*EEA Technical report*

*No 16/2014*

# Approximated EU GHG inventory:

# Proxy GHG emission estimates for 2013

*30 September 2014*

European Environment Agency

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|---|---|
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# Contents

**Acknowledgements** ..... **14**

**Executive Summary** ..... **15**

**1. Background and objective** ..... **27**

**2. European GHG emissions in 2013 using Member States proxy data** ..... **30**

2.1 Trends and general results ..... 31
2.2 Sectoral results ..... 41
*2.2.1 Energy* ..... *42*
*2.2.2 Industrial Processes* ..... *43*
*2.2.3 Agriculture* ..... *44*
*2.2.4 Waste* ..... *46*
2.3 ETS / ESD ..... 47

**3. European GHG emissions in 2013 using EEA proxy data** ..... **52**

3.1 Methodologies and data sources ..... 52
3.2 Uncertainties, differences and QA/QC in EEA proxy data ..... 56
3.3 Differences in emission estimates between Member States and EEA data ..... 64

**4. References** ..... **70**

**5. Annexes** ..... **72**

5.1 Annex I. Detailed results for each Member States as reported by Member States ..... 72
*5.1.1 Austria* ..... *73*
*5.1.2 Belgium* ..... *74*
*5.1.3 Bulgaria* ..... *75*
*5.1.4 Cyprus* ..... *76*
*5.1.5 Czech Republic* ..... *77*
*5.1.6 Germany* ..... *78*
*5.1.7 Denmark* ..... *79*
*5.1.8 Estonia* ..... *80*
*5.1.9 Spain* ..... *81*
*5.1.10 Finland* ..... *82*
*5.1.11 France* ..... *83*
*5.1.12 Greece* ..... *84*
*5.1.13 Hungary* ..... *85*
*5.1.14 Croatia* ..... *86*
*5.1.15 Ireland* ..... *87*
*5.1.16 Italy* ..... *88*
*5.1.17 Lithuania* ..... *89*
*5.1.18 Luxembourg* ..... *90*
*5.1.19 Latvia* ..... *91*
*5.1.20 Malta* ..... *93*

*5.1.21 Netherlands* ..... *94*
*5.1.22 Poland* ..... *95*
*5.1.23 Portugal* ..... *96*
*5.1.24 Romania* ..... *97*
*5.1.25 Sweden* ..... *98*
*5.1.26 Slovenia* ..... *99*
*5.1.27 Slovakia* ..... *100*
*5.1.28 United Kingdom* ..... *101*
5.2 Annex II. Detailed results for each Member States as calculated by EEA ..... 102
*5.2.1 Austria* ..... *103*
*5.2.2 Belgium* ..... *104*
*5.2.3 Bulgaria* ..... *105*
*5.2.4 Cyprus* ..... *106*
*5.2.5 Czech Republic* ..... *107*
*5.2.6 Germany* ..... *108*
*5.2.7 Denmark* ..... *109*
*5.2.8 Estonia* ..... *110*
*5.2.9 Spain* ..... *111*
*5.2.10 Finland* ..... *112*
*5.2.11 France* ..... *113*
*5.2.12 Greece* ..... *114*
*5.2.13 Hungary* ..... *115*
*5.2.14 Croatia* ..... *116*
*5.2.15 Ireland* ..... *117*
*5.2.16 Italy* ..... *118*
*5.2.17 Lithuania* ..... *119*
*5.2.18 Luxembourg* ..... *120*
*5.2.19 Latvia* ..... *121*
*5.2.20 Malta* ..... *122*
*5.2.21 Netherlands* ..... *123*
*5.2.22 Poland* ..... *124*
*5.2.23 Portugal* ..... *125*
*5.2.24 Romania* ..... *126*
*5.2.25 Sweden* ..... *127*
*5.2.26 Slovenia* ..... *128*
*5.2.27 Slovakia* ..... *129*
*5.2.28 United Kingdom* ..... *130*
*5.2.29 EU-15* ..... *131*
*5.2.30 EU-28* ..... *132*
5.3 Annex III. Methodology for the proxy calculated by EEA ..... 133
*5.3.1 Energy* ..... *133*
*5.3.2 Industrial Processes* ..... *170*
*5.3.3 Agriculture* ..... *175*
*5.3.4 Waste* ..... *181*

*5.3.5 Other source categories* ..... *182*
5.4 Annex IV. Methods and data sources used for the proxy calculated by EEA ..... 184

# List of tables


Table 1 Summary table of approximated GHG emissions for 2013 for EU-15 (total emissions without LULUCF) ..... 39

Table 2 Summary table of approximated GHG emissions for 2013 for EU-28 (total emissions without LULUCF) ..... 40

Table 3 Emissions by sector, change 2012-2013 ..... 41

Table 4 Energy sector emissions, change 2012-2013 ..... 42

Table 5 Industrial Processes emissions, change 2012-2013 ..... 43

Table 6 Agriculture sector emissions, change 2012-2013 ..... 45

Table 7 Waste sector emissions, change 2012-2013 ..... 47

Table 8 Global warning potentials from different IPCC Assessment Reports ..... 48

Table 9 ETS and non-ETS 2013 proxy emissions with SAR and AR4 GWPs ..... 49

Table 10 Time of availability of data used for the proxy inventory ..... 56

Table 11 Difference between proxy inventory estimated for 2012 and submitted 2012 inventory ..... 58

Table 12 Uncertainties of the EU approximated GHG inventory for 2013 ..... 58

Table 13 Comparison of EEA and Member States proxies (total without LULUCF) ..... 64

Table 14 Overview of approaches used for the estimation of $CO_2$ emissions from 1.A fuel combustion ..... 133

Table 15 2013 $CO_2$ emissions for source category 1.A Fuel combustion in various approximation approaches ..... 137

Table 16 $CO_2$ emissions for source category 1.A Fuel Combustion ..... 138

Table 17 $CH_4$ emissions for source category 1.A Fuel Combustion ..... 139

Table 18 $N_2O$ emissions for source category 1.A Fuel Combustion ..... 140

Table 19 $CO_2$ emissions for 1.A.1 Energy Industries ..... 145

Table 20 $CH_4$ emissions for 1.A.1 Energy Industries ..... 146

Table 21 $N_2O$ emissions for 1.A.1 Energy Industries ..... 147

Table 22 $CO_2$ emissions from 1.A.2 Manufacturing Industries and Construction ..... 150

Table 23 $CH_4$ emissions from 1.A.2 Manufacturing Industries and Construction ..... 151

Table 24 $N_2O$ emissions from 1.A.2 Manufacturing Industries and Construction ..... 151
Table 25 $CO_2$ emissions for source category 1.A.3 ..... 157
Table 26 $CH_4$ emissions for source category 1.A.3 ..... 158
Table 27 $N_2O$ emissions for source category 1.A.3 ..... 159
Table 28 $CO_2$ emissions for source category 1.A.4 ..... 161
Table 29 $CH_4$ emissions for source category 1.A.4 ..... 162
Table 30 $N_2O$ emissions for source category 1.A.4 ..... 163
Table 31 Best fit trends for calculating $CO_2$ and $CH_4$ emissions from 1B2a, 1B2b and 1B2c ..... 166
Table 32 $CO_2$ emissions from 1.B.1 Fugitive Emissions from Solid Fuels ..... 167
Table 33 $CH_4$ emissions from 1.B.1 Fugitive Emissions from solid Fuels ..... 168
Table 34 $CO_2$ emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas ..... 168
Table 35 $CH_4$ emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas ..... 169
Table 36 $CO_2$ emissions from 2.A Mineral Products ..... 172
Table 37 $CO_2$ emissions from 2.C Metal Production ..... 174
Table 38 $CH_4$ emissions in Gg from 4.A Enteric Fermentation ..... 176
Table 39 $CH_4$ emissions in Gg from 4.B Manure Management ..... 178
Table 40 N2O emissions in Gg from 4.B Manure Management ..... 179
Table 41 $N_2O$ emissions in Gg from 4.D Agricultural Soils ..... 181
Table 42 Methods and data: $CO_2$ emissions from 1.A Fuel combustion ..... 184
Table 43 Methods and data: CH4 and N2O emissions from 1.A Fuel combustion ..... 185
Table 44 Methods and data: $CO_2$, $CH_4$ and $N_2O$ emissions for 1.A.1 Energy industries ..... 186
Table 45 Methods and data: $CO_2$ emissions from 1A1a Public electricity and heat production ..... 187
Table 46 Methods and data: $CH_4$ emissions from 1A1a Public electricity and heat production ..... 188
Table 47 Methods and data: $N_2O$ emissions from 1A1a Public electricity and heat production ..... 189
Table 48 Methods and data: $CO_2$ emissions from 1A1b Petroleum refining ..... 190

Table 49 Methods and data: $CH_4$ emissions from 1A1b Petroleum refining ..... 191
Table 50 Methods and data: $N_2O$ emissions from 1A1b Petroleum refining ..... 192
Table 51 Methods and data sources used for CO2, CH4 and N2O emissions from 1A1c Manufacture of solid fuels and other energy industries ..... 193
Table 52 Methods and data: CO2 emissions from 1.A.2 Manufacturing industries and construction ..... 194
Table 53 Methods and data: CH4 emissions from 1.A.2 Manufacturing industries and construction ..... 195
Table 54 Methods and data: N2O emissions from 1.A.2 Manufacturing industries and construction ..... 196
Table 55 Methods and data: $CO_2$ emissions from 1.A.3 Transport ..... 197
Table 56 Methods and data: $CH_4$ and $N_2O$ emissions from 1.A.3 Transport ..... 198
Table 57 Methods and data: $CO_2$ emissions from 1.A.4 Other sectors ..... 199
Table 58 Methods and data: CH4 and N2O emissions from 1.A.4 Other sectors ..... 199
Table 59 Methods and data: $CO_2$ emissions from 1.B.1 Fugitive emissions from solid fuels ..... 200
Table 60 Methods and data: $CH_4$ emissions from 1.B.1 Fugitive emissions from solid fuels ..... 202
Table 61 Methods and data: $CO_2$ emissions from 1B2a Fugitive emissions from oil ..... 204
Table 62 Methods and data: $CH_4$ emissions from 1B2a Fugitive emissions from oil ..... 205
Table 63 Methods and data: CO2 emissions from 1B2b Fugitive emissions from gas ..... 206
Table 64 Methods and data: $CH_4$ emissions from 1B2b Fugitive emissions from gas ..... 207
Table 65 Methods and data: $CO_2$ emissions from 1B2c Venting ..... 208
Table 66 Methods and data: $CH_4$ emissions from 1B2c Venting ..... 209
Table 67 Methods and data: $CO_2$ emissions from 1B2c Flaring ..... 210
Table 68 Methods and data: $CH_4$ emissions from 1B2c Flaring ..... 211
Table 69 Methods and data: $CO_2$ emissions from 2.A.1 Cement Production ..... 212
Table 70 Methods and data: $CO_2$ emissions from 2.A.2 Lime Production ..... 213
Table 71 Methods and data: $CH_4$ emissions from 2.A Mineral products ..... 214
Table 72 Methods and data: $CO_2$ emissions from 2.B.1 Ammonia Production ..... 215

Table 73 Methods and data: $N_2O$ emissions from 2.B.2 Nitric Acid Production ..... 216
Table 74 Methods and data: $N_2O$ emissions from 2.B.3 Adipic Acid Production ..... 217
Table 75 Methods and data: $CH_4$ emissions from 2.C Metal production ..... 217
Table 76 Methods and data: $CO_2$ emissions from 2.C Metal production ..... 219
Table 77 Methods and data: $N_2O$ emissions from 2.C Metal production ..... 219
Table 78 Methods and data: $CO_2$ emissions from 2.C.1 Iron and steel production ..... 221
Table 79 Methods and data: $CO_2$ emissions from 2.D Other production ..... 222
Table 80 Methods and data: SF6 emissions ..... 223
Table 81 Methods and data: HFC emissions ..... 223
Table 82 Methods and data: PFC emissions ..... 225
Table 83 Methods and data: $CO_2$ emissions from 2.G Other ..... 226
Table 84 Methods and data: $CH_4$ emissions from 2.G Other ..... 227
Table 85 Methods and data: $N_2O$ emissions from 2.G Other ..... 228
Table 86 Methods and data: $CO_2$ emissions from 3 Solvent and other product use ..... 229
Table 87 Methods and data: $N_2O$ emissions from 3 Solvent and other product used ..... 229
Table 88 Methods and data: CH4 emissions from 4.A. Enteric fermentation and from 4.B Manure management ..... 231
Table 89 Methods and data: CH4 emissions from 4.A Enteric Fermentation, Horses ..... 233
Table 90 Methods and data: $CH_4$ emissions from 4.B Manure Management, Horses ..... 233
Table 91 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Mules and Asses ..... 234
Table 92 Methods and data: $CH_4$ emissions from 4.B Manure Management, Mules and Asses ..... 234
Table 93 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Poultry ..... 235
Table 94 Methods and data: CH4 emissions from 4.B Manure Management, Poultry ..... 235

Table 95 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Other ..... 236
Table 96 Methods and data: $CH_4$ emissions from 4.B Manure Management, Other ..... 236
Table 97 Methods and data: N2O emissions from 4.B Manure management ..... 237
Table 98 Methods and data: CH4 emissions from 4.C Rice cultivation ..... 238
Table 99 Methods and data: CH4 emissions from 4.D Agricultural soils ..... 240
Table 100 Methods and data: N2O emissions from 4.D Agricultural soils ..... 241
Table 101 Methods and data: CH4 emissions from 4.F Field burning of agricultural residues ..... 242
Table 102 Methods and data: N2O emissions from 4.F Field burning of agricultural residues ..... 243
Table 103 Methods and data: $CH_4$ emissions from 6.A Solid waste disposal on land ..... 244
Table 104 Methods and data: $CH_4$ emissions from 6.B Wastewater handling ..... 245
Table 105 Methods and data: $N_2O$ emissions from 6.B Wastewater handling ..... 245
Table 106 Methods and data: $CO_2$ emissions from 6.C Waste incineration ..... 246
Table 107 Methods and data: $CH_4$ emissions from 6.C Waste incineration ..... 248
Table 108 Methods and data: $N_2O$ emissions from 6.C Waste incineration ..... 249
Table 109 Methods and data: $CO_2$ emissions from 6.D Other ..... 249
Table 110 Methods and data: $CH_4$ emissions from 6.D Other ..... 250
Table 111 Methods and data: $N_2O$ emissions from 6.D Other ..... 251

# List of figures


Figure 1 Trends in total greenhouse gas emissions ..... 31

Figure 2 Member States emissions, change 2012-2013 ..... 36

Figure 3 Member States emissions, change 1990-2013 ..... 38

Figure 4 Emissions by sector, change 2012-2013 ..... 41

Figure 5 Energy sector emissions, change 2012-2013 ..... 43

Figure 6 Industrial Processes emissions, change 2012-2013 ..... 44

Figure 7 Agriculture sector emissions, change 2012-2013 ..... 45

Figure 8 Waste sector emissions, change 2012-2013 ..... 47

Figure 9 ETS and non-ETS emissions, change 2012-2013 ..... 51

Figure 10 Differences between approximated and submitted 2012 inventories ..... 60

Figure 11 Difference by sector, proxy and submitted 2012 inventories (%) ..... 62

Figure 12 Difference by sector, proxy and submitted 2012 inventories (Mt) ..... 63

# Abbreviations

| | |
|---|---|
| AD | Activity data |
| AR | Activity rate |
| AR4 | IPCC Fourth Assessment Report: Climate Change 2007 (AR4) |
| 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 Scheme |
| EU | European Union |
| EU-15 | Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. |
| EU-27 | Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom |
| EU-28 | Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom |
| GDP | Gross domestic product |
| GHG | Greenhouse gas |
| GWP | Global warming potential |
| HFCs | Hydrofluorocarbons |

| | |
|---|---|
| IEA | International Energy Agency |
| IEF | Implied emission factor |
| IPCC | Intergovernmental Panel on Climate Change |
| LULUCF | Land use, land-use change and forestry |
| Mt | Million tons |
| $N_2O$ | Nitrous oxide |
| PFCs | Perfluorocarbons |
| QA/QC | Quality assurance and quality control |
| SAR | IPCC Second Assessment Report: Climate Change 1995 (SAR) |
| $SF_6$ | 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 2013, 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 estimates are based on incomplete activity and/or emissions data at country level and they should be considered as preliminary until the official inventory submissions are reported to UNFCCC in 2015. 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 (EEA) using activity and/or emissions data at country level. The official submission of 2013 inventories to the United Nations Framework Convention on Climate Change (UNFCCC) will take place in 2015. The proxy estimates greatly improve the timeliness of information on GHG emissions and are used for analysis of emission trends and progress to EU climate targets.

2013 presents a special case in GHG emissions reporting as it entails a change in the methodology and Global Warming Potentials (GWPs) used to estimate non-$CO_2$ GHG gases. Under the UNFCCC rules, the official GHG inventories for 2013, to be submitted in 2015, will have to follow the 2006 IPCC Guidelines for national inventories and use the GWPs from the IPCC Fourth Assessment Report (AR4). These changes will reduce the comparability of the 2013 estimates with the previous inventories, in particular in areas where the revised IPCC methodologies will trigger changes in the methods used. As it is impossible to accurately quantify the different impacts arising from these changes on the 2013 inventory estimates, it is expected that the approximated estimates will show larger deviations relative to the final inventories submitted in 2015 than the approximated results for the past years.

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 of July. Chapter 3 is based on EEA proxy estimates for all Member States. The estimates in both chapters are based on GWPs from the IPCC Second Assessment Report (SAR) However, for reasons of consistency the paragraphs referring to the split between EU ETS and non-ETS emissions are based on GWPs from the IPCC AR4 and the scope-corrected ETS data for 2012.

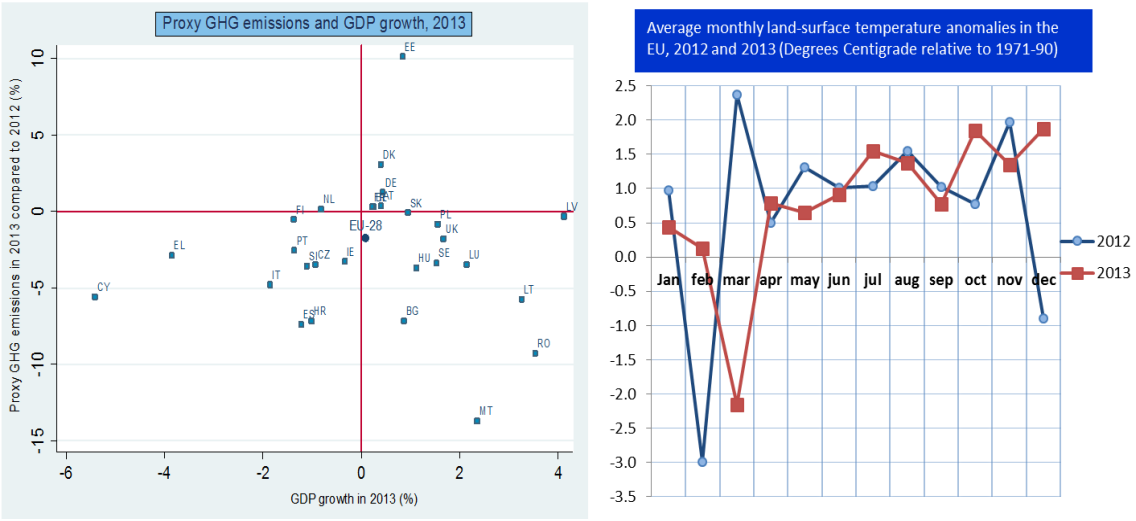
[1] Regulation (EU) 525/2013 of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions (EU MMR).

**Proxy GHG emission estimates for 2013 at EU level**

The 2013 inventory estimates indicate that for the EU-28 emissions continued to decrease slightly between 2012 and 2013. Compared to the 2012 official emissions reported to the UNFCCC and published earlier this year, the fall in emissions between 2012 and 2013 is estimated to be – 80.0 million tonnes of $CO_2$-equivalents (Mt $CO_2$-eq) or – 1.8 % for the EU-28 (total GHG emissions without LULUCF). For EU-28, total GHG emissions in 2013 are estimated to be – 20.7 % below 1990 emissions.

The 1.8 % emission decrease for EU-28 came along with a slight increase in Gross domestic product (GDP) of 0.1 % on average in 2013 compared to 2012. As in 2012, notwithstanding economic developments in specific sectors and countries, there was no common pattern between GDP and GHG emissions on average for the EU in 2013. The economic situation in the EU improved during 2013 compared to 2012, where GDP had contracted by – 0.5 %. Yet, GHG emission reductions in 2013 compared to 2012 were even larger than in 2012 compared to 2011 (1.8 % and 1.3 %, respectively). Some Member States achieved significant emission reductions in 2013 while also recording positive economic growth (see figure ES.0).

**Figure ES.0 GHG emissions, GDP growth and monthly temperatures in the EU, changes 2012-2013**




Note: GDP from DG ECFIN's Ameco database, European Commission. Average monthly land-surface temperatures from the E-OBS dataset, EU-FP6 project ENSEMBLES (http://ensembles-eu.metoffice.com) and the data providers in the ECA&D project (http://www.ecad.eu) (Haylock et al., 2008).

Source: EEA.

For the understanding of emission trends, climate factors need to be considered as well. The winter in Europe was generally warmer in 2013 than it was in 2012. Higher winter temperatures led to lower heating demand and lower emissions from the residential and commercial sectors[2].

Figure ES.4 shows the expected change in total GHG emissions in 2013 broken down by European Emissions Trading System (ETS) and non-ETS sectors for the EU and by Member State. Between 2012 and 2013 emission reductions in the EU-28 were greater for the installations covered by the ETS (a decline in emissions of – 4.3 %) (see Figure ES.4) than they were in the non-ETS sectors (where emissions remained at a relatively stable level, growing by 0.2 %).

On a sectoral basis, the largest absolute emission reduction in the EU occurred in the energy sector (i.e. all combustion activities). GHG emissions fell by – 80.7 Mt $CO_2$-eq (– 2.2 %) across the EU-28. This decrease in emissions in the energy sector reflects the decline of gross inland energy consumption in the EU-28 in 2013. Within the energy sector, emissions decreased mostly in energy industries (– 59.5 Mt $CO_2$-eq), manufacturing industries and construction (– 10.1 Mt $CO_2$-eq) as well as for transportation (– 11.3 Mt $CO_2$-eq).

Primary energy consumption in the EU-28 dropped by – 0.3 % and reached the lowest level since 1995. The contribution of fossil fuels to the energy mix declined while renewables further increased.

Based on Eurostat monthly fuel consumption data (Eurostat, 2014), total fuel consumption in the EU fell by – 2.5 %, with different trends for the different fossil fuel types. Coal consumption dropped most significantly by – 4.0 %. Natural gas consumption fell by – 0.7 % and consumption of liquid fuels was reduced by – 2.5 %. The changes in solid fuel consumption between 2012 and 2013 are strongly connected with the trends in electricity generation. Hydroelectric generation increased by 8 % in the EU with strong regional differences: south-eastern Europe experienced high rainfalls and a very favourable year for hydro electricity production, while the northern countries faced the opposite conditions with low rainfall and declining net hydro generation.

Electricity production from renewable sources other than hydro increased considerably. Net wind generation grew by about 20 % in the EU (Eurostat, 2013). Also solar consumption continued with a strong growth by 17 %. Thus, the use of renewables continues to play an important role in GHG mitigation efforts by the EU and its Member States.

Nuclear electricity production across the EU-28 decreased slightly by – 1 % in 2013 compared to 2012 according to Eurostat monthly data.

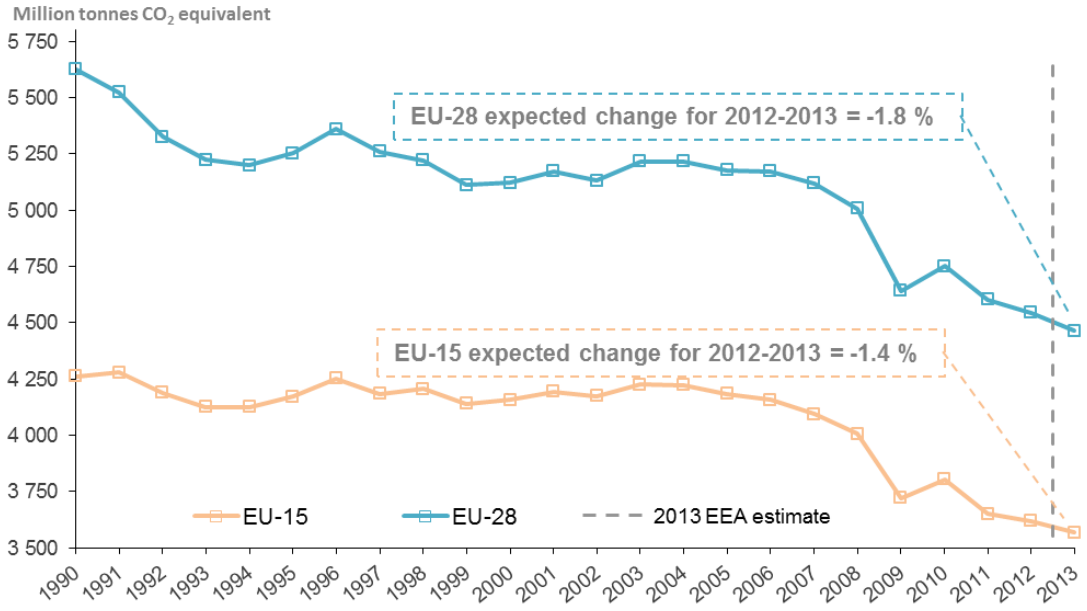
GHG emissions from industrial processes increased slightly in 2013 compared to 2012, up by 0.8 % in the EU-28. Emissions from mineral products fell by – 1.4 % in the EU-28 in 2013 compared to 2012. This is consistent with the decrease in emissions from cement and lime production under the EU ETS in the same period. Emissions released by metal production rose by 3.3 % in the

[2] Data based on the E-OBS, EU-FP6 project ENSEMBLES. No heating degree days available from Eurostat for the year 2013 at the time of production of this report.

EU-28 between 2012 and 2013. Emissions from chemical production remained relatively stable in the EU-28 (falling by only – 0.3 % between 2012 and 2013).

Figure ES.1 shows the emission trend for total GHG emissions without LULUCF in the EU-15 and EU-28 in the period 1990–2013 ([3]).

**Figure ES. 1 Trends in total GHG emissions**




Note: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC for the years 1990-2012 as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR.

Source: EEA

### Change in GHG emissions in the period 1990–2013

Figure ES.2 presents the estimated change in GHG emissions for each Member State between 1990 and 2013 ([4]).

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

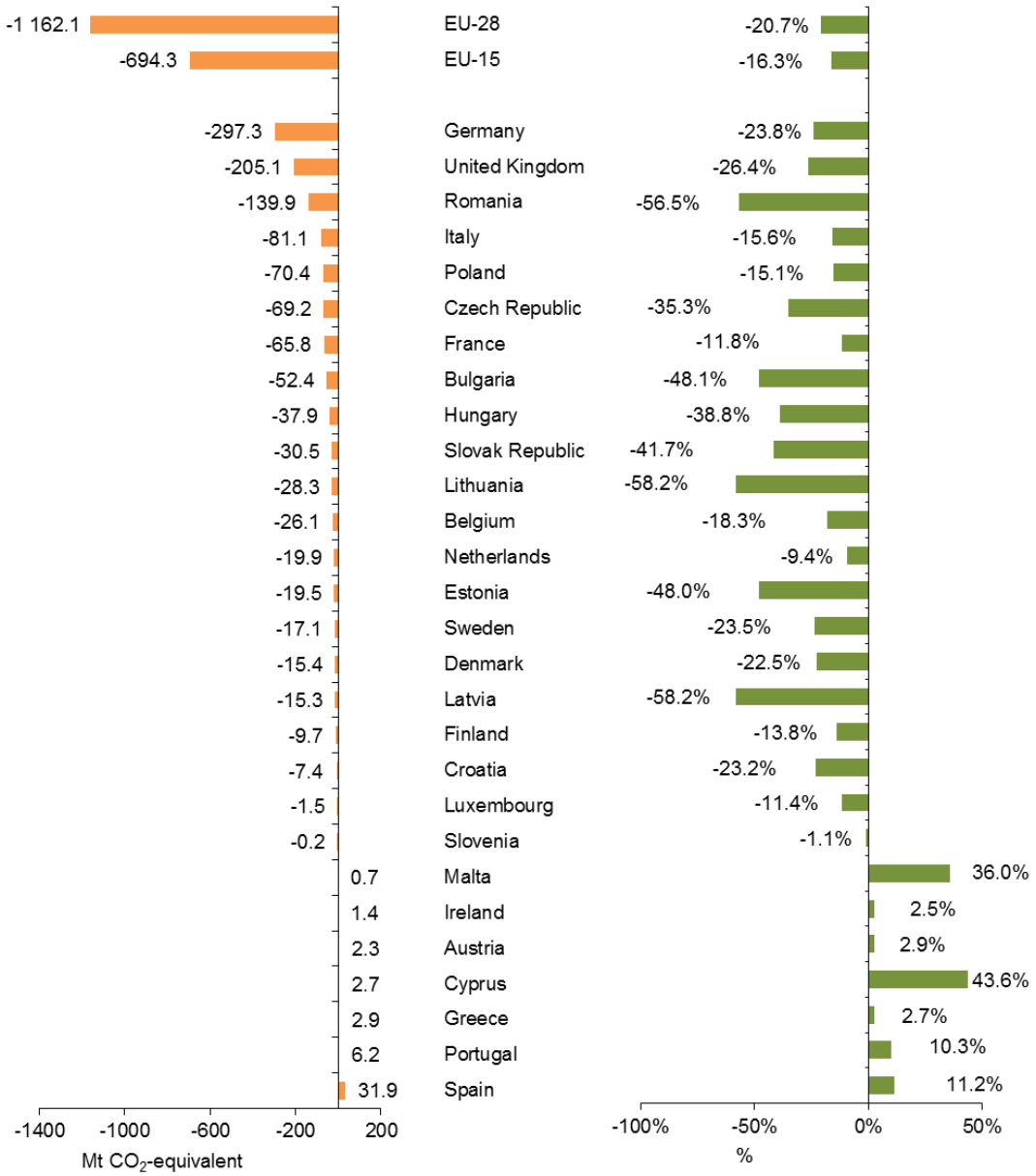
[4] The percentage change cannot be directly compared to the emission reduction obligations under the Kyoto Protocol and the Effort Sharing Decision because Member State net balances under the ETS need to be taken into account and the fixed base-year emissions are not identical to the latest recalculation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

Based on these 2013 estimates, total EU-15 emissions in 2013 will be 16.3 % below the 1990 level and 16.6 % below base year level. For EU-28, total GHG emissions excluding LULUCF in 2013 are estimated to be almost 20.7 % below 1990 emissions. Including $CO_2$ emissions from international aviation the reduction in total GHG emissions would reach 19.3 % in 2013 — less than a percentage point from the EU's internal 20 % emission reduction target.

A wide range of factors and policies (climate-related and non climate-related) have contributed to the long-term decline in GHG emissions in the EU, particularly for $CO_2$. These include improvements in energy efficiency, the shift to less carbon-intensive fossil fuels, and the strong increase in renewable energy use[5]. Implementation of the EU's Climate and Energy Package should lead to further reductions in emissions. 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 fluorinated gases (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.

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

**Figure ES. 2 Member States emissions, change 1990-2013**




Note: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR.

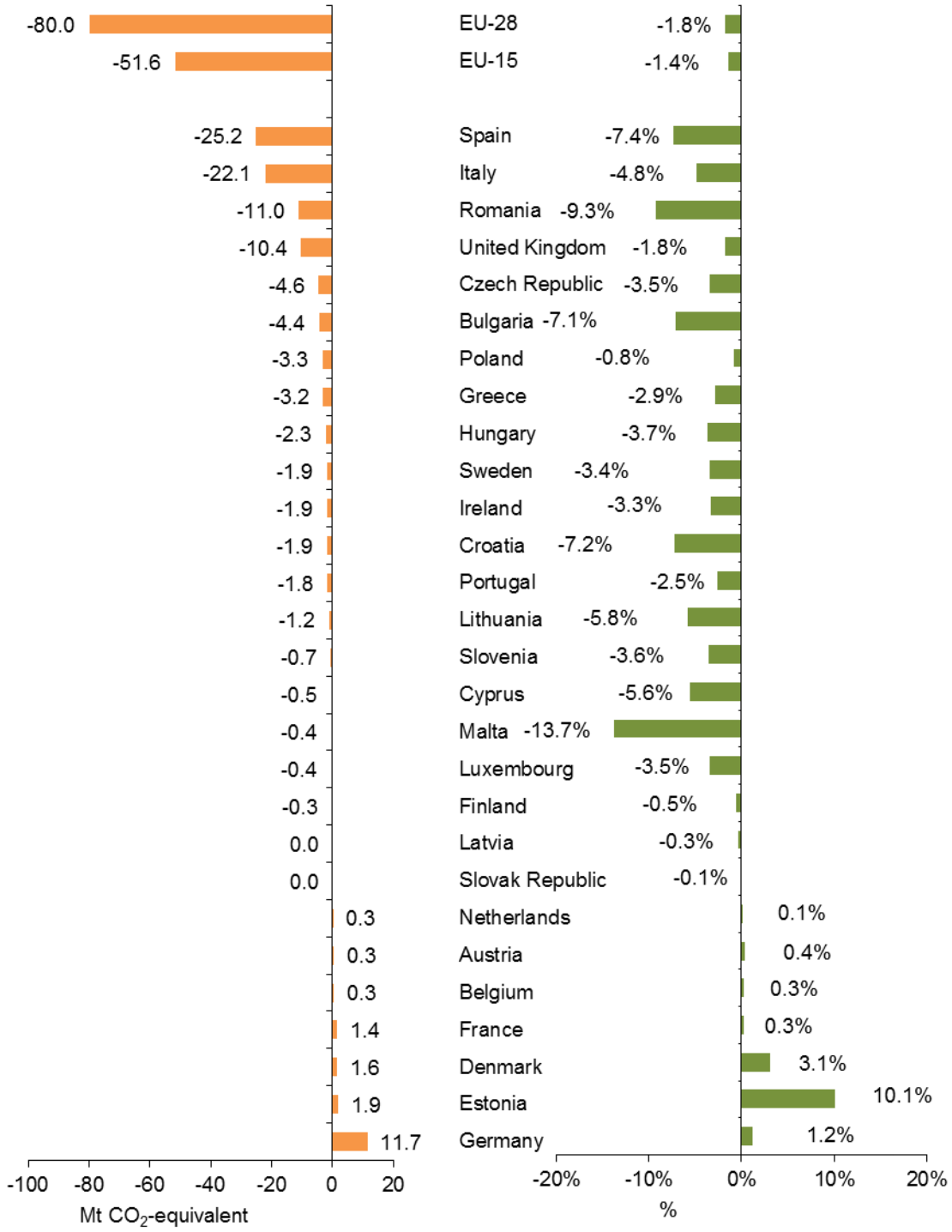
Source: EEA

## Change in GHG emissions in the period 2012–2013 at Member State level

As Figure ES.3 illustrates, GHG emissions decreased in 21 Member States (Spain, Italy, Romania, the United Kingdom, Czech Republic, Bulgaria, Poland, Greece Hungary, Sweden, Ireland, Croatia, Portugal Lithuania, Slovenia, Cyprus, Malta, Luxembourg, Finland, Latvia and Slovakia). The largest absolute decrease of emissions occurred in Spain (– 25.2 Mt $CO_2$-eq or – 7.4 % compared to 2012), Italy (22.1 Mt $CO_2$-eq or – 4.8 % compared to 2012), followed by Romania (11.0 Mt $CO_2$-eq or 9.3 %) and the United Kingdom (– 10.4 Mt $CO_2$-eq or – 1.8 %). The largest

relative fall in emissions compared to the previous year took place in Malta (– 13.7 %), followed by Romania (– 9.3 %), Spain (– 7.4 %), Croatia (– 7.2 %) and Bulgaria (– 7.1 %). The largest absolute growth in emissions occurred in Germany (11.7 Mt $CO_2$-eq or 1.2 %) and the largest relative increase in Estonia (10.1 %). Chapter 2 of the main report includes explanations for some of the change in emissions by Member State.

*Figure ES. 3 Member States emissions, change 2012-2013*




Note: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR.

Source: EEA

Twenty-one Member States submitted preliminary 2013 GHG data to the European Commission and the EEA by 31 July 2014. Austria, Belgium, Croatia, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Slovakia, Slovenia and Spain submitted complete emissions in the form of Common reporting format (CRF) Summary 2 tables. Denmark, Greece Sweden and the United Kingdom submitted largely complete CRF Summary 2 tables[6].

According to the country estimates, as shown in Figure ES.3, the expected change in GHG emissions in 2013 compared to 2012 is as follows: Austria (+ 0.4 %), Belgium (+ 0.3 %), Croatia (– 7.2 %), Denmark (+ 3.1 %), Estonia (+10.1 %), Finland (– 0.5 %), France (+ 0.3 %), Germany (+ 1.2 %), Greece (– 2.9 %), Hungary – 3.7 %), Italy (– 4.8 %), Latvia (– 0.3 %), Lithuania – 5.8 %), Malta (– 13.7 %), the Netherlands (+ 0.1 %), Poland (– 0.8 %), Slovakia (– 0.1 %), Slovenia (– 3.6 %), Spain (– 7.4 %), Sweden (– 3.4 %) and the United Kingdom (– 1.8 %).

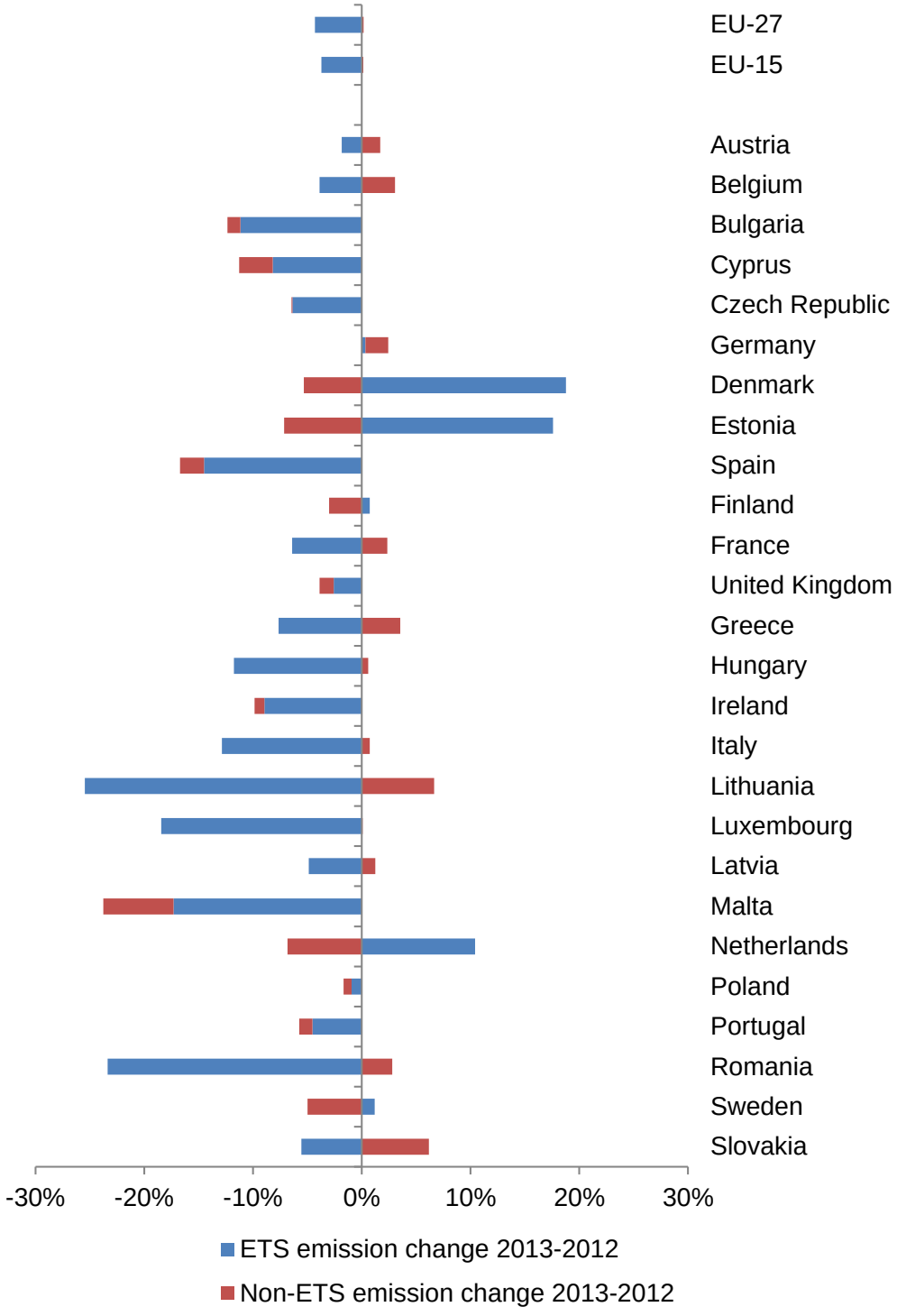
Using the available proxy emission estimates by Member States, EU-28 emissions are expected to decrease by 1.8 % between 2012 and 2013 (and matching to 1.8 % when using EEA proxy estimates only).

In general, the preliminary estimates from both sources (i.e. both EEA-sourced proxy data and Member States' own estimates) matched well with differences smaller than ± 2 %, except for Croatia (where the difference was 4.5 %), Greece (5.0 %), Lithuania (3.1 %), Malta (2.3 %) and Slovakia (3.1 %).

Official 2013 GHG emissions for the EU will be available in the late May or early June 2015, when the EEA publishes the EU GHG inventory 1990–2013, and the inventory report 2015 for submission to the UNFCCC.

[6] Luxembourg submitted proxy data on 14th August 2014. As this submission was after the deadline, proxy data of Luxembourg could not be taken into account in the calculations of the EU proxy but it is presented in Annex 5.1 for transparency reasons. Belgium submitted revised proxy data on 15th September 2014. As these revised data were submitted after the deadline, only the proxy data of Belgium's first submission before 31/07 were taken into account.

