO	NO		NA	NO

Memo items:[2]											
International bunkers											
Aviation											
Navigation											
Multilateral operations											
CO_2 emissions from biomass											
CO_2 captured											
Long-term storage of C in waste disposal sites											
Indirect N_2O											

Indirect CO_2 [3]			

Total CO_2 equivalent emissions without land use, land-use change and forestry			
Total CO_2 equivalent emissions with land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry			
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry			

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in t-1 (proxy) compared to t-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.
Estimated CO_2 emissions for 2014 have been calculated using the quarterly energy consumption statistics for the UK. The statistical release and methodology document describing the calculations are available below: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416810/2014_stats_release.pdf https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416820/methodology_summary.pdf The calculations described in the above document are carried out using data including the Crown Dependencies but excluding the Overseas Territories The data presented above is consistent with this data set, no changes have been made to the geographical coverage. Emissions are presented in Gg and rounded to the neared 100 Gg, consistent with the UK's statistical release. Note that totals are rounded from full precision data, and therefore do not match the sum of the rounded data presented here CO2 from LULUCF is excluded in accordance with Article 17 of the Implementing Regulation 749/214 Non-CO2 emissions are available only at an aggregated level. The total presented here include LULUCF emissions. Emissions from LULUCF in 2012 for non-CO2 gases were 0.036 MtCO2e CH4 and 0.71 MtCO2e for N2O. As only aggregated figures for non-CO2 gases are available, the comparison of ETS and non-ETS emissions in columns M and N are CO2 only.

4.1.29 Iceland (calculated centrally by EEA and its ETC/ACM)

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year 2014
Submission EEA Proxy Inventory
Country Iceland

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	ETS	non-ETS
	CO_2 equivalent (kt)									CO2 equivalent (Gg)	
Total (net emissions)[1]	**3 315**	**541**	**313**	**191**	**88**	**3**	**0**	**0**	**4 451**		
1. Energy	**1 656**	**13**	**30**						**1 699**		
A. Fuel combustion (sectoral approach)	1 489	9	30						1 528		
1. Energy industries	2	0	0						2		
2. Manufacturing industries and construction	158	3	10						172		
3. Transport	835	4	20						859		
4. Other sectors	493	1	0						494		
5. Other	NA,NO	NA,NO	NA,NO						NA,NO		
B. Fugitive emissions from fuels	167	4	0						171		
1. Solid fuels	NA,NO	NA,NO	NA,NO						NA,NO		
2. Oil and natural gas and other emissions from energy production	167	4	NA,NO						171		
C. CO_2 transport and storage											
2. Industrial processes and product use	**1 654**	**1**	**3**	**191**	**88**	**3**	**0**	**0**	**1 940**		
A. Mineral industry	1								1		
B. Chemical industry	NO								NO		
C. Metal industry	1 649	1	NA		88	NA,NO	NA,NO	NA,NO	1 738		
D. Non-energy products from fuels and solvent use	4								4		
E. Electronic Industry											
F. Product uses as ODS substitutes				191					191		
G. Other product manufacture and use	0		3			3			6		
H. Other	NE								NE		
3. Agriculture	**0**	**315**	**271**						**586**		
A. Enteric fermentation		277							277		
B. Manure management		38	64						102		
C. Rice cultivation		NA,NO							0		
D. Agricultural soils			207						207		
E. Prescribed burning of savannahs		NA	NA						0		
F. Field burning of agricultural residues		NA,NO	NA,NO						0		
G. Liming	0								0		
H. Urea application	0								0		
I. Other carbon-containing fertilizers	NE								NE		
J. Other	NE	NE	NE						NE		
4. 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. Harvested wood products	NE								NE		
H. Other	NE	NE	NE						NE		
5. Waste	**5**	**212**	**9**						**226**		
A. Solid waste disposal		206							206		
B. Biological treatment of solid waste		1	1						3		
C. Incineration and open burning of waste	5	0	0						5		
D. Waste water treatment and discharge		4	8						12		
E. Other											
6. Other *(as specified in summary 1.A)*											

Memo items:[2]											
International bunkers	NE	NE	NE						NE		
Aviation	NE	NE	NE						NE		
Navigation	NE	NE	NE						NE		
Multilateral operations	NE	NE	NE						NE		
CO_2 emissions from biomass	NE								NE		
CO_2 captured	NE								NE		
Long-term storage of C in waste disposal sites	NE								NE		
Indirect N_2O			NE								

Indirect CO_2[3]			

Total CO_2 equivalent emissions without land use, land-use change and forestry	**4 451**	**1 755**	**2 696**
Total CO_2 equivalent emissions with land use, land-use change and forestry	**NE**		
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry	**4 451**	**1 755**	**2 696**
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry	**NE**		

[1] For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] See footnote 7 to table Summary 1.A.
[3] In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO_2, the national totals shall be provided with and without indirect CO_2.

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 4.2. The EEA proxy 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.

4.2 Annex II. Methodology for the proxy inventories calculated centrally

The proxy inventory is now largely based on estimates from member states with gap filling only where necessary. This year, gap filling was necessary for five Member States of the European Union (Bulgaria, Cyprus, Lithuania, Portugal and Romania) and additionally Iceland. Detail on the methodology of the proxy calculated by EEA that is used for gap filling is provided here.