*Figure ES. 4 ETS and non-ETS emissions, change 2012-2013*




**Note:** EU-27 as Croatia only joined in EU ETS in 2013

**Source:** EU 2014 submission to UNFCCC for 2012, proxy estimates for 2013 and verified emissions from European Union Transaction Log (EUTL) as of August 2014. The split between ETS and non-ETS is based on GWPs from the AR4 and the scope corrected ETS data for 2012 (see section 2.3 of the full report).

## 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 X therefore include data up to the year X–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 is not always optimal and does not 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 X–2 basis, Kyoto registries and EU ETS information are available on a year X–1 basis. Verified EU ETS emissions are therefore already available for 2013 (EEA, 2014b).

There are clear advantages in generating proxy GHG estimates for all sectors. Under the Kyoto Protocol, the EU-15 took on a common commitment to reduce emissions by 8 % between 2008 and 2012 compared to emissions in the base year. When Member States set national emission caps for installations under the ETS for the period 2008–2012, they allocated part of their Kyoto emission budget (Kyoto Assigned Amounts) to the EU ETS and fixed the overall contribution of the ETS sectors towards reaching Kyoto national targets. ETS information runs on a year X–1 timeline but success in reducing emissions from sectors not covered by the EU ETS (running on a year X–2 timeline) will determine whether governments need to use Kyoto flexible mechanisms to achieve their targets.

Starting this year, 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 X–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

The present report sets out estimated GHG emissions for 2013 based on national EU Member States estimated GHG emissions, submitted to EEA by 31 July 2014 (see Annex I). From these data, aggregated EU-15 and EU-28 proxy 2013 GHG emission estimates were derived (see Chapter 2).

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 X–1 (in this case 2013). 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 Union 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 X–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 GHG estimates in this report have been compiled by the EEA's European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM). Chapter 2 shows the complete dataset of EU proxy GHG emission estimates, based on the submissions made by Member States and EEA's gap-filling of the remaining Member States which did not submit, where applicable. Chapter 3 shows the proxy GHG emission estimates by Member State based entirely on the methods and data sources developed by the EEA and its ETC/ACM as described in Annex III. The detailed results for each Member State are shown in Annex I and Annex II of this report in order to ensure complete transparency regarding the different GHG estimates available.

The EEA has used the proxy estimates of 2013 GHG emissions produced by Member States to assess progress towards GHG emission targets in its annual 'Trends and projections' report (to be published end-October). In that report, the EEA's proxy estimates for 2013 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 the EEA and its ETC/ACM (see Annex II). In recent years, a methodology to estimate GHG emissions using a 'bottom-up' approach has been developed (see Annex III). 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 (X–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.

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

The EEA estimates (see Chapter 3 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.

# 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 around 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 X-1 by 31 July every year. 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.

In relation to the scope, the Proxy GHG estimates cover 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.

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 X-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 and its Member States for the year 2013. 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 2013 data to the United Nations Framework Convention on Climate Change (UNFCCC) will take place in 2015.

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

In addition, the 2009 EU's Climate and Energy Package encourages trading and non-trading sectors to run on similar timelines. The Package represents the EU's response to limiting the rise in global average temperature to no more than 2 °C above pre-industrial levels. To achieve this

Member States agreed to reduce total EU GHG emissions by 20% compared to 1990 by 2020. Both ETS and non-ETS sectors will contribute to the 20% objective. Minimising overall reduction costs to reach the 20 % objective implies a 21% reduction in emissions from EU ETS compared to 2005 by 2020 and a reduction of approximately 10% compared to 2005 by 2020 for non-trading sectors. From 2013, there will be an EU-wide cap on emissions from ETS installations (instead of national allocation plans as under Kyoto) and national targets for the non-trading sectors. As with Kyoto, meeting the 2020 national targets will by and large be determined by how countries reduce emissions in the non-trading sectors. Proxy GHG estimates can therefore help tracking progress to towards EU and national targets for 2020. The EEA has also used the proxy estimates of 2013 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 2013 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. This report marks a change of approach in the way that these Member States proxies are used. 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 as much use as possible of the Member States proxy inventories. In effect the proxy inventory for the whole EU-28 is based directly on the Member States proxies. Missing or incomplete 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 0 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' http://www.eea.europa.eu/publications/different-emission-estimates-by-eu-bodies

**Table 0 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) & 27 May (final submission) | X-2 | EU and its 28 Member States | All gases and sectors (100% of emissions) | EU MMR (525/2013) |
| Proxy GHG inventory | EEA | 30 September | X-1 | EU and its 28 Member States 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 | X-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 | April / May | X-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 | X-1 | Global coverage | All gases and sectors (100% of emissions) | JRC's work programme |

# 2. European GHG emissions in 2013 using Member States proxy data

Twenty-one Member States submitted preliminary 2013 GHG data to the European Commission and the EEA by 31 July 2014. Austria, Belgium, Croatia, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Malta, Netherlands, Poland, Slovakia, Slovenia and Spain submitted complete emissions in the form of CRF Summary 2 tables. Denmark, Greece Sweden and United Kingdom submitted largely complete CRF Summary 2 tables. Where emissions from a complete sector were missing, this was gap filled using GHG emissions from the EEA proxy (see chapter 3). If emissions for a sector were submitted but data for subsectors and/or gases were missing, the Member State preliminary data was distributed to subsectors/gases using Member States preliminary data and shares calculated by EEA proxy. Where LULUCF data was provided, this data was omitted (NE), as for the EU-15 and EU-28 proxy GHG inventory, emissions from LULUCF are not calculated. As Bulgaria, Cyprus, Czech Republic, Ireland, Luxembourg, Portugal and Romania did not submit preliminary GHG inventories by 31 July 2014, GHG emissions from EEA proxy was used for these Member States. Member States data as submitted is presented in chapter 5.1.[7]

The inventory reporting year 2013 is special because under the UNFCCC countries are required to use revised Global Warming Potentials and updated inventory methodologies based on the 2006 IPCC Guidelines for the national GHG inventories for the reporting year 2013. These changes will reduce the comparability of the 2013 estimates with the previous inventories, in particular in areas where the revised IPCC methodologies will trigger changes in the methods used. As it is impossible to predict the quantitative effects arising from these changes on the 2013 inventory estimates, it is expected that the approximated estimates will show larger deviations relative to the final inventories submitted in 2015 than the approximated results for the past years.

This also has a special implication on the calculation of ETS / ESD shares. The approximated GHG inventory is calculated using global warming potentials (GWP) from the IPCC Second Assessment Report: Climate Change 1995 (SAR) but available ETS data is already calculated using GWPs from the IPCC Fourth Assessment Report: Climate Change 2007 (AR4). Therefore, total estimated emissions for 2013 have to be converted applying GWP correction factors. For further methodological details, see chapter 2.3.)

[7] Luxembourg submitted proxy data on 14th August 2014. As this submission was after the deadline, proxy data of Luxembourg is presented in section 5.1.18 for transparency reasons, but was not taken into account in the calculations of this report. Belgium submitted revised proxy data on 15th September 2014. As these revised data was submitted after the deadline, only the proxy data of the first submission was taken into account.

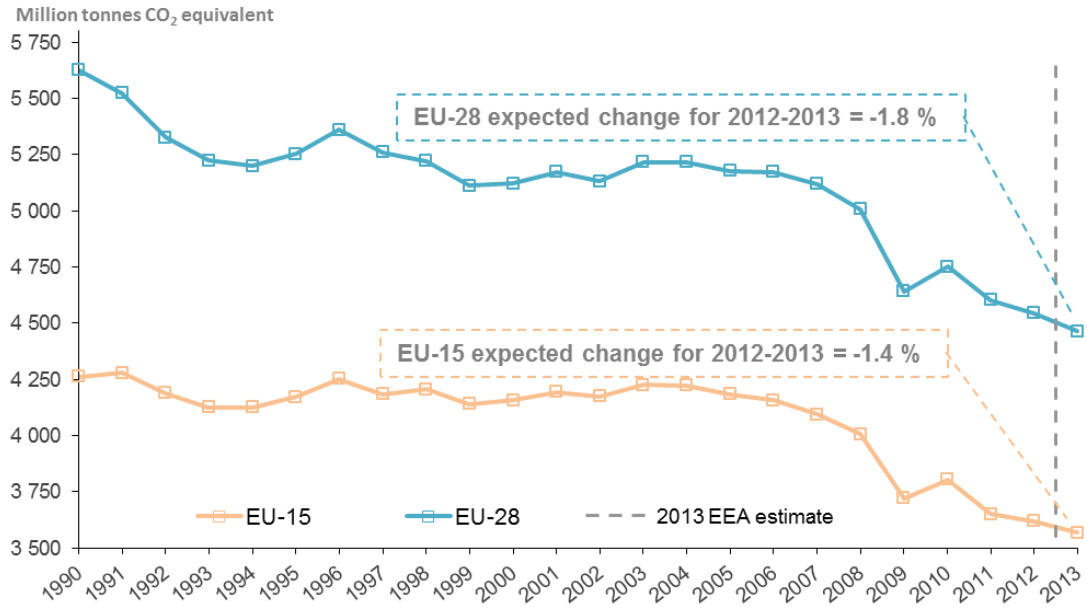
## 2.1 Trends and general results

The 2013 inventory estimates indicate that for EU-28 emissions continued to decrease slightly between 2012 and 2013. Compared to the 2012 official emissions published earlier this year, the fall in emissions between 2012 and 2013 is estimated to be -80.0 Mt CO2eq or -1.8 % for the EU-28 (total greenhouse gas emissions without LULUCF). For EU-28, total GHG emissions in 2013 are estimated to be -20.1 % below 1990 emissions.

The 1.8% emission decrease for EU-28 came along with a slight increase in GDP of 0.1% on average in 2013 compared to 2012. As in 2012, notwithstanding economic developments in specific sectors and countries there was no common pattern between GDP and GHG emissions on average for the EU in 2013. The economic situation in the EU improved during 2013 compared to 2012, where GDP had contracted by -0.5%. Yet, GHG emission reductions in 2013 were even larger than in 2012 (1.8% and 1.3%, respectively). Some Member States achieved significant emission reductions in 2013 while also recording positive economic growth.

The winter in Europe was generally warmer in 2013 than it was in 2012. Higher winter temperatures led to lower heating demand and lower emissions from the residential and commercial sectors.

*Figure 1 Trends in total greenhouse gas emissions*




Note: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC for the years 1990-2012 as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR.

On a sectoral basis, the largest absolute emission reduction in the EU occurred in the Energy sector (i.e. all combustion activities). GHG emissions fell by -80.7 Mt $CO_2$eq (-2.2 %) across the

EU-28. This decrease in emissions in the Energy sector reflects the decline of gross inland energy consumption in the EU-28 in 2013. Within the energy sector, emissions decreased mostly in energy industries (-59.5 Mt CO2eq) and manufacturing industries and construction (-10.1 Mt $CO_2$eq) as well as for transportation (-11.3 Mt $CO_2$eq).

Primary energy consumption in the EU-28 dropped by -0,3 % and reached the lowest level since 1995 and the contribution of fossil fuels to the energy mix declined while renewables further increased.

Based on Eurostat monthly fuel consumption data (Eurostat, 2014), total fuel consumption in the EU fell by -2.5 %, with different trends for the different fossil fuel types: Coal consumption dropped most significantly by -4.0 %. Natural gas consumption fell by -0.7 % and consumption of liquid fuels was reduced by -2.5 %. Many Member States experienced strong declines in coal consumption between 2012 and 2013: Austria by -7.4 %, Bulgaria by -14.8 %, Spain by -31.7 %, Greece by -12.8 %, Hungary by -10 %, Ireland by -15.1 %, Italy by -10.5 %, Romania by -28.0 % and Slovenia by -17.1 %. Few Member States showed increasing coal consumption, most pronounced was the increase in Denmark by 26.6 %, followed by Lithuania with 17.4 % growth, Estonia with 7.9 %, Finland with 7.8 %, Croatia with 6.8 % and France with 6.7 % (Eurostat, 2014). These changes in solid fuel consumption between 2012 and 2013 are strongly connected with the trends in electricity generation:

Hydroelectric generation increased by 8 % in the EU with strong regional differences: Southeastern Europe experienced high rainfalls and a very favourable year for hydro electricity production. In Portugal net hydro generation grew by 142 % compared to the previous year, in Spain by 77.5 %, Greece by 40.9 %, Romania by 23.7 %, Italy by 21.2 %, Slovenia by 20.6 % and Bulgaria by 19.0 % (Eurostat, 2014). The northern countries faced the opposite conditions with low rainfall and declining net hydro generation, in particular in Finland (-24 %), Sweden (-22 %), Denmark (-22 %), Latvia (-21 %) and Norway (-10 %). In years with low rainfall in the Northern electricity market, Denmark is increasing its electricity generation from thermal plants which resulted in a strong increase in coal consumption in Denmark in 2013 (26.6 %).

In the northern parts of Europe, the winter in 2013 was longer and colder compared to the year before, e.g. in Germany, which was one of the reasons for an emission increase in Germany by 1.2 %.[8]

Electricity production from renewable sources other than hydro increased considerably. Net wind generation grew by about 20 % in the EU (Eurostat, 2013).[9] Wind generation grew in all

[8] Germany published approximated data in a press release and additional explanation on trends in an annex on 10th March 2014. Available on: http://www.umweltbundesamt.de/sites/default/files/medien/478/dokumente/pi-2014-10_treibhausgasausstoss_im_jahr_2013_um_12_prozent_erneut_leicht_gestiegen.pdf

[9] 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.

Member States in 2013 except in Hungary with very high growth rates: Romania (91 %), Finland (56 % - although with very small contribution to total generation), Croatia (47 %), United Kingdom (42 %), Sweden (37 %), Poland (37 %) and Bulgaria (32 %). In six Member States (Denmark, Germany, Ireland, Spain, Lithuania, Portugal) net wind generation contributed with more than 10% to total net electricity generation in 2013, with the highest share in Denmark (34 % wind generation in total net electricity generation).

Due to the lack of data on solar generation from Eurostat for 2013 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 other renewable sources grew by 12.6 % with a continued strong growth by 17 % for solar power (BP, 2014). In three large Member States solar consumption arrived at a considerable share of total energy consumption: In Germany solar consumption increased by 14 % and reached a share of 24% in total consumption, in Italy solar consumption grew by 10 % and attained a share of 18 % in total consumption and in Spain solar consumption expanded by 10 % and achieved a share of 10.5 % in total consumption (BP, 2014).

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 renewable energy consumption (without hydro) is reported for many Member States such as Austria (13 %), Belgium (14 %), Bulgaria (33 %), Czech Republic (11 %), Denmark (9 %), France (8 %), Germany (8 %), Greece (9 %), Ireland (12 %), Italy (14 %), Lithuania (22 %), the Netherlands (8 %), Poland (26 %), Portugal (16 %), Romania (76 %), Spain (12 %), Sweden (14 %) and United Kingdom (34 %) (BP, 2014). Only Hungary (-2 %) showed decreasing consumption of renewable energy according to BP data.

Nuclear electricity production across the EU-28 decreased slightly by --1 % in 2013 compared to 2012 according to Eurostat monthly data. The largest increases in nuclear electricity generation occurred in Belgium (6 %) and Sweden (4 %). The largest decreases were in Bulgaria (-10 %), the Netherlands (-27 %) and Spain (-8 %).

Between 2012 and 2013 the emission reductions occurred in the installations covered by the European Emissions Trading Scheme (-4.3 %) for EU-27, whereas emissions from the Non-ETS sector kept at a stable level (0.2 %).

**Change in GHG emissions in the period 2012–2013 at Member State level**

Figure 2 illustrates the changes in emissions in Europe from 2012 to 2013. GHG emissions decreased in 21 Member States (Spain, Italy, Romania, United Kingdom, Czech Republic, Bulgaria, Poland, Greece Hungary, Sweden, Ireland, Croatia, Portugal Lithuania, Slovenia, Cyprus, Malta, Luxembourg, Finland, Latvia and Slovakia).[10] The largest absolute decrease of emissions occurred in Spain (-25.2 Mt $CO_2$eq or -7.4 % compared to 2012), Italy (-22.1 Mt $CO_2$eq or -4.8%

[10] Ordered by absolute contribution to the EU reduction

compared to 2012), followed by Romania (-11.0 Mt $CO_2$eq or -9.3 %) and United Kingdom (-10.4 Mt $CO_2$eq or -1.8 %). The largest relative fall in emissions compared to the previous year took place in Malta (-13.7 %), followed by Romania (-9.3 %), Spain (-7.4 %), Croatia (-7.2 %) and Bulgaria (-7.1 %). The largest absolute growth in emissions occurred in Germany (11.7 Mt $CO_2$eq or 1.2 %) and the largest relative increase in Estonia (10.1 %).

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

*Member States with decreasing emission trends*

Spain experienced a strong reduction of emissions by -7.4 % or -25.2 Mt CO2eq in 2013 compared to 2012. This is due to a large decrease in solid fuel consumption for electricity generation (-31.7 %), but also reduced oil consumption (-6.6 %) and gas consumption (-7.7 %). Total fuel consumption fell by -12.6 % whereas net electricity generation only decreased by -2.2 %. The reduced use of fossil fuels was replaced by hydro generation which showed an increase of 77.5 % resulting from a very favourable hydro year in 2013. Wind generation also grew by 16.9 % to an absolute level equal to nuclear electricity generation. Nuclear generation declined by 7.5 %. In Spain also emissions from mineral products (cement industry) dropped by almost 10 %. The continuing economic crisis is reflected by rather strong decreases in emissions from manufacturing industries and from mineral products through reduced consumption of cement for the construction industry).

Italy is the fourth largest GHG emitter in Europe. In 2013 emissions fell by -22.1 Mt CO2eq or -4.8% compared to 2012. Similar to Spain, fossil fuel consumption showed a significant decline: solid fuel consumption dropped by -10.5 %, oil consumption by -5.1 % and gas consumption by -6.5 %. The strong decrease in net thermal electricity generation by -10.9 % was compensated by an increase in hydro generation of 21.2 % and of wind generation by 13.5 %. Thus, Italy also profited from good rainfall conditions. Additional emission reduction effects are likely from the continued economic crisis with an almost 10% decrease of emissions from manufacturing industries and a decline of emissions from mineral products which is related to less construction activities.

In Romania emissions declined by -11.0 Mt CO2eq or -9.3 % compared to the previous year. In Romania, solid fuel consumption fell substantially by -28.0 %, liquid fuel consumption by -5.0% and gas consumption by -7.5 %. In total net thermal electricity generation declined by -22.5 % which was also compensated by hydro (increase by 24 %) and wind generation (increase by 91 %). Favourable weather conditions seemed to have reduced heating demand.

In Bulgaria the drop in emissions was -4.4 MtCO2eq or -7.1 % compared to 2012. Also in Bulgaria solid fuel consumption showed a strong decline of -14.8 % and oil consumption by -4.5 % while gas consumption increased by 4.3 %. Net electricity generation in general decreased by -6.6 % with a strong reduction in thermal generation by -12.3 % and nuclear generation by -10.4 % while hydro generation grew by 19.0 %, wind generation by 32 % and electricity exports were reduced by -11 %. In Bulgaria also coal production and related fugitive emissions decreased (fugitive emissions dropped by -25 %).

In the United Kingdom, emissions decreased by -10.4 Mt CO2eq or -1.8% in 2013. This is in contrast to the preceding increase of emissions by 3.1 % in 2012. Also in the United Kingdom the decline in emissions is due to reduced consumption of fossil fuels, in particular coal which dropped by -4.0 % and liquid fuels which decreased by -2.3 %. Net thermal electricity generation was -5.0 % lower, which was compensated by higher wind generation (42 %) and higher electricity imports (5 %) and a generally reduced net electricity generation of -1.5 %.

*Member States with increasing emission trends*

In Germany, the largest European economy and the largest GHG emitter, there was an emissions increase of 11.7 Mt $CO_2$eq or 1.2 % in 2013. However, Germany continues to hold first place for the largest emissions reduction relative to 1990 levels. The net GHG increase in 2013 was due to higher use of solid fuels for electricity production as well as higher gas and oil for heating in households and the commercial sector due to a colder winter. There was also a significant increase in net electricity exports. The continued strong increase in renewables helped contained otherwise higher GHG emissions in 2013.

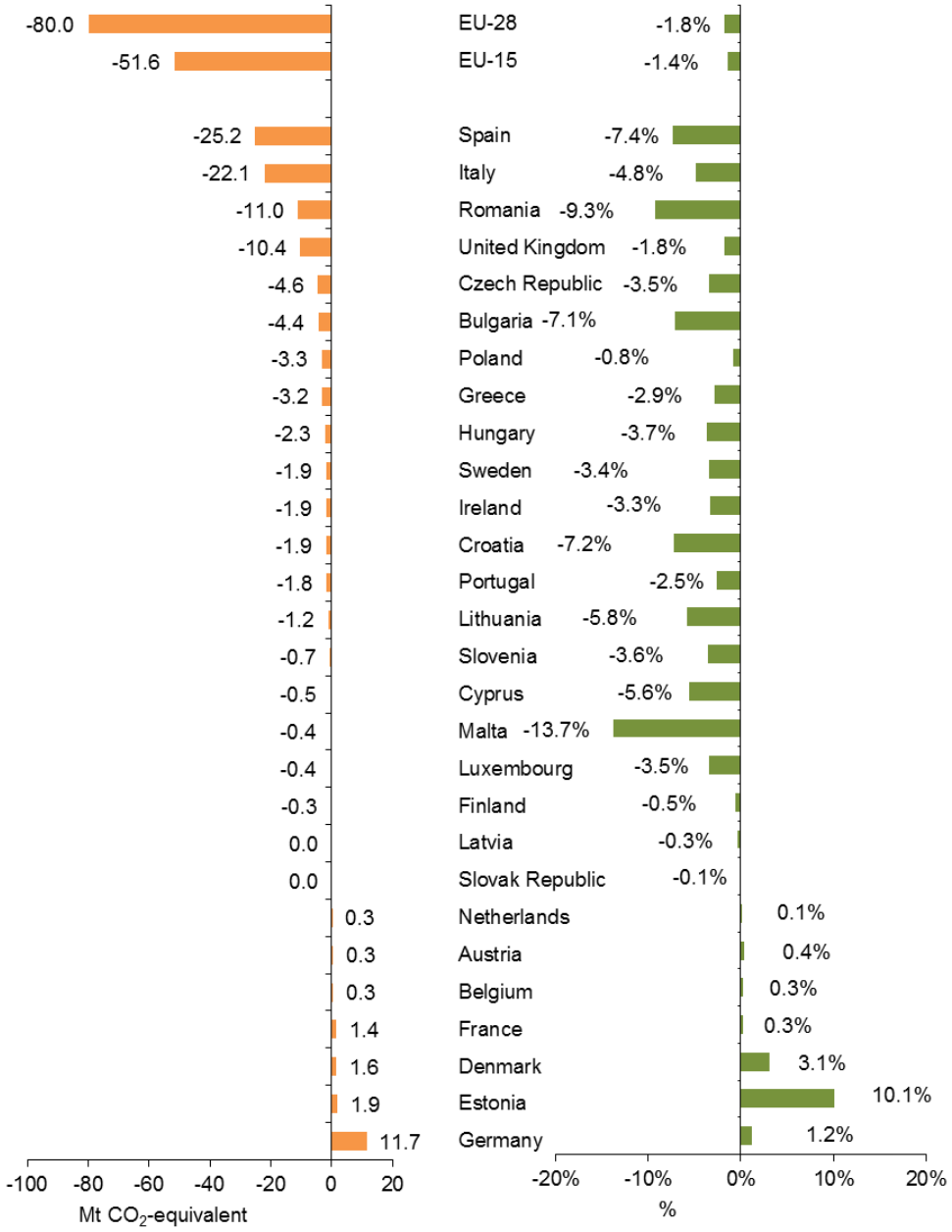
Estonia experienced the highest relative emission increase with 10.1 % compared to 2013 and an absolute increase by 1.9 Mt $CO_2$eq. Coal consumption grew significantly by 7.9 %. This fits with an increase in thermal generation of 10 % and also total net electricity generation rose by 10 %. Wind generation grew by 12.5 %, however has a small share in total generation. In Estonia also higher emissions from industrial processes contributed to the emission increase, in particular cement industry and chemical industry.

In Denmark the growth of emissions by 3.1 % or 1.6 Mt $CO_2$eq is related to higher coal consumption for power production (increase of 26.6 % in solid fuel consumption and of 15.4 % in net thermal electricity generation) due to lower electricity imports from the Nordic electricity market where Norway, Finland and Sweden experienced low rainfalls and low hydro generation. Wind generation increased by 14 % and reached a share of 33.6 % in net electricity generation which obviously helped to compensate the decline of -28 % in electricity imports. .

*Member States with relatively stable emissions compared to 2012*

In France emissions remained at a relatively constant level and only increased by 0.3 %. Relative to 1990, French emissions have fallen by -67.3 Mt $CO_2$eq or -12.1%. The small increase is due to increasing coal consumption (6.7 %) and natural gas consumption (3.1 %). The increased natural gas consumption is likely to be related to a colder winter similar to the situation in Germany. However, this increase in emissions was compensated by a decrease in transport emissions which is rather unique in France compared to other Member States. In France, nuclear energy generation remained relatively stable with a small decline of -0.3 % whereas hydro generation increased by 16 %.

*Figure 2 Member States emissions, change 2012-2013*




Note: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR.

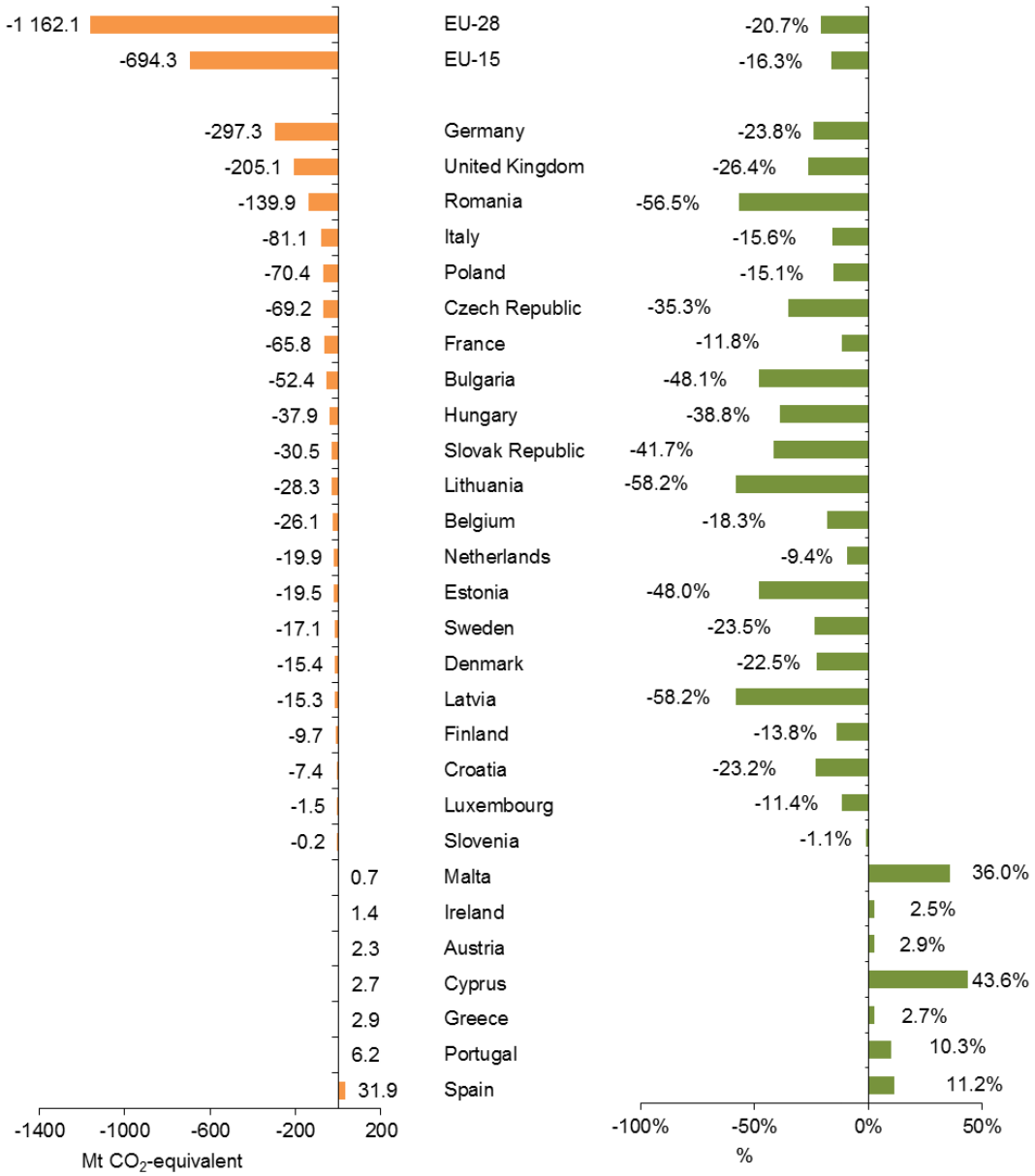
Source: EEA

[11]

Figure 3 shows the emission trend for total GHG emissions without LULUCF between the years 1990 and 2013. According to these estimates, total EU-15 emissions in 2013 will be 16.3 % below the 1990 level and 16.6 % below base year level. For EU-28, total GHG emissions in 2013 are estimated to be almost 20.7 % below 1990 emissions.

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

Figure 3 Member States emissions, change 1990-2013




**Note**: Total GHG emissions without LULUCF, based on the 2014 EU GHG inventory submitted to the UNFCCC as well as proxy estimates for 2013 submitted by Member States using the GWPs from the IPCC SAR. Error bars are not included in this year's graphs as the proxy inventory is now largely based on Member States own estimates. For analysis of last year's EEA proxy estimates for each member state and the subsequent reported emissions see Section 3.2.
Source: EEA

Table 1 and Table 2 show the detailed results for the EU-15 and the EU-28. Annex 5.1 includes summary tables for 2013 for each Member State as submitted by the Member States. Annex 5.2 includes summary tables for EU-28, EU-15 and each Member State as calculated by EEA.

*Table 1 Summary table of approximated GHG emissions for 2013 for EU-15 (total emissions without LULUCF)*

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

Inventory 2013
Submission
EU-15

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ (1) | $CH_4$ | $N_2O$ | HFCs (2) | PFCs (2) | $SF_6$ (2) | Total |
|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | |
| **Total (Net Emissions) (1)** | **2.938.842** | **288.597** | **258.351** | **73.048** | **2.949** | **5.962** | **3.567.848** |
| **1. Energy** | **2.774.463** | **38.813** | **26.881** | | | | **2.840.157** |
| A. Fuel Combustion (Sectoral Approach) | 2.756.156 | 13.010 | 26.848 | | | | 2.796.014 |
| 1. Energy Industries | 1.000.960 | 2.651 | 8.167 | | | | 1.010.026 |
| 2. Manufacturing Industries and Construction | 434.681 | 1.294 | 4.832 | | | | 439.985 |
| 3. Transport | 750.959 | 904 | 7.246 | | | | 757.203 |
| 4. Other Sectors | 563.829 | 8.146 | 6.330 | | | | 578.508 |
| 5. Other | 5.628 | 15 | 272 | | | | 10.193 |
| B. Fugitive Emissions from Fuels | 18.302 | 25.812 | 29 | | | | 44.143 |
| 1. Solid Fuels | 603 | 5.833 | 0 | | | | 6.436 |
| 2. Oil and Natural Gas | 17.799 | 19.979 | 29 | | | | 37.807 |
| **2. Industrial Processes** | **156.807** | **567** | **7.952** | **73.048** | **2.949** | **5.962** | **247.286** |
| A. Mineral Products | 83.929 | 20 | 0 | | | | 83.949 |
| B. Chemical Industry | 32.149 | 446 | 7.933 | | | | 40.528 |
| C. Metal Production | 40.076 | 101 | 20 | | 314 | 227 | 40.777 |
| D. Other Production | 351 | 0 | 0 | | | | 351 |
| E. Production of Halocarbons and SF6 | | | | 548 | 1.515 | 110 | 2.173 |
| F. Consumption of Halocarbons and SF6 (2) | | | | 50.213 | 720 | 4.972 | 55.905 |
| G. Other | 302 | 35 | 10 | 144 | 0 | 0 | 491 |
| **3. Solvent and Other Product Use** | **5.340** | | **1.981** | | | | **7.321** |
| **4. Agriculture** | | **162.348** | **210.461** | | | | **372.809** |
| A. Enteric Fermentation | | 119.946 | | | | | 119.946 |
| B. Manure Management | | 39.718 | 20.303 | | | | 60.021 |
| C. Rice Cultivation | | 2.141 | | | | | 2.141 |
| D. Agricultural Soils(3) | | 9 | 190.034 | | | | 190.043 |
| E. Prescribed Burning of Savannas | | 0 | 0 | | | | 0 |
| F. Field Burning of Agricultural Residues | | 534 | 124 | | | | 658 |
| G. Other | | 0 | 0 | | | | 0 |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **2.436** | **86.868** | **11.170** | | | | **100.478** |
| A. Solid Waste Disposal on Land | 0 | 74.753 | 1 | | | | 74.754 |
| B. Waste-water Handling | | 10.824 | 9.696 | | | | 20.520 |
| C. Waste Incineration | 2.418 | 76 | 168 | | | | 2.661 |
| D. Other | 19 | 1.215 | 1.309 | | | | 2.543 |
| **7. Other (as specified in Summary 1.A)** | | | | | | | |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | **3.567.848** |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE |

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

*Table 2 Summary table of approximated GHG emissions for 2013 for EU-28 (total emissions without LULUCF)*

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

Inventory 2013
Submission
EU-28

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ (1) | $CH_4$ | $N_2O$ | HFCs (2) | PFCs (2) | $SF_6$ (2) | Total |
|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | |
| **Total (Net Emissions) (1)** | **3.641.352** | **391.746** | **333.869** | **87.844** | **3.001** | **6.294** | **4.464.207** |
| **1. Energy** | **3.418.018** | **73.343** | **31.720** | | | | **3.523.081** |
| A. Fuel Combustion (Sectoral Approach) | 3.394.265 | 19.103 | 31.686 | | | | 3.445.054 |
| 1. Energy Industries | 1.338.608 | 2.866 | 9.722 | | | | 1.349.443 |
| 2. Manufacturing Industries and Construction | 516.998 | 1.527 | 5.245 | | | | 522.948 |
| 3. Transport | 873.407 | 1.176 | 9.085 | | | | 881.762 |
| 4. Other Sectors | 656.198 | 13.494 | 7.329 | | | | 677.224 |
| 5. Other | 8.955 | 39 | 304 | | | | 13.576 |
| B. Fugitive Emissions from Fuels | 23.749 | 54.249 | 30 | | | | 78.027 |
| 1. Solid Fuels | 2.740 | 17.639 | 0 | | | | 20.379 |
| 2. Oil and Natural Gas | 21.109 | 36.610 | 30 | | | | 57.748 |
| **2. Industrial Processes** | **213.744** | **983** | **11.394** | **87.844** | **3.001** | **6.294** | **323.261** |
| A. Mineral Products | 112.258 | 23 | 0 | | | | 112.281 |
| B. Chemical Industry | 43.632 | 779 | 11.370 | | | | 55.781 |
| C. Metal Production | 54.907 | 181 | 20 | | 339 | 231 | 55.718 |
| D. Other Production | 388 | 0 | 0 | | | | 388 |
| E. Production of Halocarbons and SF6 | | | | 548 | 1.515 | 110 | 2.173 |
| F. Consumption of Halocarbons and SF6 (2) | | | | 60.888 | 734 | 5.152 | 66.774 |
| G. Other | 2.559 | 35 | 14 | 144 | 0 | 2 | 2.755 |
| **3. Solvent and Other Product Use** | **6.725** | | **2.915** | | | | **9.640** |
| **4. Agriculture** | | **195.924** | **273.767** | | | | **469.700** |
| A. Enteric Fermentation | | 146.531 | | | | | 146.531 |
| B. Manure Management | | 46.442 | 29.394 | | | | 75.836 |
| C. Rice Cultivation | | 2.285 | | | | | 2.285 |
| D. Agricultural Soils(3) | | 9 | 244.198 | | | | 244.207 |
| E. Prescribed Burning of Savannas | | 0 | 0 | | | | 0 |
| F. Field Burning of Agricultural Residues | | 658 | 174 | | | | 832 |
| G. Other | | 0 | 0 | | | | 9 |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **3.060** | **121.496** | **14.168** | | | | **138.727** |
| A. Solid Waste Disposal on Land | 0 | 99.486 | 13 | | | | 99.499 |
| B. Waste-water Handling | 0 | 20.618 | 12.543 | | | | 33.160 |
| C. Waste Incineration | 3.041 | 78 | 202 | | | | 3.321 |
| D. Other | 19 | 1.314 | 1.413 | | | | 2.746 |
| **7. Other (as specified in Summary 1.A)** | | | | | | | |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | **4.464.207** |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE |

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

## 2.2 Sectoral results

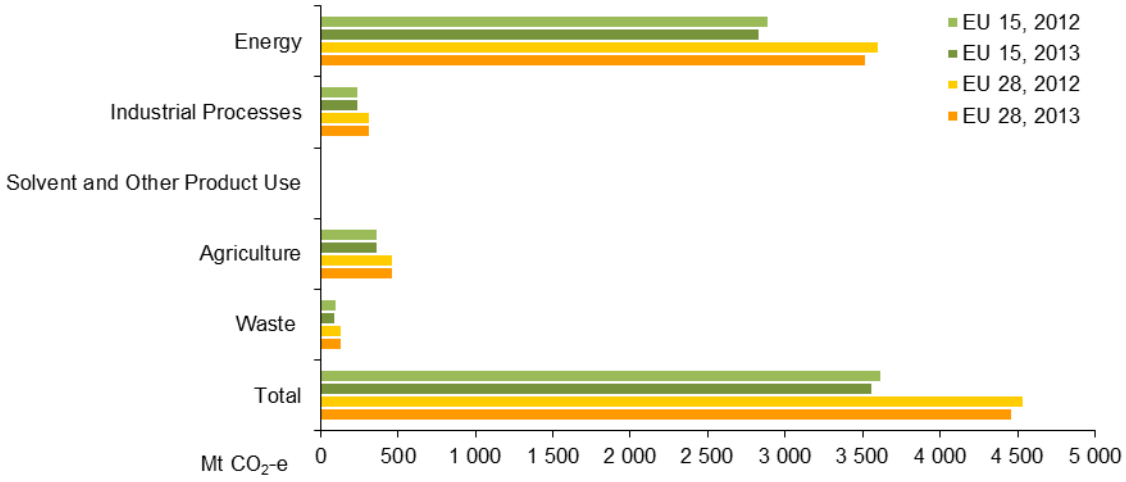
Table 3 and Figure 4 show the changes between 2012 and 2013 at sectoral level for the EU-15 and the EU-28.

*Table 3 Emissions by sector, change 2012-2013*

| | Emissions change between 2012 and 2013 | | | |
|---|---|---|---|---|
| | EU-15 | | EU-28 | |
| | Mt CO2eq | % | Mt CO2eq | % |
| **Energy** | -53.0 | -1.8% | -80.7 | -2.2% |
| **Industrial Processes** | 4.1 | 1.7% | 2.6 | 0.8% |
| **Solvent and Other Product Use** | -0.2 | -3.1% | -0.3 | -2.6% |
| **Agriculture** | -0.3 | -0.1% | 0.6 | 0.1% |
| **Waste** | -2.0 | -1.9% | -2.1 | -1.5% |
| **Total** | **-51.6** | **-1.4%** | **-80.0** | **-1.8%** |

**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

*Figure 4 Emissions by sector, change 2012-2013*




**Source**: EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

On a sectoral basis, the largest absolute emission reduction occurred in the Energy sector (i.e. all combustion activities). GHG emissions fell by -80.0 Mt CO2eq (-1.8 %) across the EU-28. More detailed explanations for the trends in the energy sector were already provided in the general section above.

The greenhouse gas emissions from Industrial Processes increased slightly compared to the previous year (EU-28 0.8 %), mainly from Chemical Industry and Metal Production. Emissions in the sector Solvent and Other Product Use are already minor but decreased further (EU-28 -2.6 %). In the agricultural sector, GHG emissions in 2013 were almost constant and increased

only slightly in EU-28 by 0.1%. Waste sector emissions show a decrease of -1.5 % for the EU-28. GHG emissions decreased mainly in the sub-sector Solid Waste Disposal on Landfills.

### 2.2.1 Energy

Emissions from the energy sector are the most important source of GHG emission in the European Union and contribute to more than 75% of total EU-28 GHG emissions. The results of the proxy estimates in the fuel combustion sector show a decrease of GHG emissions of 78.2 Mt $CO_2$eq or 2.2 % in EU-28 between 2012 and 2013 is estimated. Table 4 indicates the sub-sectors contribution to this drop in emissions. Emissions from sub-sectors are estimated separately applying different methodologies as explained later. The largest decrease in fuel combustion emissions occurred in 1.A.1 Energy Industries. Emission increases occurred in 1.A.4 Other sectors, i.e. residential and commercial combustion for EU-15. Emissions in 1.A.5 Other increased for EU-15 by 3.9 Mt $CO_2$eq and for EU-28 by 4.6 Mt $CO_2$eq. The increase in this sector seems to be the result of a change in Swedish sectoral methodology.[12] However the increases were more than offset the decreases in the other sub-sectors. 1.B Fugitive Emissions from Fuels decreased in both EU-15 and EU-28.