4.2.1 Energy

4.2.1.1 1.A Energy – Fuel combustion

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 14. 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 14 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 , World Steel data	Member States' national energy statistics
Method	2014 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2013	2014 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2013	detailed estimation for inventory source categories 1A1, 1A2, 1A3 and 1A4, constant emissions for 1A5	2014 consumption trend for solid, liquid and gaseous fuels applied to inventory data for 2013

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 Croatia, Cyprus, Estonia, Latvia, Luxembourg, Malta, Slovenia and Iceland in this source. The share of these (small) countries in primary energy consumption amounts to approximately 2 % of total EU consumption, with some differences regarding individual energy sources. The BP data refer to primary energy consumption and covers only commercially traded fuels.

Approach II is based on Eurostat monthly energy statistics which reflect Member States' submissions of monthly Oil and Gas Questionnaires and monthly Coal Questionnaires to Eurostat. No data are published for Iceland in this source.

In contrast to all other approaches for CO_2 emissions from sector 1.A (Fuel Combustion), Approach III makes use of CO_2 estimates for categories 1.A.1 (Energy Industries – chapter 4.2.1.2),

1.A.2 (Manufacturing Industries and Construction – chapter 4.2.1.3), 1.A.3 (Transport – chapter 4.2.1.4) and 1.A.4 (Other sectors i.e. Commercial/Institutional, Residential and Agriculture/Forestry/Fishing – chapter 4.2.1.5). In this 'bottom up' approach those CO_2 emission estimates for 2014 are complemented with reported 2013 CO_2 emissions for category 1.A.5 (Other) in order to estimate 2014 CO_2 emissions for 1A (Fuel Combustion) CO_2 emissions.

In Approach IV, finally, early national energy statistics are used: For a considerable number of Member States, preliminary energy statistics are available. 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 2013 to 2014 was derived from the respective data sources (this applies to approaches I (BP), II (Eurostat) and IV (national energy statistics)). 2014 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 2014 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 for 2013. 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 IV (national energy statistics)):

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

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

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 2014 (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

The BP data source (approach I) was chosen for Lithuania. Approach II using Eurostat data was not applied at all this year. The bottom-up approach (Approach III) relying on EUTL data, Eurostat energy and transport data, World Steel data and earlier officially reported emission data was chosen for Cyprus and Portugal. Early national energy statistics data (Approach IV) were chosen for Bulgaria, Romania and Iceland[35].

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*

[35] According to the CRF tables of the Islandic 2014 GHG Inventory, liquid fuels are the only fossil fuels used in the Fuel Combustion sector of Island. Therefore in Iceland all non-liquid terms of Equation 1 are zero. For details on calculation for Iceland see chapter 4.2.1.7)

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*

Results for 2014

The CO_2 emissions in category 1 A (Fuel Combustion) account for approx. 75 % of overall greenhouse gas emissions (without LULUCF) in the EU-28. As mentioned above, 2014 CO_2 emissions in this category are based on different approximation approaches. Table 15 shows the calculation results for all Member States subject to gap-filling for 2014 and highlights the approaches chosen per Member State.

Table 15 2014 CO_2 emissions for source category 1.A Fuel combustion in various approximation approaches

Gg CO2	Approach I BP (Trend)	Approach III Bottom up: 1A1+1A2+1A3+ 1A4+ $(1A5)_{Y-1}$	Approach IV preliminary national energy statistics (trend)
BG	42 162	41 648	41 886
CY	not available	5 597	not available
LT	10 231	10 537	9 591
PT	39 715	40 413	38 946
RO	64 268	59 401	62 961
IS	not available	not available	1 489

Note: The result for the approach chosen as the best guess per Member State is highlighted in colour. Approach II (Eurostat) is not shown here as this approach was not calculated in this year.

Source: EEA's proxy GHG emissions

4.2.1.2 1.A.1 Energy Industries

The GHG emissions for source category 1.A.1 (Energy Industries) of Bulgaria, Cyprus, Lithuania, Portugal and Romania[36] 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 20 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*

A second approach based on gross electricity generation data from thermal power plants was also analysed.

[36] CO_2, CH_4 and N_2O emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7. This method for Iceland only calculates emissions on 1.A.1 level and does not split into sub-sub-categories 1.A.1.a, 1.A.1.b, 1.A.1.c.

Equation 6

$$E^{Y}_{1A1a,CO2} = \frac{E^{Y}_{MS(power\ production)}}{E^{Y-1}_{MS(power\ production)}} \cdot E^{Y-1}_{1A1a,CO2}$$

with

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

$E^{Y-1}_{1A1a,CO2}$ 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*

Finally, CO_2 emissions from source category 1.A.1.a were calculated using EUTL Main activity code 20 data for Bulgaria, Cyprus and Lithuania. For Portugal and Romania, CO_2 emissions were calculated using EUTL data on power plants identified by Öko-Institut.

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 2011–2013 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 2004 to 2013.
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 first option (average of 2011–2013) was used for Lithuania, Portugal and Romania. The second option (linear trend extrapolation) was not used at all. The third option (estimates on the basis of trend dynamics) was chosen for Bulgaria and Cyprus.

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 2011–2013 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 (average of 2011–2013) was used for Lithuania and Portugal. The second option (estimates on the basis of trend dynamics) was used for Bulgaria, Cyprus and Romania.

Two different approaches were used to estimate CO_2 emissions from 1.A.1.b (Refineries):

1. For the Member States with no strong correlation between CO_2 emissions and EUTL data Main activity code 21 (Refining of mineral oil) in the previous years the average 2011–2013 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 21 in the previous years, the projection of CO_2 emissions is based on the following equation:

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*

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

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

The first option (average of 2011–2013) was used for Bulgaria, Portugal and Romania. The second option (estimates on the basis of trend dynamics) was chosen for Lithuania. Cyprus did not report CO_2 emissions for 1.A.1.b therefore no emissions were estimated.

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 2011–2013 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 (average of 2011–2013) was used for Portugal. The second option (estimates on the basis of trend dynamics) was chosen for Bulgaria, Lithuania and Romania. Cyprus did not report CH_4 emissions for 1.A.1.b therefore no emissions were estimated.

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 2011–2013 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 (average of 2011–2013) was used for Lithuania, Portugal and Romania. The second option (estimates on the basis of trend dynamics) was chosen for Bulgaria. Cyprus did not report N_2O emissions for 1.A.1.b therefore no emissions were estimated.

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).

4.2.1.3 1.A.2 Manufacturing Industries and Construction

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 1.A.2 CO_2 emissions for Lithuania, Portugal and Romania 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*

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

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

For Lithuania and Portugal, trend dynamics of total EUTL emissions were chosen to calculate CO_2 emissions from 1.A.2 (Manufacturing Industries and Construction). For Romania, trend dynamics of the following non-metal production EUTL Main Activity Codes were chosen: 29 (Production of cement clinker), 30 (Production of lime, or calcination of dolomite/magnesite), 31 (Manufacture of glass), 32 (Manufacture of ceramics), 33 (Production of mineral wool), 34 (Production of processing of gypsum of plasterboard), 35 (Production of pulp), 36 (Production of paper or cardboard).

For Bulgaria and Cyprus, the average 2011–2013 of the CO_2 emission data from the last inventory submission were used. CO_2 emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

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 2011–2013 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 (average of 2011–2013) was used for Bulgaria, Cyprus, Portugal and Romania. The second option (estimates on the basis of trend dynamics) was chosen for Lithuania. CH_4 emissions of Iceland were calculated with a special top-down method; see chapter 4.2.1.7.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 2011–2013 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 (average of 2011–2013) was used for Bulgaria, Cyprus, Portugal and Romania. The second option (estimates on the basis of trend dynamics) was chosen for Lithuania. N_2O emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

4.2.1.4 1.A.3 Transport

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 Bulgaria, Cyprus, Lithuania and Romania:

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 Portugal:

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 chosen for none of the Member States gap-filled for 2014:

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*

CO_2 emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

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*

CH_4 emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

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*

N_2O emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

4.2.1.5 1.A.4 Other sectors

The CO_2 emissions from source category 1.A.4 (Other sectors) were estimated on five approaches analysed:

- Multiple linear regression on gas and oil consumption data
- Multiple linear regression on heating degree days and gross domestic product
- Linear trend extrapolation of emissions of the years 2005–2013
- Average of 2011–2013
- Subtraction from bottom-up calculation for sector 1.A

The multiple linear regression on gas and oil consumption data is based on data from Eurostat on gross inland consumption for natural gas and on gross inland deliveries for total fuel oil, heating oil and other gas oil are used. Based on these data 1.A.4 CO_2 emissions were calculated as follows:

Equation 20

$$E^{Y}_{1A4,CO2} = a \cdot AR^{Y}_{gas-cons} + b \cdot AR^{Y}_{oil-cons} + c$$

with

$E^{Y}_{1A4,CO2}$	*CO2 emissions for source category 1A4*
$AR^{Y}_{gas-cons}$	*Gas consumption*
$AR^{Y-1}_{oil-prod}$	*Oil consumption*
a	*Proportionally constant for gas consumption*
b	*Proportionally constant for oil consumption*
c	*Intercept*

The constants *a, b* and *c* in this formula were calculated using a multiple linear regression of 1.A.4 CO_2 emission data from inventories on gas and oil consumption data from 2008 to 2013.

The multiple linear regression on gas and oil consumption data is based on heating degree data (HDD) calculated by EEA and on Eurostat data on gross domestic product (GDP). Based on these data 1.A.4 CO_2 emissions were calculated as follows:

Equation 21

$$E^{Y}_{1A4,CO2} = a \cdot AR^{Y}_{HDD} + b \cdot AR^{Y}_{GDP} + c$$

with

$E^{Y}_{1A4,CO2}$	*CO2 emissions for source category 1A4*
AR^{Y}_{HDD}	*Heating degree days*
AR^{Y}_{GDP}	*Gross domestic product*
a	*Proportionally constant for heating degree days*
b	*Proportionally constant for gross domestic product*
c	*Intercept*

The constants *a, b* and *c* in this formula were calculated using a multiple linear regression of 1.A.4 CO_2 emission data from inventories of heating degree days and gross domestic product from 2008 to 2013.