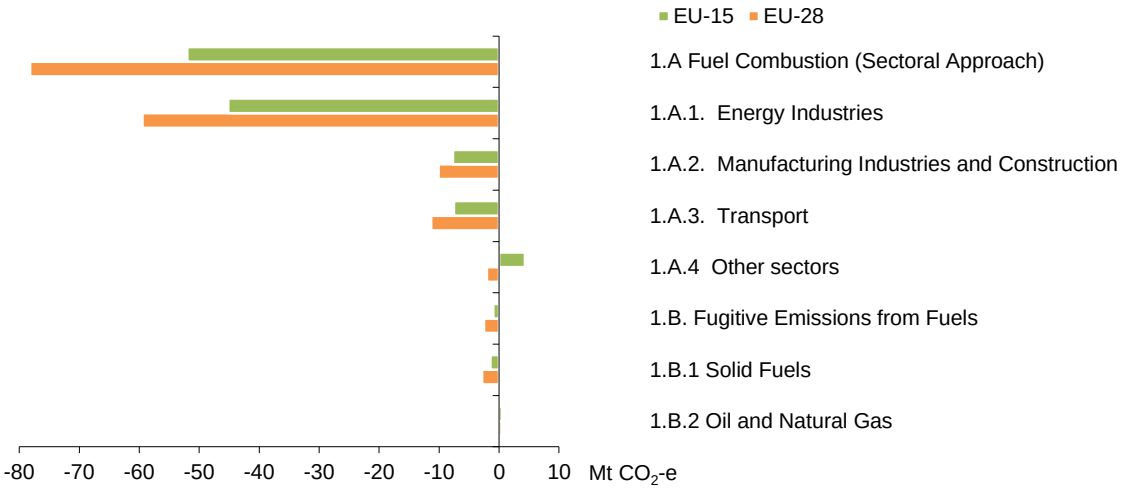
*Table 4 Energy sector emissions, change 2012-2013*

| **Change 2012 / 2013** | **EU-15** | | **EU-28** | |
|---|---|---|---|---|
| | **Mt $CO_2$eq** | **%** | **Mt $CO_2$eq** | **%** |
| 1.A Fuel Combustion (Sectoral Approach) | -52.0 | -1.8% | -78.2 | -2.2% |
| 1.A.1. Energy Industries | -45.2 | -4.3% | -59.5 | -4.2% |
| 1.A.2. Manufacturing Industries and Construction | -7.7 | -1.7% | -10.1 | -1.9% |
| 1.A.3. Transport | -7.5 | -1.0% | -11.3 | -1.3% |
| 1.A.4 Other sector | 4.3 | 0.8% | -2.0 | -0.3% |
| 1.A.5 Other | 3.9 | 62.9% | 4.6 | 50.8% |
| 1.B. Fugitive Emissions from Fuels | -1.0 | -2.2% | -2.5 | -3.1% |
| 1.B.1 Solid Fuels | -1.4 | -18.1% | -2.8 | -12.2% |
| 1.B.2 Oil and Natural Gas | 0.5 | 1.5% | 0.5 | 0.8% |

**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

[12] Sweden reported for sector 1.A.5 emissions of 0.16 Mt $CO_2$eq in the inventory for 2012. In the Member State proxy, Sweden estimated 4.4 Mt $CO_2$eq. In the Member State proxy submission, Sweden included the following note: "CRF 1A5 Other: Including the military's domestic transport and machinery in all sectors (CRF 1A3 except 1A3b, 1A5b + parts of 1A2f and 1A4)."

*Figure 5 Energy sector emissions, change 2012-2013*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

### 2.2.2 Industrial Processes

Industrial processes contribute to about 7% of total EU-28 GHG emissions and are the third most important source of GHG emissions after emissions from energy use and agriculture,. In 2013, GHG emissions from Industrial Processes were increased by 2.6 Mt $CO_2$eq for the EU-28 (+0.8%) compared to 2012. Table 5 and Figure 6 show the sub-sector contribution to this trend in emissions. Emissions mainly decreased in the sector 2.A Mineral Products and increased in the sectors 2.B Chemical Industry and 2.C Metal Production. Emissions in the Sector 2.D Other Production mainly increased because Belgium in its Member States proxy reported new emissions in this sector and did not report emissions here in past inventories.[13] GHG Emissions in the sectors 2.E Production of Halocarbons and $SF_6$, 2.F Consumption of Halocarbons and SF6 and 2.G Other are not present here, because neither all Member States reported proxy GHG emissions nor EEA estimates were calculated on sub sectorial level for these sub sectors.

*Table 5 Industrial Processes emissions, change 2012-2013*

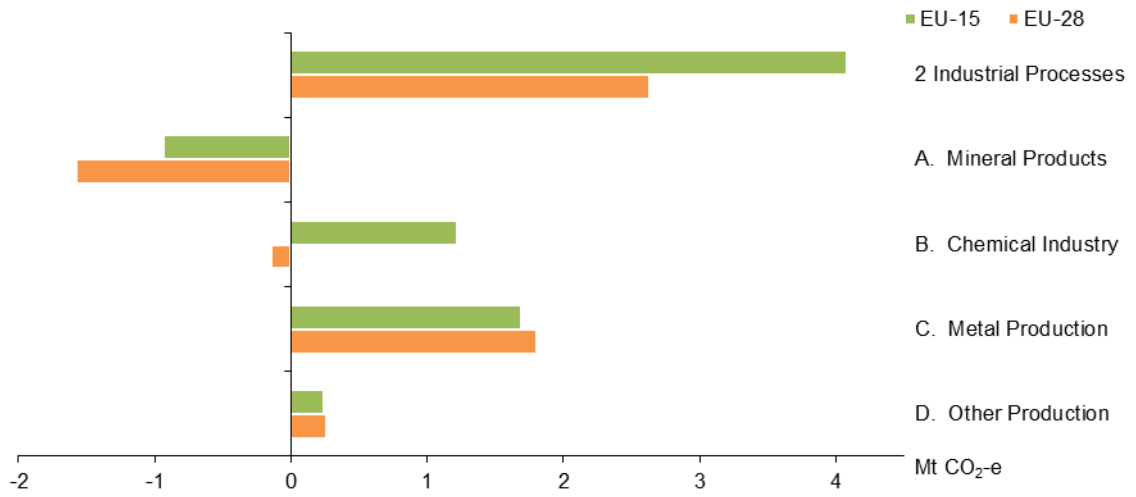
| **Change 2012 / 2013** | **EU-15** | | **EU-28** | |
|---|---|---|---|---|
| | **Mt $CO_2$eq** | **%** | **Mt $CO_2$eq** | **%** |
| **2 Industrial Processes** | 4.1 | 1.7% | 2.6 | 0.8% |

[13] Belgium submitted on 15th September 2014 revised proxy data where emission of the emissions in the sector 2.D of the initial proxy inventory submission was reallocated to sector 2.C. As this revision was submitted after the deadline, it was not taken into account in the calculations of this report.

| | | | | |
|---|---|---|---|---|
| **2.A Mineral Products** | -0.9 | -1.1% | -1.6 | -1.4% |
| **2.B Chemical Industry** | 1.2 | 3.1% | -0.1 | -0.3% |
| **2.C Metal Production** | 1.7 | 4.3% | 1.8 | 3.3% |
| **2.D Other Production** | 0.2 | 209.2% | 0.3 | 193.8% |

**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

*Figure 6 Industrial Processes emissions, change 2012-2013*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

### 2.2.3 Agriculture

Agriculture contributes to about 10% of European emissions (excluding LULUCF). The main greenhouse gases from agricultural activities are $N_2O$ from soils and $CH_4$ from livestock. Soils and enteric fermentation contribute about 52% and 31% of the of the sector's emissions respectively. Emissions from manure management make up about 16% of agricultural emissions. Table 6 and Figure 7 show that the small increase in Agriculture sector emissions for the EU-28 this year is largely due to higher emissions from agricultural soils. In the brief descriptions of the key drivers accompanying each proxy inventory, a number of Member States observe that his increase is caused by a rise in the use of synthetic fertilizer.

Table 6 and Figure 7 show the sub-sector contributions with $CH_4$ and $N_2O$ emissions shown as $CO_2$ equivalents (Mt $CO_2$eq).

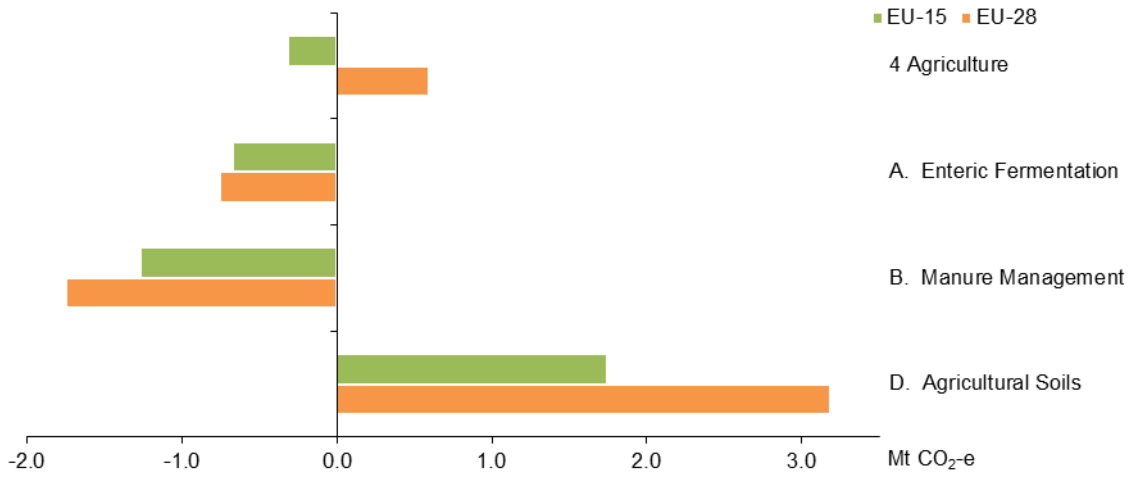
Table 6 Agriculture sector emissions, change 2012-2013

| Change 2012 / 2013 | EU-15 | | EU-28 | |
|---|---|---|---|---|
| | Mt $CO_2eq$ | % | Mt $CO_2eq$ | % |
| 4 Agriculture | -0.3 | -0.1% | 0.6 | 0.1% |
| A. Enteric Fermentation | -0.7 | -0.6% | -0.8 | -0.5% |
| B. Manure Management | -1.3 | -2.1% | -1.8 | -2.3% |
| C. Rice Cultivation | -0.1 | -4.8% | -0.1 | -3.3% |
| D. Agricultural Soils | 1.7 | 0.9% | 3.2 | 1.3% |
| E. Prescribed Burning of Savannas | 0.0 | 0.0% | 0.0 | 0.0% |
| F. Field Burning of Agricultural Residues | 0.0 | -0.5% | 0.0 | -0.4% |

**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

For the EU-15 total emissions from agriculture decreased as reductions in emissions from enteric fermentation and manure management outweighed the increase in emissions from soils. For the EU-28 total emissions from agriculture increased as the higher emissions from soils outweighed the reductions in the other sub-sectors.

*Figure 7 Agriculture sector emissions, change 2012-2013*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

Note that although sub-sectors 4.C Rice Cultivation, E. Prescribed Burning of Savannas and F. Field Burning of Agricultural Residues are shown in Table 6, because they contribute to less than 1% of EU Agricultural emissions they are not included in Figure 7 nor discussed below.

## Methods and data sources uses

The proxy inventory is now largely based on estimates from member states with gap filling only where necessary. Details on the methodology of emissions estimates used for gap filling of the Agriculture sector are provided in section 5.3.3.

## Results

#### *2.2.3.1 4.A Enteric Fermentation*

Emissions from Enteric Fermentation and Manure Management continue a declining emission trend in Europe's agriculture sector. Across the EU-28 the greatest emissions reductions were in Italy (-351 Gg $CO_2$-e, -4 %) and Poland (-351 Gg $CO_2$-e, -4 %). The United Kingdom (-351 Gg $CO_2$-e, -2 %), Germany (-233 Gg $CO_2$-e, -1 %), and Spain (-189 Gg $CO_2$-e, -2 %) also saw large reductions.

The largest increases were in the Netherlands (285 Gg $CO_2$-e, 4 %), Greece (203 Gg $CO_2$-e, 7 %) and Romania (157 Gg $CO_2$-e, 2 %). Overall the EU-28 had an -760 Gg $CO_2$-e, -1 % decrease in emissions from Enteric Fermentation. Table 38 in section 5.3.3 presents the $CH_4$ emissions for the proxy inventory in 2013 for 4A Enteric Fermentation compared to the inventory time series for the EU and all Member States.

#### *2.2.3.2 4.B Manure Management*

Emissions from manure management contribute about 16% of EU-28 emissions. Since 2012 emissions have fallen by more than 2% in EU-28. There was a substantial decrease in Italy (-408 Gg $CO_2$-e, -7 %). Poland, Spain and Romania also saw large reductions. Greece and Hungary saw small increases. Table 39 and Table 40 in section 5.3.3 show 4B Manure Management $CH_4$ and $N_2O$ emissions for the EEA calculated proxy inventory along with selected time series for the EU and Member States as submitted to the UNFCCC.

#### *2.2.3.3 4.D Agricultural Soils*

The increase in Agriculture sector emissions for the EU-28 this year is largely due to higher emissions from agricultural soils. Emissions from soils contribute about half of EU-28 emissions from agriculture and have increased by 1% since 2012. The greatest increases were for France (895 Gg $CO_2$-e, 2 %), Portugal (807 Gg $CO_2$-e, 4 %) and Spain (739 Gg $CO_2$-e, 3 %). The greatest decreases were for Poland (-576 Gg $CO_2$-e, -10 %) and Lithuania (-249 Gg $CO_2$-e, -1 %).

Section 5.3.3 (Table 41) shows 4D Agricultural Soils $N_2O$ emissions for the EEA calculated proxy inventory along with selected time series for the EU and Member States as submitted to the UNFCCC.

### 2.2.4 Waste

This sector contributes about 3 % of EU-28 emissions. Waste related emissions to continue to decrease reflecting the contribution from solid waste disposal on land and restrictions on land-filling of organic degradable waste from decades ago.

## Results for 2013

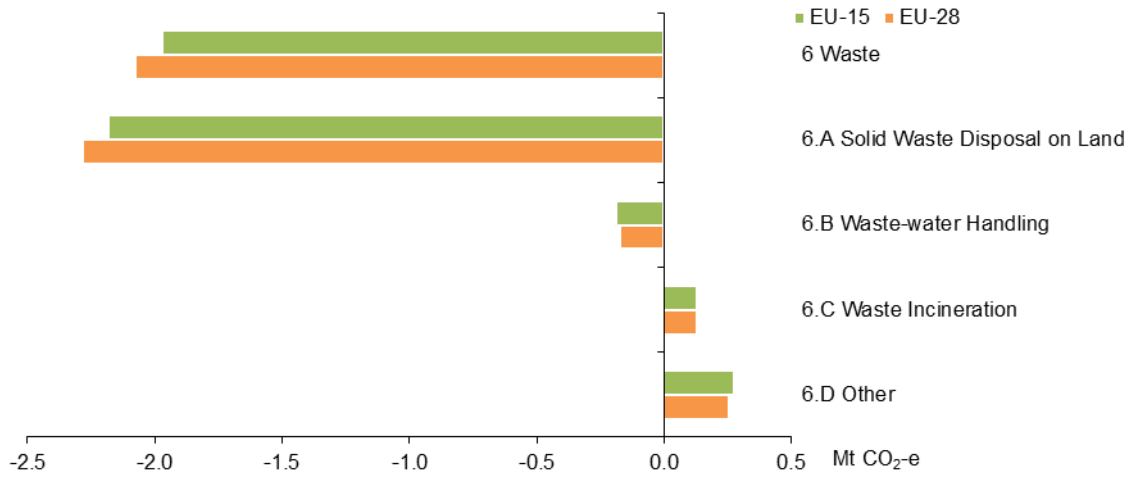
Emissions from the Waste sector decreased by -2 Mt $CO_2$eq for the EU-28 compared to 2012. Table 7 and Figure 8 show the sub-sector contributions to this trend in emissions.

*Table 7 Waste sector emissions, change 2012-2013*

| Waste | Change 2013/2012 | | | |
|---|---|---|---|---|
| | EU-15 | | EU-28 | |
| | Mt CO2eq | % | Mt CO2eq | % |
| **6 Waste** | -2.0 | -1.9% | -2.1 | -1.5% |
| **6.A Solid Waste Disposal on Land** | -2.2 | -2.8% | -2.3 | -2.2% |
| **6.B Waste-water Handling** | -0.2 | -0.9% | -0.2 | -0.5% |
| **6.C Waste Incineration** | 0.1 | 5.0% | 0.1 | 4.0% |
| **6.D Other** | 0.3 | 12.2% | 0.3 | 10.2% |

**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

*Figure 8 Waste sector emissions, change 2012-2013*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2013.

The proxy inventory is now based on estimates from member states with gap filling only where necessary. Details on the previous Waste sector methodology which was largely based on extrapolation and is now only used for gap filling are provided in section 5.3.4.

## 2.3 ETS / ESD

Proxy estimates in chapter 2.1 and 2.2 were calculated using global warming potentials (GWP) from the IPCC Second Assessment Report: Climate Change 1995 (SAR). Emissions data in the EU Emissions Trading Scheme (ETS) provided from 2013 on are based on GWPs from the IPCC

Fourth Assessment Report: Climate Change 2007 (AR4). To show emission changes in the ETS sector and the non-ETS sector (which is regulated by the Effort Sharing Decision (ESD)[14]), all emissions had to be re-estimated, so that they are consistent with AR4 GWPs. Member States were invited to perform this estimation by themselves and to submit proxy inventories using not only SAR GWPs but also AR4 GWPs. Where Member States submitted total and/or ETS proxy 2013 emissions data using AR4 GWPs, this data was used. When this was not provided, proxy inventories for the year 2013 based on SAR GWPs were converted to AR4 GWPs by EEA using conversion factors. In addition, when ETS data were not submitted, the ETS data were taken from the 'EU Emissions Trading System (ETS) data viewer' (EEA, 2014b).

The conversion of the proxy estimates from SAR to AR4 GWPs used the following method: Emissions of carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$) and sulphur hexafluoride ($SF_6$) were converted directly using conversion factors listed in Table 8. Hydroflourocarbons (HFCs) and perflourocarbons (PFCs) are not single gases but mixes of several different gases with different GWP. The mixes of these different gases with different GWPs are country specific. Therefore, for each Member State, country specific conversion factors for HFC and PFC were derived using the shares of these different gases on total HFCs respectively PFCs emissions and their individual GWPs in the latest available Member States' official GHG inventories.

*Table 8 Global warming potentials from different IPCC Assessment Reports*

| Greenhouse gas or group of gases | | GWP from IPCC SAR | GWP from IPCC AR4 | AR4/SAR GWPconversion factor |
|---|---|---|---|---|
| **Carbon dioxide** | **$CO_2$** | 1 | 1 | 1.000 |
| **Methane** | **$CH_4$** | 21 | 25 | 1.190 |
| **Nitrous oxide** | **$N_2O$** | 310 | 298 | 0.961 |
| **Hydrofluorocarbons** | **HFC** | Member States specific value dependent of mix of HFC | | |
| **Perfluorocarbons** | **PFC** | Member States specific value dependent of mix of PFC | | |
| **Sulfur hexafluoride** | **$SF_6$** | 23 900 | 22 800 | 0.954 |

**Source**: IPCC (1995), IPCC (2007)

[14] Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020

Table 9 shows the converted total proxy emissions for 2013, ETS emissions and non-ETS emissions together with the respective relative changes in emissions. To calculate emission changes for both ETS emissions and non-ETS emissions, total emissions for the year 2012 of Member States inventories were also converted using AR4/SAR GWP conversion factors. To account for the scope change in the ETS from 2012 to 2013, scope corrected data from EU Emissions Trading System (ETS) data viewer was used. This scope correction for data of the year 2012 addresses changes due to additional sectors and gases to be able to compare amounts across years (EEA, 2014d). Where not submitted by Member States, 2013 non-ETS emissions were calculated by subtracting 2013 ETS emission from proxy estimates of total emissions. Similarly, 2012 non-ETS emissions where calculated by subtracting the scope-corrected 2012 ETS emissions from 2012 total recalculated emissions.

*Table 9 ETS and non-ETS 2013 proxy emissions with SAR and AR4 GWPs*

| MS | Estimated 2013 GHG emissions | | | | Change 2013 versus 2012 | | |
|---|---|---|---|---|---|---|---|
| | Total | Total | ETS | Non-ETS | Total | ETS | Non-ETS |
| | SAR GWPs | AR4 GWPs | | | % | | |
| AT | 80 350 | 81 375 | 29 851 | 51 524 | 0.4% | -1.9% | 1.7% |
| BE | 116 852 | 118 194 | 45 231 | 72 963 | 0.3% | -3.9% | 3.1% |
| BG | 56 689 | 57 874 | 32 696 | 25 178 | -7.1% | -11.2% | -1.2% |
| CY | 8 743 | 9 011 | 4 025 | 4 986 | -5.4% | -8.2% | -3.1% |
| CZ | 126 910 | 128 795 | 67 714 | 61 082 | -3.5% | -6.4% | -0.1% |
| DE | 950 790 | 958 861 | 477 448 | 481 414 | 1.2% | 0.3% | 2.1% |
| DK | 53 235 | 54 140 | 21 602 | 32 538 | 3.0% | 18.8% | -5.3% |
| EE | 21 131 | 21 320 | 15 925 | 5 395 | 10.2% | 17.6% | -7.1% |
| ES | 315 612 | 322 032 | 122 791 | 199 241 | -7.3% | -14.5% | -2.2% |
| FI | 60 644 | 61 015 | 31 497 | 29 519 | -1.1% | 0.7% | -3.0% |
| FR | 491 532 | 501 536 | 110 936 | 390 600 | 0.3% | -6.4% | 2.3% |
| UK | 570 300 | 580 429 | 225 519 | 354 910 | -1.8% | -2.6% | -1.3% |
| GR | 107 797 | 110 130 | 58 633 | 51 497 | -2.7% | -7.7% | 3.5% |
| HR | 24 524 | 25 843 | 9 698 | 16 145 | -4.3% | *NA* | *NA* |
| HU | 59 687 | 61 091 | 19 125 | 41 966 | -3.6% | -11.8% | 0.6% |
| IE | 56 614 | 58 761 | 15 685 | 43 076 | -3.2% | -9.0% | -0.9% |
| IT | 437 994 | 444 893 | 164 399 | 280 493 | -4.8% | -12.9% | 0.7% |
| LT | 20 378 | 20 331 | 7 464 | 12 867 | -7.9% | -25.5% | 6.7% |
| LU | 11 428 | 11 502 | 1 847 | 9 655 | -3.4% | -18.4% | 0.1% |
| LV | 10 945 | 11 199 | 2 625 | 8 574 | -0.3% | -4.9% | 1.2% |
| MT | 2 709 | 2 758 | 1 697 | 1 060 | -13.4% | -17.3% | -6.5% |
| NL | 191 940 | 194 717 | 86 799 | 107 917 | 0.1% | 10.4% | -6.8% |
| PL | 395 979 | 403 662 | 205 734 | 197 927 | -0.8% | -1.0% | -0.7% |
| PT | 67 001 | 69 433 | 24 642 | 44 791 | -2.4% | -4.5% | -1.2% |
| RO | 107 748 | 111 644 | 42 415 | 69 230 | -9.0% | -23.4% | 2.8% |
| SE | 55 959 | 56 699 | 20 114 | 36 585 | -2.9% | 1.2% | -5.0% |
| SI | 18 236 | 18 574 | 7 386 | 11 188 | -3.6% | -2.3% | -4.3% |
| SK | 42 679 | 43 448 | 21 829 | 21 618 | -0.1% | -5.6% | 6.2% |
| **EU-15** | **3 568 047** | **3 623 718** | **1 436 995** | **2 186 723** | **-1.4%** | **-3.7%** | **0.1%** |
| **EU-27** | **4 439 881** | **4 513 424** | **1 865 630** | **2 647 794** | **-1.7%** | **-4.3%** | **0.2%** |
| **EU-28** | **4 464 406** | **4 539 268** | **1 875 329** | **2 663 939** | **-1.8%** | ***NA*** | ***NA*** |

**Source**: Member States proxies, EEA's proxy GHG emissions based on the 2014 EU greenhouse gas inventory to UNFCCC for 1990-2012 and proxy estimates for 2013 and ETS data (2013 verified emissions and the 2012 scope-corrected verified emissions). The split between ETS and non-ETS is based on GWPs from the AR4.

**Notes:** Recalculated emission data using AR4 GWPs were only used in this section 2.3 of the report on ETS/ESD emissions, as the EU ETS already uses these AR4 GWPs since 2013. All other parts of this report still use SAR GWPs in line with the national inventories submitted in 2014. As Croatia only joined in 2013 the EU ETS, changes in emissions for ETS/non-ETS cannot be given here. For the same reason, sums for EU-27 are shown. Due to data gaps and/or inconsistencies in the sum of reported emissions by sector and/or gas, the totals presented in column "Total SAR GWP" differ slightly from those in Annex 5.1 for AT, SE and UK.

In total, emissions using AR4 GWPs changed by -1.8% for EU-28 and -1.7% for EU-27. Figure 9 presents a differentiation of the emission trend change between ETS emissions and Non-ETS emissions. Between 2012 and 2013, emissions in the ETS sector strongly decreased by 4.3% (EU-27), while emissions in the non-ETS sector increased slightly by 0.2% (EU-27). In absolute terms, the total emission reduction in EU-27 is 79.8 Mt $CO_2$eq in the 2012-2013 period. In the ETS sector, emissions were reduced by 84.0 Mt $CO_2$eq and in the non-ETS sector emissions increased by 4.2 Mt $CO_2$eq.

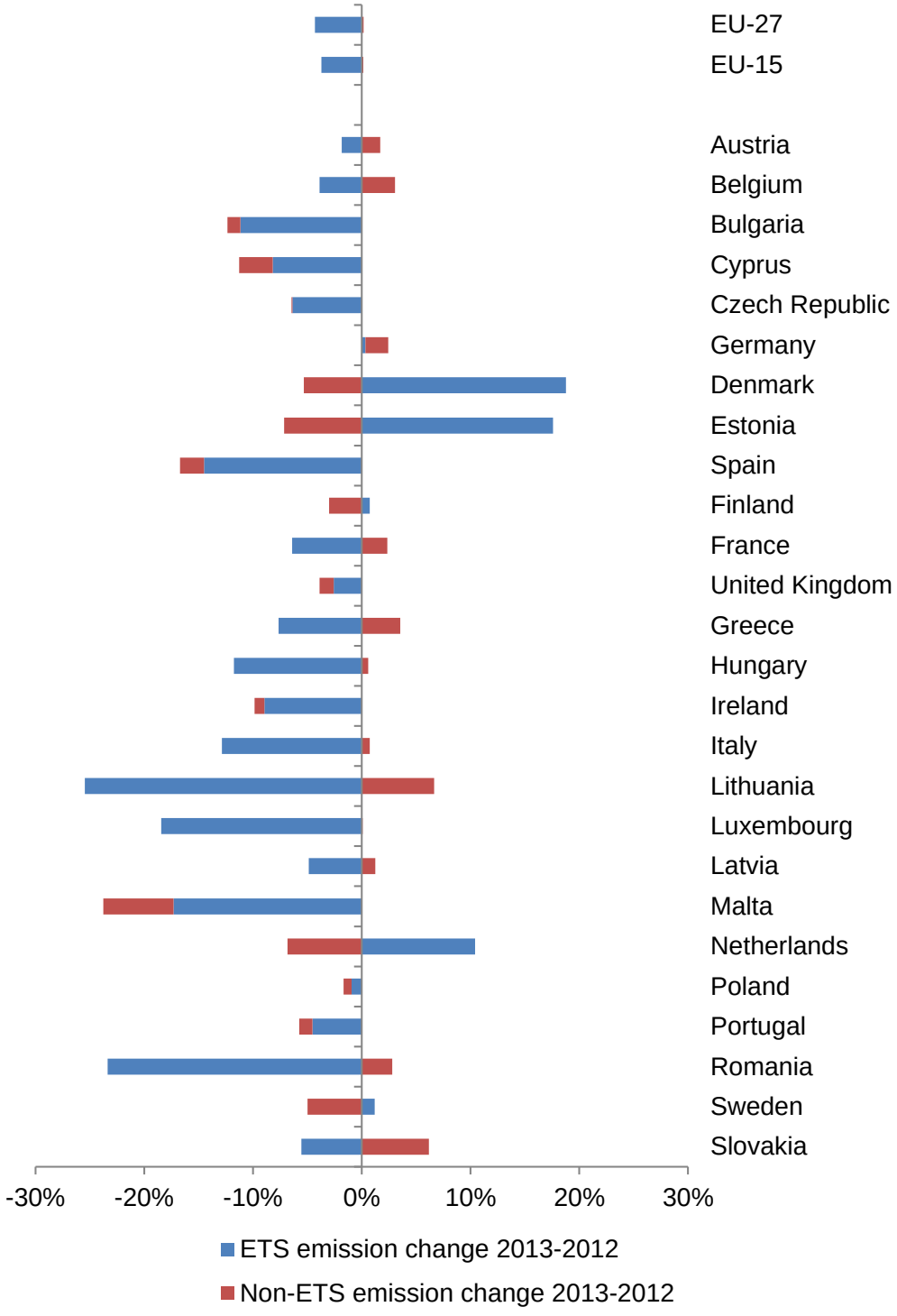
At Member State level the trend change separated between the ETS and non-ETS sector look different:

ETS emissions only increased in Denmark, Estonia, Finland, Germany, the Netherlands and Sweden. Largest ETS emissions increase in absolute value with about 8.2 Mt $CO_2$eq occurred in the Netherlands, largest relative increase with 18.8% was in Denmark. Largest ETS emission decrease in absolute value occurred in Italy (-24.3 Mt $CO_2$eq) and largest relative decrease in Lithuania (-25.5%).

Non-ETS emissions increased in Austria, Belgium, Germany, France, Greece, Hungary, Italy, Lithuania, Luxembourg, Latvia, Romania and Slovakia. Largest non-ETS emissions increase in absolute value with about 9.9 Mt $CO_2$eq occurred in the Germany, largest relative increase with 6.7% was in Lithuania. Largest non-ETS emission decrease in absolute value occurred in the Netherlands (-7.9 Mt $CO_2$eq) and largest relative decrease in Estonia (-7.1%).

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

*Figure 9 ETS and non-ETS emissions, change 2012-2013*




**Note:** EU-27 as Croatia only joined in EU ETS in 2013

**Source:** EU 2014 submission to UNFCCC for 2012, proxy estimates for 2013 and verified emissions from EUTL as of August 2014. The split between ETS and non-ETS is based on GWPs from the AR4 and the scope-corrected ETS data for 2012.

# 3. European GHG emissions in 2013 using EEA proxy data

## 3.1 Methodologies and data sources

For the estimation of approximated emissions, the following data sources for emissions or activities in the year 2013 were used:

- BP's Statistical Review of World Energy 2014[15];
- verified emissions reported under the EU-ETS and recorded in the EUTL[16];
- Eurostat Monthly Oil and Gas Questionnaires and Monthly Coal Questionnaires
- Eurostat monthly data on crude oil production (indicator code 100100, product code 3100);
- Eurostat monthly total consumption data for natural gas (indicator code 100900, product code 4100);
- Eurostat production data for natural gas (indicator code 100100, product code 4100);
- Eurostat 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;
- Monthly production data for crude steel production and blast furnace iron production of the World Steel Association (previously IISI International Iron and Steel Institute)[17]; this data source has only data for some of the EU Member States[18];
- Eurostat annual statistics on livestock population for cattle, goats, sheep and swine.
- National preliminary energy balance data or energy statistics:
    - Austria, 2014, Preliminary energy balance 2013, (http://www.statistik.at/web_de/statistiken/energie_und_umwelt/energie/energiebilanzen/), accessed 30 June 2014.

[15] BP, 2014, BP Statistical Review of World Energy 2014 (www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy/statistical-review-downloads.html) accessed by 04 July 2014.

[16] EEA 2014b: www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer

[17] Available at www.worldsteel.org

[18] 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, 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 30 June 2014.
- Croatia, 2014, Short term indicators of energy statistics, first results, different issues, www.dzs.hr/default_e.htm, (⇨ released data ⇨ by statistical subjects ⇨ Industry, Energy and Information Society ⇨ energy ⇨ Short-Term Indicators of Energy Statistics), accessed 30 June 2014.
- 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 30 June 2014.
- Denmark, 2014, Monthly energy statistics, www.ens.dk/en/info/facts-figures/energy-statistics-indicators-energy-efficiency/monthly-statistics, accessed 30 June 2014.
- Estonia, 2014, Energy balances, http://pub.stat.ee/px-web.2001/I_Databas/Economy/07Energy/02Energy_consumption_and_production/01Annual_statistics/01Annual_statistics.asp, accessed 30 June 2014.
- Finland 2014, Energy consumption data, http://193.166.171.75/database/statfin/ene/ehk/ehk_en.asp, accessed 30 June 2014.
- France, 2014, Monthly energy statistics gas, oil and coal, http://developpement-durable.bsocom.fr/statistiques/ReportFolders/reportFolders.aspx (⇨ Énergie - Données mensuelles ⇨ Pégase ⇨ Importations, productions, consommations par énergie, en ktep), accessed 30 June 2014.
- Germany, 2014, Quarterly energy consumption data, www.ag-energiebilanzen.de/DE/daten-und-fakten/primaerenergieverbrauch/primaerenergieverbrauch.html, accessed 30 June 2014.
- Hungary, 2014, Monthly energy statistics, www.ksh.hu/engstadat (⇨ energy ⇨ Times series of annual data AND Infra-annual data), accessed 30 June 2014.
- Ireland, 2014, Provisional energy balance, www.seai.ie/Publications/Statistics_Publications/Energy_Balance 30 June 2014.
- Italy, 2014, Preliminary energy balance, http://dgerm.sviluppoeconomico.gov.it/dgerm/ben.asp, accessed 30 June 2014.
- Latvia, 2014, monthly data natural gas, solid fuels and oil products, http://data.csb.gov.lv/Menu.aspx?selection=vide__%C4%AAstermi%C5%86a%20statistikas%20dati__Ener%C4%A3%C4%93tika&tablelist=true&px_language=en&px_db=vide&rxid=80666b16-4296-4d44-aa1c-ab806e990f07 (⇨ Short term statistical data ⇨ Energy), 30 June 2014.
- Luxembourg, 2014, Monthly gross consumption by products, www.statistiques.public.lu/stat/TableViewer/tableView.aspx?ReportId=4087&IF_Language=eng&MainTheme=1&FldrName=4&RFPath=50, 30 June 2014.

- Lithuania, 2014, Fuel and energy resources, http://osp.stat.gov.lt/ (⇨ Environment and Energy ⇨ Energy ⇨ Monthly energy indicators ⇨ fuel and energy resources), June 2014.
- Netherlands, 2014, Monthly energy consumption, http://statline.cbs.nl/StatWeb/dome/?LA=EN (⇨ Themes ⇨ Manufacturing and energy ⇨ energy, key figures ⇨ Energy; consumption and producer prices by energy commodity), June 2014.
- Portugal, 2014, Energy balances, www.apren.pt/fotos/newsletter/conteudos/dgeg_2014_balanco_energetico_sintetico_2013_1404920046.pdf, (search for: "BALANÇO ENERGÉTICO"), accessed 30 June 2014.
- Romania, 2014, Industry statistical bulletin, www.insse.ro/cms/en/content/statistical-bulletins, June 2014.
- Slovenia 2014, Annual balance of liquid, solid and gaseous fuels, http://pxweb.stat.si/pxweb/Database/Environment/18_energy/01_18179_balance_indicators/01_18179_balance_indicators.asp, June 2014.
- Spain, 2014, Monthly data on production and consumption of coal, petroleum and natural gas, www.ine.es/jaxi/tabla.do?path=/t38/bme2/t04/a082/l1/&file=1202002.px&type=pcaxis&L=1 , June 2014.
- Sweden, 2014, Quarterly energy balances www.scb.se/Pages/Product___24905.aspx?Produktkod=EN0201&displaypublications=true (⇨ Finding statistics ⇨ Statistics by subject area ⇨ Energy ⇨ Quarterly Energy Balances ⇨ Publications ⇨ Quarterly energy balances the 4th quarter and for the years 2012 and 2013 www.scb.se/Pages/Product____24905.aspx?Produktkod=EN0201&displaypublications=true, June 2014.
- United Kingdom, 2014, Quarterly bulletin of energy statistics published in Mar, Jun, Sept, Dec, March version includes complete data for X-1 www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx and Energy statistics on a monthly, quarterly and annual basis www.decc.gov.uk/en/content/cms/statistics/energy_stats/source/source.aspx and Total energy trends for coal, oil and gas in months, quarters and years www.gov.uk/government/publications/total-energy-section-1-energy-trends, June 2014.

Based on these data sources, 2013 emission estimates were made for the following source categories:

- Energy
  - 1.A Fuel Combustion
    - 1.A.1 Energy Industries
    - 1.A.2 Manufacturing Industries and Construction
    - 1.A.3 Transport

        - 1.A.4 Other sectors
    - 1.B Fugitive Emissions
        - 1.B.1 Solid Fuels
        - 1.B.2.a Oil and Natural Gas, Oil
        - 1.B.2.b Oil and Natural Gas, Natural Gas
        - 1.B.2.c Oil and Natural Gas, Venting and Flaring
- Industrial Processes
    - 2.A Mineral Products
    - 2.C Metal Production
- Agriculture
    - 4.A Enteric Fermentation
    - 4.B Manure Management
    - 4.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.

For the waste sector and all other inventory source categories not listed above, no 2012 activity data was available that could be combined with IEFs from GHG inventories. These categories were extrapolated from 2013 GHG inventories, either by trend extrapolation or by taking the constant values of the year 2012 and by following the gap filing rules in accordance with the implementing provisions under Council Decision 280/2004/EC. Constant values were used when past trends were inconsistent and strongly fluctuating; trend extrapolation was used when historic time series showed good correlations with a linear trend.

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

The timing of these calculations depends on the release of the underlying data sources. The availability of data sources is shown in Table 10. The latest data source that became available in 2014 was the BP statistical review of World Energy which is published annually by 15 June. In July of each year updated verified emissions in the EUTL have been available in recent years. 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 27 May 2014 was used for EEA proxy.<br>Data as of .6 August 2014 was used for ETS/non-ETS split. |
| BP Statistical Review of World Energy | 16 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 | End of May (final submitted changes) |
| Member States' national energy balances and national energy statistics | different publication dates |
| Member States' own preliminary inventories | 31 July |

## 3.2 Uncertainties, differences and QA/QC in EEA proxy data

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.

In this section the differences between the previous proxy estimates and the subsequent official inventory submissions are assessed. An uncertainty estimate for the present 2013 proxy estimate is also presented, based on the past difference for the year 2012.

For the proxy inventory for the year 2012, there was an underestimation of the emissions decline at EU level compared to the official data submitted to UNFCCCC in 2013. For the EU-15 the approximated 2012 GHG emissions were 0.1 % (1.8 Mt $CO_2$eq) higher than the real GHG inventory submissions and for the EU-28 1.2 % lower (9.4 Mt $CO_2$eq). Compared to the previous

year's analysis, the deviations between the approximated GHG inventory and the real inventory submissions declined: For 2011 the approximated GHG inventory had overestimated the EU-15 GHG emissions by 0.9 % and the EU-28 GHG emissions by 1.0%.

The uncertainty for the approximated 2013 GHG emissions presented in this analysis is estimated as a simple metric based on the absolute deviation between last year's proxy estimates for each Member State and the subsequent reported emissions. Since emissions for each source category are estimated using different methodologies for each sector in Member State, as a first step the uncertainty for each Member State was calculated as a weighted average of all sectoral deviations. [19] In a second step, the uncertainty for the EU was calculated as the weighted mean of the Member States' deviations to total EU-15 and EU-28 emissions. The uncertainties for approximated 2013 GHG emissions are shown in the far right-hand column in Table 11. Next to the uncertainty ranges for the total GHG emissions of EU-15 and EU-28, uncertainty ranges for the sectoral EU-15 and EU-28 2013 GHG emission approximations were calculated following the same methodology. The results on source category level are depicted in Table 12.

It has to be taken into account that any recent national improvements of GHG reporting methodologies could not be considered for the calculation of the approximated GHG inventory, as the 2013 estimates for the 2012 proxy inventory were based on the national methodologies used for 2013 inventory submissions (covering emissions until 2011). This is especially the case for those source categories for which linear trend extrapolation was performed, in particular for the source categories Chemical Industry, fluorinated gases, Solvent and Other Product Use and some subcategories in the sector Agriculture and Waste (see below). Thus, revised methodologies and parameters at Member States level will always result in deviations between the final inventory and the proxy inventory. The main factors explaining the change in emissions in 2012 compared to 2011 are further analysed in the 2013 EU GHG inventory submitted to the UNFCCC and the analysis paper: 'Why did GHG emissions decrease in the EU in 2012?' (EEA 2014c).