These multiple linear regression approaches can only be used, if on one hand both the regression has shown a good correlation and the emission estimated from the equation was within the range

of the year-to-year changes of historic years[37] and on the other hand, emissions for total 1.A emissions were estimated by approach III (bottom-up approach). Bulgaria has a reasonable correlation for multiple linear regression on HDD and GDP, but approach I (BP approach) was used to calculate total 1.A emissions.

Linear trend extrapolation of emissions trend 2005–2013 was used to estimate 1.A.4 CO_2 emissions of Portugal. For Cyprus, the average of 2011–2013 emissions was used as 2014 estimate.

For Bulgaria, Lithuania and Romania, approximated emissions of source category 1.A.4 were estimated 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 and constant emissions for 1.A.5, the emissions for the source categories 1.A.4 were calculated based on the following formula:

Equation 22

$$E_{1A4}^{Y} = E_{1A}^{Y} - E_{1A1}^{Y} - E_{1A2}^{Y} - E_{1A3}^{Y} - E_{1A5}^{Y}$$

with

E_i^Y *Emissions for source category i*

This subtraction method was used for all member states, where total 1.A emissions were estimated using another approach than approach III (bottom-up approach).

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

For CH_4 and N_2O emissions from source category 1.A.4, the calculation is based on the following formula:

Equation 23

$$E_{1A4,CH4orN2O}^{Y} = \frac{E_{1A4,CO2}^{Y}}{E_{1A4,CO2}^{Y-1}} \cdot E_{1A4,CH4orN2O}^{Y-1}$$

with

$E_{1A4,CH4orN2O}^{Y}$ *CH_4 or N_2O emissions for source category 1A4*

$E_{1A4,CH4orN2O}^{Y-1}$ *CH_4 or N_2O emissions for source category 1A4 from previous year*

$E_{1A4,CO2}^{Y}$ *CO_2 emissions for source category 1A4 (see above)*

$E_{1A4,CO2}^{Y-1}$ *CO_2 emissions for source category 1A4 from previous year*

[37] Measured as coefficient of determination R^2>80% and change within 1 standard deviation (σ).

CO_2, CH_4 and N_2O emissions of Iceland were calculated with a special top-down method, see chapter 4.2.1.7.

4.2.1.6 1.A.5 Other Fuel Combustion

For all Member States and all three gases (CO_2, CH_4 and N_2O), inventory data from previous year was used as emission estimate for source category 1.A.5 (Other Fuel Combustion). As a result, the emissions from 1.A.5 have higher uncertainties than the other source categories in the energy sector.

4.2.1.7 Special top-down method for Iceland

Iceland has not yet provided a full GHG inventory for the reporting year 2015 and does not report full energy data to Eurostat. Also fuel combustion sector contributes to only approximately 33% to total emissions of Iceland (excluding LULUCF) and only liquid fossil fuels are used. Therefore a much simpler approach for calculating fuel combustion emissions of Iceland was used:

Equation 24

$$E^{Y}_{1Ax,Gas} = \frac{AR^{Y}_{liquid}}{AR^{Y-1}_{liquid}} \cdot E^{Y-1}_{1Ax,Gas}$$

with

$E^{Y}_{1Ax,Gas}$ CO_2, CH_4 or N_2O emissions for source category 1A, 1A1, 1A2, 1A3, 1A4 or 1A5

$E^{Y-1}_{1A1b,N2O}$ CO_2, CH_4 or N_2O emissions for source category 1A, 1A1, 1A2, 1A3, 1A4 or 1A5 from previous year

AR^{Y}_{liquid} Activity data of liquid fuel consumption

AR^{Y}_{liquid} Activity data of liquid fuel consumption from previous year

So the change of liquid fossil fuel consumption in Iceland was applied to the source category 1.A (Fuel Combustion), all subcategories (1.A.1 to 1.A.5) and all relevant greenhouse gases (CO_2, CH_4 and N_2O). As this method applies one fossil liquid fuel consumption trend to all subsectors and all gases, this can be named as a form of top-down approach.

4.2.1.8 1.B Fugitive Emissions

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

- Solid Fuels (1.B.1);
- Oil (1.B.2.a);

- Natural Gas (1.B.2.b);
- Venting and Flaring (1.B.2.c).

The CO_2 emissions for source category 1.B.1 (Solid Fuels) of Portugal were estimated using average 2011-2013 from the last available submission. Bulgaria, Cyprus, Lithuania and Romania did not report CO_2 emissions in that source category.

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 2010–2013 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 25

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

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*

Bulgaria and Romania where lignite production is the main determinant for CH_4 emissions from source category 1.B.1, the primary production data for lignite (Eurostat indicator code 100100, Eurostat product code 2210) were used. Portugal, average 2011–2013, from the last available submission was used. Cyprus and Lithuania did not report CH_4 emissions from 1.B.1.

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 21 (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 26

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

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. The following table displays the selected methods.

Table 16 Methods used to estimate fugitive emissions from Oil, Gas or Venting and Flaring

Sector	Gas	BG	CY	LT	PT	RO	IS
1.B.2.a Oil	CO_2	Average (2011-2013)	Previous year	Average (2011-2013)	Average (2011-2013)	Average (2011-2013)	No detailed calculation for Iceland (see below)
1.B.2.a Oil	CH_4	Trend change CITL Refineries	Previous year value	Average (2011-2013)	Average (2011-2013)	Trend change gas production	
1.B.2.b Natural Gas	CO_2	Average (2011-2013)	Previous year value	Average (2011-2013)	Average (2011-2013)	Trend change Gas production	
1.B.2.b Natural Gas	CH_4	Average (2011-2013)	Previous year value	Average (2011-2013)	Average (2011-2013)	Trend change Gas consumption	
1.B.2.c Venting	CO_2	Average (2011-2013)	Previous year value	Trend change Oil production	Average (2011-2013)	Trend change Oil production	
1.B.2.c Venting	CH_4	Average (2011-2013)	Previous year value	Trend change Oil production	Previous year	Trend change Oil production	
1.B.2.c Flaring	CO_2	Average (2011-2013)	Previous year value	Trend change Oil Production	Average (2011-2013)	Trend change Oil Production	
1.B.2.c Flaring	CH_4	Average (2011-2013)	Previous year value	Trend change Oil production	Average (2011-2013)	Trend change Oil production	

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

According to the CRF tables of the Islandic 2014 GHG Inventory, geothermal energy use is the dominant source of fugitive CO_2 emissions in the Island. Therefore 1.B.2 CO_2 emissions were calculated based on geothermal electricity generation based on the following formula:

Equation 27

$$E^{Y}_{1B2,CO2} = \frac{AR^{Y}_{geothermal}}{AR^{Y-1}_{geothermal}} \cdot E^{Y-1}_{1B2,CO2}$$

with

$E^{Y}_{1B1,CH4}$ CH_4 *emissions for source category 1B2*

$E^{Y-1}_{1B1,CH4}$ CH_4 *emissions for source category 1B2 from previous year*

$AR^{Y}_{geothermal}$ *Geothermal electricity generation*

$AR^{Y-1}_{geothermal}$ *Geothermal electricity generation for previous year*

For fugitive CH_4 emissions in source category 1.B.2 of Iceland, previous year value was used as 2014 estimate.

4.2.2 Industrial Processes and Product Use

4.2.2.1 2.A Mineral products

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.3) from the EUTL 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 codes 29 (Production of cement clinker), 30 (Production of lime, or calcination of dolomite/magnesite) and 34 (Production or processing of gypsum or plasterboard) and a scaling factor based on comparison inventory data versus EUTL data for 2013.

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

Equation 28

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

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*

Two different approaches were used to estimate CO_2 emissions from 2.A.3 (Glass production):

1. For the Member States with no strong correlation between CO_2 emissions and EUTL data Main activity code 31 (Manufacture of glass) in the previous years the average 2011–2013 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 31 in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 29

$$E_{2A3}^{Y} = \frac{E_{EUTL}^{Y}}{E_{EUTL}^{Y-1}} \cdot E_{2A3}^{Y-1}$$

with

E_{2A7}^{Y} — *Emissions for source category 2A3*

E_{2A3}^{Y-1} — *Emissions for source category 2A3 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*

Average of 2011–2013 emissions was used as estimate for Lithuania. For Bulgaria, Portugal and Romania, emissions were estimated based on EUTL data Main activity code 31. Cyprus did not report 2.A.3 emissions for glass production therefore no emissions were estimated.

In source category 2.A.4 (Other use of carbonates) 2013 CO_2 emissions were used as approximated 2014 CO_2 emissions.

As for Iceland no complete GHG inventory was available, 2.A CO_2 emissions from year 2013 were used as estimate for 2014.

4.2.2.2 2.B Chemical industry

Two different approaches were analysed to estimate CO_2 emissions from 2.B.1 (Ammonia production):

1. For the Member States with no strong correlation between CO_2 emissions and EUTL data Main activity code 41 (Production of ammonia) in the previous years the average 2011–2013 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 41 in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 30

$$E_{2B1}^{Y} = \frac{E_{EUTL}^{Y}}{E_{EUTL}^{Y-1}} \cdot E_{2B1}^{Y-1}$$

with

E_{2B1}^{Y} *Emissions for source category 2B1*

E_{2B1}^{Y-1} *Emissions for source category 2B1 from previous year*

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

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

Average of 2011–2013 emissions was used as 2.B.1 CO_2 emission estimate for Bulgaria, Lithuania and Romania, as in none of these Member States 2.B.1 CO_2 emissions showed good correlation to EUTL data Main activity code 31. Cyprus and Portugal did not report 2.B.1 emissions for ammonia production therefore no emissions were estimated.

Two different approaches were analysed to estimate N_2O emissions from 2.B.2 (Nitric acid production):

1. For the Member States with no strong correlation between N_2O emissions and EUTL data Main activity code 38 (Production of nitric acid) in the previous years the average 2011–2013 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 38 in the previous years, the projection of CO_2 emissions is based on the following equation:

Equation 31

$$E_{2B2}^{Y} = \frac{E_{EUTL}^{Y}}{E_{EUTL}^{Y-1}} \cdot E_{2B2}^{Y-1}$$

with

E_{2B1}^{Y} *Emissions for source category 2B2*

E_{2B1}^{Y-1} *Emissions for source category 2B2 from previous year*

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

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

Average of 2011–2013 emissions was used as 2.B.2 N_2O emission estimate for BulgariaPortugal and Romania, as in none of these Member States 2.B.2 N_2O emissions showed good correlation to EUTL data Main activity code 31. During Eionet/WG1 consultation Lithuania submitted a value of 332 kt CO_2-eq for N_2O emissions from nitric acid production therefore this value was used. Cyprus did not report 2.B.2 emissions for nitric acid production therefore no emissions were estimated.