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

*Table 11 Difference between proxy inventory estimated for 2012 and submitted 2012 inventory*

| MS | UNFCCC 2012 (Submission 2014) | Proxy 2012 | Deviation 2012 | | Recalculations 2013 for 2011 | Deviation 2012 cleared of impact of recalculations | uncertainty of 2013 proxy emissions |
|---|---|---|---|---|---|---|---|
| | Gg $CO_2$eq | | Gg $CO_2$eq | % | % | % | % |
| AT | 80 059 | 80 362 | 302 | 0.4% | -3.4% | -3.0% | 0.6% |
| BE | 116 520 | 117 357 | 837 | 0.7% | -3.0% | -2.3% | 0.7% |
| BG | 61 046 | 62 375 | 1 329 | 2.2% | -7.7% | -5.5% | 3.3% |
| CY | 9 259 | 8 546 | -714 | -7.7% | 1.1% | -6.6% | 6.9% |
| CZ | 131 466 | 127 662 | -3 805 | -2.9% | -1.5% | -4.4% | 2.9% |
| DE | 939 083 | 928 910 | -10 174 | -1.1% | 2.5% | 1.4% | 1.4% |
| DK | 51 637 | 52 305 | 667 | 1.3% | -9.4% | -8.1% | 1.7% |
| EE | 19 188 | 21 000 | 1 812 | 9.4% | -8.4% | 1.0% | 9.9% |
| EL | 110 985 | 116 455 | 5 469 | 4.9% | -3.5% | 1.4% | 4.9% |
| ES | 340 809 | 347 201 | 6 392 | 1.9% | -2.8% | -0.9% | 2.2% |
| FI | 60 966 | 61 908 | 942 | 1.5% | -9.0% | -7.5% | 2.2% |
| FR | 490 125 | 489 152 | -973 | -0.2% | 0.9% | 0.7% | 1.3% |
| HR | 26 385 | 25 507 | -878 | -3.3% | -6.7% | -10.0% | 5.5% |
| HU | 62 040 | 63 675 | 1 635 | 2.6% | -6.2% | -3.6% | 4.7% |
| IE | 58 531 | 57 724 | -808 | -1.4% | 1.8% | 0.4% | 1.5% |
| IT | 460 083 | 464 350 | 4 266 | 0.9% | -5.9% | -4.9% | 1.3% |
| LT | 21 622 | 22 036 | 414 | 1.9% | 0.0% | 2.0% | 2.3% |
| LU | 11 839 | 11 724 | -115 | -1.0% | -2.1% | -3.1% | 1.8% |
| LV | 10 978 | 11 252 | 274 | 2.5% | -4.5% | -2.0% | 5.0% |
| MT | 3 140 | 3 141 | 1 | 0.0% | 3.9% | 4.0% | 4.6% |
| NL | 191 669 | 195 152 | 3 483 | 1.8% | -1.4% | 0.4% | 2.0% |
| PL | 400 689 | 387 108 | -13 581 | -3.4% | -0.2% | -3.6% | 3.4% |
| PT | 68 527 | 69 818 | 1 291 | 1.9% | -2.1% | -0.2% | 2.8% |
| RO | 118 849 | 120 583 | 1 734 | 1.5% | -3.6% | -2.2% | 1.9% |
| SE | 57 604 | 59 065 | 1 461 | 2.5% | -6.3% | -3.7% | 2.9% |
| SI | 18 911 | 19 047 | 136 | 0.7% | -3.1% | -2.3% | 1.0% |
| SK | 42 710 | 42 506 | -204 | -0.5% | -5.7% | -6.2% | 2.4% |
| UK | 580 807 | 569 967 | -10 840 | -1.9% | 5.7% | 3.9% | 2.2% |
| **EU-15** | **3 619 246** | **3 621 448** | **2 202** | **0.1%** | **-0.2%** | **-0.2%** | **1.7%** |
| **EU-28** | **4 545 530** | **4 510 379** | **-35 150** | **-0.8%** | **-0.7%** | **-1.5%** | **2.1%** |

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

*Table 12 Uncertainties of the EU approximated GHG inventory for 2013*

| | EU-15 | | EU-28 | |
|---|---|---|---|---|
| | Mt $CO_2$eq | % | Mt $CO_2$eq | % |
| Energy | 1,5 | 0,1 | -3,4 | -0,1 |
| Industrial Processes | 6,3 | 2,5 | 8,8 | 2,7 |
| Solvent and OPU | 0,1 | 1,5 | -0,1 | -0,6 |
| Agriculture | -2,3 | -0,6 | -4,4 | -0,9 |
| Waste | -3,7 | -3,8 | -9,2 | -7,0 |
| **Total** | **2,0** | **0,1** | **-8,3** | **-0,2** |

**Source**: EEA's proxy GHG emissions

The use of the data sources and methodologies for the proxy estimates published last year and the results mirrored rather well the decreasing trend in official emissions as reported to the UNFCCC this year. The deviations given in Table 11 arise from several factors: the less precise

methodologies and data used for the approximated GHG inventories (compared to official GHG inventories); the lack of updated (t-1) activity data for some key emission sources; and, from Member States' own recalculations of GHG estimates and methodological improvements which cannot be reflected in the approximated data where constant methodologies and emission factors are assumed.

The largest deviations in relative terms occurred for Estonia (Proxy 9 % higher), followed by Cyprus (Proxy 8 % lower), Greece (Proxy 5 % higher), Croatia, Poland, and Czech Republic, (Proxy 3 % lower) resp. Hungary and Sweden (Proxy 3 % higher). In absolute terms the deviations were highest for Poland (underestimate by Proxy of 12 Mt $CO_2$eq), United Kingdom (underestimate by Proxy of 11 Mt $CO_2$eq), Germany (underestimate by Proxy of 10 Mt $CO_2$eq ), Spain (underestimate by Proxy of 6 Mt $CO_2$eq) and Greece (overestimate by Proxy of 5 Mt $CO_2$eq). By comparing the percentage changes in emission levels 2011/2012 as derived from the 2013 Proxy inventory on the one hand and from the 2013 official GHG inventory submissions to UNFCCC on the other, the deviations are in the same order of magnitude, see Figure 10.

*Figure 10 Differences between approximated and submitted 2012 inventories*


**Source:** Member States 2014 submissions to UNFCCC for 2012 and proxy estimates for 2012.

Compared to the approximated GHG emissions that have been calculated last year, differences could be reduced for 15 of 27 Member States[20]. For eight Member States the deviations were lower than 1 % (Austria, Belgium, France, Italy, Luxembourg, Malta, Slovenia and Slovakia), whereas for four Member States the deviations were higher than 3 % (Croatia, Estonia, Greece, and Poland).

Member States' recalculations of GHG estimates and methodological improvements played an important role for the differences of the 2012 proxy emission estimates compared to 2012 emissions officially reported in 2014. In the following sections country-specific deviations are further explained for some Member States with high deviations in absolute terms (Germany, Poland and United Kingdom) and/or in relative terms (Estonia, Cyprus and Greece) (see also columns on the right hand side in Table 11):

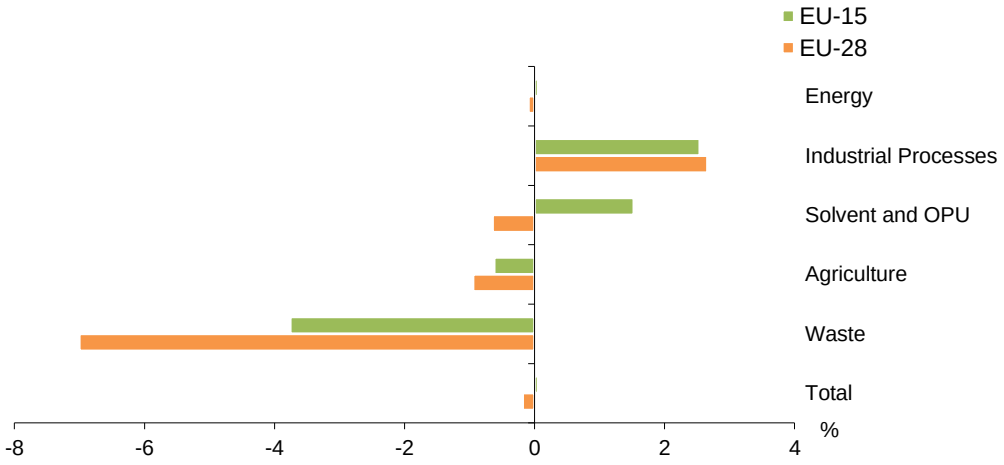
- Germany: 2012 GHG emissions were underestimated by the 2012 proxy inventory by 10.2 Mt $CO_2$eq (1.1 %). Updated activity data in the energy sector increased emissions by 12.3 Mt CO2eq which is larger than the underestimation in this sector (10.9 Mt $CO_2$eq). An overestimation of 1.2 Mt $CO_2$eq from the agricultural soils partially compensated the underestimation in the energy sector.
- Poland: 2012 GHG emissions were underestimated by the 2012 proxy inventory by 13.6 Mt $CO_2$eq (3.4%). 50% of the underestimation can be explained by a recalculation of the waste sector. 25% can be attributed to the other energy sector (1.A.4). 20% can be explained from recalculations on agricultural soils.
- United Kingdom: 2012 GHG emissions were underestimated by the 2012 proxy inventory by 10.8 Mt $CO_2$eq (1.9%). Recalculations explain 95 % of the underestimation, mainly in solid waste disposal on land and in manure management.
- Estonia: 2012 GHG emissions were overestimated by the 2012 proxy inventory by 1.8 Mt $CO_2$eq (9.4%). 75% of the overestimation can be attributed to the energy sector. In retrospective, a use of the bottom-up approach for estimating $CO_2$ emission for the 1A Fuel combustion sector would have significantly better met the actual emission development than the approach based on absolute Eurostat data as chosen in 2013. This would have decreased the overestimation by 30%. Recalculation in the energy industries can explain another 20% each of the overestimation. 25% of the overestimation can be attributed to emissions from production of mineral products (2.A). Here, a trend change of ETS emissions from cement plants was used, which did not led to a similar trend change in this subsector.
- Cyprus: 2012 GHG emissions were underestimated by the 2012 proxy inventory by 0.7 Mt $CO_2$eq (7.7%). 55% of the underestimation can be explained by recalculations in the waste sector. 30% can be explained by recalculations in consumption of halocarbons and SF6 and solvent and other product use.

[20] Croatia was considered in the previous report for the first time.

- Greece: 2012 GHG emissions were overestimated by the 2012 proxy inventory by 5.5 Mt $CO_2$eq (4.9%). 90% of the overestimation can be attributed to the energy sector. In retrospective, a use of the BP approach for estimating $CO_2$ emission for the 1A Fuel combustion sector would have significantly better met the actual emission development than the approach based on absolute Eurostat data as chosen in 2013. This would have decreased the overestimation by 80%. 10% of the overestimation can be attributed to the chemical industry sector (2.B) where only simple proxy methods like linear trend extrapolation and previous year value were applied.

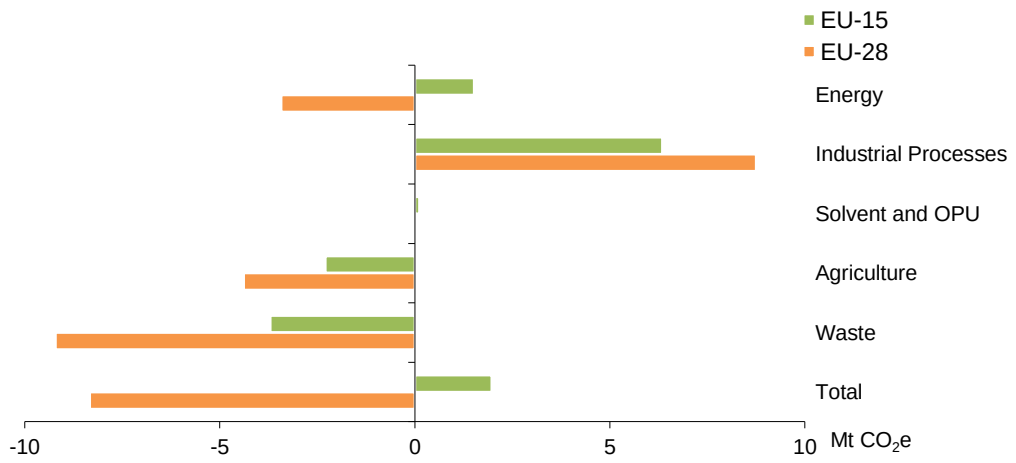
Figure 11 and Figure 12 present the relative and absolute differences for 2012 at sectoral level for the EU-15 and for the EU-28.

*Figure 11 Difference by sector, proxy and submitted 2012 inventories (%)*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2012.

*Figure 12 Difference by sector, proxy and submitted 2012 inventories (Mt)*




**Source:** EU 2014 submission to UNFCCC for 2012 and proxy estimates for 2012.

Relative deviations at sectoral level have decreased compared to the EEA's 2012 proxy estimate of 2011 emissions for all sectors except the waste sector. In the 2013 proxy inventory for 2012, the largest relative deviations occurred in the Waste sector and were 3.8% for the EU-15 and 7.0% for the EU-28. These underestimations can almost fully be attributed to recalculations. For Industrial Processes sector, the relative deviations were 2-5% for the EU-15 and 2.7% for the EU-28. Overestimation of HFC emissions explains one third and recalculations one sixth of the overestimation of emissions from Industrial Processes for the EU-15. Recalculations explain more than a third of the overestimations of emissions from Industrial Processes for the EU-28. The most important sector in absolute terms (approximately 80 % of total net emissions without LULUCF) is the Energy sector. Here, an overestimation of 0.1 % for the EU-15 (compared to 0.5 % in the previous proxy) and an underestimation of 0.1% for the EU-28 (compared to 1.0 % overestimation in the previous proxy). In the Solvent and Other Product Use sector, overestimations of 1.5% occurred for EU-15 and underestimations of 0.6% for EU-28. In absolute terms, however, that sector is nearly negligible. 2012 agriculture emissions (approx. 10 % of 2012 EU-15 and EU-28 emission levels without LULUCF) were met in the 2013 proxy report with overestimation of a 0.6% for the EU-15 and 0.9% for the EU-28. For both EU-15 and EU-28, recalculation effects in the Agriculture sector are larger than the under- resp. overestimation.

A detailed analysis of the EU-28 deviations at source category level showed that the approximated results matched rather well for 1A Fuel Combustion (0.1% lower), 1A1 Energy Industries (0.8% lower), 1A2 Manufacturing Industries (1.7% higher) as well as 1A3 Transport (1.1% higher). Nevertheless, for some Member States the deviations could not entirely be explained by recalculations.

Within the Industrial Processes sector, significant overestimations for 2C Metal Production (15 %), and 2B Chemical Industry (2%) were only partly offset by a 2 % underestimation for 2D Fluorinated gases emissions (2E & 2F, 2%) and other production (2D &2G, 40%), resulting in a 2% overestimation for that sector. For 2B Chemical Industry and Fluorinated gases emissions

(2E & 2F) no recent data sources are available for the approximated GHG inventory and emissions were extrapolated from past trends. Extrapolation methods cannot reflect sudden changes that can occur in these source categories due to rapidly changing demand patterns, technological improvements and more drastic changes in production levels than in other source categories. Compared to the previous year's report, relative deviations in the 2C Metal Production approximately tripled. For 2A Mineral Products the estimates make use of EUTL data[21]: the underestimation was only 0.1 % for the EU-28 and significant lower to the respective deviations in the previous report (-2.1 %).

In the agricultural sector the difference between the approximated EU-28 GHG inventory and real EU-28 inventory data amounted to -4 Mt $CO_2$eq which represents a 0.9% underestimation. The absolutely highest deviations occurred in the subsectors 4B Manure Management (6.9 Mt $CO_2$eq / 8% underestimation) and 4D Agricultural Soils (1.9 Mt $CO_2$eq / 1% overestimation). Compared to the previous year's report, the deviations for 4 Agriculture were in the same range.

The estimates for the waste sector show a 6.5 % overestimation for the EU-28 which is larger than the previous year's deviation. However, that overestimation was mainly triggered by recalculations which could not be foreseen in the EEA's 2013 proxy inventory for 2012. On subsectoral level, an underestimation of 4.7 Mt $CO_2$eq was found both in 6A Solid Waste Disposal on Land and 6B Waste-water Handling. In relative terms, the 14% underestimation of 6B Waswater handling was most important.

## 3.3 Differences in emission estimates between Member States and EEA data

Preliminary data estimated by Member States were compared with the approximated EU inventory calculated by EEA. In general, the preliminary estimates from both sources matched well with differences smaller than ± 2 %, except for Croatia (difference 4.5%), Greece (5.0%), Lithuania (3.1%), Malta (2.3%) and Slovakia (3.1%).

*Table 13 Comparison of EEA and Member States proxies (total without LULUCF)*

| 2013 | kt $CO_2$eq | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| **Austria** | **Total** | **79 812** | **80 354** | **-542** | **-0.7%** | |
| | Energy | 59 463 | 59 287 | 176 | 0.3% | |
| | Industrial processes | 10 916 | 11 672 | -755 | -6.9% | |
| | Solvent and OPU | 335 | 335 | 0 | 0.0% | |
| | Agriculture | 7 536 | 7 510 | 26 | 0.4% | |

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

| 2013 | kt $CO_2$eq | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| | Waste | 1 562 | 1 551 | 11 | 0.7% | |
| **Belgium** | **Total** | **116 251** | **116 852** | **-601** | **-0.5%** | |
| | Energy | 94 162 | 92 340 | 1 823 | 1.9% | |
| | Industrial processes | 11 136 | 13 461 | -2 325 | -20.9% | |
| | Solvent and OPU | 183 | 183 | 0 | -0.1% | |
| | Agriculture | 9 296 | 9 257 | 39 | 0.4% | |
| | Waste | 1 475 | 1 612 | -137 | -9.3% | |
| **Bulgaria** | **Total** | **56 689** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Energy | 42 762 | NA | | | |
| | Industrial processes | 3 975 | NA | | | |
| | Solvent and OPU | 38 | NA | | | |
| | Agriculture | 6 417 | NA | | | |
| | Waste | 3 495 | NA | | | |
| **Croatia** | **Total** | **25 689** | **24 524** | **1 165** | **4.5%** | |
| | Energy | 17 916 | 17 247 | 669 | 3.7% | |
| | Industrial processes | 3 168 | 2 580 | 588 | 18.6% | |
| | Solvent and OPU | 156 | 154 | 1 | 0.9% | |
| | Agriculture | 3 324 | 3 388 | -64 | -1.9% | |
| | Waste | 1 126 | 1 155 | -30 | -2.7% | |
| **Cyprus** | **Total** | **8 743** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Energy | 5 804 | NA | | | |
| | Industrial processes | 1 075 | NA | | | |
| | Solvent and OPU | 75 | NA | | | |
| | Agriculture | 795 | NA | | | |
| | Waste | 995 | NA | | | |
| **Czech Republic** | **Total** | **126 910** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Energy | 102 900 | NA | | | |
| | Industrial processes | 11 783 | NA | | | |
| | Solvent and OPU | 441 | NA | | | |
| | Agriculture | 8 020 | NA | | | |
| | Waste | 3 767 | NA | | | |
| **Denmark** | **Total** | **52 966** | **53 235** | **-268** | **-0.5%** | |
| | Energy | 40 353 | 40 664 | -311 | -0.8% | |
| | Industrial processes | 1 776 | 1 745 | 32 | 1.8% | |
| | Solvent and OPU | 156 | 156 | 0 | 0.0% | |
| | Agriculture | 9 592 | 9 599 | -8 | -0.1% | |
| | Waste | 1 089 | 1 071 | 18 | 1.7% | |
| **Estonia** | **Total** | **21 278** | **21 131** | **146** | **0.7%** | Member States proxy is in Summary2 post KP rep. 4AR GWP structure, with SAR GWP, and has been |
| | Energy | 18 969 | **18 424** | 545 | 2.9% | |
| | Industrial processes | 652 | **1 049** | -397 | -60.8% | |

| 2013 | kt $CO_2eq$ | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| | Solvent and OPU | 19 | **IE** | | | re-aligned to the Summary2 current rep. SAR GWP structure. Totals include 16.49 Gg of Indirect CO2, reported within IP and Agriculture. |
| | Agriculture | 1 347 | **1 356** | -9 | -0.7% | |
| | Waste | 291 | **303** | -12 | -4.0% | |
| **Spain** | **Total** | **311 900** | **315 612** | **-3 712** | **-1.2%** | |
| | Energy | 238 353 | 241 429 | -3 076 | -1.3% | |
| | Industrial processes | 22 116 | 22 145 | -30 | -0.1% | |
| | Solvent and OPU | 1 167 | 1 154 | 13 | 1.1% | |
| | Agriculture | 37 391 | 37 984 | -592 | -1.6% | |
| | Waste | 12 873 | 12 900 | -27 | -0.2% | |
| **Germany** | **Total** | **952 112** | **950 790** | **1 322** | **0.1%** | |
| | Energy | 799 800 | 798 441 | 1 359 | 0.2% | |
| | Industrial processes | 68 026 | 68 312 | -286 | -0.4% | |
| | Solvent and OPU | 1 740 | 1 702 | 38 | 2.2% | |
| | Agriculture | 69 958 | 69 300 | 658 | 0.9% | |
| | Waste | 12 588 | 13 035 | -447 | -3.5% | |
| **Finland** | **Total** | **60 463** | **60 644** | **-181** | **-0.3%** | |
| | Energy | 47 417 | 47 549 | -132 | -0.3% | |
| | Industrial processes | 5 197 | 5 352 | -155 | -3.0% | |
| | Solvent and OPU | 63 | 66 | -3 | -5.0% | |
| | Agriculture | 5 760 | 5 696 | 64 | 1.1% | |
| | Waste | 2 026 | 1 981 | 45 | 2.2% | |
| **France** | **Total** | **492 121** | **491 532** | **590** | **0.1%** | |
| | Energy | 351 510 | 352 083 | -572 | -0.2% | |
| | Industrial processes | 37 425 | 35 495 | 1 930 | 5.2% | |
| | Solvent and OPU | 1 133 | 1 116 | 17 | 1.5% | |
| | Agriculture | 89 540 | 90 335 | -796 | -0.9% | |
| | Waste | 12 513 | 12 502 | 11 | 0.1% | |
| **Greece** | **Total** | **102 710** | **107 797** | **-5 087** | **-5.0%** | The Member States proxy provided the Total CO2 Equivalent Emissions without LULUCF. Values for each sector, sub-sector and gas, were allocated based on EEA proxy results. |
| | Energy | 78 131 | 82 001 | -3 870 | -5.0% | |
| | Industrial processes | 10 348 | 10 861 | -513 | -5.0% | |
| | Solvent and OPU | 319 | 335 | -16 | -5.0% | |
| | Agriculture | 9 176 | 9 631 | -455 | -5.0% | |
| | Waste | 4 735 | 4 970 | -235 | -5.0% | |
| **Hungary** | **Total** | **59 056** | **59 687** | **-631** | **-1.1%** | |
| | Energy | 42 631 | 43 002 | -371 | -0.9% | |
| | Industrial processes | 4 142 | 3 944 | 199 | 4.8% | |
| | Solvent and OPU | 350 | 379 | -28 | -8.1% | |
| | Agriculture | 8 783 | 9 235 | -453 | -5.2% | |
| | Waste | 3 150 | 3 126 | 23 | 0.7% | |

| 2013 | kt $CO_2$eq | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| **Italy** | **Total** | **439 869** | **437 994** | **1 875** | **0.4%** | |
| | Energy | 361 110 | 360 469 | 641 | 0.2% | |
| | Industrial processes | 27 361 | 27 414 | -53 | -0.2% | |
| | Solvent and OPU | 1 410 | 1 537 | -128 | -9.1% | |
| | Agriculture | 34 507 | 33 133 | 1 375 | 4.0% | |
| | Waste | 15 481 | 15 441 | 41 | 0.3% | |
| **Ireland** | **Total** | **56 614** | **NA** | | | |
| | Energy | 35 267 | NA | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Industrial processes | 2 349 | NA | | | |
| | Solvent and OPU | 73 | NA | | | |
| | Agriculture | 17 915 | NA | | | |
| | Waste | 1 009 | NA | | | |
| **Latvia** | **Total** | **10 974** | **10 945** | **29** | **0.3%** | |
| | Energy | 7 227 | 7 102 | 125 | 1.7% | |
| | Industrial processes | 665 | 679 | -14 | -2.2% | |
| | Solvent and OPU | 49 | 45 | 3 | 6.8% | |
| | Agriculture | 2 443 | 2 510 | -67 | -2.7% | |
| | Waste | 591 | 609 | -18 | -3.0% | |
| **Lithuania** | **Total** | **21 034** | **20 378** | **657** | **3.1%** | |
| | Energy | 11 302 | 11 402 | -100 | -0.9% | |
| | Industrial processes | 3 712 | 2 930 | 782 | 21.1% | |
| | Solvent and OPU | 82 | 83 | -1 | -1.1% | |
| | Agriculture | 5 021 | 5 040 | -19 | -0.4% | |
| | Waste | 917 | 923 | -5 | -0.6% | |
| **Luxembourg** | **Total** | **11 428** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. Member States submitted proxy data on 14.08.2014.Summary2 table included in report, but not in any calculations. |
| | Energy | 10 097 | NA | | | |
| | Industrial processes | 586 | NA | | | |
| | Solvent and OPU | 11 | NA | | | |
| | Agriculture | 686 | NA | | | |
| | Waste | 47 | NA | | | |
| **Malta** | **Total** | **2 770** | **2 706** | **64** | **2.3%** | |
| | Energy | 2 452 | 2 370 | 82 | 3.3% | |
| | Industrial processes | 172 | 202 | -30 | -17.4% | |
| | Solvent and OPU | 2 | 5 | -3 | -136.9% | |
| | Agriculture | 80 | 83 | -3 | -3.7% | |
| | Waste | 65 | 50 | 15 | 22.5% | |
| **Netherlands** | **Total** | **191 264** | **191 940** | **-675** | **-0.4%** | |
| | Energy | 161 481 | 162 255 | -774 | -0.5% | |
| | Industrial processes | 9 819 | 11 240 | -1 421 | -14.5% | |
| | Solvent and OPU | 206 | 120 | 86 | 41.8% | |

| 2013 | kt $CO_2$eq | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| | Agriculture | 16 310 | 15 106 | 1 203 | 7.4% | |
| | Waste | 3 449 | 3 218 | 231 | 6.7% | |
| **Poland** | **Total** | **399 685** | **395 979** | **3 706** | **0.9%** | |
| | Energy | 320 503 | 316 479 | 4 024 | 1.3% | |
| | Industrial processes | 26 723 | 26 675 | 48 | 0.2% | |
| | Solvent and OPU | 760 | 760 | 0 | 0.0% | |
| | Agriculture | 36 568 | 36 826 | -258 | -0.7% | |
| | Waste | 15 131 | 15 239 | -107 | -0.7% | |
| **Portugal** | **Total** | **67 001** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Energy | 45 611 | NA | | | |
| | Industrial processes | 5 566 | NA | | | |
| | Solvent and OPU | 230 | NA | | | |
| | Agriculture | 7 173 | NA | | | |
| | Waste | 8 421 | NA | | | |
| **Romania** | **Total** | **107 748** | **NA** | | | Member States proxy not received by 31.07.2014. EEA proxy used for all values. |
| | Energy | 71 192 | NA | | | |
| | Industrial processes | 12 252 | NA | | | |
| | Solvent and OPU | 128 | NA | | | |
| | Agriculture | 18 276 | NA | | | |
| | Waste | 5 901 | NA | | | |
| **Sweden** | **Total** | **56 121** | **55 657** | **465** | **0.8%** | |
| | Energy | 41 498 | 40 899 | 599 | 1.4% | |
| | Industrial processes | 5 191 | 5 739 | -548 | -10.6% | |
| | Solvent and OPU | 303 | 0 | 303 | 100.0% | |
| | Agriculture | 7 596 | 7 555 | 40 | 0.5% | |
| | Waste | 1 534 | 1 464 | 70 | 4.6% | |
| **Slovenia** | **Total** | **18 197** | **18 236** | **-39** | **-0.2%** | |
| | Energy | 14 701 | 14 847 | -147 | -1.0% | |
| | Industrial processes | 1 082 | 1 028 | 54 | 5.0% | |
| | Solvent and OPU | 65 | 37 | 28 | 42.9% | |
| | Agriculture | 1 864 | 1 853 | 11 | 0.6% | |
| | Waste | 485 | 471 | 14 | 2.9% | |
| **Slovakia** | **Total** | **44 030** | **42 679** | **1 351** | **3.1%** | |
| | Energy | 29 991 | 29 392 | 599 | 2.0% | |
| | Industrial processes | 8 579 | 7 803 | 775 | 9.0% | |
| | Solvent and OPU | 173 | 174 | -1 | -0.6% | |
| | Agriculture | 3 137 | 3 093 | 44 | 1.4% | |
| | Waste | 2 150 | 2 216 | -66 | -3.1% | |
| **United Kingdom** | **Total** | **570 988** | **570 400** | **588** | **0.1%** | The top level totals for the separate gases, sum to 100 Gg less than the Total, |
| | Energy | 471 306 | 471 766 | -460 | -0.1% | |

| 2013 | kt $CO_2$eq | EEA proxy | Member States proxy | Difference (kt and %) | | Comment |
|---|---|---|---|---|---|---|
| | Industrial processes | 25 831 | 25 349 | 482 | 1.9% | due to rounding. CH4 and N2O are only shown at top level in the Member State proxy. Values for non-CO2 gases and for each sector based on EEA proxy. |
| | Solvent and OPU | NENO, | 0 | | | |
| | Agriculture | 52 271 | 51 929 | 342 | 0.7% | |
| | Waste | 21 580 | 21 256 | 324 | 1.5% | |
| **EU-15** | **Total** | **3 561 620** | | | | |
| | Energy | 2 835 559 | | | | |
| | Industrial processes | 243 642 | | | | |
| | Solvent and OPU | 7 329 | | | | |
| | Agriculture | 374 707 | | | | |
| | Waste | 100 383 | | | | |
| **EU-28** | **Total** | **4 464 424** | | | | |
| | Energy | 3 523 908 | | | | |
| | Industrial processes | 321 623 | | | | |
| | Solvent and OPU | 9 666 | | | | |
| | Agriculture | 470 780 | | | | |
| | Waste | 138 446 | | | | |

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

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

For Croatia, Estonia, Germany, France, Italy, Latvia, Lithuania, Malta, Poland, Slovakia, Sweden and United Kingdom, the Member States own emissions estimates are below the EEA estimates. For Austria, Belgium, Denmark, Finland, Greece, Hungary, Netherlands, Spain and Slovenia the EEA proxy estimates are lower.

Member States' own estimates for Austria, Belgium and Netherlands show an increase of emissions in 2013 compared to 2012. In contrast, EEA estimates show a decrease of emissions for these Member States. Differences in absolute values are only 0.5 Mt $CO_2$eq for Austria, 0.6 Mt $CO_2$eq for Belgium and 0.7 Mt $CO_2$eq for Netherlands. Member States' own estimates for Poland and Slovakia show a decrease of emissions, whereas EEA estimates show an increase of emissions. Differences in absolute values are 3.7 Mt $CO_2$eq for Poland and 1.3 Mt $CO_2$eq for Slovakia.

Using available Member States' own proxy emission estimates and gap filling (results from chapter 2) for 2013, the 2012-2013 change in emissions for the EU-28 is -1.8 %, which is the same as the EEA estimates. For the EU-15, the 2012-2013 the GHG emission trend is -1.4 % (based on Member States estimates, where available) or -1.6 % (based on EEA estimates).

For the 1990-2013 emission trends, the trend change results based on the different data sources deviate even less: The 1990-2013 emission trend for EU-28 is -19.4 % (Member States estimates, where available) or -19.1 % (EEA estimates). For the EU-15, the 1990-2013 GHG emission trend is 15.0 % (Member States estimates, where available) or -14.9 % (EEA estimates).

# 4. References


BP 2014, BP Statistical Review of World Energy 2014 www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy/statistical-review-downloads.html July 2014.

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, 'European Union Emissions Trading Scheme (EU ETS) data viewer' www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer August 2014

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

EEA 2014d, 'EEA greenhouse gas data viewer' www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer

EEA 2014e, 'EU ETS data viewer – User manual and background note', Version 6.1, May 2014 http://www.eea.europa.eu/data-and-maps/data/european-union-emissions-trading-scheme-eu-ets-data-from-citl-6/eu-ets-data-viewer-manual/eu-ets-data-viewer-manual/download

EU 2014, Beyond GDP — Measuring progress, true wealth and the well-being of nations www.beyond-gdp.eu.

Eurostat 2014, 'Energy — Database' http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database accessed in June-August 2014, 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;
- Monthly production data for crude steel production and blast furnace iron production of the World Steel Association;
- Annual statistics on livestock population for dairy cattle, non-dairy cattle, swine, sheep, goats.
- Annual road freight transport by type

Haylock, M.R., N. Hofstra, A.M.G. Klein Tank, E.J. Klok, P.D. Jones, M. and New, 2008, 'A European daily high-resolution gridded dataset of surface temperature and precipitation', *J. Geophys. Res (Atmospheres),* (113) D20119

IPCC 1995, IPCC Second Assessment Report: Climate Change 1995 (SAR)

IPCC 1996, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual, www.ipcc-nggip.iges.or.jp/public/gl/invs1.html

IPCC 2000, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, www.ipcc-nggip.iges.or.jp/public/gp

IPCC 2007, IPCC Fourth Assessment Report: Climate Change 2007 (AR4)

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.

UNFCCC 2014, National Inventory Submissions 2014, http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php

World Steel Association 2014a, Crude steel production www.worldsteel.org/statistics/crude-steel-production.html accessed in June 2014.

World Steel Association 2014b, Blast furnace iron (BFI) production www.worldsteel.org/statistics/BFI-production.html accessed June 2014

# 5. Annexes

## 5.1 Annex I. Detailed results for each Member States as reported by Member States

## 5.1.1 Austria

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

2013 Inventory year
2014 proxy Submission
Austria country

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **68.025,32** | **5.206,46** | **5.221,51** | **1.547,44** | **39,39** | **313,82** | **80.353,93** | | |
| **1. Energy** | **58.129,54** | **482,75** | **674,47** | | | | **59.286,76** | **20.194,10** | **39.092,66** |
| A. Fuel Combustion (Sectoral Approach) | 57.892,36 | 238,58 | 674,47 | | | | 58.805,41 | 20.194,10 | 38.611,31 |
| 1. Energy Industries | 11.406,24 | 10,49 | 111,42 | | | | 11.528,15 | 9.306,12 | 2.222,03 |
| 2. Manufacturing Industries and Construction | 15.035,87 | 13,53 | 158,06 | | | | 15.207,46 | 10.200,47 | 5.006,98 |
| 3. Transport | 22.554,41 | 12,85 | 204,52 | | | | 22.771,78 | 687,51 | 22.084,28 |
| 4. Other Sectors | 8.848,45 | 201,67 | 199,48 | | | | 9.249,61 | | 9.249,61 |
| 5. Other | 47,40 | 0,03 | 0,98 | | | | 48,41 | | 48,41 |
| B. Fugitive Emissions from Fuels | 237,17 | 244,17 | 0,00 | | | | 481,35 | | 481,35 |
| 1. Solid Fuels | IE,NA,NO | 0,90 | IE,NA | | | | 0,90 | | |
| 2. Oil and Natural Gas | 237,17 | 243,28 | IE,NA | | | | 480,45 | | 480,45 |
| **2. Industrial Processes** | **9.704,74** | **18,33** | **48,09** | **1.547,44** | **39,39** | **313,82** | **11.671,81** | **9.656,62** | **2.015,19** |
| A. Mineral Products | 2.972,03 | NA | NA | | | | 2.972,03 | 2.972,03 | 0,00 |
| B. Chemical Industry | 976,09 | 18,24 | 48,09 | | | | 1.042,42 | 947,68 | 94,74 |
| C. Metal Production | 5.756,63 | 0,08 | NA | | NO | 4,68 | 5.761,39 | 5.736,91 | 24,48 |
| D. Other Production | NA | | | | | | 0,00 | | 0,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NA | NA | NA | NA | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 1.547,44 | 39,39 | 309,14 | 1.895,97 | | 1.895,97 |
| G. Other | NA | NA | NA | NA | NA | NA | NA | | |
| **3. Solvent and Other Product Use** | **189,00** | | **145,56** | | | | **334,56** | | 334,56 |
| **4. Agriculture** | | **3.536,57** | **3.973,44** | | | | **7.510,01** | | 7.510,01 |
| A. Enteric Fermentation | | 3.204,36 | | | | | 3.204,36 | | **3.204,36** |
| B. Manure Management | | 322,85 | 919,00 | | | | 1.241,85 | | 1.241,85 |
| C. Rice Cultivation | | NO | | | | | 0,00 | | 0,00 |
| D. Agricultural Soils [3] | | 8,84 | 3.054,34 | | | | 3.063,18 | | 3.063,18 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | 0 | | 0,00 |
| F. Field Burning of Agricultural Residues | | 0,52 | 0,10 | | | | 0,62 | | 0,62 |
| G. Other | | NA | NA | | | | 0 | | 0,00 |
| **5. Land Use, Land-Use Change and Forestry [1]** | **NE** | **NE** | **NE** | | | | **NE** | | |
| A. Forest Land | NE | NE | NE | | | | NE | | |
| B. Cropland | NE | NE | NE | | | | NE | | |
| C. Grassland | NE | NE | NE | | | | NE | | |
| D. Wetlands | NE | NE | NE | | | | NE | | |
| E. Settlements | NE | NE | NE | | | | NE | | |
| F. Other Land | NE | NE | NE | | | | NE | | |
| G. Other | NE | NE | NE | | | | NE | | |
| **6. Waste** | **2,03** | **1.168,81** | **376,12** | | | | **1.550,79** | | 1.550,79 |
| A. Solid Waste Disposal on Land | NA,NO | 1.091,05 | | | | | 1.091,05 | | 1.091,05 |
| B. Waste-water Handling | | 23,32 | 269,97 | | | | 293,28 | | 293,28 |
| C. Waste Incineration | 2,03 | 0,00 | 0,01 | | | | 2,04 | | 2,04 |
| D. Other | NA | 54,45 | 109,98 | | | | 164,43 | | 164,43 |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | |
| | | | | | | | | | |
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | 2.120,07 | 0,98 | 26,50 | | | | 2.147,55 | | |
| Aviation | 2.075,65 | 0,94 | 21,62 | | | | 2.098,20 | | |
| Marine | 44,42 | 0,04 | 4,89 | | | | 49,34 | | |
| **Multilateral Operations** | **NO** | **NO** | **NO** | | | | **NO** | | |
| **$CO_2$ Emissions from Biomass** | **NE** | | | | | | **NE** | | |
| | | | | | | | | | |
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | | | | | | | 80.353,93 | 29.850,72 | 50.503,21 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | | | | | | | NE | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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 2012-2013 in fuel consumption by type of fuel are:**
Sales of transport diesel and gasoline increased by +3.9% (approx. +880 Gg of CO2)
(https://www.wko.at/Content.Node/branchen/oe/Mineraloelindustrie/Verbrauchsstatistik.html)
Natural gas consumption decreased by -6.4% (approx. -1100 Gg of CO2)
(http://www.e-control.at/de/statistik/gas)
**Other main drivers are:**
Iron production increased by 7% (approx. + 700 Gg of CO2)
(http://www.worldsteel.org/statistics/BFI-production.html)
Fertilizer Use: two-year mean value decreased by 2.2%
(http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.161837&280_Duengemittelstatistik_N_P_K_Bundeslaender_ab_1995_quarta.pdf)
Animals numbers: total cattle increased by 0,1%, whereas milk cows increased by 1.2 % (and milk yield increased by 0.7%); swine number decreased by 2.0%
(http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.137781&230_vz_rinder.pdf)
(http://www.ama.at/Portal.Node/ama/public?gentics.rm=PCP&gentics.pm=gti_full&p.contentid=10008.137782&240_vz_schweine.pdf)

## 5.1.2 Belgium

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

Inventory year: proxy 2013
Submission:
country: BELGIUM

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **99.658,04** | **6.390,37** | **6.945,50** | **2.140,19** | **220,12** | **117,00** | **115.471,23** | | |
| **1. Energy** | **90.860,11** | **729,59** | **750,05** | | | | **92.339,75** | **34.321,70** | **58.018,80** |
| A. Fuel Combustion (Sectoral Approach) | **90.741,16** | **345,25** | **750,05** | | | | **91.836,45** | **34.203,20** | **57.634,00** |
| 1. Energy Industries | 21.065,41 | 35,58 | 147,96 | | | | 21.248,94 | 19.193,51 | 2.055,66 |
| 2. Manufacturing Industries and Construction | 18.765,57 | 37,91 | 223,16 | | | | 19.026,64 | 14.805,90 | 4.220,73 |
| 3. Transport | 24.473,92 | 15,38 | 274,63 | | | | 24.763,93 | 87,00 | 24.676,93 |
| 4. Other Sectors | 26.390,98 | 256,30 | 103,39 | | | | 26.750,67 | 116,79 | 26.634,41 |
| 5. Other | 45,28 | 0,09 | 0,91 | | | | 46,28 | 0,00 | 46,28 |
| B. Fugitive Emissions from Fuels | **118,95** | **384,34** | **0,00** | | | | **503,30** | **118,50** | **384,80** |
| 1. Solid Fuels | NA,NO | 4,84 | NA,NO | | | | 4,84 | | 4,84 |
| 2. Oil and Natural Gas | 118,95 | 379,51 | IE,NA,NO | | | | 498,46 | 118,50 | 379,96 |
| **2. Industrial Processes** | **9.664,06** | **17,14** | **1.302,47** | **2.140,19** | **220,12** | **117,00** | **13.460,99** | **10.226,57** | **3.234,43** |
| A. Mineral Products | 4.484,22 | | | | | | 4.484,22 | 4.484,06 | 0,16 |
| B. Chemical Industry | 1.930,13 | 3,85 | 1.302,47 | | | | 3.236,45 | 2.492,80 | 743,65 |
| C. Metal Production | 2.929,71 | 13,29 | | | | | 2.943,00 | 2.929,71 | 13,29 |
| D. Other Production | 320,00 | | | | | | 320,00 | 320,00 | 0,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | 212,03 | NO | 212,03 | | 212,03 |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 2.140,19 | 8,10 | 117,00 | 2.265,29 | | 2.265,29 |
| G. Other | | | | | | | | | |
| **3. Solvent and Other Product Use** | **NA** | | **182,88** | | | | **182,88** | | **182,88** |
| **4. Agriculture** | | **4.962,24** | **4.294,29** | | | | **9.256,53** | | **9.256,53** |
| A. Enteric Fermentation | | 3.561,36 | | | | | 3.561,36 | | 3.561,36 |
| B. Manure Management | | 1.400,87 | 765,70 | | | | 2.166,58 | | 2.166,58 |
| C. Rice Cultivation | | NO | | | | | 0,00 | | 0,00 |
| D. Agricultural Soils [3] | | NA | 3.528,59 | | | | 3.528,59 | | 3.528,59 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | | | |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | | | |
| G. Other | | NA | NA | | | | | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-1.487,76** | **0,00** | **106,50** | | | | **-1.381,26** | | |
| A. Forest Land | -3.844,12 | NO | NO | | | | -3.844,12 | | |
| B. Cropland | 1.881,78 | NO | 106,50 | | | | 1.988,28 | | |
| C. Grassland | -188,02 | NO | NO | | | | -188,02 | | |
| D. Wetlands | -23,00 | NO | NO | | | | -23,00 | | |
| E. Settlements | 578,80 | NO | NO | | | | 578,80 | | |
| F. Other Land | 106,81 | NO | NO | | | | 106,81 | | |
| G. Other | NO | NO | NO | | | | 0,00 | | |
| **6. Waste** | **621,62** | **681,40** | **309,32** | | | | **1.612,35** | **536,00** | **1.076,35** |
| A. Solid Waste Disposal on Land | NA,NO | 578,60 | | | | | 578,60 | | 578,60 |
| B. Waste-water Handling | | 78,87 | 309,26 | | | | 388,13 | | 388,13 |
| C. Waste Incineration | 621,62 | NA | 0,06 | | | | 621,68 | 536 | 85,68 |
| D. Other | NA | 23,93 | NA | | | | 23,93 | | 23,93 |
| **7. Other *(as specified in Summary 1.A)*** | | | | | | | | | |
| | | | | | | | | | |
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | | | | | | | | | |
| Aviation | | | | | | | | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | **116.852,49** | | |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | **115.471,23** | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

In the Flemish region the sector of industry shows an increase of emissions in 2013 because the energy consumption increases with 3.3% compared to 2012.
In the sector of 'electricity & heat' a decrease of emissions takes place because of total decreasing fuel consumption in 2013 (-1.3% compared to 2012).
In the 3 regions, the emissions from residential and commercial sectors increase due to a colder year.
In Wallonia, regarding ETS, the emissions in the energy industry slightly increased, but this is counterbalanced by emissions reductions in the manufacturing industry.