Estimates for CO_2 emissions from 2.B.7 (Soda ash production) are based on EUTL emissions data from Main activity code 44 (Production of soda ash an sodium bicarbonate) using the following equation:

Equation 32

$$E_{2B7}^{Y} = \frac{E_{EUTL}^{Y}}{E_{EUTL}^{Y-1}} \cdot E_{2B7}^{Y-1}$$

with

E_{2B7}^{Y} *Emissions for source category 2B7*

E_{2B7}^{Y-1} *Emissions for source category 2B7 from previous year*

E_{EUTL}^{Y} *EUTL emissions for the production of soda ash and sodium bicarbonate*

E_{EUTL}^{Y-1} *EUTL emissions for the production of soda ash and sodium bicarbonate from previous year*

For Portugal emission trends based on ETS data from EUTL main activity code 44 were used for the calculation 2.B.7 CO_2 emissions for Bulgaria and Romania. Cyprus, Lithuania and Portugal did not report 2.B.7 emissions for soda ash production therefore no emissions were estimated.

Iceland did not report 2.B emissions for chemical industry at all therefore no emissions were estimated.

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 sub-categories 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 analysed:

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 24 (Production of pig iron or steel);
4. EUTL main activity code 24 (Production of pig iron or steel) and including those power plants in the EUTL that where identified to use waste gases from the iron and steel industry; EUTL main activity code 22 (Production of coke), 23 (Metal ore roasting or sintering) 24 (Production of pig iron or steel) 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 33

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

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*

For Portugal emission trends based on ETS data from EUTL main activity code 24 (Production of pig iron or steel) and including those power plants in the EUTL that where identified to use waste gases from the iron and steel industry 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 2011–2013 from the last inventory submission were used. This includes Bulgaria, Lithuania and Romania. Cyprus 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.

For Iceland there was no complete GHG inventory available, therefore emissions were estimated directly for source category 2.C based on EUTL data from Main activity code 99 (Other activity). All four Islandic installations with Main activity code 99 could be identified as installations related to metal production. The estimates for CO_2 and PFC emissions for source category 2.C are based on the formula:

Equation 34

$$E^{Y}_{2C,gas} = \frac{E^{Y}_{EUTL}}{E^{Y-1}_{EUTL}} \cdot E^{Y-1}_{2C,gas}$$

with

$E^{Y}_{2C,gas}$ — *CO_2 resp. PFC emissions for source category 2C*

$E^{Y-1}_{2C,CO2}$ — *CO_2 resp. PFC emissions for source category 2C from previous year*

E^{Y}_{EUTL} — *EUTL emissions for other activities*

E^{Y-1}_{EUTL} — *EUTL emissions for other activities for previous year*

4.2.2.3 Other source categories

For all other source categories covering Industrial Processes and Product Use (CRF 2), 2014 activity data from alternative data sources are lacking. These categories were extrapolated from 2015 GHG inventories, either by linear trend extrapolation via minimum square deviation or by taking the constant values of the year 2013. Constant values were used when past trends were inconsistent and strongly fluctuating. Trend extrapolations were used when the historic time series showed good correlations[38] with a linear trend. Time spans ranging from three years (2011-2013) to fourteen years (2000-2013) were analysed regarding linear trends and best fitting time span was chosen for linear trend extrapolation.

Table 17 provides a detailed overview of methods and data sources used for each source category and Member State.

[38] A "good correlation" in the context of this report is interpreted as an adjusted coefficient of determination (R^2) of the trend is greater than or equal to 0.80.

Table 17 Methods used to estimate emissions from other source categories of Industrial Processes and Product Use

Sector	Gas	BG	CY	LT	PT	RO	IS
2. Industrial processes and product use	HFCs	linear trend extrapolation (2011–2013)	previous year value	linear trend extrapolation (2009–2013)	previous year value	linear trend extrapolation (2011–2013)	previous year value
2. Industrial processes and product use	PFCs	linear trend extrapolation (2011–2013)	previous year value	previous year value	previous year value	previous year value	trend change EUTL activity code 99
2. Industrial processes and product use	SF_6	previous year value	previous year value	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value
2.A.4 Other process uses of carbonates	CO_2	linear trend extrapolation (2011–2013)	linear trend extrapolation (2011–2013)	linear trend extrapolation (2009–2013)	previous year value	linear trend extrapolation (2011–2013)	previous year value
2.B.5 Carbide production	CH_4	previous year value	previous year value	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value
2.B.8 Titanium dioxide production	CO_2	previous year value	previous year value	previous year value	linear trend extrapolation (2010–2013)	previous year value	previous year value
2.B.10 Other	CO_2	previous year value	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value	previous year value
2.C Metal production	CH_4	previous year value	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value	trend change EUTL activity code 99
2.D Non-energy products from fuels and solvent use	CO_2	linear trend extrapolation (2010–2013)	previous year value	linear trend extrapolation (2010–2013)	linear trend extrapolation (2001–2013)	previous year value	previous year value
2.D Non-energy products from fuels and solvent use	CH_4	previous year value	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value	previous year value
2.G Other product manufacture and use	CH_4	previous year value	previous year value	previous year value	previous year value	previous year value	linear trend extrapolation (1990-2013)
2.G Other product manufacture and use	N_2O	previous year value	linear trend extrapolation (2001–2013)	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value
2.H Other	CO_2	linear trend extrapolation (2011–2013)	previous year value	previous year value	linear trend extrapolation (2011–2013)	previous year value	previous year value

Note: Sectors and gases with notations keys (IE, NA, NE and/or NO) in all mentioned sectors are not shown here.