Road Transportation according reference approach (20/06/14) in tons

| | |
|---|---|
| Gasoline (excluding offroads) | 1.120.902 |
| Diesel | 6.360.000 |
| LPG | 60.000 |
| Bioethanol (excluding offroads) | 72.862 |
| Biodiesel | 320.000 |

Belgium submitted revised proxy data on 15th September 2014. As this revision was submitted after the deadline of 31st July 2014, proxy data of the initial submission is presented here and was taken into account in the calculations of this report.

### 5.1.3 Bulgaria

Bulgaria did not submit proxy data by 31 July 2014.

### 5.1.4 Cyprus

Cyprus did not submit proxy data by 31 July 2014.

### 5.1.5 Czech Republic

Czech Republic did not submit proxy data by 31 July 2014.

## 5.1.6 Germany

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

25.02.2014
GERMANY
prognostic year 2013

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **830.380** | **47.525** | **56.543** | **9.340** | **205** | **3.310** | **947.303** | | |
| **1. Energy** | **780.740** | **11.730** | **5.971** | | | | **798.441** | **426.680** | **371.761** |
| A. Fuel Combustion (Sectoral Approach) | 779.200 | 3.120 | 5.970 | | | | 788.290 | 426.599 | 361.691 |
| 1. Energy Industries | 362.800 | 1.700 | 3.060 | | | | 367.560 | 342.039 | 25.521 |
| 2. Manufacturing Industries and Construction | 115.700 | 210 | 750 | | | | 116.660 | 83.395 | 33.265 |
| 3. Transport | 154.700 | 150 | 1.500 | | | | 156.350 | 812 | 155.538 |
| 4. Other Sectors | 145.000 | 1.050 | 650 | | | | 146.700 | 120 | 146.580 |
| 5. Other | 1.000 | 10 | 10 | | | | 1.020 | 235 | 785 |
| B. Fugitive Emissions from Fuels | 1.540 | 8.610 | 1 | | | | 10.151 | 80 | 10.071 |
| 1. Solid Fuels | 10 | 2.700 | NO | | | | 2.710 | | 2.710 |
| 2. Oil and Natural Gas | 1.530 | 5.910 | 1 | | | | 7.441 | 80 | 7.361 |
| **2. Industrial Processes** | **52.200** | **7** | **3.250** | **9.340** | **205** | **3.310** | **68.312** | **50.785** | **17.527** |
| A. Mineral Products | 18.700 | NO | NO | | | | 18.700 | IE | IE |
| B. Chemical Industry | 17.100 | 2 | 3.235 | | | | 20.337 | IE | IE |
| C. Metal Production | 16.400 | 5 | 15 | 40 | 75 | 50 | 16.585 | IE | IE |
| D. Other Production | NO | | | | | | NO | IE | IE |
| E. Production of Halocarbons and $SF_6$ | | | | 30 | NA,NO | 110 | 140 | IE | IE |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 9.130 | 130 | 3.150 | 12.410 | IE | IE |
| G. Other | NO | NO | NO | 140 | IE,NA,NO | IE,NO | 140 | IE | IE |
| **3. Solvent and Other Product Use** | **1.450** | | **252** | | | | **1.702** | | |
| **4. Agriculture** | | **25.500** | **43.800** | | | | **69.300** | | |
| A. Enteric Fermentation | | 20.600 | | | | | 20.600 | | |
| B. Manure Management | | 4.900 | 2.800 | | | | 7.700 | | |
| C. Rice Cultivation | | NO | | | | | 0 | | |
| D. Agricultural Soils [3] | | NO | 41.000 | | | | 41.000 | | |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | | |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | | |
| G. Other | | NA,NO | NA,NO | | | | NA,NO | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-4.010** | **3** | **520** | | | | **-3.487** | | |
| A. Forest Land | -51.850 | 3 | 70 | | | | -51.777 | | |
| B. Cropland | 31.250 | NO | 450 | | | | 31.700 | | |
| C. Grassland | 10.100 | NO | NO | | | | 10.100 | | |
| D. Wetlands | 2.280 | NE,NO | NE,NO | | | | 2.280 | | |
| E. Settlements | 4.150 | NE | NE | | | | 4.150 | | |
| F. Other Land | NO | NO | NO | | | | NO | | |
| G. Other | 60 | NA,NE | NE | | | | 60 | | |
| **6. Waste** | **NO** | **10.285** | **2.750** | | | | **13.035** | | |
| A. Solid Waste Disposal on Land | NO | 9.660 | | | | | 9.660 | | |
| B. Waste-water Handling | | 25 | 2.400 | | | | 2.425 | | |
| C. Waste Incineration | NO | NO | NO | | | | NO | | |
| D. Other | NO | 600 | 350 | | | | 950 | | |
| **7. Other** ***(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | 34.340 | 20 | 320 | | | | 34.680 | | |
| Aviation | 26.065 | 3 | 254 | | | | 26.322 | | |
| Marine | 8.275 | 17 | 66 | | | | 8.358 | | |
| **Multilateral Operations** | **NE** | **NE** | **NE** | | | | **NE** | | |
| **$CO_2$ Emissions from Biomass** | **109.400** | | | | | | **109.400** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | **950.790** | **477.465** | **473.325** |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | **947.303** | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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-H) are based on an approximation published in February 2014:
http://www.umweltbundesamt.de/en/press/pressinformation/greenhouse-gas-emissions-rise-again-slightly-in
All trends are explained in the Annex to this press release.

ETS data (column J) are based on work to the Emissions Trading Directive 2003/87/EC (Article 21):
http://cdr.eionet.europa.eu/de/eu/emt/envu5rcta/overview
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 express the high degree of uncertainty.

## 5.1.7 Denmark

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

Proxy inventory 2013 - Old IPCC GL

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **41.047,79** | **5.479,82** | **5.965,82** | **605,06** | **7,94** | **128,46** | **53.234,89** | | |
| **1. Energy** | **39.881,61** | **429,99** | **352,37** | | | | **40.663,97** | | |
| A. Fuel Combustion (Sectoral Approach) | 39.573,12 | 323,97 | 351,84 | | | | 40.248,93 | | |
| 1. Energy Industries | | | | | | | | | |
| 2. Manufacturing Industries and Construction | | | | | | | | | |
| 3. Transport | | | | | | | | | |
| 4. Other Sectors | | | | | | | | | |
| 5. Other | | | | | | | | | |
| B. Fugitive Emissions from Fuels | 308,49 | 106,02 | 0,53 | | | | 415,04 | | |
| 1. Solid Fuels | NA,NO | NA,NO | NA,NO | | | | NA,NO | | |
| 2. Oil and Natural Gas | 308,49 | 106,02 | 0,53 | | | | 415,04 | | |
| **2. Industrial Processes** | **1.003,04** | **IE,NA,NO** | **IE,NA,NO** | **605,06** | **7,94** | **128,46** | **1.744,51** | | |
| A. Mineral Products | 967,70 | IE,NA | IE,NA | | | | 967,70 | | |
| B. Chemical Industry | 1,41 | NA,NO | NA,NO | | | | 1,41 | | |
| C. Metal Production | NA,NO | NA,NO | NO | | NO | NO | NA,NO | | |
| D. Other Production | 2,24 | | | | | | 2,24 | | |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA,NO | NO | NA,NO | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 605,06 | 7,94 | 128,46 | 741,46 | | |
| G. Other | 31,70 | NA | NA | NA | NA | NA | 31,70 | | |
| **3. Solvent and Other Product Use** | **144,39** | | **11,93** | | | | **156,32** | | |
| **4. Agriculture** | | **4.203,40** | **5.395,93** | | | | **9.599,33** | | |
| A. Enteric Fermentation | | 2.903,79 | | | | | 2.903,79 | | |
| B. Manure Management | | 1.297,17 | 390,77 | | | | 1.687,94 | | |
| C. Rice Cultivation | | NO | | | | | NO | | |
| D. Agricultural Soils [3] | | NA,NE | 5.004,23 | | | | 5.004,23 | | |
| E. Prescribed Burning of Savannas | | NA | NA | | | | NA | | |
| F. Field Burning of Agricultural Residues | | 2,43 | 0,93 | | | | 3,36 | | |
| G. Other | | NA | NA | | | | NA | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | | | | | | | | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | **18,75** | **846,44** | **205,59** | | | | **1.070,77** | | |
| A. Solid Waste Disposal on Land | NA,NE,NO | 676,78 | | | | | 676,78 | | |
| B. Waste-water Handling | | 75,11 | 75,00 | | | | 150,12 | | |
| C. Waste Incineration | NO | 0,02 | 0,29 | | | | 0,30 | | |
| D. Other | 18,75 | 94,53 | 130,30 | | | | 243,57 | | |
| **7. Other** ***(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | | | | | | | | | |
| Aviation | | | | | | | | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | |
|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 53.234,89 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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 2013, Denmark imported less electricity compared to 2012. This caused an increase in coal consumption in the DAnish power plants to compensate for the lower electricity import. At the same time the consumption of natural gas and oil products decreased. The overall result is however, an increase in the CO2 emission. More information on the preliminary energy statistics is available from the Danish Energy Agency (http://www.ens.dk/node/3955). 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 only correction for CO2 is to take into account the 2013 ETS report of the only DAnish cement plant that accounts for the vast majority of emissions. 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 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.
Product use has been assumed at the same level as in 2012.
The agricultural sector is the sector in Denmark most influenced by the 2006 IPCC GL and therefore this sector has been prioritised in terms of implementing the new GL. This means that the data in this table are simply kept at the 2012 level. The short term fluctuations in the agricultural sector are generally small especially when compared to the energy sector.
For waste the emissions from SWDS are expected to continue the decreasing trend caused by the change decades ago to limit the landfilling of organic degradable waste. This is somewhat counteracted by the increase in emissions from composting. The emissions from WWH remain relatively constant.

## 5.1.8 Estonia

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

Year 2013
Submission
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]** | **19.016,23** | **1.027,24** | **911,16** | **174,72** | **NO** | **2,13** | **NO** | **NO** | **21.131,48** | | |
| **1. Energy** | **18.138,87** | **209,31** | **75,95** | | | | | | **18.424,12** | **15.076,70** | **3.347,41** |
| A. Fuel combustion (sectoral approach) | 18.138,87 | 119,85 | 75,95 | | | | | | 18.334,66 | | |
| 1. Energy industries | 14.734,38 | 12,23 | 31,45 | | | | | | 14.778,05 | | |
| 2. Manufacturing industries and construction | 673,16 | 1,75 | 3,65 | | | | | | 678,57 | | |
| 3. Transport | 2.232,97 | 3,73 | 19,50 | | | | | | 2.256,20 | | |
| 4. Other sectors | 475,74 | 102,12 | 20,96 | | | | | | 598,82 | | |
| 5. Other | 22,62 | 0,03 | 0,39 | | | | | | 23,03 | | |
| B. Fugitive emissions from fuels | NO | 89,45 | NO | | | | | | 89,45 | | |
| 1. Solid fuels | NO | NO | NO | | | | | | NO | | |
| 2. Oil and natural gas and other emissions from energy production | NO | 89,45 | NO | | | | | | 89,45 | | |
| C. $CO_2$ transport and storage | NO | | | | | | | | NO | | |
| **2. Industrial processes and product use** | **867,52** | **NO** | **4,36** | **174,72** | **NO** | **2,13** | **NO** | **NO** | **1.048,74** | **848,71** | **200,41** |
| A. Mineral industry | 694,52 | | | | | | | | 694,52 | | |
| B. Chemical industry | 154,05 | NO | NO | NO | NO | NO | NO | NO | 154,05 | | |
| C. Metal industry | NO | NO | NO | NO | NO | NO | NO | NO | NO | | |
| D. Non-energy products from fuels and solvent use | 17,26 | NO | NO | | | | | | 17,26 | | |
| E. Electronic Industry | | | | NO | NO | NO | NO | NO | NO | | |
| F. Product uses as ODS substitutes | | | | 174,72 | NO | NO | NO | NO | 174,72 | | |
| G. Other product manufacture and use | NO | NO | 4,36 | NO | NO | 2,13 | NO | NO | 6,50 | | |
| H. Other | 1,69 | NO | NO | NO | NO | NO | NO | NO | 1,69 | | |
| **3. Agriculture** | **9,39** | **547,27** | **799,20** | | | | | | **1.355,86** | **0,00** | **1.355,49** |
| A. Enteric fermentation | | 476,53 | | | | | | | 476,53 | | |
| B. Manure management | | 70,74 | 75,42 | | | | | | 146,16 | | |
| C. Rice cultivation | | NO | | | | | | | NO | | |
| D. Agricultural soils | | NO | 723,78 | | | | | | 723,78 | | |
| E. Prescribed burning of savannahs | | NO | NO | | | | | | NO | | |
| F. Field burning of agricultural residues | | NO | NO | | | | | | NO | | |
| G. Liming | 9,02 | | | | | | | | 9,02 | | |
| H. Urea application | 0,37 | | | | | | | | 0,37 | | |
| 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 | NE | | | | | | NE | | |
| H. Other | NE | NE | NE | | | | | | NE | | |
| **5. Waste** | **0,45** | **270,66** | **31,65** | | | | | | **302,76** | **0,00** | **302,76** |
| A. Solid waste disposal | NO | 224,70 | NO | | | | | | 224,70 | | |
| B. Biological treatment of solid waste | | 10,78 | 11,90 | | | | | | 22,69 | | |
| C. Incineration and open burning of waste | 0,45 | 1,33 | 0,10 | | | | | | 1,88 | | |
| D. Waste water treatment and discharge | | 33,85 | 19,65 | | | | | | 53,50 | | |
| E. Other | NO | NO | NO | | | | | | NO | | |
| **6. Other *(as specified in summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **0,00** | **0,00** |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| **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 $N_2O$** | | | 143,47 | | | | | | | | |
| **Indirect $CO_2$[3]** | 16,49 | | | | | | | | | | |
| **Total $CO_2$ equivalent emissions without land use, land-use change and forestry** | | | | | | | | | **21.114,99** | **15.925,41** | **5.206,07** |
| **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** | | | | | | | | | **21.131,48** | | |
| **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 increase of GHG emissions in the energy sector is related to the fact that the export of electricity (mainly produced from oil shale) increased about 27% in 2013, compared to 2012.

Increase of CO2 emissions from chemical industry (CRF 2.B) was caused by increased production of ammonia (ammonia production was temporarily stopped at the beginning of February 2009 and the production was restarted in December 2012).

In the agriculture sector, there were new sub-categories where Estonia performed emission estimations, namely liming and urea application, both of which contributed to increased gross emissions. There was also a considerable growth in the assessment of emissions from enteric fermentation due to new methodology for calculating emissions from livestock taken up from the IPCC 2006 guidelines.

CH4 emissions from waste water treatment and discharge (CRF 5.D) increased mainly due to the new methodology and factors introduced in the IPCC 2006 guidelines.

## 5.1.9 Spain

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

Inventory year 2013
Submission 2014-Proxy
country SPAIN

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **217.660,54** | **31.865,25** | **24.847,26** | **7.446,99** | **48,34** | **214,77** | **282.083,14** | | |
| **1. Energy** | **236.566,27** | **2.579,94** | **2.282,57** | | | | **241.428,79** | | |
| A. Fuel Combustion (Sectoral Approach) | 233.167,23 | 1.624,18 | 2.282,27 | | | | 237.073,68 | | |
| 1. Energy Industries | 72.084,67 | 155,15 | 638,97 | | | | 72.878,79 | | |
| 2. Manufacturing Industries and Construction | 42.261,35 | 440,59 | 437,72 | | | | 43.139,67 | | |
| 3. Transport | 79.361,39 | 81,54 | 784,15 | | | | 80.227,08 | | |
| 4. Other Sectors | 39.459,82 | 946,90 | 421,43 | | | | 40.828,14 | | |
| 5. Other | | | | | | | 0,00 | | |
| B. Fugitive Emissions from Fuels | 3.399,04 | 955,76 | 0,31 | | | | 4.355,11 | | |
| 1. Solid Fuels | 23,77 | 374,81 | | | | | 398,58 | | |
| 2. Oil and Natural Gas | 3.375,27 | 580,95 | 0,31 | | | | 3.956,53 | | |
| **2. Industrial Processes** | **14.189,80** | **53,41** | **192,14** | **7.446,99** | **48,34** | **214,77** | **22.145,44** | | |
| A. Mineral Products | 10.675,44 | | | | | | 10.675,44 | | |
| B. Chemical Industry | 716,00 | 39,83 | 190,80 | | | | 946,63 | | |
| C. Metal Production | 2.798,36 | 13,58 | 1,34 | | 45,89 | | 2.859,17 | | |
| D. Other Production | | | | | | | 0,00 | | |
| E. Production of Halocarbons and $SF_6$ | | | | 182,74 | | | 182,74 | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 7.264,24 | 2,45 | 214,77 | 7.481,46 | | |
| G. Other | | | | | | | 0,00 | | |
| **3. Solvent and Other Product Use** | **752,20** | | **401,88** | | | | **1.154,08** | | |
| **4. Agriculture** | | **17.476,89** | **20.506,62** | | | | **37.983,51** | | |
| A. Enteric Fermentation | | 10.070,32 | | | | | 10.070,32 | | |
| B. Manure Management | | 6.660,71 | 1.521,00 | | | | 8.181,71 | | |
| C. Rice Cultivation | | 307,59 | | | | | 307,59 | | |
| D. Agricultural Soils [3] | | | 18.905,42 | | | | 18.905,42 | | |
| E. Prescribed Burning of Savannas | | | | | | | 0,00 | | |
| F. Field Burning of Agricultural Residues | | 438,27 | 80,20 | | | | 518,47 | | |
| G. Other | | | | | | | 0,00 | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-33.851,03** | **135,65** | **186,75** | | | | **-33.528,63** | | |
| A. Forest Land | -34.040,90 | 135,56 | 13,76 | | | | -33.891,58 | | |
| B. Cropland | -1.993,07 | | 172,99 | | | | -1.820,09 | | |
| C. Grassland | 996,14 | 0,09 | 0,01 | | | | 996,24 | | |
| D. Wetlands | 42,05 | | | | | | 42,05 | | |
| E. Settlements | 1.139,07 | | | | | | 1.139,07 | | |
| F. Other Land | 5,67 | | | | | | 5,67 | | |
| G. Other | | | | | | | 0,00 | | |
| **6. Waste** | **3,30** | **11.619,36** | **1.277,30** | | | | **12.899,95** | | |
| A. Solid Waste Disposal on Land | | 11.003,51 | 0,84 | | | | 11.004,34 | | |
| B. Waste-water Handling | | 598,45 | 1.266,62 | | | | 1.865,07 | | |
| C. Waste Incineration | 3,30 | 0,64 | 9,75 | | | | 13,70 | | |
| D. Other | | 16,76 | 0,09 | | | | 16,85 | | |
| **7. Other** ***(as specified in Summary 1.A)*** | | | | | | | | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | | | | | | | | | |
| Aviation | | | | | | | | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | | |
|---|---|---|
| **Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry** | **315.611,77** | |
| **Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry** | **282.083,14** | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

In the evolution of the emissions of 2013 compared to 2012 there is a downward trend that encompasses almost all sectors, leading to a decrease of 25,197 Gg of CO2-e, that in percentage therms represents a change of –7,4%.
The dominant dirvers in the decline of emissions are those corresponding to stationary combustion, and within them the most relevant decreases are those produced in:
- the energy industries, particularly in the public power plants (category 1.A.1.a), with the largest decline in emissions as a consequence of the drop in electricity production in coal power plants and in natural gas combined cycle plants, as well as an important contribution of renewables to the energy mix during the year;
- the manufacturing industries and construction (category 1.A.2), as a result of the decrease in fuel consumption combined with the change in the mix of energy sources (decreases in the use of fuels with higher carbon content per unit of energy calorific value, such as coal and petroleum coke);
- residential, commercial and institutional sectors (category 1.A.4), where the drop is determined by the decrease in consumption of gasoil and natural gas.

Besides stationary combustion it is noteworthy the fall in CO2 emissions in industrial processes, essentially caused by the decrease in cement clinker production (category 2.A.1). Additionaly, a decrease in aviation transport (category 1.A.3) produces a fall in the associated emissions for that sector.
Regarding categories with an upward change, it should be mentioned the increase in agricultural soils (category 4.D) as a result of the increase in the application of synthetic fertilizers, wastes and road transport.

## 5.1.10 Finland

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

Inventory year 2013
Submission v1
country Finland

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **31.482,44** | **2.246,01** | **2.627,69** | **982,46** | **4,84** | **51,46** | **37.394,90** | | |
| **1. Energy** | **46.293,00** | **357,00** | **899,00** | | | | **47.549,00** | **30162,06** | **17386,94** |
| A. Fuel Combustion (Sectoral Approach) | 46.160,00 | 319,00 | 898,00 | | | | 47.377,00 | | |
| 1. Energy Industries | 22.120,00 | 22,00 | 334,00 | | | | 22.476,00 | | |
| 2. Manufacturing Industries and Construction | 8.050,00 | 15,00 | 134,00 | | | | 8.199,00 | | |
| 3. Transport | 12.600,00 | 34,00 | 172,00 | | | | 12.806,00 | | |
| 4. Other Sectors | 2.560,00 | 246,00 | 52,00 | | | | 2.858,00 | | |
| 5. Other | 830,00 | 2,00 | 206,00 | | | | 1.038,00 | | |
| B. Fugitive Emissions from Fuels | 133,00 | 38,00 | 1,00 | | | | 172,00 | | |
| 1. Solid Fuels | NO | NO | NO | | | | 0,00 | | |
| 2. Oil and Natural Gas | 133,00 | 38,00 | 1,00 | | | | 172,00 | | |
| **2. Industrial Processes** | **4.084,54** | **9,38** | **219,24** | **982,46** | **4,84** | **51,46** | **5.351,91** | **1341,10** | **4.010,81** |
| A. Mineral Products | 1.107,93 | NO | NO | | | | 1.107,93 | | |
| B. Chemical Industry | 807,22 | NA, NO | 219,24 | | | | 1.026,46 | | |
| C. Metal Production | 2.169,39 | 9,38 | NO | | NO | C, NO | 2.178,77 | | |
| D. Other Production | NO | | | | | | NO | | |
| E. Production of Halocarbons and $SF_6$ | | | | NA, NO | NA, NO | NO | NA, NO | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 982,46 | 4,84 | 51,46 | 1.038,76 | | |
| G. Other | NA | NA | NA | NA | NA | NA | NA | | |
| **3. Solvent and Other Product Use** | **39,81** | | **26,35** | | | | **66,16** | **0,00** | **66,16** |
| **4. Agriculture** | | **1.796,64** | **3.899,29** | | | | **5.695,93** | | |
| A. Enteric Fermentation | | 1.542,81 | | | | | 1.542,81 | | |
| B. Manure Management | | 253,44 | 403,51 | | | | 656,95 | | |
| C. Rice Cultivation | | NO | | | | | NO | | |
| D. Agricultural Soils[3] | | NE,NO | 3.495,67 | | | | 3.495,67 | | |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | | |
| F. Field Burning of Agricultural Residues | | 0,39 | 0,11 | | | | 0,51 | | |
| G. Other | | NO | NO | | | | NO | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-18.934,91** | **57,09** | **1.324,85** | | | | **-17.552,97** | | |
| A. Forest Land | -30.137,14 | 0,47 | 1.212,77 | | | | -28.923,90 | | |
| B. Cropland | 6.923,59 | NA,NE | 12,26 | | | | 6.935,85 | | |
| C. Grassland | 331,64 | NE,NO | NE,NO | | | | 331,64 | | |
| D. Wetlands | 1.753,15 | 56,62 | 99,82 | | | | 1.909,58 | | |
| E. Settlements | 906,40 | NA,NE | NA,NE | | | | 906,40 | | |
| F. Other Land | IE,NA,NO | IE,NA | IE,NA | | | | 0,00 | | |
| G. Other | 1.287,46 | NE | NE | | | | 1.287,46 | | |
| **6. Waste** | **IE, NO** | **1.822,54** | **158,25** | | | | **1.980,80** | **0,00** | **1.980,80** |
| A. Solid Waste Disposal on Land | NO | 1.652,09 | | | | | 1.652,09 | | |
| B. Waste-water Handling | | 56,29 | 59,07 | | | | 115,35 | | |
| C. Waste Incineration | IE | IE | IE | | | | 0,00 | | |
| D. Other | NO | 114,16 | 99,19 | | | | 213,35 | | |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | 2.304,95 | 1,35 | 28,10 | | | | 2.334,40 | | |
| Aviation | 1.949,24 | 0,86 | 25,21 | | | | 1.975,31 | | |
| Marine | 355,71 | 0,49 | 2,88 | | | | 359,08 | | |
| **Multilateral Operations** | NO | NO | NO | | | | NO | | |
| **$CO_2$ Emissions from Biomass** | 36.121,62 | | | | | | 36.121,62 | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 60.643,80 | 31.503,16 | 29.140,64 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 43.090,83 | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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 2013 corresponded with 60.6 million tonnes of carbon dioxide. The emissions remained almost unchanged from the year before. In the energy sector, the use of hard coal increased but the consumption of peat, oil and natural gas decreased. In 2013, emissions outside the emissions trading scheme were around six per cent below the target set by the EU. The net sink of the Land Use, Land-Use Change and Forestry (LULUCF) sector has decreased by one-third as a result of increased fellings.
Greenhouse gas inventory: (http://tilastokeskus.fi/til/khki/2013/khki_2013_2014-05-22_tie_001_en.html)
Energy statistics: (Preliminary data: http://tilastokeskus.fi/til/ehk/2013/04/ehk_2013_04_2014-03-24_tie_001_en.html)
Energy authority, in Finnish only: (http://www.energiavirasto.fi/-/paastokaupan-soveltamisalan-laajeneminen-ja-kivihiilen-kulutus-kasvattivat-suomen-paastokauppasektorin-paastoja-2013?redirect=http%3A%2F%2Fwww.energiavirasto.fi%2Fuutisarkisto%3Fp_p_id%3D101_INSTANCE_c1ITKRwQcXY6%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)

Greenhouse gas inventory, proxy, 2013
Energy statistics, preliminary data 2013
Energy authority (Emission trading registry, CO2 emissions of 2013, in Finnish only)

## 5.1.11 France

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

Inventory 2013 proxy
Submission July 2014
FRANCE (KP)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **315.844,77** | **52.362,07** | **61.111,13** | **16.801,49** | **399,12** | **670,78** | **447.189,37** | | |
| **1. Energy** | **344.871,40** | **2.789,95** | **4.421,17** | | | | **352.082,52** | | |
| A. Fuel Combustion (Sectoral Approach) | 341.619,65 | 1.580,76 | 4.405,80 | | | | 347.606,21 | | |
| 1. Energy Industries | 53.163,54 | 28,25 | 638,83 | | | | 53.830,61 | | |
| 2. Manufacturing Industries and Construction | 62.444,76 | 146,44 | 766,71 | | | | 63.357,92 | | |
| 3. Transport | 128.473,66 | 151,14 | 1.571,40 | | | | 130.196,20 | | |
| 4. Other Sectors | 97.537,69 | 1.254,92 | 1.428,86 | | | | 100.221,47 | | |
| 5. Other | 0,00 | 0,00 | 0,00 | | | | 0,00 | | |
| B. Fugitive Emissions from Fuels | 3.251,75 | 1.209,19 | 15,38 | | | | 4.476,31 | | |
| 1. Solid Fuels | 0,00 | 33,21 | 0,00 | | | | 33,21 | | |
| 2. Oil and Natural Gas | 3.251,75 | 1.175,98 | 15,38 | | | | 4.443,10 | | |
| **2. Industrial Processes** | **16.679,75** | **38,12** | **906,10** | **16.801,49** | **399,12** | **670,78** | **35.495,36** | | |
| A. Mineral Products | 11.507,88 | 0 | 0 | | | | 11.507,88 | | |
| B. Chemical Industry | 2.094,46 | 36,74 | 906,10 | | | | 3.037,30 | | |
| C. Metal Production | 3.077,41 | 1,38 | 0 | | 115,12 | 172,41 | 3.366,31 | | |
| D. Other Production | 0,00 | | | | | | 0,00 | | |
| E. Production of Halocarbons and $SF_6$ | | | | 114,76 | 2,89 | 0,00 | 117,64 | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 16.686,73 | 281,12 | 498,38 | 17.466,23 | | |
| G. Other | 0,00 | 0 | 0 | 0,00 | 0,00 | 0 | 0,00 | | |
| **3. Solvent and Other Product Use** | **979,70** | | **136,44** | | | | **1.116,14** | | |
| **4. Agriculture** | | **38.439,42** | **51.896,06** | | | | **90.335,48** | | |
| A. Enteric Fermentation | | 28.200,89 | | | | | 28.200,89 | | |
| B. Manure Management | | 10.110,16 | 4.972,04 | | | | 15.082,20 | | |
| C. Rice Cultivation | | 107,97 | | | | | 107,97 | | |
| D. Agricultural Soils [3] | | 0 | 46.916,54 | | | | 46.916,54 | | |
| E. Prescribed Burning of Savannas | | 0 | 0 | | | | 0,00 | | |
| F. Field Burning of Agricultural Residues | | 20,39839073 | 7,468873186 | | | | 27,87 | | |
| G. Other | | 0 | 0 | | | | 0,00 | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-47.894,75** | **1.141,01** | **2.411,31** | | | | **-44.342,43** | | |
| A. Forest Land | -70.834,72 | 596,59 | 65,21 | | | | -70.172,92 | | |
| B. Cropland | 23.045,84 | 130,58 | 2.325,73 | | | | 25.502,15 | | |
| C. Grassland | -11.910,05 | 143,13 | 14,53 | | | | -11.752,39 | | |
| D. Wetlands | -2.191,10 | 8,03 | 0,82 | | | | -2.182,25 | | |
| E. Settlements | 13.876,14 | 72,67 | 5,03 | | | | 13.953,84 | | |
| F. Other Land | 0,16 | 0,00 | 0,00 | | | | 0,16 | | |
| G. Other | 118,97 | 190,008 | 0 | | | | 308,98 | | |
| **6. Waste** | **1.208,67** | **9.953,57** | **1.340,05** | | | | **12.502,29** | | |
| A. Solid Waste Disposal on Land | 0,00 | 8.464,23 | | | | | 8.464,23 | | |
| B. Waste-water Handling | | 1.258,55 | 776,44 | | | | 2.034,99 | | |
| C. Waste Incineration | 1.208,67 | 23,72 | 72,43 | | | | 1.304,82 | | |
| D. Other | 0,00 | 207,07 | 491,18 | | | | 698,25 | | |
| **7. Other *(as specified in Summary 1.A)*** | **0,00** | **0,00** | **0,00** | **0,00** | **0,00** | **0,00** | **0,00** | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | 24.120,22 | 4,31 | 218,17 | | | | 24.342,71 | | |
| Aviation | 16.152,68 | 1,63 | 163,19 | | | | 16.317,50 | | |
| Marine | 7.967,55 | 2,68 | 54,98 | | | | 8.025,21 | | |
| **Multilateral Operations** | **1,13** | **NE** | **NE** | | | | **1,13** | | |
| **$CO_2$ Emissions from Biomass** | **56.625,61** | | | | | | **56.625,61** | | |

| | | |
|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 491.531,80 | |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 447.189,37 | |

(1) For $CO_2$ 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) Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

(3) Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

(4) See footnote 8 to table Summary 1.A.

**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 proxy 2013 total GHG emissions are close to the 2012 GHG inventory : slight increase of 0,3% i.e. + 1,4 Mt CO2e.
The two main drivers of this slight increase of total GHG emissions are a slight increase of GHG in Energy sectors (+ 0,650 Mt CO2e in CRF1) and an increase of N2O from agricultural soils (+1 Mt CO2e in CRF4).
The increase of N2O from agricultural soils is due to an increase of the deliveries of synthetic fertilizer (already available information) used for 2013
The slight increase of GHG in Energy sectors (+ 0,650 Mt CO2e) is in fact the result of 2 opposit trends :
- A slight decrease of GHG in Manufacturing Industry Combustion (not yet out of the economic crisis) and a decrease of GHG from road transport due to total fuel consumption decrease in 2013 (available information) and planned biomass % increase in 2013 (assumption).
- An increase of fuel consumptions in 2013 for other energy sectors (available information) : energy industries, residential/commercial/institutional, etc., in relation with the fact that 2013 has been a colder year than 2012 (climate cold index : 2012 -> 0.97, 2013-> 1.06).

## 5.1.12 Greece

| Proxy Inventory of Greece for Year | 2013 | | | Method followed for emissions estimation |
|---|---|---|---|---|
| | National Total | ETS | non-ETS | |
| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Total $CO_2$ equivalent (Gg ) | Total $CO_2$ equivalent (Gg ) | Total $CO_2$ equivalent (Gg ) | |
| **Total Emissions without LULUCF** | **107.796,97** | **58.632,00** | **49.164,97** | |
| | | | | |
| **1. Energy** | | Incl in ETS total | **30.825,50** | |
| A. Fuel Combustion (Sectoral Approach) | | Incl in ETS total | 29.700,50 | |
| 1. Energy Industries | | Incl in ETS total | 350,50 | |
| Public electricity and heat production | | Incl in ETS total | 300,00 | Based on the ratio of nonETS GHG emissions per ETS emissions reported for 2012 ETS reports. |
| Petroleum refining | | Incl in ETS total | 50,00 | Based on the ratio of nonETS GHG emissions per ETS emissions reported for 2012 ETS reports. |
| Manufacture of Solid Fuels and Other Energy Industries | | Incl in ETS total | 0,50 | Based on the ratio of nonETS GHG emissions per ETS emissions reported for 2012 ETS reports. |
| 2. Manufacturing Industries and Construction | | Incl in ETS total | 1.000,00 | Based on the ratio of 2012 of non ETS emissions of the categories 1A2+2A+2B+2C per the respective ETS emissions and expert judgement |
| 3. Transport | | | 19.150,00 | |
| Civil Aviation | | | 1.000,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| Road Transportation | | | 16.000,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| Railways | | | 100,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| Navigation | | | 2.000,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| other | | | 50,00 | |
| 4. Other Sectors | | | 9.200,00 | |
| Commercial/Institutional | | | 1.200,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| Residential | | | 6.500,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| Agriculture/Forestry/Fisheries | | | 1.500,00 | Estimation of emissions based on extrapolation of historic emissions and expert judgement. |
| 5. Other | | NO | NO | |
| B. Fugitive Emissions from Fuels | | | 1.125,00 | Estimation of emissions based on ETS emissions from lignite consumption in power plants and expert judgement. |
| **2. Industrial Processes** | | Incl in ETS total | **4.100,00** | |
| A. Mineral Products | | Incl in ETS total | Included in 1A2 | |
| B. Chemical Industry | | Incl in ETS total | Included in 1A2 | |
| C. Metal Production | | Incl in ETS total | Included in 1A2 | |
| D. Other Production | | NA | NA | |
| E. Production of Halocarbons and $SF_6$ | | NA,NO | NA,NO | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | 4.100,00 | Estimation of emissions based on extrapolation of historic emissions (years 2008-2012, on the basis that the mixtures used of the recent years are the same for 2013). |
| G. Other | | NA,NO | NA,NO | |
| **3. Solvent and Other Product Use** | | | **325,00** | Extrapolation |
| **4. Agriculture** | | | **9.138,00** | Agriculture: |
| A. Enteric Fermentation | | | 3.118,42 | For the prediction of the emissions from the agriculture sector for 2013: |
| B. Manure Management | | | 993,28 | 1. The nitrogen fertilizers consumption was provided by Pan-Hellenic Association of Professional Fertilizers Producers & Dealers |
| C. Rice Cultivation | | | 117,60 | 2. The animal population and the agricultural production was predicted based on the trend of historical data |
| D. Agricultural Soils[3] | | | 4.864,20 | 3. Emissions factors and required information for the prediction of emissions, e.g. the shares of manure management systems per animal species and the Nitrogen excretion for animals are those utilized in the last Unfccc submission. |
| E. Prescribed Burning of Savannas | | | NO | |
| F. Field Burning of Agricultural Residues | | | 44,50 | |
| G. Other | | | NO | |
| **6. Waste** | | | **4.776,47** | Waste: |
| A. Solid Waste Disposal on Land | | | 3.258,29 | For the prediction of the emissions from the waste sector for 2013: |
| B. Waste-water Handling | | | 1.479,95 | 1. The amounts of municipal waste, industrial waste and sludge disposed in the managed and unmanaged solid waste disposal sites were predicted based on the historical data and the Gross domestic product of Greece and the Gross added value by industrial sector as they were provided by the Hellenic statistical authority of Greece |
| C. Waste Incineration | | | 3,91 | 2. The population of Greece for 2013 was provided by the Hellenic statistical authority of Greece |
| D. Other | | | 34,31571398 | 3. Industrial production and the amount of waste incinerated were predicted based on the trend of historical data |
| | National Total | ETS | non-ETS | 4. Emissions factors and required information for the prediction of emissions, e.g. the degradable organic fraction of waste, the distribution between aerobic and anaerobic treatment of industrial and domestic wastewater etc., are those utilized in the last Unfccc submission. |
| **Total Emissions without LULUCF** | **107.796,97** | **58632** | **49.164,97** | |

## 5.1.13 Hungary

**SUMMARY 2 SUMMARY REPORT FOR $CO_2$ EQUIVALENT EMISSIONS**

**(Sheet 1 of 1)**

Inventory 2013
Submission 2014 v2.1
HUNGARY

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **43.299,86** | **7.982,24** | **7.257,68** | **1.071,19** | **1,35** | **74,49** | **59.686,81** | **19.124,84** | **40.561,97** |
| **1. Energy** | **40.409,56** | **2.368,28** | **224,53** | | | | **43.002,37** | **16.509,34** | **26.493,03** |
| A. Fuel Combustion (Sectoral Approach) | 40.237,23 | 344,95 | 224,35 | | | | 40.806,53 | 16.484,57 | 24.321,96 |
| 1. Energy Industries | 14.335,22 | 16,19 | 55,72 | | | | 14.407,13 | 13012,35 | 1394,78 |
| 2. Manufacturing Industries and Construction | 3.490,33 | 6,98 | 7,45 | | | | 3.504,75 | 3398,18 | 106,57 |
| 3. Transport | 10.470,65 | 23,76 | 103,82 | | | | 10.598,23 | 0,00 | 10598,23 |
| 4. Other Sectors | 11.941,03 | 298,01 | 57,37 | | | | 12.296,42 | 74,04 | 12222,38 |
| 5. Other | NO | NO | NO | | | | 0,00 | NO | NO |
| B. Fugitive Emissions from Fuels | 172,34 | 2.023,33 | 0,18 | | | | 2.195,85 | 24,78 | 2.171,07 |
| 1. Solid Fuels | **IE, NA, NO** | **11,31** | **NA, NO** | | | | 11,31 | 0,00 | 11,31 |
| 2. Oil and Natural Gas | **172,34** | **2.012,02** | **0,18** | | | | 2.184,54 | 24,78 | 2159,76 |
| **2. Industrial Processes** | **2.721,13** | **37,09** | **38,47** | **1.071,19** | **1,35** | **74,49** | **3.943,72** | **2.615,50** | **1.328,23** |
| A. Mineral Products | **1.076,54** | NA,NO | NA,NO | | | | 1.076,54 | 1075,80 | 0,74 |
| B. Chemical Industry | **404,29** | **37,07** | **38,47** | NO | NO | NO | 479,83 | 442,76 | 37,07 |
| C. Metal Production | **117,35** | **0,02** | NA | NA,NO | NA,NO | NA,NO | 117,37 | 117,35 | 0,02 |
| D. Other Production | NO | | | | | | 0,00 | 0,00 | 0,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA | NA,NO | 0,00 | 0,00 | 0,00 |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | **1.071,19** | **1,35** | **74,49** | 1.147,03 | 0,00 | 1147,03 |
| G. Other | **1.122,95** | NO | NO | NA,NO | NA,NO | NO | 1.122,95 | 979,59 | 143,37 |
| **3. Solvent and Other Product Use** | **76,15** | | **302,73** | | | | **378,87** | **0,00** | **378,87** |
| **4. Agriculture** | | **2.826,68** | **6.408,77** | | | | **9.235,45** | **0,00** | **9.235,45** |
| A. Enteric Fermentation | | 1.545,69 | | | | | 1.545,69 | 0,00 | 1.545,69 |
| B. Manure Management | | 1.268,56 | 855,76 | | | | 2.124,31 | 0,00 | 2.124,31 |
| C. Rice Cultivation | | 12,43 | | | | | 12,43 | 0,00 | 12,43 |
| D. Agricultural Soils [3] | | NA,NO | 5.553,01 | | | | 5.553,01 | 0,00 | 5.553,01 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | 0,00 | 0,00 | 0,00 |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | 0,00 | 0,00 | 0,00 |
| G. Other | | NO | NO | | | | 0,00 | 0,00 | 0,00 |
| **5. Land Use, Land-Use Change and Forestry [1]** | **NE** | **NE** | **NE** | | | | **NE** | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | **93,01** | **2.750,19** | **283,19** | | | | **3.126,39** | **0,00** | **3.126,39** |
| A. Solid Waste Disposal on Land | NA,NO | 2.441,12 | | | | | 2.441,12 | | 2.441,12 |
| B. Waste-water Handling | | 292,55 | 263,29 | | | | 555,84 | | 555,84 |
| C. Waste Incineration | 93,01 | 1,16 | 2,89 | | | | 97,06 | | 97,06 |
| D. Other | NA | 15,36 | 17,01 | | | | 32,37 | | 32,37 |
| **7. Other** ***(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | | | | | | | | | |
| Aviation | 502,43 | 0,07 | 4,40 | | | | 506,91 | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 59.686,81 | **19.124,84** | **40.561,97** |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

Electricity production decreased by 12%;
Most importantly, 40% less natural gas was used for power generation;
The biggest change in fossil fuel use occured in connection with natural gas: gross inland consumption fell by 9%;
Production of pig iron and steel have decreased by 49% in 2013;
One cement factory was closed and overall production of mineral industry have also fallen;
Preliminary data indicate also a drop of ammonia production;
N-fertilizer use and Non-Dairy Cattle livestock increased by 10.5% and 9%, respectively. (Swine and Dairy-Cattle slightly decreased);
Harvested productions of main crops were generally higher in 2013 than in 2012.

## 5.1.14 Croatia

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

Inventory year 2013
Submission 2014 v1.0
country CROATIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **17.826,07** | **3.313,15** | **2.880,73** | **494,29** | **0,02** | **9,86** | **24.524,12** | | |
| **1. Energy** | **15.906,70** | **1.248,97** | **91,34** | | | | **17.247,01** | **6.999,49** | **10.247,52** |
| A. Fuel Combustion (Sectoral Approach) | 15.417,60 | 148,24 | 91,12 | | | | 15.656,97 | 6.999,49 | 8.657,47 |
| 1. Energy Industries | 4.754,80 | 3,74 | 13,62 | | | | 4.772,16 | 4.673,20 | 98,96 |
| 2. Manufacturing Industries and Construc | 2.510,38 | 5,32 | 7,47 | | | | 2.523,17 | 2.312,42 | 210,75 |
| 3. Transport | 5.498,18 | 10,21 | 41,76 | | | | 5.550,15 | 13,88 | 5.536,27 |
| 4. Other Sectors | 2.654,24 | 128,98 | 28,27 | | | | 2.811,49 | NO | 2.811,49 |
| 5. Other | NO | NO | NO | | | | NO | NO | NO |
| B. Fugitive Emissions from Fuels | 489,10 | 1.100,73 | 0,22 | | | | 1.590,04 | NO | 1.590,04 |
| 1. Solid Fuels | NO | NO | NO | | | | NO | NO | NO |
| 2. Oil and Natural Gas | 489,10 | 1.100,73 | 0,22 | | | | 1.590,04 | NO | 1.590,04 |
| **2. Industrial Processes** | **1.825,02** | **0,44** | **249,95** | **494,29** | **0,02** | **9,86** | **2.579,57** | **2.066,86** | **512,71** |
| A. Mineral Products | 1.307,86 | NO | NO | | | | 1.307,86 | 1.299,76 | 8,10 |
| B. Chemical Industry | 505,81 | 0,44 | 249,95 | | | | 756,20 | 755,76 | 0,44 |
| C. Metal Production | 11,34 | NO | NO | | NO | NO | 11,34 | 11,34 | NO |
| D. Other Production | NE | | | | | | NE | NO | NE |
| E. Production of Halocarbons and $SF_6$ | | | | NO | NO | NO | NO | NO | NO |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 494,29 | 0,02 | 9,86 | 504,17 | NO | 504,17 |
| G. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| **3. Solvent and Other Product Use** | **94,28** | | **59,95** | | | | **154,23** | **NO** | **154,23** |
| **4. Agriculture** | | **1.020,17** | **2.367,70** | | | | **3.387,87** | **NO** | **3.387,87** |
| A. Enteric Fermentation | | 825,03 | | | | | 825,03 | NO | 825,03 |
| B. Manure Management | | 195,13 | 244,75 | | | | 439,89 | NO | 439,89 |
| C. Rice Cultivation | | NO | | | | | NO | NO | NO |
| D. Agricultural Soils [3] | | NO | 2.122,95 | | | | 2.122,95 | NO | 2.122,95 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | NO | NO |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | NO | NO |
| G. Other | | NO | NO | | | | NO | NO | NO |
| **5. Land Use, Land-Use Change and Forestry [1]** | **NE** | **NE** | **NE** | | | | **NE** | | |
| A. Forest Land | NE | NE | NE | | | | NE | | |
| B. Cropland | NE | NE | NE | | | | NE | | |
| C. Grassland | NE | NE | NE | | | | NE | | |
| D. Wetlands | NE | NE | NE | | | | NE | | |
| E. Settlements | NE | NE | NE | | | | NE | | |
| F. Other Land | NE | NE | NE | | | | NE | | |
| G. Other | NE | NE | NE | | | | NE | | |
| **6. Waste** | **0,08** | **1.043,57** | **111,79** | | | | **1.155,44** | **NO** | **1.155,44** |
| A. Solid Waste Disposal on Land | NO | 822,54 | | | | | 822,54 | NO | 822,54 |
| B. Waste-water Handling | | 221,04 | 111,79 | | | | 332,82 | NO | 332,82 |
| C. Waste Incineration | 0,08 | NO | NO | | | | 0,08 | NO | 0,08 |
| D. Other | NO | NO | NO | | | | NO | NO | NO |
| **7. Other *(as specified in Summary 1.A)*** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** | NO | NO |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | NE | NE | NE | | | | NE | | |
| Aviation | NE | NE | NE | | | | NE | | |
| Marine | NE | NE | NE | | | | NE | | |
| **Multilateral Operations** | NE | NE | NE | | | | NE | | |
| **$CO_2$ Emissions from Biomass** | NE | | | | | | NE | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 24.524,12 | 9.066,36 | 15.457,77 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

| **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 - 98% of total CO2 emissisons is from ETS, for other 2% CO2 emission extrapolation method (years 2010-2012) is used. CH4 and N2O emissions are based on reduction factor which was calculated using Verified reports for 2012 and 2013 |
| 1A2 - It is assumed that 92% of total CO2 emission is from ETS, for other 8% CO2 emission extrapolation method (years 2010-2012) is used. CH4 and N2O emissions are based on reduction factor which was calculated using Verified reports for 2012 and 2013 |
| 1A3 - Transport, 1A4. Other Sectors, 1B2. Oil and Natural Gas all GHG were extrapolated based on emissions from 2010-2012 |
| 1B2 - all GHG are extrapolated based on emissions from 2010-2012 |
| **2. Industrial Processes** |
| 2.A - 99% CO2 emissions from ETS; 1% CO2 emissions from non-ETS (extrapolation are based on emissions trend from 2010-2012). |
| 2.B - Natural gas consumption as feedstock in ammonia production is included. |
| 2.B - 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. |
| 2.B - CH4 emission is assessed according to data for 2012 due to the lack of the information on significant reducing of the production of other chemicals during 2012 compared to the previous period. |
| 2.C - Data for CO2 emission from iron and steel production are included. |
| 2.D, 2.E, 2.G - The same as in the previous years. |
| 2.F - Extrapolation are based on emissions trend from 2010-2012. |
| **3. Solvent and Other Product Use** |
| 3. - Extrapolation are based on emissions trend from 2010-2012. |
| **4. Agriculture** |
| 4A. Ent.Fermentation, 4B. Man.Management, 4D. Agr.soils - Extrapolation of calculated emissions data trend for the last 3 years (2010-2012) |
| **6. Waste** |
| 6.A - Extrapolation are based on emissions trend from 2010-2012. |
| 6.B - Extrapolation are based on emissions trend from 2010-2012. |
| 6.C - CO2 emission is assessed according to data for 2012 due to the significant fluctuations of CO2 emissions in the previous period. |

### 5.1.15 Ireland

Ireland did not submit proxy data by 31 July 2014.

## 5.1.16 Italy

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

Inventory year
Submission
country

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **350.166,32** | **33.904,10** | **27.342,31** | **9.713,82** | **1.431,10** | **315,28** | **422.872,93** | | |
| **1. Energy** | **349.058,52** | **7.034,93** | **4.375,36** | | | | **360.468,81** | **149.949,01** | **210.519,79** |
| A. Fuel Combustion (Sectoral Approach) | 346.835,93 | 1.947,88 | 4.364,43 | | | | 353.148,25 | 148.487,60 | 204.660,65 |
| 1. Energy Industries | 113.901,17 | 104,82 | 529,61 | | | | 114.535,60 | 112.791,82 | 1.743,77 |
| 2. Manufacturing Industries and Construction | 48.301,52 | 143,96 | 982,34 | | | | 49.427,82 | 34.897,06 | 14.530,77 |
| 3. Transport | 104.056,58 | 186,73 | 698,38 | | | | 104.941,69 | 0,00 | 104.941,69 |
| 4. Other Sectors | 80.238,15 | 1.511,95 | 2.133,35 | | | | 83.883,45 | 798,72 | 83.084,73 |
| 5. Other | 338,51 | 0,42 | 20,75 | | | | 359,69 | 0,00 | 359,69 |
| B. Fugitive Emissions from Fuels | 2.222,59 | 5.087,04 | 10,92 | | | | 7.320,56 | 1.461,41 | 5.859,15 |
| 1. Solid Fuels | 0,04 | 70,27 | 0,00 | | | | 70,31 | 0,00 | 70,31 |
| 2. Oil and Natural Gas | 2.222,55 | 5.016,77 | 10,92 | | | | 7.250,24 | 1.461,41 | 5.788,83 |
| **2. Industrial Processes** | **15.676,92** | **49,31** | **227,81** | **9.713,82** | **1.431,10** | **315,28** | **27.414,24** | **14.495,27** | **12.918,98** |
| A. Mineral Products | 13.039,63 | 0,00 | 0,00 | | | | 13.039,63 | 11.903,77 | 1.135,86 |
| B. Chemical Industry | 1.525,19 | 5,43 | 227,81 | | | | 1.758,42 | 1.668,97 | 89,46 |
| C. Metal Production | 1.112,10 | 43,88 | 0,00 | | 33,21 | 0,00 | 1.189,20 | 922,53 | 266,67 |
| D. Other Production | NA | | | | | | 0,00 | 0,00 | 0,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | 1.300,00 | 0,00 | 1.300,00 | 0,00 | 1.300,00 |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 9.709,92 | 97,90 | 315,28 | 10.123,09 | 0,00 | 10.123,09 |
| G. Other | NA | 0,00 | 0,00 | 3,90 | NO | 0,00 | 3,90 | 0,00 | 3,90 |
| **3. Solvent and Other Product Use** | **1.017,73** | | **519,56** | | | | **1.537,29** | **0,00** | **1.537,29** |
| **4. Agriculture** | | **13.087,09** | **20.045,68** | | | | **33.132,77** | **0,00** | **33.132,77** |
| A. Enteric Fermentation | | 10.281,68 | | | | | 10.281,68 | 0,00 | 10.281,68 |
| B. Manure Management | | 1.371,64 | 3.665,82 | | | | 5.037,46 | 0,00 | 5.037,46 |
| C. Rice Cultivation | | 1.420,53 | | | | | 1.420,53 | 0,00 | 1.420,53 |
| D. Agricultural Soils[3] | | 0,00 | 16.375,69 | | | | 16.375,69 | 0,00 | 16.375,69 |
| E. Prescribed Burning of Savannas | | 0,00 | 0,00 | | | | 0,00 | 0,00 | 0,00 |
| F. Field Burning of Agricultural Residues | | 13,24 | 4,16 | | | | 17,40 | 0,00 | 17,40 |
| G. Other | | 0,00 | 0,00 | | | | 0,00 | 0,00 | 0,00 |
| **5. Land Use, Land-Use Change and Forestry[1]** | **-15.749,97** | **484,62** | **144,33** | | | | **-15.121,02** | | |
| A. Forest Land | -28.234,74 | 218,12 | 1,01 | | | | -28.015,60 | | |
| B. Cropland | 4.372,80 | 1,86 | 20,53 | | | | 4.395,20 | | |
| C. Grassland | -841,82 | 264,64 | 122,78 | | | | -454,40 | | |
| D. Wetlands | NE,NO | NO | NO | | | | NE,NO | | |
| E. Settlements | 8.953,78 | 0,00 | 0,00 | | | | 8.953,78 | | |
| F. Other Land | NO | NO | NO | | | | NO | | |
| G. Other | NA | NA | NA | | | | NA | | |
| **6. Waste** | **163,12** | **13.248,15** | **2.029,58** | | | | **15.440,85** | **0,00** | **15.440,85** |
| A. Solid Waste Disposal on Land | 0,00 | 10.459,63 | | | | | 10.459,63 | 0,00 | 10.459,63 |
| B. Waste-water Handling | | 2.733,63 | 2.006,63 | | | | 4.740,26 | 0,00 | 4.740,26 |
| C. Waste Incineration | 163,12 | 48,86 | 22,95 | | | | 234,93 | 0,00 | 234,93 |
| D. Other | 0,00 | 6,03 | 0,00 | | | | 6,03 | 0,00 | 6,03 |
| **7. 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: [4]** | | | | | | | | | |
| **International Bunkers** | **13.619,51** | **11,51** | **101,70** | | | | **13.732,73** | | |
| Aviation | 8.996,62 | 2,35 | 65,65 | | | | 9.064,62 | | |
| Marine | 4.622,89 | 9,16 | 36,06 | | | | 4.668,11 | | |
| **Multilateral Operations** | **NA** | **0,00** | **0,00** | | | | **0,00** | | |
| **$CO_2$ Emissions from Biomass** | **34.789,92** | | | | | | **34.789,92** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 437.993,95 | 164.444,28 | 273.549,67 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 422.872,93 | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

In 2013 emissions reduced with respect to 2012 (-4.8%), especially CO2 in the energy sector, as a consequence both of the economical crisis and the increase of energy production from renewable sources. The draft national energy balance shows a reduction of 3.0% of total final energy consumptions and an increase of more than 17% of renewable sources used for energy production as well as an increase of 15.8% of final energy consumption of renewable sources especially for civil uses. In the industrial processes sector a strong reduction is observed in clinker and iron and steel production (-12%) and their relevant emissions.

Emissions are only calculated using the SAR GWP coefficients and not using the 4AR GWP because the 2015 submission of the inventory would also involve methodological changes in the IPCC 2006 guidelines and not only the new conversion coefficients.

## 5.1.17 Lithuania

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

Inventory 2013
Submission 2014
LITHUANIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **13.183,02** | **3.030,15** | **3.889,56** | **268,43** | **0,00** | **6,63** | **20.377,80** | | |
| **1. Energy** | **10.795,50** | **497,17** | **108,99** | | | | **11.401,65** | **4814,31** | **6587,35** |
| A. Fuel Combustion (Sectoral Approach) | 10.788,67 | 228,30 | 108,97 | | | | 11.125,94 | 4814,31 | 6311,64 |
| 1. Energy Industries | 3.803,71 | 12,42 | 25,86 | | | | 3.841,99 | 3794,30 | 47,69 |
| 2. Manufacturing Industries and Construction | 1.253,17 | 4,78 | 7,81 | | | | 1.265,76 | 1020,00 | 245,75 |
| 3. Transport | 4.700,37 | 36,76 | 42,19 | | | | 4.779,33 | 0,00 | 4779,33 |
| 4. Other Sectors | 1.014,16 | 174,34 | 32,96 | | | | 1.221,45 | 0,00 | 1221,45 |
| 5. Other | 17,27 | 0,00 | 0,15 | | | | 17,42 | 0,00 | 17,42 |
| B. Fugitive Emissions from Fuels | 6,82 | 268,87 | 0,02 | | | | 275,71 | 0,00 | 275,71 |
| 1. Solid Fuels | NO | NO | NO | | | | NO | 0,00 | 0,00 |
| 2. Oil and Natural Gas | 6,82 | 268,87 | 0,02 | | | | 275,71 | 0,00 | 275,71 |
| **2. Industrial Processes** | **2.305,95** | **0,00** | **349,45** | **268,43** | **0,00** | **6,63** | **2.930,46** | **2649,76** | **280,70** |
| A. Mineral Products | 515,62 | NO | NO | | | | 515,62 | 507,70 | 7,93 |
| B. Chemical Industry | 1.777,93 | NO | 349,45 | | | | 2.127,38 | 2142,06 | -14,68 |
| C. Metal Production | 2,40 | NA | NA | | NA | NA | 2,40 | 0,00 | 2,40 |
| D. Other Production | 10,00 | | | | | | 10,00 | 0,00 | 10,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NO | NO | NO | NO | 0,00 | 0,00 |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 268,43 | NO | 6,63 | 275,06 | 0,00 | 275,06 |
| G. Other | NO | NO | NO | NO | NO | NO | NO | 0,00 | 0,00 |
| **3. Solvent and Other Product Use** | **80,32** | | **2,70** | | | | **83,02** | **0,00** | **83,02** |
| **4. Agriculture** | | **1.684,41** | **3.355,61** | | | | **5.040,02** | **0,00** | **5040,02** |
| A. Enteric Fermentation | | 1.190,57 | | | | | 1.190,57 | 0,00 | 1190,57 |
| B. Manure Management | | 493,85 | 268,74 | | | | 762,59 | 0,00 | 762,59 |
| C. Rice Cultivation | | NO | | | | | NO | 0,00 | 0,00 |
| D. Agricultural Soils [3] | | NE | 3.086,87 | | | | 3.086,87 | 0,00 | 3086,87 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | 0,00 | 0,00 |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | 0,00 | 0,00 |
| G. Other | | NO | NO | | | | NO | 0,00 | 0,00 |
| **5. Land Use, Land-Use Change and Forestry [1]** | | | | | | | | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | **1,26** | **848,57** | **72,80** | | | | **922,63** | **0,00** | **922,63** |
| A. Solid Waste Disposal on Land | NA | 747,40 | | | | | 747,40 | 0,00 | 747,40 |
| B. Waste-water Handling | | 101,17 | 72,75 | | | | 173,92 | 0,00 | 173,92 |
| C. Waste Incineration | 1,26 | NA | 0,05 | | | | 1,31 | 0,00 | 1,31 |
| D. Other | NA | NA | NA | | | | NA | 0,00 | 0,00 |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | | | | **NA** | **0,00** | **0,00** |
| | | | | | | | | | |
| **Memo Items: (4)** | | | | | | | | | |
| **International Bunkers** | 489,75 | 0,41 | 3,62 | | | | 493,78 | | |
| Aviation | 211,09 | 0,03 | 1,81 | | | | 212,93 | | |
| Marine | 278,66 | 0,38 | 1,81 | | | | 280,85 | | |
| **Multilateral Operations** | **NO** | **NO** | **NO** | | | | **NO** | | |
| **CO2 Emissions from Biomass** | **4.751,55** | | | | | | **4.751,55** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 20.377,80 | **7464,07** | **12913,73** |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

| **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.A.1. Energy Industries | Emissions decreased due to significant decrease in residual fuel oil and natural gas consumption. |
| 1.A.2. Manufacturing Industries and Construction | Emissions decreased due to decrease in residual fuel oil and natural gas consumption. |
| 1.A.3. Transport | Emissions increased due to increased use of diesel oil in road transport. |
| 1.A.4. Other Sectors | Emissions decreased due to decrease in natural gas and Sub-bituminous coal consumption. |
| 1.A.5. Other | Emissions increased due to increased use of jet kerosene in military aviation. |
| 1.B.2 Fugitive Emissions from Oil and Natural Gas | Emissions increased due to increase in natural gas transportation pipelines length. |
| 2.B. Chemical Industry | Emissions decreased due to decrease in amonia and nitric acid production. |
| 2.F. Consumption of halocarbons and SF6 | Emissions increased due to increase of F-gases use. |
| 4. Agriculture | Overall emissions from Enteric Fermentation had a very slight increase in t-1 comparing with t-2 due to increase of some of the livestock population (non-dairy cattle, sheep, goats). CH4 emissions from Manure Management decreased as population of swine dropped by 6,5%. N2O emissions from manure management had a slight rise due to increase of some of the livestock population. The main drivers in slight decrease of N2O emissions from Agricultural soils were decrease of crops harvested and decrease in population of dairy cows and horses. |
| 6.A. Solid waste disposal on land | Emissions decreased due to lower values of acitivy data. |

## 5.1.18 Luxembourg

**SUMMARY 2 SUMMARY REPORT FOR $CO_2$ EQUIVALENT EMISSIONS** — Proxy Inventory 2013

**(Sheet 1 of 1)** — Submission 2014 v1.4

LUXEMBOURG

AR2

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS | ESD |
|---|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | | |
| **Total (Net Emissions) [1]** | **NE** | **423,52** | **NE** | **78,22** | **IE** | **IE** | **NE** | | | |
| **Total excl. LULUCF** | **10.215,77** | **423,52** | **475,55** | **78,22** | **IE** | **IE** | **11.193,05** | | | |
| **1. Energy** | **9.699,62** | **51,43** | **109,16** | | | | **9.860,21** | **1336,33** | **8523,88** | **8523,39** |
| A. Fuel Combustion (Sectoral Approach) | 9.699,57 | 17,45 | 109,16 | | | | 9.826,17 | 1336,33 | 8489,84 | 8489,35 |
| 1. Energy Industries | 614,72 | 1,31 | 2,47 | | | | 618,50 | 464,49 | 154,00 | 154,00 |
| 2. Manufacturing Industries and Construction | 1.174,10 | 1,93 | 19,75 | | | | 1.195,78 | 871,84 | 323,95 | 323,95 |
| 3. Transport | 6.307,22 | 5,75 | 77,64 | | | | 6.390,61 | NA | 6390,61 | 6390,12 |
| 4. Other Sectors | 1.603,53 | 8,46 | 9,30 | | | | 1.621,29 | NA | 1621,29 | 1621,29 |
| 5. Other | NO | NO | NO | | | | NO | NO | NO | NO |
| B. Fugitive Emissions from Fuels | 0,05 | 33,98 | NA,NO | | | | 34,04 | NA | 34,04 | 34,04 |
| 1. Solid Fuels | NO | NO | NO | | | | NO | NO | NO | NO |
| 2. Oil and Natural Gas | 0,05 | 33,98 | NA,NO | | | | 34,04 | NA | 34,04 | 34,04 |
| **2. Industrial Processes** | **506,04** | **NA,NO** | **NA,NO** | **78,22** | **IE** | **IE** | **584,25** | **510,79** | **73,47** | **73,47** |
| A. Mineral Products | 410,39 | NO | NO | | | | 410,39 | 409,19 | 1,20 | 1,20 |
| B. Chemical Industry | NO | NO | NO | NA | NA | NA | NA,NO | NO | NA,NO | NA,NO |
| C. Metal Production | 95,64 | NA,NO | NA | NA | NA,NO | NA,NO | 95,64 | 101,59 | -5,95 | -5,95 |
| D. Other Production | NO | | | | | | NO | NO | NO | NO |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 78,22 | IE | IE | 78,22 | NA | 78,22 | 78,22 |
| G. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **3. Solvent and Other Product Use** | **10,11** | | **4,22** | | | | **14,34** | **NA** | **14,34** | **14,34** |
| **4. Agriculture** | | **335,56** | **347,34** | | | | **682,91** | **NA** | **682,91** | **682,91** |
| A. Enteric Fermentation | | 245,36 | | | | | 245,36 | NA | 245,36 | 245,36 |
| B. Manure Management | | 90,20 | 32,82 | | | | 123,02 | NA | 123,02 | 123,02 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO | NO | NA,NO | NA,NO |
| D. Agricultural Soils [3] | | NA,NE | 314,53 | | | | 314,53 | NA | 314,53 | 314,53 |
| E. Prescribed Burning of Savannas | | NA | NA | | | | NA | NA | NA | NA |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | NO | NO | NO |
| G. Other | | NA | NA | | | | NA | NA | NA | NA |
| **5. Land Use, Land-Use Change and Forestry [1]** | **NE** | **NE,NO** | **NE** | | | | **NE** | | | |
| A. Forest Land | NE | NO | NO | | | | NE | | | |
| B. Cropland | NE | NO | NE | | | | NE | | | |
| C. Grassland | NE | NO | NO | | | | NE | | | |
| D. Wetlands | NE | NO | NO | | | | NE | | | |
| E. Settlements | NE | NE | NE | | | | NE | | | |
| F. Other Land | NE | NO | NO | | | | NE | | | |
| G. Other | NE | NE | NE | | | | NE | | | |
| **6. Waste** | **IE,NA,NO** | **36,52** | **14,82** | | | | **51,34** | **NA** | **51,34** | **51,34** |
| A. Solid Waste Disposal on Land | NA,NO | 26,55 | | | | | 26,55 | NA | 26,55 | 26,55 |
| B. Waste-water Handling | | 3,01 | 7,59 | | | | 10,61 | NA | 10,61 | 10,61 |
| C. Waste Incineration | IE | IE | IE | | | | IE | IE | IE | IE |
| D. Other | NO | 6,96 | 7,23 | | | | 14,19 | NA | 14,19 | 14,19 |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

| Memo Items: [4] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | **NE** | **NE** | **NE** | | | | **NE** | | | |
| Aviation | NE | NE | NE | | | | NE | | | |
| Marine | NE | NE | NE | | | | NE | | | |
| **Multilateral Operations** | **NO** | **NO** | **NO** | | | | **NO** | | | |
| **$CO_2$ Emissions from Biomass** | **NE** | | | | | | **NE** | | | |

| | | | | |
|---|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 11.193,05 | 1847,12 | 9345,93 | 9345,44 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE | | | |
| | | *0,000000* | *0,000000* | *0,489209* |

= CRF 1A3a - CO2

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

Luxembourg submitted proxy data on 14 August 2014. As this submission was after the deadline of 31 July 2014, proxy data of Luxembourg is presented here for transparency reasons, but was not taken into account in any calculations.

## 5.1.19 Latvia

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

Inventory year: 2013
Submission: 2014 v.1
Country: Latvia

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **7.310,89** | **1.659,14** | **1.871,47** | **89,68** | NO | **13,69** | **10.944,87** | | |
| **1. Energy** | **6.689,67** | **281,56** | **130,78** | | | | **7.102,01** | **2.049,32** | **5.052,68** |
| A. Fuel Combustion (Sectoral Approach) | 6.689,67 | 221,77 | 130,78 | | | | 7.042,21 | 2049,32 | 4992,89 |
| 1. Energy Industries | 2.006,79 | 8,27 | 16,13 | | | | 2.031,19 | 1604,81 | 426,38 |
| 2. Manufacturing Industries and Construction | 719,58 | 10,32 | 19,52 | | | | 749,42 | 387,28 | 362,14 |
| 3. Transport | 2.767,57 | 4,17 | 52,09 | | | | 2.823,83 | NA | 2823,83 |
| 4. Other Sectors | 1.195,72 | 199,00 | 43,03 | | | | 1.437,76 | 57,23 | 1380,53 |
| 5. Other | IE | IE | IE | | | | IE | IE | IE |
| B. Fugitive Emissions from Fuels | 0,00 | 59,79 | NA, NO | | | | 59,80 | NA | 59,80 |
| 1. Solid Fuels | NO | NO | NO | | | | NO | NA | NO |
| 2. Oil and Natural Gas | 0,00 | 59,79 | NA, NO | | | | 59,80 | NA | 59,80 |
| **2. Industrial Processes** | **575,60** | **0,00** | **IE,NA,NE,NO** | **89,68** | NO | **13,69** | **678,97** | **575,61** | **103,37** |
| A. Mineral Products | 573,73 | IE,NA,NE,NO | IE,NA,NE,NO | | | | 573,73 | 573,73 | NO |
| B. Chemical Industry | NO | NO | NO | | | | NO | NO | NO |
| C. Metal Production | 1,87 | 0,00 | NO | NO | NO | NO | 1,88 | 1,88 | NO |
| D. Other Production | NA | | | | | | NA | NA | NA |
| E. Production of Halocarbons and $SF_6$ | | | | NO | NO | NO | NO | NO | NO |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 89,68 | NO | 13,69 | 103,37 | NO | 103,37 |
| G. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| **3. Solvent and Other Product Use** | **45,21** | | **0,005** | | | | **45,22** | NE, NO | **45,22** |
| **4. Agriculture** | | **818,65** | **1.691,00** | | | | **2.509,65** | NO | **2.509,65** |
| A. Enteric Fermentation | | 718,00 | | | | | 718,00 | NO | 718,00 |
| B. Manure Management | | 101,00 | 127,00 | | | | 228,00 | NO | 228,00 |
| C. Rice Cultivation | | NO | | | | | NO | NO | NO |
| D. Agricultural Soils [3] | | NA | 1.564,00 | | | | 1.564,00 | NO | 1564,00 |
| E. Prescribed Burning of Savannas | | NA | NA | | | | NA | NA | NA |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | NO | NO |
| G. Other | | NO | NO | | | | NO | NO | NO |
| **5. Land Use, Land-Use Change and Forestry [1]** | **NE** | **NE** | **NE** | | | | **NE** | | |
| A. Forest Land | NE | NE | NE | | | | NE | | |
| B. Cropland | NE | NE | NE | | | | NE | | |
| C. Grassland | NE | NE | NE | | | | NE | | |
| D. Wetlands | NE | NE | NE | | | | NE | | |
| E. Settlements | NE | NE | NE | | | | NE | | |
| F. Other Land | NE | NE | NE | | | | NE | | |
| G. Other | NE | NE | NE | | | | NE | | |
| **6. Waste** | **0,41** | **558,93** | **49,69** | | | | **609,02** | NA | **609,02** |
| A. Solid Waste Disposal on Land | NA | 461,41 | | | | | 461,41 | NA | 461,41 |
| B. Waste-water Handling | | 96,31 | 48,34 | | | | 144,64 | NA | 144,64 |
| C. Waste Incineration | 0,41 | NE | 0,02 | | | | 0,42 | NA | 0,42 |
| D. Other | NA | 1,21 | 1,34 | | | | 2,54 | NA | 2,54 |
| **7. Other *(as specified in Summary 1.A)*** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** | **NO** |
| | | | | | | | | | |
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | 1.137,52 | 1,06 | 39,63 | | | | 1.178,21 | | |
| Aviation | 375,99 | 0,07 | 3,89 | | | | 379,95 | | |
| Marine | 761,53 | 0,98 | 35,74 | | | | 798,25 | | |
| **Multilateral Operations** | **NO** | **NO** | **NO** | | | | NO | | |
| **$CO_2$ Emissions from Biomass** | **6.012,39** | | | | | | **6.012,39** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 10.944,87 | 2624,93 | 8319,94 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

**Energy.** As activity data for approximated emission estimations the Preliminary energy balance (Central Statistical Bureau of Latvia (CSB) after request) was used as well as Annual ETS GHG emission report(www.vvd.gov.lv/filedownload?tabula=Document&id=13852&filename=Emisijuzinojums_CEMEX_2013.pdf). GHG emissions in corresponding Energy sectors - 1A1, 1A2, 1A4, 1A5 - in 2013 are 3.43% less than in 2012. That can be explained with less use of residual fuel oil, coal, coke as well as natural gas. However, CO2 emissions from biomass have increased by 2.95% generally due to increased use of wood. In the 2013 approximate inventory, all emissions from autoproducers have been included in 1A1 sector due to unavailability to disaggregate data, however, on the 2015 submission these will be allocated to corresponding sectors. Calculated proxy GHG emissions for **Transport** sector constituted 2823 Gg in 2013. Emission calculation had performed using the preliminary information about fuel consumption in transport sector in 2013. The first calculations indicated that GHG emissions in transport sector have increased by approximately 1% point in 2013 compare with year 2012. In different subsectors various changes have taken place in 2013. The main driver for emission changes was emission increasing in road transport by 1.7% points. At the same time GHG emissions in railway has decreased by approximately 10% points. The mentioned subsectors are the main impacted the total emissions in transport. The main feature for road transport in 2013 was gasoline consumption decreasing by approximately 9% points and liquid petrol gas (LPG) consumption increasing by approximately 27% points.

**Industrial processes.** For approximated emission estimations the Annual ETS GHG report (www.vvd.gov.lv/filedownload?tabula=Document&id=13852&filename=Emisijuzinojums_CEMEX_2013.pdf) as well as available updated national statistics from CSB were used as activity data. Emissions from IP sector in 2013 are decreased about aproximate 1% mainly due to fact that there are overall small decreases in each subsector in Mineral products industry. As activity data for Mineral products are taken from enterprices annual Greenhouse gas inventory report that are reported for ETS, here are noted trend to be decrease of used raw materials for all indutry. In aproximate inventory there are used last year data for subsector 2.C.1 Iron& steel production due to enterprice hasn't yet gathered information we use to ask seperately for annual NIR preparation. Emissions from **F gases** were estimated using available activity data from updated national statistics from CSB:
1)number of inhabitants in Latvia (http://data.csb.gov.lv/Table.aspx?layout=tableViewLayout1&px_tableid=IS0020.px&px_path=Sociala__Ikgad%C4%93jie%20statistikas%20dati__Iedz%C4%ABvot%C4%81ji__Iedz%C4%ABvot%C4%81ji%20skaits%20un%20t%C4%81%20izmai%C5%86as&px_language=lv&px_db=Sociala&rxid=992a0682-2c7d-4148-b242-7b48ff9fe0c2), 2) amount of households (http://data.csb.gov.lv/Table.aspx?layout=tableViewLayout1&px_tableid=IS0210.px&px_path=Sociala__Ikgad%C4%93jie%20statistikas%20dati__Iedz%C4%ABvot%C4%81ji__Iedz%C4%ABvot%C4%81ji%20skaits%20un%20t%C4%81%20izmai%C5%86as&px_language=lv&px_db=Sociala&rxid=992a0682-2c7d-4148-b242-7b48ff9fe0c2) 3) number of registered road vehicles (http://data.csb.gov.lv/Table.aspx?layout=tableViewLayout1&px_tableid=TR0120.px&px_path=transp__Ikgad%C4%93jie%20statistikas%20dati__Transports&px_language=lv&px_db=transp&rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0) Totally emissions from F gases have increased by a little more than 6.00 CO2 equivalents (Gg) (6.7%) comparing to the 2012 due to increased number of households and increased number of registered road vehicles (rises HFC emissions in 2.F.1 Refrigeration and air conditioning equipment) as well as increased amount of imported shoes (rise HFC emissions in 2.F.9. Other by 22%).

**Solvent and other product use.** No activity data per 2013 from Register of Chemical Substances and Chemical Mixtures were available regarding this sector during the preparation of approximate emission estimates. Therefore the emissions in 2013 were extrapolated taking into account emission rates from previous 3 years (average). Emissions in 2013 decreased by almost 7% comparing with 2012.

**Agriculture.** Activity data for emission estimations were taken from CSB databases on Agriculture (http://data.csb.gov.lv/Menu.aspx?selection=lauks__Ikgad%C4%93jie%20statistikas%20dati__01Lauks_visp&tablelist=true&px_language=lv&px_db=lauks&rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0 - public available information is provided in table below). The main reason of increasing trends of methane emissions from enteric fermentation and manure management is increasing animal number trends (attached table) of all livestock categories except goats and horses. Also milk yield is estimated to be 4.7% higher comparing with previous year. However in average harvest of crops was lower than in 2012, there are possible to observe rapid growth of synthetics N fertilizers use in Latvia. This is the main reason of increasing nitrous oxide emissions.

**Main differences in activity data**

| | 2012 | 2013 | 2013 versus 2012, units | 2013 versus 2012, % |
|---|---|---|---|---|
| Dairy Cattle (ths. animals) | 164.6 | 165.0 | 0.40 | 0.2% |
| Non-dairy Cattle | 228.5 | 241.5 | 13.00 | 5.4% |
| Sheep | 83.6 | 84.8 | 1.20 | 1.4% |
| Goats | 13.3 | 12.6 | -0.70 | -5.6% |
| Horses | 10.9 | 10.7 | -0.20 | -1.9% |
| Swine | 355.2 | 367.5 | 12.30 | 3.3% |
| Poultry | 4910.9 | 4985.8 | 74.90 | 1.5% |
| Milk yield (kg per cow per year) | 5 250.00 | 5 508.00 | 258.00 | 4.7% |
| Wheat (ths.t) | 1539.8 | 1435.0 | -104.80 | -7.3% |
| Barley | 248.6 | 232.6 | -16.00 | -6.9% |
| Triticale | 48.8 | 36.6 | -12.20 | -33.3% |
| Maize for silage and forage** | 553.7 | 610.6 | 56.90 | 9.3% |
| Oats | 137 | 134.2 | -2.80 | -2.1% |
| Rye | 124.2 | 75.6 | -48.60 | -64.3% |
| Crops for green feed and silage** | 167.7 | 98.2 | -69.50 | -70.8% |
| Rape | 303.5 | 296.6 | -6.90 | -2.3% |
| Mixed cereals and pulses | 18.1 | 23.9 | 5.80 | 24.3% |
| Buckwheat* | 8 | 10.8 | 2.80 | 25.9% |
| Potatoes | 538.9 | 495.9 | -43.00 | -8.7% |
| Feedbeet | 17.4 | 8 | -9.40 | -117.5% |
| Vegetable | 161.4 | 140.4 | -21.00 | -15.0% |
| Peas and beans | 11.1 | 16.9 | 5.80 | 34.3% |
| Synthetic fertilizers (kg N per year) | 65200000 | 69700000 | 4 500 000 | 6.5% |

**Waste.** For approximated emission estimations activity data from database "Waste-3" was used (https://www.meteo.lv/autorizacija/?josso_back_to=http://parissrv.lvgmc.lv/signon#viewType=home_view). Emissions increase by 2.9% compared to 2012 in SWD sector due to increase of disposed amounts of solid wastes. According to First order decay method - methane emittting for long time period after landfill was closed. Emissions from composting decreases by 18.5% compared to 2012 due to decrease of composted waste amounts. Composting from households are not included in calculations due to lack of data. Emissions from waste incineration increases by 30% due to increse of incinerated amount of hospital wastes compared to year 2012. Emissions from **waste water** subsector have decreased by 2% comparing with 2012 due to decrease of population number. Regarding CH4 from industrial wastewaters there were no activity data per year 2013, therefore the number of 2012 was reported.

## 5.1.20 Malta

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

Inventory year
Submission
country

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **2.356,06** | **89,15** | **52,16** | **201,06** | **0,00** | **0,47** | **2.698,90** | | |
| **1. Energy** | **2.362,48** | **1,93** | **5,68** | | | | **2.370,09** | **1.697,37** | **672,72** |
| A. Fuel Combustion (Sectoral Approach) | 2.362,48 | 1,93 | 5,68 | | | | 2.370,09 | **1.697,37** | **672,72** |
| 1. Energy Industries | 1.697,37 | 1,62 | 3,86 | | | | 1.702,85 | 1.697,37 | 5,48 |
| 2. Manufacturing Industries and Construction | IE | IE | IE | | | | 0,00 | 0,00 | 0,00 |
| 3. Transport | IE | IE | IE | | | | 0,00 | 0,00 | 0,00 |
| 4. Other Sectors | IE | IE | IE | | | | 0,00 | 0,00 | 0,00 |
| 5. Other | 665,11 | 0,31 | 1,81 | | | | 667,24 | 0,00 | 667,24 |
| B. Fugitive Emissions from Fuels | 0,00 | 0,00 | 0,00 | | | | 0,00 | 0,00 | 0,00 |
| 1. Solid Fuels | NO | NO | NO | | | | 0,00 | 0,00 | 0,00 |
| 2. Oil and Natural Gas | | | | | | | 0,00 | 0,00 | 0,00 |
| **2. Industrial Processes** | **0,24** | **0,00** | **0,00** | **201,06** | **0,00** | **0,47** | **201,77** | 0,00 | 201,77 |
| A. Mineral Products | 0,22 | NO | NO | | | | 0,22 | 0,00 | 0,22 |
| B. Chemical Industry | 0,03 | NA,NO | NO | | | | 0,03 | 0,00 | 0,03 |
| C. Metal Production | NA,NO | NA,NO | NA | | NA,NO | NA,NO | 0,00 | 0,00 | 0,00 |
| D. Other Production | NA | | | | | | 0,00 | 0,00 | 0,00 |
| E. Production of Halocarbons and $SF_6$ | | | | NO | NO | NO | 0,00 | 0,00 | 0,00 |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 201,06 | 0,00 | 0,47 | 201,53 | 0,00 | 201,53 |
| G. Other | NO | NO | NO | NO | NO | NO | 0,00 | 0,00 | 0,00 |
| **3. Solvent and Other Product Use** | **3,32** | | **1,19** | | | | **4,51** | 0,00 | 4,51 |
| **4. Agriculture** | | **51,38** | **31,20** | | | | **82,58** | 0,00 | 82,58 |
| A. Enteric Fermentation | | 28,85 | | | | | 28,85 | 0,00 | 28,85 |
| B. Manure Management | | 22,53 | 5,86 | | | | 28,39 | 0,00 | 28,39 |
| C. Rice Cultivation | | NO | | | | | 0,00 | 0,00 | 0,00 |
| D. Agricultural Soils [3] | | NO | 25,34 | | | | 25,34 | 0,00 | 25,34 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | 0 | 0,00 | 0,00 |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | 0,00 | 0,00 | 0,00 |
| G. Other | | NO | NO | | | | 0 | 0,00 | 0,00 |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-7,22** | **NE, NO** | **NE,NO** | | | | **-7,22** | | |
| A. Forest Land | -5,21 | NE, NO | NE,NO | | | | -5,21 | | |
| B. Cropland | -2,01 | NE, NO | NE,NO | | | | -2,01 | | |
| C. Grassland | NE,NO | NO | NO | | | | 0,00 | | |
| D. Wetlands | NO | NO | NO | | | | 0,00 | | |
| E. Settlements | NE,NO | NO | NO | | | | 0,00 | | |
| F. Other Land | NO | NO | NO | | | | 0,00 | | |
| G. Other | NO | NO | NO | | | | 0,00 | | |
| **6. Waste** | **0,56** | **35,83** | **14,10** | | | | **50,49** | 0,00 | 50,49 |
| A. Solid Waste Disposal on Land | N/A | 35,83 | - | | | | 35,83 | 0,00 | 35,83 |
| B. Waste-water Handling | | 0,00 | 13,91 | | | | 13,91 | 0,00 | 13,91 |
| C. Waste Incineration | 0,56 | 0,00 | 0,19 | | | | 0,75 | 0,00 | 0,75 |
| D. Other | NO | NO | NO | | | | 0,00 | 0,00 | 0,00 |
| **7. Other** ***(as specified in Summary 1.A)*** | | | | | | | **0,00** | 0,00 | 0,00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | 4.296,39 | 3,54 | 10,46 | | | | 4.310,39 | | |
| Aviation | IE | IE | IE | | | | 0,00 | | |
| Marine | IE | IE | IE | | | | 0,00 | | |
| **Multilateral Operations** | **NE** | **NE** | **NE** | | | | **0,00** | | |
| **$CO_2$ Emissions from Biomass** | **NE** | | | | | | **0,00** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 2.706,12 | 1697,37 | 1008,75 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 2.698,90 | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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 Energy industries - the entry in operation of efficient power generation (200MW plant in Deimara power station) in late 2012 lead to a significant reduction in fuel consumptin and relative emissions (-20%) in the sector in 2013.