4.2.3 Agriculture

Changes to Agriculture sector emissions reporting due to the implementation of the IPCC 2006 Guidelines include revisions to the reporting structure of livestock types and changes to methodology and emissions factors.

The revised reporting structure means that less emission significant livestock types are listed under 3.A.4 Other livestock and 3.B.4 Other livestock. Cattle, sheep and swine have their usual categories.

With respect to IPCC 2006 Guidelines methodology and emission factor changes, while emissions are of course estimated using consistent estimation methods and data sources across a time series, the magnitude of reported emissions from agricultural soils has changed. Within the sector the effect of the changes are most apparent on estimates of soils emissions. If compared to previously published figures, emissions from soils would have an apparent reduction of 298 kt N_2O (29%) for 1990 and an apparent reduction of 199 kt N_2O (26%) for 2012.

Table 18 shows the estimation approach used for each of the five countries for which gap filled proxies were required.

Table 18 Methods used to estimate emissions from Agriculture

Sector	Gas	BG	CY	LT	PT	RO	IS
3.A Enteric fermentation 1. Cattle, 2. Sheep and 3. Swine	CH_4	change in livestock numbers	change in livestock numbers	change in livestock numbers	change in livestock numbers	change in livestock numbers	previous year value
3.A Enteric fermentation 4. Other livestock	CH_4	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	previous year value
3.B. Manure management 1. Cattle, 2. Sheep and 3. Swine	CH_4	change in livestock numbers	change in livestock numbers	change in livestock numbers	change in livestock numbers	change in livestock numbers	previous year value
3.B. Manure management 4. Other livestock	CH_4	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	previous year value
3.B. Manure management	N_2O	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation	linear trend extrapolation
3.C. to 3.J., 3.C. to 3.J.,	CH_4 and N_2O	linear trend extrapolation linear trend extrapolation	linear trend extrapolation linear trend extrapolation	linear trend extrapolation linear trend extrapolation	linear trend extrapolation linear trend extrapolation	linear trend extrapolation linear trend extrapolation	linear trend extrapolation previous year value

4.2.3.1 3.A Enteric fermentation

Enteric fermentation emissions were calculated using livestock data and previous year's emissions. Livestock data were obtained from Eurostat and emissions data were from the annual inventory data in CRF format submitted by each Member State to the European Environment Agency.

Eurostat livestock data was used for dairy cattle, non-dairy cattle, sheep and swine. Livestock population is the main driver for these emissions, and the 2013 to 2014 change in the number of

head of livestock species/category in each Member State was applied to the 2013 inventory emissions for corresponding species/category of livestock. The proxy CH_4 emissions for source category 3A cattle, sheep and swine were calculated based on the following equation:

Equation 35: *3A. Enteric fermentation emissions for dairy cattle, non-dairy cattle, sheep and swine*

$$E^{Y}_{3A,T} = \frac{N^{Y}_{T}}{N^{Y-1}_{T}} \cdot E^{Y-1}_{3A,T}$$

with :

Y	*inventory year*
$3A$	*enteric fermentation*
T	*species / category of livestick*
N_T	*number of head of livestock species / category in country*
$E^{Y}_{3A,T}$	*enteric fermentation emissions for the year Y and livestock T*

3.A.4 Other livestock: Member State emissions inventories for enteric fermentation (and manure management) emissions from livestock other than cattle, sheep and swine typically include: goats, horses, buffalo, poultry, mules and asses. Goats, horses, mules and asses are not covered by Eurostat animal production statistics and the data for poultry is for poultry meat production and not directly comparable to inventory categories. Data for buffalo are available but they constitute a small part of the bovine herd in all countries except Italy. Therefore, the emissions of the 3.A.4 Other livestock category (and the 3.B.4 Other livestock category) were updated using emissions data of previous five years and trend extrapolation. The Microsoft Excel TREND function returns values along a linear trend matching known data points, using the least squares method.

4.2.3.2 3.B Manure management

Manure management emissions calculations use the same approach as for Enteric Fermentation. Emissions are calculated using livestock data and previous year's emissions. Livestock data were obtained from Eurostat and emissions data were from the annual inventory data in CRF format submitted by each Member State to the European Environment Agency.