## 5.1.21 Netherlands

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

Year 2013
Provisional Submission
Country NLD

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **169.557,61** | **15.162,75** | **7.734,25** | **2.367,44** | **192,83** | **187,03** | **195.201,91** | | |
| **1. Energy** | **159.294,78** | **2.333,44** | **627,26** | | | | **162.255,48** | | |
| A. Fuel Combustion (Sectoral Approach) | 157.876,51 | 1.531,40 | 627,26 | | | | 160.035,17 | | |
| 1. Energy Industries | 59.532,17 | 86,70 | 270,06 | | | | 59.888,93 | | |
| 2. Manufacturing Industries and Construction | 25.101,83 | 54,26 | 30,83 | | | | 25.186,93 | | |
| 3. Transport | 32.633,25 | 47,58 | 268,90 | | | | 32.949,73 | | |
| 4. Other Sectors | 40.268,62 | 1.342,18 | 51,37 | | | | 41.662,17 | | |
| 5. Other | 340,64 | 0,69 | 6,09 | | | | 347,41 | | |
| B. Fugitive Emissions from Fuels | 1.418,27 | 802,04 | IE,NA,NO | | | | 2.220,32 | | |
| 1. Solid Fuels | 360,41 | 20,64 | NA,NO | | | | 381,05 | | |
| 2. Oil and Natural Gas | 1.057,86 | 781,40 | IE,NA,NO | | | | 1.839,26 | | |
| **2. Industrial Processes** | **6.978,05** | **242,43** | **1.272,20** | **2.367,44** | **192,83** | **187,03** | **11.239,98** | | |
| A. Mineral Products | 1.881,17 | NO | NO | | | | 1.881,17 | | |
| B. Chemical Industry | 3.553,19 | 242,43 | 1.272,20 | | | | 5.067,82 | | |
| C. Metal Production | 1.244,32 | IE,NA,NO | NO | | 44,30 | NO | 1.288,62 | | |
| D. Other Production | 28,74 | | | | | | 28,74 | | |
| E. Production of Halocarbons and $SF_6$ | | | | 220,71 | NA,NO | NO | 220,71 | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 2.146,73 | 148,53 | 187,03 | 2.482,29 | | |
| G. Other | 270,63 | 35,33 | 9,84 | NA,NO | NA,NO | NO | 315,80 | | |
| **3. Solvent and Other Product Use** | **119,71** | | **0,28** | | | | **119,99** | | |
| **4. Agriculture** | | **9.534,42** | **5.572,02** | | | | **15.106,44** | | |
| A. Enteric Fermentation | | 6.839,27 | | | | | 6.839,27 | | |
| B. Manure Management | | 2.695,15 | 434,96 | | | | 3.130,11 | | |
| C. Rice Cultivation | | NO | | | | | 0,00 | | |
| D. Agricultural Soils [3] | | NA | 5.137,06 | | | | 5.137,06 | | |
| E. Prescribed Burning of Savannas | | NO | NO | | | | 0 | | |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | 0,00 | | |
| G. Other | | NA | NA | | | | 0 | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **3.165,07** | **7,92** | **89,06** | | | | **3.262,06** | | |
| A. Forest Land | -2.881,76 | 0,76 | 0,08 | | | | -2.880,92 | | |
| B. Cropland | 1.191,47 | IE,NO | 78,14 | | | | 1.269,61 | | |
| C. Grassland | 3.802,87 | 7,16 | 10,85 | | | | 3.820,88 | | |
| D. Wetlands | 48,16 | IE,NO | IE,NO | | | | 48,16 | | |
| E. Settlements | 815,42 | NE,NO | NE,NO | | | | 815,42 | | |
| F. Other Land | 115,58 | NE,NO | NE,NO | | | | 115,58 | | |
| G. Other | 73,32 | IE,NE,NO | IE,NE,NO | | | | 73,32 | | |
| **6. Waste** | **IE,NA,NO** | **3.044,53** | **173,43** | | | | **3.217,96** | | |
| A. Solid Waste Disposal on Land | NA,NO | 2.835,24 | | | | | 2.835,24 | | |
| B. Waste-water Handling | | 134,74 | 72,06 | | | | 206,80 | | |
| C. Waste Incineration | IE | IE | 0,00 | | | | 0,00 | | |
| D. Other | NA | 74,55 | 101,37 | | | | 175,92 | | |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | 50.557,36 | 29,71 | 123,92 | | | | 50.711,00 | | |
| Aviation | 10.346,29 | 10,33 | 26,91 | | | | 10.383,53 | | |
| Marine | 40.211,08 | 19,38 | 97,01 | | | | 40.327,46 | | |
| **Multilateral Operations** | **IE** | **IE** | **IE** | | | | **IE** | | |
| **$CO_2$ Emissions from Biomass** | **12.939,25** | | | | | | **12.939,25** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 191.939,85 | **86.799,47** | **105.140,38** |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 195.201,91 | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

| | |
|---|---|
| !A3 transport | less fuel sold |
| 1A4 other sectors | CO2 increase due to cold early 2013 (increase in natural gas consumption)<br>CH4 decrease due to less natural gass use in CHP in horticulture |
| 1B2 Oil and gas | Increased process emission from hydrogen plant at refinery |
| 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 |

Difference in CO2 total between SARGWP and 4ARGWP sheet originates from the inclusion of Harvested Wood products in this sheet.

ETS figures according to extended scope of third trading period

## 5.1.22 Poland

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

Inventory 2013
Submission 2014 v.0 ***Proxy***
**POLAND**

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | 282.734,15 | 42.784,36 | 30.843,82 | 7.700,22 | 19,48 | 42,06 | 364.124,09 | | |
| **1. Energy** | **299.013,49** | **15.395,26** | **2.070,56** | | | | **316.479,31** | | |
| A. Fuel Combustion (Sectoral Approach) | 295.149,80 | 3.097,11 | 2.070,31 | | | | 300.317,23 | | |
| 1. Energy Industries | 167.733,45 | 106,17 | 851,18 | | | | 168.690,79 | | |
| 2. Manufacturing Industries and Construction | 30.485,21 | 93,95 | 170,98 | | | | 30.750,15 | | |
| 3. Transport | 44.443,94 | 100,56 | 557,92 | | | | 45.102,42 | | |
| 4. Other Sectors | 52.487,20 | 2.796,43 | 490,23 | | | | 55.773,86 | | |
| 5. Other | IE, NO | IE, NO | IE, NO | | | | IE, NO | | |
| B. Fugitive Emissions from Fuels | 3.863,69 | 12.298,15 | 0,24 | | | | 16.162,08 | | |
| 1. Solid Fuels | 1.869,57 | 7.553,35 | NA | | | | 9.422,92 | | |
| 2. Oil and Natural Gas | 1.994,12 | 4.744,80 | 0,24 | | | | 6.739,16 | | |
| **2. Industrial Processes** | **17.478,64** | **280,90** | **1.153,96** | **7.700,22** | **19,48** | **42,06** | **26.675,26** | | |
| A. Mineral Products | 9.714,93 | NA | NA | | | | 9.714,93 | | |
| B. Chemical Industry | 4.249,81 | 255,88 | 1.153,96 | NA,NO | NA,NO | NA,NO | 5.659,65 | | |
| C. Metal Production | 2.372,11 | 25,02 | NA, NO | NA,NO | 7,31 | 4,35 | 2.408,78 | | |
| D. Other Production | 9,37 | | | | | | 9,37 | | |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA,NO | NA,NO | 0,00 | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 7.700,22 | 12,17 | 37,72 | 7.750,11 | | |
| G. Other | 1.132,41 | NO | NO | NA,NO | NA,NO | NO | 1.132,41 | | |
| **3. Solvent and Other Product Use** | **635,67** | | **124,00** | | | | **759,67** | | |
| **4. Agriculture** | | **11.000,30** | **25.825,64** | | | | **36.825,94** | | |
| A. Enteric Fermentation | | 8.625,67 | | | | | 8.625,67 | | |
| B. Manure Management | | 2.356,11 | 4.696,52 | | | | 7.052,63 | | |
| C. Rice Cultivation | | NA,NO | | | | | NA | | |
| D. Agricultural Soils [3] | | NA | 21.118,12 | | | | 21.118,12 | | |
| E. Prescribed Burning of Savannas | | NA | NA | | | | NA | | |
| F. Field Burning of Agricultural Residues | | 18,52 | 11,01 | | | | 29,53 | | |
| G. Other | | NA | NA | | | | NA | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-34.672,39** | **2.272,42** | **545,33** | | | | **-31.854,64** | | |
| A. Forest Land | -39.573,27 | 31,31 | 330,07 | | | | -39.211,89 | | |
| B. Cropland | 1.307,56 | NO | 209,09 | | | | 1.516,65 | | |
| C. Grassland | 377,82 | 1,37 | 0,31 | | | | 379,51 | | |
| D. Wetlands | 3.102,17 | 2.239,73 | 5,86 | | | | 5.347,76 | | |
| E. Settlements | 113,34 | NA,NO | NA,NO | | | | 113,34 | | |
| F. Other Land | NA,NO | NA,NO | NA,NO | | | | NA,NO | | |
| G. Other | NA | NA | NA | | | | NA | | |
| **6. Waste** | **278,74** | **13.835,48** | **1.124,33** | | | | **15.238,55** | | |
| A. Solid Waste Disposal on Land | NA,NO | 8560,37 | | | | | 8.560,37 | | |
| B. Waste-water Handling | | 5275,12 | 1.108,31 | | | | 6.383,42 | | |
| C. Waste Incineration | 278,74 | NA | 16,02 | | | | 294,76 | | |
| D. Other | | | | | | | 0,00 | | |
| **7. Other** ***(as specified in Summary 1.A)*** | | | | | | | | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | 2.174,82 | 1,06 | 20,71 | | | | 2.196,59 | | |
| Aviation | 1.759,21 | 0,25 | 17,31 | | | | 1.776,77 | | |
| Marine | 415,61 | 0,81 | 3,40 | | | | 419,81 | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | **35.066,24** | | | | | | | | |

| | | |
|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | **395.978,72** | |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | 364.124,09 | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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.**

**Energy:**
The main reason of decrease of GHG emission from fuel combustion in stationary sources is drop in coal consumption by above 2%
**Transport:**
Slight decrease in emissions triggered by drop in fuels use: diesel oil by 2.5% and gasoline by 3.5%
**Industrial processes:**
Decrease of GHG emission is mainly the result of drop in production amounts of clinker (about 6%) and lime (about 7%)
**Agriculture:**
Main changes in emissions relate to the slight decrease in population of dairy cattle by about 5% and sheep by 6%
At the same time increase in nitrogen mineral fertilisers use was observed by more than 9%

**Solvents, Waste and LULUCF data are those Submitted for 2012 (May 2014)**

### 5.1.23 Portugal

Portugal did not submit proxy data by 31 July 2014.

### 5.1.24 Romania

Romania did not submit proxy data by 31 July 2014.

## 5.1.25 Sweden

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

Inventory year 2.013
Submission 2015 prel
country Sweden

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | | | | | | | | | |
| **1. Energy** | | | | | | | **40.898,97** | | |
| A. Fuel Combustion (Sectoral Approach) | | | | | | | | | |
| 1. Energy Industries | | | | | | | 9.773,05 | | |
| 2. Manufacturing Industries and Construction | | | | | | | 6.756,12 | | |
| 3. Transport | | | | | | | 17.395,16 | | |
| 4. Other Sectors | | | | | | | 1.432,77 | | |
| 5. Other | | | | | | | 4.441,76 | | |
| B. Fugitive Emissions from Fuels | | | | | | | 1.100,11 | | |
| 1. Solid Fuels | | | | | | | | | |
| 2. Oil and Natural Gas | | | | | | | | | |
| **2. Industrial Processes** | | | | | | | **5.738,57** | | |
| A. Mineral Products | | | | | | | | | |
| B. Chemical Industry | | | | | | | | | |
| C. Metal Production | | | | | | | | | |
| D. Other Production | | | | | | | | | |
| E. Production of Halocarbons and $SF_6$ | | | | | | | | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | | | | | | |
| G. Other | | | | | | | | | |
| **3. Solvent and Other Product Use** | | | | | | | | | |
| **4. Agriculture** | | | | | | | **7.555,17** | | |
| A. Enteric Fermentation | | | | | | | | | |
| B. Manure Management | | | | | | | | | |
| C. Rice Cultivation | | | | | | | | | |
| D. Agricultural Soils [3] | | | | | | | | | |
| E. Prescribed Burning of Savannas | | | | | | | | | |
| F. Field Burning of Agricultural Residues | | | | | | | | | |
| G. Other | | | | | | | | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | | | | | | | | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | | | | | | | **1.463,93** | | |
| A. Solid Waste Disposal on Land | | | | | | | | | |
| B. Waste-water Handling | | | | | | | | | |
| C. Waste Incineration | | | | | | | | | |
| D. Other | | | | | | | | | |
| **7. Other *(as specified in Summary 1.A)*** | | | | | | | | | |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | | | | | | | 7.817,55 | | |
| Aviation | | | | | | | | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | |
|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 55.656,64 |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.
[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.
[4] See footnote 8 to table Summary 1.A.

**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.**

***CRF 1 Energy (total):*** *Including emission from CRF 3 Solvent and Other Product Use.*
***CRF 1A2:*** *Only emission from stationary combustion. Off-road machinery are included in other domestic transport.*
***CRF 1A5 Other:*** *Including the military's domestic transport and machinery in all sectors (CRF 1A3 except 1A3b, 1A5b + parts of 1A2f and 1A4).*
***CRF 1B:*** *Including CRF 3 Solvent and Other Product Use.*

**Key drivers for emission trend**

Preliminary results of the overall Greenhouse gases emissions in Sweden for 2013 have been estimated to about 56 million tons of CO2-eq. Compared with 2012, the emissions have decreased by about 3%, which correspond to approximately 2 million tons of CO2-eq.

Emissions from energy industries have decreased by 5 % between 2012 and 2013. These emissions are strongly linked to variations in temperature and precipitation. In 2013, it was generally a little warmer than normal in Sweden and specifically wetter in the northern parts. This led to a decreased demand for heating and increased hydro electrical production, which in turn contributed to a reduction in emissions from the energy industries.

Road transport accounts for one-third of national emissions. The emission has decreased by about 3 % compared to 2012, due to the increase in numbers of fuel-efficient cars being used and also a promotion of the use of biofuels. This decrease in emissions is in spite of a little increase of the traffic on the state road networks in 2013.

The decreased volume of production is believed to be the main reason for the decreased emission from Industrial processes sector.

The steady decline of animal population and decreased application of synthetic fertilizers are behind the decreased emission from the Agriculture sector.

## 5.1.26 Slovenia

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

Inventory year 2013
Submission 2014
country Slovenia

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **15101,535** | **1822,498** | **1066,298** | **218,742** | **9,994** | **17,062** | **18236,130** | | |
| **1. Energy** | **14314,005** | **382,313** | **150,896** | | | | **14847,214** | | |
| A. Fuel Combustion (Sectoral Approach) | 14240,880 | 142,491 | 150,896 | | | | 14534,267 | | |
| 1. Energy Industries | 5762,031 | 2,784 | 26,786 | | | | 5791,601 | | |
| 2. Manufacturing Industries and Construction | 1700,593 | 4,748 | 16,166 | | | | 1721,508 | | |
| 3. Transport | 5364,416 | 6,911 | 56,199 | | | | 5427,526 | | |
| 4. Other Sectors | 1410,489 | 128,046 | 51,716 | | | | 1590,251 | | |
| 5. Other | 3,351 | 0,001 | 0,029 | | | | 3,381 | | |
| B. Fugitive Emissions from Fuels | 73,125 | 239,822 | NA,NO | | | | 312,947 | | |
| 1. Solid Fuels | 73,123 | 218,198 | NA,NO | | | | 291,320 | | |
| 2. Oil and Natural Gas | 0,002 | 21,624 | NO | | | | 21,626 | | |
| **2. Industrial Processes** | **782,125** | **NA,NO** | **NA,NO** | **218,742** | **9,994** | **17,062** | **1027,922** | | |
| A. Mineral Products | 602,820 | NA | NA | | | | 602,820 | | |
| B. Chemical Industry | 1,021 | NA,NO | NA,NO | | | | 1,021 | | |
| C. Metal Production | 178,284 | NA,NO | NO | | 9,994 | NO | 188,278 | | |
| D. Other Production | NA | | | | | | NA | | |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA | NA | NA,NO | | |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 218,742 | NA,NO | 17,062 | 235,804 | | |
| G. Other | NA | NA | NA | NA | NA | NA | NA | | |
| **3. Solvent and Other Product Use** | **NA,NE** | | **37,200** | | | | **37,200** | | |
| **4. Agriculture** | | **1035,083** | **817,725** | | | | **1852,808** | | |
| A. Enteric Fermentation | | 643,564 | | | | | 643,564 | | |
| B. Manure Management | | 391,518 | 134,413 | | | | 525,931 | | |
| C. Rice Cultivation | | NO | | | | | NO | | |
| D. Agricultural Soils [3] | | NA,NO | 683,313 | | | | 683,313 | | |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | | |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO | | |
| G. Other | | NO | NO | | | | NO | | |
| **5. Land Use, Land-Use Change and Forestry [1]** | | | | | | | | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | **5,406** | **405,103** | **60,477** | | | | **470,985** | | |
| A. Solid Waste Disposal on Land | NA,NO | 341,642 | | | | | 341,642 | | |
| B. Waste-water Handling | | 63,461 | 60,446 | | | | 123,907 | | |
| C. Waste Incineration | 5,406 | NA | 0,031 | | | | 5,436 | | |
| D. Other | NA | NA | NA | | | | NA | | |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | |
| | | | | | | | | | |
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | **264,446** | **0,237** | **24,621** | | | | **289,303** | | |
| Aviation | 66,395 | 0,020 | 0,576 | | | | 66,990 | | |
| Marine | 198,051 | 0,217 | 24,045 | | | | 222,313 | | |
| **Multilateral Operations** | **0,168** | **0,000** | **0,001** | | | | **0,170** | | |
| **$CO_2$ Emissions from Biomass** | **2869,225** | | | | | | **2869,225** | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 18.236,13 | | |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | NA | | |

(1) For $CO_2$ 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) Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

(3) Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

(4) See footnote 8 to table Summary 1.A.

| 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 | **Preliminary data from energy balance from national statistics for liquid and gaseous fuel**<br>**ETS data for solid fuel, 2012 data for other fuel 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 2013 have been used |
| 4. Other Sectors | Preliminary statistical data about gas oil and natural gas consumption for 2013 |
| 5. Other | The same data as in 2012 |
| B. Fugitive Emissions from Fuels | **Statistical data and extrapolation** |
| 1. Solid Fuels | Coal production data for 2013 |
| 2. Oil and Natural Gas | Extrapolation |
| **2. Industrial Processes** | **Mostly covered with ETS data for 2013** |
| A. Mineral Products | Data from ETS for the whole category (including small emitters) |
| B. Chemical Industry | Only carbide use - data from statistics |
| C. Metal Production | Data from ETS |
| F. Consumption of Halocarbons and $SF_6$ | Extrapolation |
| **3. Solvent and Other Product Use** | **Statistical data for 2013** |
| **4. Agriculture** | **Data on animal population and crop production are the final statistical data for 2013** |
| A. Enteric Fermentation | milk yield: preliminary estimate for 2013, EF and other parameters from 2012 inventory |
| B. Manure Management | EF and other parameters from 2012 inventory |
| D. Agricultural Soils | EF and other parameters from 2012 inventory |
| **6. Waste** | **No data for 2012** |
| A. Solid Waste Disposal on Land | FOD model has been used - the same AD as in 2012 |
| B. Waste-water Handling | The same data as in 2012 |
| C. Waste incineration | The same data as in 2012 |

## 5.1.27 Slovakia

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

Inventory year
Submission
country

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | | | | | | | | | |
| **1. Energy** | **28.134,08** | **1.079,45** | **178,66** | | | | **29.392,20** | **14.903,88** | **14.488,32** |
| A. Fuel Combustion (Sectoral Approach) | 28.133,81 | 54,46 | 178,66 | | | | 28.366,93 | 14.903,88 | 13.463,06 |
| 1. Energy Industries | 9.268,14 | 9,05 | 44,92 | | | | 9.322,11 | 8.284,56 | 1.037,55 |
| 2. Manufacturing Industries and Construction | 7.360,86 | 8,18 | 17,38 | | | | 7.386,41 | 6.228,96 | 1.157,45 |
| 3. Transport | 6.675,55 | 12,41 | 79,50 | | | | 6.767,46 | 0,00 | 6.767,46 |
| 4. Other Sectors | 3.880,77 | 23,01 | 36,22 | | | | 3.940,01 | 29,94 | 3.910,06 |
| 5. Other | 948,49 | 1,81 | 0,64 | | | | 950,94 | 360,41 | 590,53 |
| B. Fugitive Emissions from Fuels | 0,27 | 1.024,99 | 0,00 | | | | 1.025,26 | 0,00 | 1.025,26 |
| 1. Solid Fuels | NA, NO | 322,92 | NA, NO | | | | 322,92 | 0,00 | 322,92 |
| 2. Oil and Natural Gas | 0,27 | 702,07 | 0,00 | | | | 702,34 | 0,00 | 702,34 |
| **2. Industrial Processes** | **7.180,82** | **2,02** | **134,97** | **456,51** | **8,42** | **20,71** | **7.803,45** | **7.217,06** | **586,39** |
| A. Mineral Products | 2.393,50 | NA | NA | | | | 2.393,50 | 2.286,69 | 106,81 |
| B. Chemical Industry | 686,56 | 1,18 | 134,97 | | | | 822,71 | 821,19 | 1,53 |
| C. Metal Production | 4.100,76 | 0,84 | NA | | 8,42 | NA, NO | 4.110,02 | 4.109,18 | 0,84 |
| D. Other Production | NO | | | | | | NO | NO | NO |
| E. Production of Halocarbons and $SF_6$ | | | | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | 456,51 | NA,NO | 20,71 | 477,22 | 0,00 | 477,22 |
| G. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **3. Solvent and Other Product Use** | **82,00** | | **92,00** | | | | **174,00** | **0,00** | **174,00** |
| **4. Agriculture** | | **1.034,14** | **2.059,13** | | | | **3.093,27** | **0,00** | **3.093,27** |
| A. Enteric Fermentation | | 882,56 | | | | | 882,56 | 0,00 | 882,56 |
| B. Manure Management | | 151,58 | 323,03 | | | | 474,61 | 0,00 | 474,61 |
| C. Rice Cultivation | | NO | | | | | NO | 0,00 | NO |
| D. Agricultural Soils [3] | | NO | 1.736,10 | | | | 1.736,10 | 0,00 | 1.736,10 |
| E. Prescribed Burning of Savannas | | NO | NO | | | | NO | 0,00 | NO |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO | 0,00 | NO |
| G. Other | | NO | NO | | | | NO | 0,00 | NO |
| **5. Land Use, Land-Use Change and Forestry [1]** | **-8.128,36** | **13,44** | **12,10** | | | | **-8.102,83** | | |
| A. Forest Land | -7.223,46 | 13,44 | 2,73 | | | | -7.207,30 | | |
| B. Cropland | -874,34 | NO | 9,37 | | | | -864,97 | | |
| C. Grassland | -232,50 | NO | NO | | | | -232,50 | | |
| D. Wetlands | NO | NO | NO | | | | NO | | |
| E. Settlements | 96,11 | NO | NO | | | | 96,11 | | |
| F. Other Land | 105,83 | NO | NO | | | | 105,83 | | |
| G. Other | NO | NO | NO | | | | NO | | |
| **6. Waste** | **7,00** | **2.055,90** | **153,00** | | | | **2.215,90** | **0,00** | **2.215,90** |
| A. Solid Waste Disposal on Land | NO | 1.680,00 | | | | | 1.680,00 | 0,00 | 1.680,00 |
| B. Waste-water Handling | | 300,30 | 72,00 | | | | 372,30 | 0,00 | 372,30 |
| C. Waste Incineration | 7,00 | NO | 2,00 | | | | 9,00 | 0,00 | 9,00 |
| D. Other | NO | 75,60 | 79,00 | | | | 154,60 | 0,00 | 154,60 |
| **7. Other *(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| **Memo Items: [4]** | | | | | | | | | |
| **International Bunkers** | 98,45 | 0,04 | 2,15 | | | | 100,64 | | |
| Aviation | 89,16 | 0,03 | 0,91 | | | | 90,11 | | |
| Marine | 9,29 | 0,01 | 1,24 | | | | 10,54 | | |
| **Multilateral Operations** | **NO** | **NO** | **NO** | | | | **NO** | | |
| **$CO_2$ Emissions from Biomass** | **4.144,91** | | | | | | **4.144,91** | | |
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | | | | | | | 42.678,81 | **22.120,94** | **20.557,88** |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | | | | | | | 34.575,98 | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

| **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.A.1 Energy Industries | Due to a moderate winter season in 2013, fuel consumption decreased in this category for major sources included in ETS (for example Slovak PPs -7.55%, PPC POWER -4%, SLOVINTEGRA ENERGY -8.5%, E.ON Elektrárne -79.2%, Mondi -44%). Total reduction of $CO_2$ emissions in this category is expected approximately on the level of 445 Gg in 2013. |
| 1.A.2 Manufacturing Industries and Construction | Due to a reduction in iron and steel production, emissions of $CO_2$ decreased in this category by approximately 860 Gg in 2013. |
| 1.A.3 Transport | Due to an increase in diesel oil consumption and number of vehicle-kilometres (passenger cars and HDVs), total emissions of $CO_2$ eq. will increase in this category in 2013 (in accordance with the previous trend). |
| 1.A.4 Other Sectors | No fluctuations are expected in this category in 2013. Major source of GHG emissions is residential heating, where consumption of fuels is almost stable in last years. |
| 2.A Mineral Production | Due to a reduction in mineral production, it is expected further decrease in this category in 2013. |
| 3. Solvent and other product use | No changes are expected in this sector in 2013. |
| 4. Agriculture | No changes are expected in this sector in 2013. |
| 5. LULUCF | No changes are expected in this sector in 2013. |
| 6. Waste | No changes are expected in this sector in 2013. |
| ETS and non-ETS share: | The absolute figure of the ETS GHG emissions (in Gg of $CO_2$ eq.) provided in this proxy inventory not corresponded to the absolute verified GHG emissions in 2013. The reasons are:<br>1. Using GWP from the SAR of the IPCC for $N_2O$ and $CH_4$ emissions in proxy inventory (instead of GWP used in ETS); 2. Using calculated GHG emissions for those sources, which reported GHG emissions based on measurements in their ETS reports. This approach was chosen due to keep consistency in fuel balance of the Slovakia. |
| Comment: | Proxy 2013 inventory of the Slovak Republic was prepared from the real data based on the ETS reports recalculated by the GWP from the SAR of the IPCC and the extrapolation of non-ETS data (trends) using several sectoral drivers described above. |

## 5.1.28 United Kingdom

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

Inventory year 2013 (provisional)
Submission 2014 provisional inventory s
country UNITED KINGDOM OF GREA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | $CO_2$ [1] | $CH_4$ | $N_2O$ | HFCs [2] | PFCs [2] | $SF_6$ [2] | Total | ETS | non-ETS |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ equivalent (Gg) | | | | | | | CO2 equivalent (Gg) | |
| **Total (Net Emissions) [1]** | **470.700,00** | **49.300,00** | **35.400,00** | **14.200,00** | **200,00** | **500,00** | **570.400,00** | | |
| **1. Energy** | **460.100,00** | **IE** | **IE** | | | | | **209.945,88** | **250.154,12** |
| A. Fuel Combustion (Sectoral Approach) | 456.400,00 | IE | IE | | | | | 209.342,28 | 247.057,72 |
| 1. Energy Industries | 173.900,00 | IE | IE | | | | | 163.116,62 | 10.783,38 |
| 2. Manufacturing Industries and Construction | 66.700,00 | IE | IE | | | | | 41.890,44 | 24.809,56 |
| 3. Transport | 113.300,00 | IE | IE | | | | | 2.632,58 | 110.667,42 |
| 4. Other Sectors | 99.700,00 | IE | IE | | | | | 1.702,64 | 97.997,36 |
| 5. Other | 2.700,00 | IE | IE | | | | | 0 | 2.700,00 |
| B. Fugitive Emissions from Fuels | 3.700,00 | IE | IE | | | | | 603,60 | 3.096,40 |
| 1. Solid Fuels | 200,00 | IE | IE | | | | | 95,74 | 104,26 |
| 2. Oil and Natural Gas | 3.600,00 | IE | IE | | | | | 507,86 | 3.092,14 |
| **2. Industrial Processes** | **10.300,00** | **IE** | **IE, NE** | **IE** | **IE** | **IE** | | **7239,40** | **3.060,60** |
| A. Mineral Products | 6.500,00 | IE | NE | | | | | IE | NA |
| B. Chemical Industry | 2.700,00 | IE | IE | | | | | IE | NA |
| C. Metal Production | 1.100,00 | IE | IE | IE | IE | IE | | IE | NA |
| D. Other Production | 0,00 | | | | | | | 0 | - |
| E. Production of Halocarbons and $SF_6$ | | | | IE | IE | NA, NO | | 0 | - |
| F. Consumption of Halocarbons and $SF_6$ [2] | | | | IE | IE | IE | | 0 | - |
| G. Other | NA | NA | NA | NA | NA | NA | | 0 | - |
| **3. Solvent and Other Product Use** | **NE** | | **NE, NO** | | | | | 0 | - |
| **4. Agriculture** | | **IE** | **IE** | | | | | 0 | - |
| A. Enteric Fermentation | | IE | | | | | | 0 | - |
| B. Manure Management | | IE | IE | | | | | 0 | - |
| C. Rice Cultivation | | NA, NO | | | | | | 0 | - |
| D. Agricultural Soils [3] | | IE,NA,NE,NO | IE | | | | | 0 | - |
| E. Prescribed Burning of Savannas | | NA | NA | | | | | 0 | - |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | | 0 | - |
| G. Other | | NA | IE | | | | | 0 | - |
| **5. Land Use, Land-Use Change and Forestry [1]** | | | | | | | | | |
| A. Forest Land | | | | | | | | | |
| B. Cropland | | | | | | | | | |
| C. Grassland | | | | | | | | | |
| D. Wetlands | | | | | | | | | |
| E. Settlements | | | | | | | | | |
| F. Other Land | | | | | | | | | |
| G. Other | | | | | | | | | |
| **6. Waste** | **300,00** | **IE** | **IE** | | | | | 0 | 300,00 |
| A. Solid Waste Disposal on Land | NA, NE, NO | IE | | | | | | 0 | - |
| B. Waste-water Handling | | IE | IE | | | | | 0 | - |
| C. Waste Incineration | 300,00 | IE | IE | | | | | 0 | 300,00 |
| D. Other | NA | NA | NA | | | | | 0 | - |
| **7. Other** ***(as specified in Summary 1.A)*** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | | 0 | - |

| **Memo Items: [4]** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **International Bunkers** | | | | | | | | | |
| Aviation | | | | | | | | | |
| Marine | | | | | | | | | |
| **Multilateral Operations** | | | | | | | | | |
| **$CO_2$ Emissions from Biomass** | | | | | | | | | |

| | | | |
|---|---|---|---|
| Total $CO_2$ Equivalent Emissions without Land Use, Land-Use Change and Forestry | 570.400,00 | | |
| Total $CO_2$ Equivalent Emissions with Land Use, Land-Use Change and Forestry | | | |

[1] For $CO_2$ 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] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] Parties which previously reported $CO_2$ from soils in the Agriculture sector should note this in the NIR.

[4] See footnote 8 to table Summary 1.A.

**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 2013 have been calculated using the quarterly energy consumption statistics for the UK.
A note describing the calculations is presented here and the drivers for the changes between t-1 and t-2:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295968/20140327_2013_UK_Greenhouse_Gas_Emissions_Provisional_Figures.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 have been adjusted to remove the Crown Dependencies and add in Gibraltar, consistent with submissions to the EU.
Emissions for the Crown Dependencies and Gibraltar have been assumed the same as 2012
Emissions are presented in Gg to 4 significant figures, 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
LULUCF emissions are excluded in accordance with Article 17 of the Implementing Regulation 749/214

## 5.2 Annex II. Detailed results for each Member States as calculated by EEA

### 5.2.1 Austria

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

Inventory 2013
Submission 2014 v1.0
AUSTRIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **67.485** | **5.206** | **5.250** | **1.531** | **40** | **300** | **79.812** |
| **1. Energy** | **58.320** | **471** | **672** | | | | **59.463** |
| A. Fuel Combustion (Sectoral Approach) | 58.085 | 238 | 672 | | | | 58.994 |
| 1. Energy Industries | 9.171 | 10 | 116 | | | | 9.297 |
| 2. Manufacturing Industries and Construction | 15.472 | 14 | 159 | | | | 15.645 |
| 3. Transport | 22.264 | 13 | 213 | | | | 22.490 |
| 4. Other Sectors | 11.130 | 200 | 183 | | | | 11.514 |
| 5. Other | 47 | 0 | 1 | | | | 48 |
| B. Fugitive Emissions from Fuels | 235 | 233 | 0 | | | | 468 |
| 1. Solid Fuels | IE,NA,NO | 1 | IE | | | | 1 |
| 2. Oil and Natural Gas | 235 | 232 | IE | | | | 468 |
| **2. Industrial Processes** | **8.974** | **18** | **53** | **1.531** | **40** | **300** | **10.916** |
| A. Mineral Products | 3.055 | NA | NE | | | | 3.055 |
| B. Chemical Industry | 591 | 18 | 53 | | | | 662 |
| C. Metal Production | 5.329 | 0 | NA | | IE | IE | 5.329 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **189** | | **146** | | | | **335** |
| **4. Agriculture** | | **3.533** | **4.004** | | | | **7.536** |
| A. Enteric Fermentation | | 3.200 | | | | | 3.200 |
| B. Manure Management | | 323 | 922 | | | | 1.245 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | 9 | 3.082 | | | | 3.091 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 1 | 0 | | | | 1 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **2** | **1.184** | **376** | | | | **1.562** |
| A. Solid Waste Disposal on Land | NA,NO | 1.107 | 0 | | | | 1.107 |
| B. Waste-water Handling | | 23 | 266 | | | | 289 |
| C. Waste Incineration | 2 | 0 | 0 | | | | 2 |
| D. Other | NA | 54 | 110 | | | | 164 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 79.812 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.2 Belgium

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

Inventory 2013
Submission 2014 v1.0
BELGIUM

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **100.110** | **6.425** | **7.146** | **2.223** | **220** | **127** | **116.251** |
| **1. Energy** | **92.658** | **757** | **748** | | | | **94.162** |
| A. Fuel Combustion (Sectoral Approach) | 92.563 | 344 | 748 | | | | 93.655 |
| 1. Energy Industries | 21.622 | 36 | 147 | | | | 21.805 |
| 2. Manufacturing Industries and Construction | 19.835 | 59 | 211 | | | | 20.105 |
| 3. Transport | 23.350 | 15 | 260 | | | | 23.625 |
| 4. Other Sectors | 27.711 | 234 | 129 | | | | 28.074 |
| 5. Other | 45 | 0 | 1 | | | | 46 |
| B. Fugitive Emissions from Fuels | 95 | 412 | 0 | | | | 507 |
| 1. Solid Fuels | NA,NO | 6 | IE | | | | 6 |
| 2. Oil and Natural Gas | 95 | 407 | IE | | | | 502 |
| **2. Industrial Processes** | **6.971** | **19** | **1.576** | **2.223** | **220** | **127** | **11.136** |
| A. Mineral Products | 4.550 | NA,NO | NE | | | | 4.550 |
| B. Chemical Industry | 2.087 | 4 | 1.576 | | | | 3.667 |
| C. Metal Production | 333 | 15 | NO | | IE | IE | 348 |
| D. Other Production | IE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA,NO | NA,NO | NA,NO | IE | IE | IE | IE,NA,NO, |
| **3. Solvent and Other Product Use** | **NA** | | **183** | | | | **183** |
| **4. Agriculture** | | **4.968** | **4.328** | | | | **9.296** |
| A. Enteric Fermentation | | 3.580 | | | | | 3.580 |
| B. Manure Management | | 1.388 | 769 | | | | 2.157 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA | 3.559 | | | | 3.559 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **482** | **681** | **312** | | | | **1.475** |
| A. Solid Waste Disposal on Land | NA,NO | 579 | 0 | | | | 579 |
| B. Waste-water Handling | | 79 | 312 | | | | 391 |
| C. Waste Incineration | 482 | NA | 0 | | | | 482 |
| D. Other | NA | 24 | NA | | | | 24 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 116.251 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.3 Bulgaria

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

Inventory 2013
Submission 2014 v1.0
BULGARIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **44.318** | **6.870** | **5.007** | **481** | **0** | **12** | **56.689** |
| **1. Energy** | **40.924** | **1.593** | **245** | | | | **42.762** |
| A. Fuel Combustion (Sectoral Approach) | 40.909 | 282 | 245 | | | | 41.437 |
| 1. Energy Industries | 27.907 | 7 | 106 | | | | 28.019 |
| 2. Manufacturing Industries and Construction | 3.388 | 10 | 17 | | | | 3.415 |
| 3. Transport | 7.736 | 12 | 79 | | | | 7.827 |
| 4. Other Sectors | 1.879 | 254 | 44 | | | | 2.176 |
| 5. Other | IE,NO | IE,NO | IE,NO | | | | IE,NO, |
| B. Fugitive Emissions from Fuels | 14 | 1.311 | 0 | | | | 1.325 |
| 1. Solid Fuels | NA,NO | 701 | IE | | | | 701 |
| 2. Oil and Natural Gas | 14 | 609 | IE | | | | 624 |
| **2. Industrial Processes** | **3.352** | **0** | **131** | **481** | **0** | **12** | **3.975** |
| A. Mineral Products | 2.921 | NO | NE | | | | 2.921 |
| B. Chemical Industry | 392 | 0 | 131 | | | | 523 |
| C. Metal Production | 38 | NA,NO | NA | | IE | IE | 38 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **22** | | **16** | | | | **38** |
| **4. Agriculture** | | **1.980** | **4.437** | | | | **6.417** |
| A. Enteric Fermentation | | 1.318 | | | | | 1.318 |
| B. Manure Management | | 526 | 500 | | | | 1.026 |
| C. Rice Cultivation | | 113 | | | | | 113 |
| D. Agricultural Soils(3) | | NA,NO | 3.926 | | | | 3.926 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 23 | 11 | | | | 34 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **21** | **3.297** | **178** | | | | **3.495** |
| A. Solid Waste Disposal on Land | NO | 2.735 | 0 | | | | 2.735 |
| B. Waste-water Handling | | 555 | 162 | | | | 717 |
| C. Waste Incineration | 21 | NO | 8 | | | | 29 |
| D. Other | NO | 7 | 8 | | | | 14 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 56.689 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.4 Cyprus

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

Inventory 2013
Submission 2014 v1.0
CYPRUS

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **6.574** | **1.271** | **616** | **282** | **NA,NE,NO,** | **0** | **8.743** |
| **1. Energy** | **5.772** | **17** | **16** | | | | **5.804** |
| A. Fuel Combustion (Sectoral Approach) | 5.772 | 17 | 16 | | | | 5.804 |
| 1. Energy Industries | 2.830 | 2 | 7 | | | | 2.839 |
| 2. Manufacturing Industries and Construction | 527 | 1 | 2 | | | | 529 |
| 3. Transport | 1.908 | 8 | 5 | | | | 1.921 |
| 4. Other Sectors | 490 | 6 | 2 | | | | 498 |
| 5. Other | 17 | 0 | 0 | | | | 17 |
| B. Fugitive Emissions from Fuels | 0 | 0 | 0 | | | | 0 |
| 1. Solid Fuels | NA,NO | NA,NO | IE | | | | IE,NA,NO, |
| 2. Oil and Natural Gas | 0 | 0 | IE | | | | 0 |
| **2. Industrial Processes** | **792** | **0** | **0** | **282** | **NA,NE,NO** | **0** | **1.075** |
| A. Mineral Products | 792 | NA,NE | NE | | | | 792 |
| B. Chemical Industry | 0 | 0 | 0 | | | | 0 |
| C. Metal Production | NA,NO | NA,NO | NA | | IE | IE | IE,NA,NO, |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **10** | | **65** | | | | **75** |
| **4. Agriculture** | | **285** | **510** | | | | **795** |
| A. Enteric Fermentation | | 178 | | | | | 178 |
| B. Manure Management | | 106 | 153 | | | | 258 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | NA,NE | 357 | | | | 357 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 1 | 0 | | | | 1 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **NA,NO,** | **970** | **25** | | | | **995** |
| A. Solid Waste Disposal on Land | NA,NO | 936 | 0 | | | | 936 |
| B. Waste-water Handling | | 34 | 25 | | | | 59 |
| C. Waste Incineration | NA | NA,NO | NA,NO | | | | NA,NO, |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 8.743 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.5 Czech Republic

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

Inventory 2013
Submission 2014 v1.0
CZECH REPUBLIC

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **107.434** | **9.469** | **7.610** | **2.298** | **7** | **92** | **126.910** |
| **1. Energy** | **98.141** | **3.664** | **1.094** | | | | **102.900** |
| A. Fuel Combustion (Sectoral Approach) | 97.935 | 573 | 1.094 | | | | 99.602 |
| 1. Energy Industries | 56.479 | 23 | 277 | | | | 56.779 |
| 2. Manufacturing Industries and Construction | 16.786 | 50 | 89 | | | | 16.925 |
| 3. Transport | 16.115 | 19 | 655 | | | | 16.789 |
| 4. Other Sectors | 7.460 | 480 | 50 | | | | 7.990 |
| 5. Other | 1.095 | 2 | 23 | | | | 1.119 |
| B. Fugitive Emissions from Fuels | 207 | 3.091 | 0 | | | | 3.298 |
| 1. Solid Fuels | 195 | 2.454 | IE | | | | 2.649 |
| 2. Oil and Natural Gas | 12 | 637 | IE | | | | 649 |
| **2. Industrial Processes** | **8.878** | **81** | **427** | **2.298** | **7** | **92** | **11.783** |
| A. Mineral Products | 3.309 | 3 | NE | | | | 3.312 |
| B. Chemical Industry | 573 | 25 | 427 | | | | 1.025 |
| C. Metal Production | 4.995 | 54 | NA | | IE | IE | 5.049 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **208** | | **233** | | | | **441** |
| **4. Agriculture** | | **2.443** | **5.577** | | | | **8.020** |
| A. Enteric Fermentation | | 1.987 | | | | | 1.987 |
| B. Manure Management | | 457 | 633 | | | | 1.090 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NE | 4.943 | | | | 4.943 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **207** | **3.280** | **280** | | | | **3.767** |
| A. Solid Waste Disposal on Land | NA,NO | 2.770 | 0 | | | | 2.770 |
| B. Waste-water Handling | | 510 | 276 | | | | 786 |
| C. Waste Incineration | 207 | 0 | 4 | | | | 211 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 126.910 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.6 Germany