Eurostat livestock data was used for dairy cattle, non-dairy cattle, sheep and swine. Given that livestock population is the main driver for these emissions, the 2013 to 2014 change in the number of head of livestock species/category in each Member State was applied to the 2013 inventory emissions for corresponding species/category of livestock. The CH_4 emissions for source category 3B cattle, sheep and swine were calculated based on the following equation:

Equation 36: *3B. Manure management CH_4 emissions for dairy cattle, non-dairy cattle, sheep and swine*

$$E^{Y}_{3B,T} = \frac{N^{Y}_{T}}{N^{Y-1}_{T}} \cdot E^{Y-1}_{3B,T}$$

with :

Y	*inventory year*
$3B$	*Manure managment*
T	*species / category of livestick*
N_T	*number of head of livestock species / category in country*
$E^{Y}_{3A,T}$	*Manure management emissions for the year Y and livestock T*

3.B.4 Other livestock: Member State emissions inventories for manure management emissions from livestock other than cattle, sheep and swine typically include: goats, horses, buffalo, poultry, mules and asses. Goats, horses, mules and asses are not covered by Eurostat animal production statistics and the data for poultry is for poultry meat production and not easily comparable to inventory categories. Data for buffalo are available but they constitute a small part of the bovine herd in all countries except Italy. Therefore, the CH_4 emissions of the 3.B.4 Other livestock category were updated using emissions data of previous five years and trend extrapolation. The Microsoft Excel TREND function returns values along a linear trend matching known data points, using the least squares method.

For 3.B Manure management N_2O emissions, an earlier EEA proxy methodology was also based on the sum of estimates using population by animal type sub-sectors where possible and otherwise either trend extrapolation or the previous year's value. Analysis of this detailed approach against subsequently reported emissions showed no appreciable gain in accuracy when compared to trend extrapolation. Therefore, 3.B Manure management N_2O emissions were updated using emissions data of previous five years and trend extrapolation. The Microsoft Excel TREND function returns values along a linear trend matching known data points, using the least squares method.

4.2.3.3 3.D Agricultural Soils

Emissions from 3.D Agricultural Soils occur mainly as N_2O produced as a result of applying fertilizers, manure, and other agricultural practices. No Member States report CH_4 emissions from soils.

The EEA proxy for this sub-sector uses emissions data of previous five years and trend extrapolation. The Microsoft Excel TREND function returns values along a linear trend matching known data points, using the least squares method.

An earlier EEA proxy methodology for N_2O emissions for 4.D Agricultural Soils[39], was based on the sum of trend estimates of most of the sub-sectors within the 4.D.1 Direct Soil Emissions category. That is 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 Member States 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 showed 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 (3.D.a.1) typically contribute 25% of soil related emissions. There is now Eurostat data for fertiliser use for 24 Member States for 2000 to 2013. Although this data could not be used for proxy calculations, the trend in artificial nitrogen fertiliser use largely matches the time series for EU plus Iceland's emissions from 3.D Agricultural Soils.

4.2.3.4 Other source categories in the agricultural sector

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 methodologies used for each of the six countries for which gap filled proxies are required are shown in Table 18.

4.2.4 Waste

A simple approach was used to estimate CH_4 emissions from Solid Waste Disposal on land. A linear extrapolation of the trend of the previous four 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. Table 19 shows the approach used for each of the six countries for which gap filled proxies are used.

Table 19 Methods used to estimate emissions from Waste

Sector	Gas	BG	CY	LT	PT	RO	IS
5.A Solid waste disposal	CO_2	previous year value	previous year value	previous year value	previous year value	previous year value	previous year value

[39] Note that "4.D" is correct here as we are referring to previous proxy calculations aligned with reporting for Revised 1996 IPCC Guidelines.

Sector	Gas	BG	CY	LT	PT	RO	IS
5.A Solid waste disposal	CH_4	linear trend extrapolation (2000–2013)	linear trend extrapolation (2000–2013)	linear trend extrapolation (2009–2013)	linear trend extrapolation (2011–2013)	previous year value	previous year value
5.B Biological treatment of solid waste	CH_4	linear trend extrapolation (2009–2013)	previous year value	linear trend extrapolation (2010–2013)	previous year value	previous year value	previous year value
5.B Biological treatment of solid waste	N_2O	linear trend extrapolation (2009–2013)	previous year value	linear trend extrapolation (2010–2013)	previous year value	previous year value	previous year value
5.C Incineration and open burning of waste	CO_2	linear trend extrapolation (2011–2013)	previous year value	previous year value	linear trend extrapolation (2011–2013)	linear trend extrapolation (2009–2013)	previous year value
5.C Incineration and open burning of waste	CH_4	linear trend extrapolation (2011–2013)	previous year value	previous year value	previous year value	previous year value	previous year value
5.C Incineration and open burning of waste	N_2O	linear trend extrapolation (2011–2013)	previous year value	previous year value	previous year value	previous year value	previous year value
5.D Waste water treatment and discharge	CH_4	previous year value	linear trend extrapolation (2011–2013)	linear trend extrapolation (2000–2013)	previous year value	linear trend extrapolation (2011–2013)	linear trend extrapolation (2010-2013)
5.D Waste water treatment and discharge	N_2O	linear trend extrapolation (2011–2013)	linear trend extrapolation (2005–2013)	linear trend extrapolation (2007–2013)	previous year value	previous year value	linear trend extrapolation (1990-2013)
5.E Other	CO_2	previous year value	previous year value	previous year value	previous year value	previous year value	previous year value
5.E Other	CH_4	previous year value	previous year value	previous year value	previous year value	previous year value	previous year value
5.E Other	N_2O	previous year value	previous year value	previous year value	previous year value	previous year value	previous year value

Note: Sectors and gases with notations keys (IE, NA, NE and/or NO) in all mentioned sectors are not shown here.