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

Inventory 2013
Submission 2014 v1.0
GERMANY

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **836.028** | **47.522** | **55.706** | **9.346** | **120** | **3.390** | **952.112** |
| **1. Energy** | **782.080** | **11.724** | **5.996** | | | | **799.800** |
| A. Fuel Combustion (Sectoral Approach) | 780.588 | 2.986 | 5.996 | | | | 789.569 |
| 1. Energy Industries | 363.676 | 1.669 | 3.055 | | | | 368.400 |
| 2. Manufacturing Industries and Construction | 114.804 | 203 | 778 | | | | 115.784 |
| 3. Transport | 162.063 | 157 | 1.556 | | | | 163.776 |
| 4. Other Sectors | 139.069 | 953 | 600 | | | | 140.622 |
| 5. Other | 975 | 4 | 7 | | | | 986 |
| B. Fugitive Emissions from Fuels | 1.493 | 8.738 | 0 | | | | 10.230 |
| 1. Solid Fuels | 3 | 2.935 | IE | | | | 2.938 |
| 2. Oil and Natural Gas | 1.490 | 5.803 | IE | | | | 7.293 |
| **2. Industrial Processes** | **52.512** | **5** | **2.653** | **9.346** | **120** | **3.390** | **68.026** |
| A. Mineral Products | 19.667 | NA | NE | | | | 19.667 |
| B. Chemical Industry | 16.827 | 1 | 2.639 | | | | 19.466 |
| C. Metal Production | 16.018 | 5 | 15 | | IE | IE | 16.037 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **1.436** | | **304** | | | | **1.740** |
| **4. Agriculture** | | **25.945** | **44.013** | | | | **69.958** |
| A. Enteric Fermentation | | 20.991 | | | | | 20.991 |
| B. Manure Management | | 4.954 | 2.743 | | | | 7.696 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NO | 41.270 | | | | 41.270 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **NO,** | **9.849** | **2.740** | | | | **12.588** |
| A. Solid Waste Disposal on Land | NO | 9.230 | 0 | | | | 9.230 |
| B. Waste-water Handling | | 20 | 2.370 | | | | 2.390 |
| C. Waste Incineration | NO | NO | NO | | | | NO, |
| D. Other | NO | 599 | 369 | | | | 968 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 952.112 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.7 Denmark

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

Inventory 2013
Submission 2014 v1.0
DENMARK

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **40.722** | **5.474** | **5.995** | **645** | **9** | **122** | **52.966** |
| **1. Energy** | **39.562** | **438** | **354** | | | | **40.353** |
| A. Fuel Combustion (Sectoral Approach) | 39.285 | 328 | 354 | | | | 39.967 |
| 1. Energy Industries | 19.444 | 190 | 97 | | | | 19.732 |
| 2. Manufacturing Industries and Construction | 5.236 | 12 | 46 | | | | 5.294 |
| 3. Transport | 11.912 | 12 | 127 | | | | 12.051 |
| 4. Other Sectors | 2.577 | 114 | 82 | | | | 2.773 |
| 5. Other | 116 | 0 | 1 | | | | 117 |
| B. Fugitive Emissions from Fuels | 277 | 110 | 0 | | | | 386 |
| 1. Solid Fuels | NA,NO | NA,NO | IE | | | | IE,NA,NO, |
| 2. Oil and Natural Gas | 277 | 110 | IE | | | | 386 |
| **2. Industrial Processes** | **1.001** | **0** | **0** | **645** | **9** | **122** | **1.776** |
| A. Mineral Products | 965 | IE,NA | NE | | | | 965 |
| B. Chemical Industry | 1 | 0 | 0 | | | | 1 |
| C. Metal Production | NA,NO | NA,NO | NO | | IE | IE | IE,NA,NO, |
| D. Other Production | 2 | 0 | 0 | | | | 2 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 32 | NA | NA | IE | IE | IE | 32 |
| **3. Solvent and Other Product Use** | **144** | | **12** | | | | **156** |
| **4. Agriculture** | | **4.170** | **5.422** | | | | **9.592** |
| A. Enteric Fermentation | | 2.872 | | | | | 2.872 |
| B. Manure Management | | 1.295 | 373 | | | | 1.668 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NE | 5.048 | | | | 5.048 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 2 | 1 | | | | 3 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **15** | **866** | **208** | | | | **1.089** |
| A. Solid Waste Disposal on Land | NA,NE,NO | 698 | 0 | | | | 698 |
| B. Waste-water Handling | | 74 | 73 | | | | 147 |
| C. Waste Incineration | NO | 0 | 0 | | | | 0 |
| D. Other | 15 | 94 | 135 | | | | 244 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 52.966 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.8 Estonia

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

Inventory 2013
Submission 2014 v1.0
ESTONIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **19.124** | **950** | **1.024** | **178** | **NA,NE,NO,** | **2** | **21.278** |
| **1. Energy** | **18.638** | **218** | **113** | | | | **18.969** |
| A. Fuel Combustion (Sectoral Approach) | 18.638 | 141 | 113 | | | | 18.891 |
| 1. Energy Industries | 15.140 | 13 | 36 | | | | 15.189 |
| 2. Manufacturing Industries and Construction | 728 | 2 | 4 | | | | 734 |
| 3. Transport | 2.258 | 4 | 19 | | | | 2.281 |
| 4. Other Sectors | 490 | 122 | 54 | | | | 665 |
| 5. Other | 23 | 0 | 0 | | | | 23 |
| B. Fugitive Emissions from Fuels | 0 | 77 | 0 | | | | 77 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 0 | 77 | IE | | | | 77 |
| **2. Industrial Processes** | **472** | **0** | **0** | **178** | **NA,NO** | **2** | **652** |
| A. Mineral Products | 447 | NO | NE | | | | 447 |
| B. Chemical Industry | 25 | 0 | 0 | | | | 25 |
| C. Metal Production | NA,NO | NA,NO | NA | | IE | IE | IE,NA,NO, |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **14** | | **4** | | | | **19** |
| **4. Agriculture** | | **486** | **861** | | | | **1.347** |
| A. Enteric Fermentation | | 439 | | | | | 439 |
| B. Manure Management | | 47 | 106 | | | | 153 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NO | 755 | | | | 755 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **0** | **246** | **45** | | | | **291** |
| A. Solid Waste Disposal on Land | NO | 231 | 0 | | | | 231 |
| B. Waste-water Handling | | 6 | 34 | | | | 40 |
| C. Waste Incineration | 0 | NO | 1 | | | | 1 |
| D. Other | NO | 9 | 10 | | | | 20 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 21.278 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.9 Spain

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

Inventory 2013
Submission 2014 v1.0
SPAIN

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **248.474** | **31.672** | **23.935** | **7.574** | **25** | **220** | **311.900** |
| **1. Energy** | **233.680** | **2.591** | **2.081** | | | | **238.353** |
| A. Fuel Combustion (Sectoral Approach) | 230.996 | 1.487 | 2.081 | | | | 234.564 |
| 1. Energy Industries | 75.354 | 170 | 616 | | | | 76.140 |
| 2. Manufacturing Industries and Construction | 43.328 | 395 | 444 | | | | 44.166 |
| 3. Transport | 76.934 | 85 | 790 | | | | 77.809 |
| 4. Other Sectors | 35.381 | 837 | 231 | | | | 36.449 |
| 5. Other | IE,NO | IE,NO | IE,NO | | | | IE,NO, |
| B. Fugitive Emissions from Fuels | 2.684 | 1.104 | 0 | | | | 3.788 |
| 1. Solid Fuels | 35 | 556 | IE | | | | 591 |
| 2. Oil and Natural Gas | 2.649 | 548 | IE | | | | 3.198 |
| **2. Industrial Processes** | **14.082** | **53** | **162** | **7.574** | **25** | **220** | **22.116** |
| A. Mineral Products | 10.625 | NA | NE | | | | 10.625 |
| B. Chemical Industry | 853 | 40 | 161 | | | | 1.054 |
| C. Metal Production | 2.604 | 12 | 1 | | IE | IE | 2.618 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **708** | | **460** | | | | **1.167** |
| **4. Agriculture** | | **17.438** | **19.953** | | | | **37.391** |
| A. Enteric Fermentation | | 9.971 | | | | | 9.971 |
| B. Manure Management | | 6.721 | 1.549 | | | | 8.270 |
| C. Rice Cultivation | | 308 | | | | | 308 |
| D. Agricultural Soils(3) | | IE,NA | 18.324 | | | | 18.324 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 438 | 80 | | | | 518 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **3** | **11.590** | **1.279** | | | | **12.873** |
| A. Solid Waste Disposal on Land | NA | 10.964 | 0 | | | | 10.964 |
| B. Waste-water Handling | | 610 | 1.269 | | | | 1.879 |
| C. Waste Incineration | 3 | 1 | 10 | | | | 14 |
| D. Other | NA | 15 | 0 | | | | 16 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 311.900 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.10 Finland

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

Inventory 2013
Submission 2014 v1.0
FINLAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **50.230** | **4.055** | **5.214** | **926** | **2** | **37** | **60.463** |
| **1. Energy** | **46.137** | **368** | **913** | | | | **47.417** |
| A. Fuel Combustion (Sectoral Approach) | 46.008 | 329 | 913 | | | | 47.250 |
| 1. Energy Industries | 23.383 | 23 | 335 | | | | 23.740 |
| 2. Manufacturing Industries and Construction | 8.068 | 14 | 137 | | | | 8.219 |
| 3. Transport | 12.308 | 33 | 171 | | | | 12.512 |
| 4. Other Sectors | 888 | 255 | 41 | | | | 1.185 |
| 5. Other | 1.361 | 4 | 230 | | | | 1.594 |
| B. Fugitive Emissions from Fuels | 129 | 39 | 0 | | | | 167 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 129 | 39 | IE | | | | 167 |
| **2. Industrial Processes** | **4.057** | **9** | **166** | **926** | **2** | **37** | **5.197** |
| A. Mineral Products | 1.181 | NO | NE | | | | 1.181 |
| B. Chemical Industry | 726 | 0 | 166 | | | | 893 |
| C. Metal Production | 2.149 | 9 | NO | | IE | IE | 2.158 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **37** | | **26** | | | | **63** |
| **4. Agriculture** | | **1.810** | **3.950** | | | | **5.760** |
| A. Enteric Fermentation | | 1.557 | | | | | 1.557 |
| B. Manure Management | | 252 | 423 | | | | 675 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NE,NO | 3.527 | | | | 3.527 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 0 | 0 | | | | 1 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **IE,NO,** | **1.868** | **158** | | | | **2.026** |
| A. Solid Waste Disposal on Land | NO | 1.697 | 0 | | | | 1.697 |
| B. Waste-water Handling | | 113 | 99 | | | | 212 |
| C. Waste Incineration | IE | IE | IE | | | | IE, |
| D. Other | NO | 58 | 59 | | | | 117 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 60.463 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.11 France

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

Inventory 2013
Submission 2014 v1.0
FRANCE

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **364.285** | **51.135** | **57.895** | **17.898** | **400** | **507** | **492.121** |
| **1. Energy** | **344.397** | **2.796** | **4.317** | | | | **351.510** |
| A. Fuel Combustion (Sectoral Approach) | 341.065 | 1.594 | 4.317 | | | | 346.976 |
| 1. Energy Industries | 52.711 | 31 | 628 | | | | 53.370 |
| 2. Manufacturing Industries and Construction | 63.067 | 148 | 779 | | | | 63.994 |
| 3. Transport | 131.397 | 169 | 1.526 | | | | 133.092 |
| 4. Other Sectors | 93.890 | 1.246 | 1.384 | | | | 96.520 |
| 5. Other | NO | NO | NO | | | | NO, |
| B. Fugitive Emissions from Fuels | 3.332 | 1.202 | 0 | | | | 4.534 |
| 1. Solid Fuels | NA,NO | 61 | IE | | | | 61 |
| 2. Oil and Natural Gas | 3.332 | 1.141 | IE | | | | 4.473 |
| **2. Industrial Processes** | **17.670** | **44** | **906** | **17.898** | **400** | **507** | **37.425** |
| A. Mineral Products | 11.821 | NA | NE | | | | 11.821 |
| B. Chemical Industry | 2.024 | 42 | 906 | | | | 2.972 |
| C. Metal Production | 3.825 | 1 | NA | | IE | IE | 3.826 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **997** | | **137** | | | | **1.133** |
| **4. Agriculture** | | **38.348** | **51.192** | | | | **89.540** |
| A. Enteric Fermentation | | 28.178 | | | | | 28.178 |
| B. Manure Management | | 10.029 | 4.932 | | | | 14.961 |
| C. Rice Cultivation | | 117 | | | | | 117 |
| D. Agricultural Soils(3) | | NA | 46.251 | | | | 46.251 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 23 | 9 | | | | 32 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **1.222** | **9.947** | **1.344** | | | | **12.513** |
| A. Solid Waste Disposal on Land | NA,NO | 8.457 | 0 | | | | 8.457 |
| B. Waste-water Handling | | 1.258 | 773 | | | | 2.031 |
| C. Waste Incineration | 1.222 | 24 | 75 | | | | 1.320 |
| D. Other | NA | 208 | 496 | | | | 704 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 492.121 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.12 Greece

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

Inventory 2013
Submission 2014 v1.0
GREECE

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **82.320** | **9.453** | **6.798** | **4.023** | **110** | **5** | **102.710** |
| **1. Energy** | **76.251** | **1.394** | **486** | | | | **78.131** |
| A. Fuel Combustion (Sectoral Approach) | 76.242 | 151 | 486 | | | | 76.878 |
| 1. Energy Industries | 50.300 | 16 | 162 | | | | 50.477 |
| 2. Manufacturing Industries and Construction | 6.468 | 9 | 33 | | | | 6.510 |
| 3. Transport | 13.521 | 51 | 170 | | | | 13.742 |
| 4. Other Sectors | 5.953 | 75 | 121 | | | | 6.149 |
| 5. Other | IE,NO | IE,NO | IE,NO | | | | IE,NO, |
| B. Fugitive Emissions from Fuels | 9 | 1.243 | 0 | | | | 1.252 |
| 1. Solid Fuels | IE,NO | 1.047 | IE | | | | 1.047 |
| 2. Oil and Natural Gas | 9 | 196 | IE | | | | 206 |
| **2. Industrial Processes** | **5.903** | **0** | **307** | **4.023** | **110** | **5** | **10.348** |
| A. Mineral Products | 4.379 | NA,NO | NE | | | | 4.379 |
| B. Chemical Industry | 502 | 0 | 307 | | | | 809 |
| C. Metal Production | 1.021 | 0 | NA | | IE | IE | 1.021 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **163** | | **156** | | | | **319** |
| **4. Agriculture** | | **3.729** | **5.448** | | | | **9.176** |
| A. Enteric Fermentation | | 3.169 | | | | | 3.169 |
| B. Manure Management | | 405 | 596 | | | | 1.001 |
| C. Rice Cultivation | | 123 | | | | | 123 |
| D. Agricultural Soils(3) | | NE,NO | 4.840 | | | | 4.840 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 32 | 12 | | | | 44 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **3** | **4.330** | **402** | | | | **4.735** |
| A. Solid Waste Disposal on Land | NA,NO | 3.204 | 0 | | | | 3.204 |
| B. Waste-water Handling | | 1.109 | 383 | | | | 1.492 |
| C. Waste Incineration | 3 | 0 | 1 | | | | 4 |
| D. Other | NA,NO | 17 | 19 | | | | 35 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 102.710 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.13 Hungary

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

Inventory 2013
Submission 2014 v1.0
HUNGARY

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **43.101** | **8.028** | **6.767** | **1.006** | **1** | **153** | **59.056** |
| **1. Energy** | **40.014** | **2.398** | **218** | | | | **42.631** |
| A. Fuel Combustion (Sectoral Approach) | 39.820 | 316 | 218 | | | | 40.354 |
| 1. Energy Industries | 14.501 | 22 | 56 | | | | 14.579 |
| 2. Manufacturing Industries and Construction | 3.670 | 10 | 10 | | | | 3.691 |
| 3. Transport | 10.956 | 25 | 109 | | | | 11.089 |
| 4. Other Sectors | 10.693 | 260 | 43 | | | | 10.996 |
| 5. Other | NO | NO | NO | | | | NO, |
| B. Fugitive Emissions from Fuels | 194 | 2.082 | 0 | | | | 2.277 |
| 1. Solid Fuels | IE,NA,NO | 11 | IE | | | | 11 |
| 2. Oil and Natural Gas | 194 | 2.071 | IE | | | | 2.266 |
| **2. Industrial Processes** | **2.920** | **39** | **23** | **1.006** | **1** | **153** | **4.142** |
| A. Mineral Products | 1.085 | NA,NO | NE | | | | 1.085 |
| B. Chemical Industry | 482 | 35 | 23 | | | | 539 |
| C. Metal Production | 282 | 4 | NA | | IE | IE | 286 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 1.071 | NO | NO | IE | IE | IE | 1.071 |
| **3. Solvent and Other Product Use** | **74** | | **277** | | | | **350** |
| **4. Agriculture** | | **2.819** | **5.964** | | | | **8.783** |
| A. Enteric Fermentation | | 1.542 | | | | | 1.542 |
| B. Manure Management | | 1.265 | 833 | | | | 2.098 |
| C. Rice Cultivation | | 12 | | | | | 12 |
| D. Agricultural Soils(3) | | NA | 5.131 | | | | 5.131 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **93** | **2.771** | **285** | | | | **3.150** |
| A. Solid Waste Disposal on Land | NA,NO | 2.472 | 0 | | | | 2.472 |
| B. Waste-water Handling | | 283 | 265 | | | | 548 |
| C. Waste Incineration | 93 | 1 | 3 | | | | 97 |
| D. Other | NA | 15 | 17 | | | | 32 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 59.056 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.14 Croatia

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

Inventory 2013
Submission 2014 v1.0
CROATIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **18.615** | **3.272** | **3.280** | **512** | **NA,NE,NO,** | **10** | **25.689** |
| **1. Energy** | **16.578** | **1.244** | **94** | | | | **17.916** |
| A. Fuel Combustion (Sectoral Approach) | 16.031 | 131 | 94 | | | | 16.256 |
| 1. Energy Industries | 5.141 | 5 | 14 | | | | 5.160 |
| 2. Manufacturing Industries and Construction | 3.120 | 6 | 8 | | | | 3.134 |
| 3. Transport | 5.685 | 12 | 50 | | | | 5.747 |
| 4. Other Sectors | 2.085 | 108 | 22 | | | | 2.214 |
| 5. Other | NO | NO | NO | | | | NO, |
| B. Fugitive Emissions from Fuels | 547 | 1.113 | 0 | | | | 1.660 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 547 | 1.113 | IE | | | | 1.660 |
| **2. Industrial Processes** | **1.932** | **35** | **679** | **512** | **NA,NO** | **10** | **3.168** |
| A. Mineral Products | 1.432 | NE,NO | NE | | | | 1.432 |
| B. Chemical Industry | 482 | 35 | 679 | | | | 1.195 |
| C. Metal Production | 19 | NE,NO | NO | | IE | IE | 19 |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **104** | | **51** | | | | **156** |
| **4. Agriculture** | | **972** | **2.352** | | | | **3.324** |
| A. Enteric Fermentation | | 777 | | | | | 777 |
| B. Manure Management | | 185 | 249 | | | | 434 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | 9 | 2.103 | | | | 2.113 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **0** | **1.022** | **104** | | | | **1.126** |
| A. Solid Waste Disposal on Land | NA,NO | 793 | 0 | | | | 793 |
| B. Waste-water Handling | | 228 | 104 | | | | 333 |
| C. Waste Incineration | 0 | NE,NO | NE,NO | | | | 0 |
| D. Other | NO | NO | NO | | | | NO, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 25.689 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.15 Ireland

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

Inventory 2013
Submission 2014 v1.0
IRELAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **36.166** | **11.978** | **7.441** | **982** | **8** | **39** | **56.614** |
| **1. Energy** | **34.734** | **196** | **337** | | | | **35.267** |
| A. Fuel Combustion (Sectoral Approach) | 34.734 | 169 | 337 | | | | 35.239 |
| 1. Energy Industries | 11.042 | 5 | 123 | | | | 11.170 |
| 2. Manufacturing Industries and Construction | 4.442 | 7 | 15 | | | | 4.464 |
| 3. Transport | 10.697 | 16 | 108 | | | | 10.821 |
| 4. Other Sectors | 8.553 | 140 | 91 | | | | 8.785 |
| 5. Other | NO | NO | NO | | | | NO, |
| B. Fugitive Emissions from Fuels | 0 | 28 | 0 | | | | 28 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 0 | 28 | IE | | | | 28 |
| **2. Industrial Processes** | **1.320** | **0** | **0** | **982** | **8** | **39** | **2.349** |
| A. Mineral Products | 1.320 | NO | NE | | | | 1.320 |
| B. Chemical Industry | 0 | 0 | 0 | | | | 0 |
| C. Metal Production | NO | NO | NO | | IE | IE | IE,NO, |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **73** | | **NA,NE** | | | | **73** |
| **4. Agriculture** | | **10.958** | **6.957** | | | | **17.915** |
| A. Enteric Fermentation | | 8.751 | | | | | 8.751 |
| B. Manure Management | | 2.207 | 448 | | | | 2.655 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NO | 6.510 | | | | 6.510 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **39** | **823** | **147** | | | | **1.009** |
| A. Solid Waste Disposal on Land | NA,NO | 804 | 0 | | | | 804 |
| B. Waste-water Handling | | 19 | 146 | | | | 166 |
| C. Waste Incineration | 39 | 0 | 0 | | | | 40 |
| D. Other | NO | NO | NO | | | | NO, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 56.614 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.16 Italy

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

Inventory 2013
Submission 2014 v1.0
ITALY

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **366.997** | **33.857** | **27.564** | **9.817** | **1.314** | **321** | **439.869** |
| **1. Energy** | **350.264** | **6.412** | **4.434** | | | | **361.110** |
| A. Fuel Combustion (Sectoral Approach) | 348.194 | 1.600 | 4.434 | | | | 354.227 |
| 1. Energy Industries | 112.692 | 110 | 504 | | | | 113.305 |
| 2. Manufacturing Industries and Construction | 51.360 | 116 | 1.049 | | | | 52.525 |
| 3. Transport | 102.004 | 212 | 967 | | | | 103.183 |
| 4. Other Sectors | 81.812 | 1.162 | 1.885 | | | | 84.859 |
| 5. Other | 326 | 1 | 29 | | | | 355 |
| B. Fugitive Emissions from Fuels | 2.070 | 4.813 | 0 | | | | 6.883 |
| 1. Solid Fuels | 0 | 67 | IE | | | | 67 |
| 2. Oil and Natural Gas | 2.070 | 4.746 | IE | | | | 6.816 |
| **2. Industrial Processes** | **15.619** | **55** | **234** | **9.817** | **1.314** | **321** | **27.361** |
| A. Mineral Products | 12.656 | NA | NE | | | | 12.656 |
| B. Chemical Industry | 1.507 | 5 | 234 | | | | 1.747 |
| C. Metal Production | 1.456 | 50 | NA | | IE | IE | 1.505 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **944** | | **466** | | | | **1.410** |
| **4. Agriculture** | | **14.037** | **20.470** | | | | **34.507** |
| A. Enteric Fermentation | | 10.772 | | | | | 10.772 |
| B. Manure Management | | 1.702 | 3.697 | | | | 5.399 |
| C. Rice Cultivation | | 1.550 | | | | | 1.550 |
| D. Agricultural Soils(3) | | NE,NO | 16.769 | | | | 16.769 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 14 | 5 | | | | 19 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **170** | **13.352** | **1.959** | | | | **15.481** |
| A. Solid Waste Disposal on Land | NA,NO | 10.570 | 0 | | | | 10.570 |
| B. Waste-water Handling | | 2.725 | 1.935 | | | | 4.661 |
| C. Waste Incineration | 170 | 51 | 24 | | | | 245 |
| D. Other | NA | 6 | NA | | | | 6 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 439.869 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.17 Lithuania

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

Inventory 2013
Submission 2014 v1.0
LITHUANIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **13.677** | **2.939** | **4.152** | **263** | **NA,NE,NO,** | **4** | **21.034** |
| **1. Energy** | **10.746** | **456** | **99** | | | | **11.302** |
| A. Fuel Combustion (Sectoral Approach) | 10.739 | 196 | 99 | | | | 11.034 |
| 1. Energy Industries | 3.727 | 10 | 21 | | | | 3.757 |
| 2. Manufacturing Industries and Construction | 1.314 | 4 | 8 | | | | 1.326 |
| 3. Transport | 4.511 | 12 | 40 | | | | 4.562 |
| 4. Other Sectors | 1.179 | 171 | 31 | | | | 1.381 |
| 5. Other | 9 | 0 | 0 | | | | 9 |
| B. Fugitive Emissions from Fuels | 7 | 260 | 0 | | | | 267 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 7 | 260 | IE | | | | 267 |
| **2. Industrial Processes** | **2.849** | **0** | **596** | **263** | **NA,NO** | **4** | **3.712** |
| A. Mineral Products | 517 | NA,NE,NO | NE | | | | 517 |
| B. Chemical Industry | 2.319 | 0 | 596 | | | | 2.915 |
| C. Metal Production | 4 | NO | NO | | IE | IE | 4 |
| D. Other Production | 9 | 0 | 0 | | | | 9 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **80** | | **3** | | | | **82** |
| **4. Agriculture** | | **1.639** | **3.382** | | | | **5.021** |
| A. Enteric Fermentation | | 1.155 | | | | | 1.155 |
| B. Manure Management | | 484 | 250 | | | | 734 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA | 3.132 | | | | 3.132 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **2** | **844** | **72** | | | | **917** |
| A. Solid Waste Disposal on Land | NA | 741 | 0 | | | | 741 |
| B. Waste-water Handling | | 102 | 72 | | | | 174 |
| C. Waste Incineration | 2 | NA | 0 | | | | 2 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 21.034 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.18 Luxembourg

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

Inventory 2013
Submission 2014 v1.0
LUXEMBOURG

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **10.449** | **432** | **470** | **69** | **0** | **9** | **11.428** |
| **1. Energy** | **9.931** | **58** | **108** | | | | **10.097** |
| A. Fuel Combustion (Sectoral Approach) | 9.931 | 17 | 108 | | | | 10.056 |
| 1. Energy Industries | 572 | 1 | 3 | | | | 576 |
| 2. Manufacturing Industries and Construction | 1.560 | 2 | 26 | | | | 1.589 |
| 3. Transport | 6.314 | 6 | 78 | | | | 6.398 |
| 4. Other Sectors | 1.484 | 8 | 1 | | | | 1.493 |
| 5. Other | NO | NO | NO | | | | NO, |
| B. Fugitive Emissions from Fuels | 0 | 41 | 0 | | | | 41 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 0 | 41 | IE | | | | 41 |
| **2. Industrial Processes** | **509** | **0** | **0** | **69** | **0** | **9** | **586** |
| A. Mineral Products | 422 | NO | NE | | | | 422 |
| B. Chemical Industry | 0 | 0 | 0 | | | | 0 |
| C. Metal Production | 87 | NA,NO | NA | | IE | IE | 87 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **9** | | **3** | | | | **11** |
| **4. Agriculture** | | **341** | **345** | | | | **686** |
| A. Enteric Fermentation | | 249 | | | | | 249 |
| B. Manure Management | | 92 | 34 | | | | 125 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | NA,NE | 311 | | | | 311 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **IE,NA,NO,** | **33** | **14** | | | | **47** |
| A. Solid Waste Disposal on Land | NA,NO | 24 | 0 | | | | 24 |
| B. Waste-water Handling | | 3 | 7 | | | | 10 |
| C. Waste Incineration | IE | IE | IE | | | | IE, |
| D. Other | NO | 6 | 7 | | | | 13 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 11.428 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.19 Latvia

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

Inventory 2013
Submission 2014 v1.0
LATVIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **7.416** | **1.640** | **1.821** | **84** | **NA,NE,NO,** | **14** | **10.974** |
| **1. Energy** | **6.800** | **297** | **130** | | | | **7.227** |
| A. Fuel Combustion (Sectoral Approach) | 6.800 | 238 | 130 | | | | 7.168 |
| 1. Energy Industries | 2.169 | 4 | 9 | | | | 2.182 |
| 2. Manufacturing Industries and Construction | 834 | 8 | 18 | | | | 861 |
| 3. Transport | 2.796 | 4 | 54 | | | | 2.854 |
| 4. Other Sectors | 993 | 221 | 49 | | | | 1.263 |
| 5. Other | 7 | 0 | 1 | | | | 8 |
| B. Fugitive Emissions from Fuels | 0 | 59 | 0 | | | | 59 |
| 1. Solid Fuels | NO | NO | IE | | | | IE,NO, |
| 2. Oil and Natural Gas | 0 | 59 | IE | | | | 59 |
| **2. Industrial Processes** | **567** | **0** | **0** | **84** | **NA,NO** | **14** | **665** |
| A. Mineral Products | 563 | IE,NA,NE,NO | NE | | | | 563 |
| B. Chemical Industry | 0 | 0 | 0 | | | | 0 |
| C. Metal Production | 5 | 0 | NO | | IE | IE | 5 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **49** | | **0** | | | | **49** |
| **4. Agriculture** | | **801** | **1.642** | | | | **2.443** |
| A. Enteric Fermentation | | 703 | | | | | 703 |
| B. Manure Management | | 98 | 115 | | | | 213 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NE | 1.526 | | | | 1.526 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **0** | **542** | **49** | | | | **591** |
| A. Solid Waste Disposal on Land | NA,NO | 454 | 0 | | | | 454 |
| B. Waste-water Handling | | 87 | 48 | | | | 134 |
| C. Waste Incineration | 0 | NA,NO | 0 | | | | 0 |
| D. Other | NA | 1 | 2 | | | | 3 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 10.974 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.20 Malta

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

Inventory 2013
Submission 2014 v1.0
MALTA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **2.439** | **104** | **56** | **171** | **0** | **0** | **2.770** |
| **1. Energy** | **2.438** | **3** | **11** | | | | **2.452** |
| A. Fuel Combustion (Sectoral Approach) | 2.438 | 3 | 11 | | | | 2.452 |
| 1. Energy Industries | 1.696 | 1 | 4 | | | | 1.701 |
| 2. Manufacturing Industries and Construction | 64 | 0 | 0 | | | | 64 |
| 3. Transport | 538 | 1 | 7 | | | | 547 |
| 4. Other Sectors | 140 | 0 | 0 | | | | 140 |
| 5. Other | NA | NA | NA | | | | NA, |
| B. Fugitive Emissions from Fuels | 0 | 0 | 0 | | | | 0 |
| 1. Solid Fuels | NA,NO | NA,NO | IE | | | | IE,NA,NO, |
| 2. Oil and Natural Gas | 0 | 0 | IE | | | | 0 |
| **2. Industrial Processes** | **0** | **0** | **0** | **171** | **0** | **0** | **172** |
| A. Mineral Products | 0 | NO | NE | | | | 0 |
| B. Chemical Industry | 0 | 0 | 0 | | | | 0 |
| C. Metal Production | NA,NO | NA,NO | NA | | IE | IE | IE,NA,NO, |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **NA** | | **2** | | | | **2** |
| **4. Agriculture** | | **51** | **29** | | | | **80** |
| A. Enteric Fermentation | | 29 | | | | | 29 |
| B. Manure Management | | 22 | 3 | | | | 25 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | NA | 26 | | | | 26 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **1** | **50** | **14** | | | | **65** |
| A. Solid Waste Disposal on Land | NA | 50 | 0 | | | | 50 |
| B. Waste-water Handling | | 0 | 14 | | | | 14 |
| C. Waste Incineration | 1 | 0 | 0 | | | | 1 |
| D. Other | NO | NO | NO | | | | NO, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 2.770 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.21 Netherlands

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

Inventory 2013
Submission 2014 v1.0
NETHERLANDS

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **164.548** | **15.023** | **9.292** | **2.055** | **151** | **196** | **191.264** |
| **1. Energy** | **158.577** | **2.278** | **626** | | | | **161.481** |
| A. Fuel Combustion (Sectoral Approach) | 157.032 | 1.515 | 626 | | | | 159.174 |
| 1. Energy Industries | 60.027 | 105 | 264 | | | | 60.396 |
| 2. Manufacturing Industries and Construction | 24.644 | 54 | 29 | | | | 24.727 |
| 3. Transport | 32.704 | 46 | 271 | | | | 33.020 |
| 4. Other Sectors | 39.316 | 1.310 | 56 | | | | 40.682 |
| 5. Other | 341 | 1 | 6 | | | | 348 |
| B. Fugitive Emissions from Fuels | 1.545 | 762 | 0 | | | | 2.307 |
| 1. Solid Fuels | 631 | 21 | IE | | | | 652 |
| 2. Oil and Natural Gas | 914 | 742 | IE | | | | 1.656 |
| **2. Industrial Processes** | **5.851** | **287** | **1.279** | **2.055** | **151** | **196** | **9.819** |
| A. Mineral Products | 1.165 | NO | NE | | | | 1.165 |
| B. Chemical Industry | 3.209 | 252 | 1.267 | | | | 4.728 |
| C. Metal Production | 1.177 | IE,NA,NO | NO | | IE | IE | 1.177 |
| D. Other Production | 26 | 0 | 0 | | | | 26 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 273 | 35 | 13 | IE | IE | IE | 321 |
| **3. Solvent and Other Product Use** | **120** | | **87** | | | | **206** |
| **4. Agriculture** | | **9.508** | **6.802** | | | | **16.310** |
| A. Enteric Fermentation | | 6.813 | | | | | 6.813 |
| B. Manure Management | | 2.695 | 1.039 | | | | 3.734 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NE | 5.763 | | | | 5.763 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **IE,NA,NO,** | **2.951** | **498** | | | | **3.449** |
| A. Solid Waste Disposal on Land | NA,NO | 2.732 | 0 | | | | 2.732 |
| B. Waste-water Handling | | 195 | 462 | | | | 658 |
| C. Waste Incineration | IE | IE | IE | | | | IE, |
| D. Other | NA | 24 | 35 | | | | 59 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 191.264 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.22 Poland

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

Inventory 2013
Submission 2014 v1.0
POLAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **320.969** | **40.748** | **29.730** | **8.154** | **42** | **42** | **399.685** |
| **1. Energy** | **302.924** | **15.474** | **2.106** | | | | **320.503** |
| A. Fuel Combustion (Sectoral Approach) | 299.522 | 3.150 | 2.106 | | | | 304.779 |
| 1. Energy Industries | 171.584 | 94 | 871 | | | | 172.548 |
| 2. Manufacturing Industries and Construction | 31.143 | 89 | 175 | | | | 31.408 |
| 3. Transport | 44.291 | 99 | 550 | | | | 44.940 |
| 4. Other Sectors | 52.504 | 2.869 | 509 | | | | 55.882 |
| 5. Other | IE,NO | IE,NO | IE,NO | | | | IE,NO, |
| B. Fugitive Emissions from Fuels | 3.402 | 12.323 | 0 | | | | 15.725 |
| 1. Solid Fuels | 1.553 | 7.282 | IE | | | | 8.835 |
| 2. Oil and Natural Gas | 1.849 | 5.041 | IE | | | | 6.890 |
| **2. Industrial Processes** | **17.131** | **304** | **1.051** | **8.154** | **42** | **42** | **26.723** |
| A. Mineral Products | 9.538 | NA | NE | | | | 9.538 |
| B. Chemical Industry | 4.317 | 277 | 1.051 | | | | 5.645 |
| C. Metal Production | 2.135 | 26 | NA,NO | | IE | IE | 2.161 |
| D. Other Production | 10 | 0 | 0 | | | | 10 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 1.132 | NO | NO | IE | IE | IE | 1.132 |
| **3. Solvent and Other Product Use** | **636** | | **124** | | | | **760** |
| **4. Agriculture** | | **11.249** | **25.319** | | | | **36.568** |
| A. Enteric Fermentation | | 8.852 | | | | | 8.852 |
| B. Manure Management | | 2.378 | 4.820 | | | | 7.198 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | NA | 20.487 | | | | 20.487 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 19 | 11 | | | | 30 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **279** | **13.722** | **1.131** | | | | **15.131** |
| A. Solid Waste Disposal on Land | NA,NO | 8.395 | 0 | | | | 8.395 |
| B. Waste-water Handling | | 5.327 | 1.114 | | | | 6.440 |
| C. Waste Incineration | 279 | NA | 17 | | | | 296 |
| D. Other | NO | NO | NO | | | | NO, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 399.685 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.23 Portugal

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

Inventory 2013
Submission 2014 v1.0
PORTUGAL

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **48.389** | **12.311** | **4.468** | **1.784** | **NA,NE,NO,** | **48** | **67.001** |
| **1. Energy** | **44.552** | **560** | **500** | | | | **45.611** |
| A. Fuel Combustion (Sectoral Approach) | 43.619 | 250 | 500 | | | | 44.369 |
| 1. Energy Industries | 16.024 | 8 | 127 | | | | 16.159 |
| 2. Manufacturing Industries and Construction | 6.973 | 33 | 77 | | | | 7.083 |
| 3. Transport | 16.498 | 26 | 164 | | | | 16.687 |
| 4. Other Sectors | 4.076 | 183 | 131 | | | | 4.391 |
| 5. Other | 48 | 0 | 0 | | | | 49 |
| B. Fugitive Emissions from Fuels | 932 | 310 | 0 | | | | 1.242 |
| 1. Solid Fuels | 1 | 8 | IE | | | | 9 |
| 2. Oil and Natural Gas | 931 | 302 | IE | | | | 1.233 |
| **2. Industrial Processes** | **3.628** | **39** | **66** | **1.784** | **NA,NO** | **48** | **5.566** |
| A. Mineral Products | 3.491 | 17 | NE | | | | 3.508 |
| B. Chemical Industry | 75 | 8 | 66 | | | | 149 |
| C. Metal Production | 63 | 13 | NO | | IE | IE | 76 |
| D. Other Production | 0 | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **190** | | **40** | | | | **230** |
| **4. Agriculture** | | **3.903** | **3.270** | | | | **7.173** |
| A. Enteric Fermentation | | 2.653 | | | | | 2.653 |
| B. Manure Management | | 1.049 | 286 | | | | 1.335 |
| C. Rice Cultivation | | 176 | | | | | 176 |
| D. Agricultural Soils(3) | | NA | 2.966 | | | | 2.966 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 25 | 18 | | | | 43 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **18** | **7.810** | **592** | | | | **8.421** |
| A. Solid Waste Disposal on Land | NA | 5.044 | 0 | | | | 5.044 |
| B. Waste-water Handling | | 2.765 | 582 | | | | 3.347 |
| C. Waste Incineration | 18 | 0 | 10 | | | | 29 |
| D. Other | NO | NO | NO | | | | NO, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 67.001 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.24 Romania

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

Inventory 2013
Submission 2014 v1.0
ROMANIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **73.269** | **21.932** | **11.440** | **1.060** | **6** | **41** | **107.748** |
| **1. Energy** | **62.955** | **7.791** | **446** | | | | **71.192** |
| A. Fuel Combustion (Sectoral Approach) | 62.334 | 861 | 446 | | | | 63.641 |
| 1. Energy Industries | 26.336 | 11 | 96 | | | | 26.443 |
| 2. Manufacturing Industries and Construction | 13.422 | 36 | 55 | | | | 13.514 |
| 3. Transport | 14.536 | 34 | 147 | | | | 14.718 |
| 4. Other Sectors | 7.481 | 760 | 142 | | | | 8.382 |
| 5. Other | 558 | 21 | 6 | | | | 585 |
| B. Fugitive Emissions from Fuels | 621 | 6.930 | 0 | | | | 7.551 |
| 1. Solid Fuels | NA | 545 | IE | | | | 545 |
| 2. Oil and Natural Gas | 621 | 6.385 | IE | | | | 7.006 |
| **2. Industrial Processes** | **10.178** | **14** | **953** | **1.060** | **6** | **41** | **12.252** |
| A. Mineral Products | 4.426 | NA,NE | NE | | | | 4.426 |
| B. Chemical Industry | 2.737 | 14 | 953 | | | | 3.704 |
| C. Metal Production | 3.014 | NA,NE | NA | | IE | IE | 3.014 |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **128** | | **NE** | | | | **128** |
| **4. Agriculture** | | **8.849** | **9.426** | | | | **18.276** |
| A. Enteric Fermentation | | 8.166 | | | | | 8.166 |
| B. Manure Management | | 584 | 1.074 | | | | 1.658 |
| C. Rice Cultivation | | 18 | | | | | 18 |
| D. Agricultural Soils(3) | | NE,NO | 8.324 | | | | 8.324 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 81 | 28 | | | | 109 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **9** | **5.277** | **615** | | | | **5.901** |
| A. Solid Waste Disposal on Land | NA | 2.966 | 0 | | | | 2.966 |
| B. Waste-water Handling | | 2.311 | 614 | | | | 2.924 |
| C. Waste Incineration | 9 | NE | 1 | | | | 10 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 107.748 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.25 Sweden

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

Inventory 2013
Submission 2014 v1.0
SWEDEN

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **44.494** | **4.627** | **6.119** | **765** | **69** | **47** | **56.121** |
| **1. Energy** | **40.001** | **524** | **974** | | | | **41.498** |
| A. Fuel Combustion (Sectoral Approach) | 39.116 | 464 | 974 | | | | 40.553 |
| 1. Energy Industries | 11.178 | 92 | 474 | | | | 11.744 |
| 2. Manufacturing Industries and Construction | 7.421 | 48 | 254 | | | | 7.722 |
| 3. Transport | 19.469 | 53 | 145 | | | | 19.667 |
| 4. Other Sectors | 883 | 272 | 98 | | | | 1.253 |
| 5. Other | 164 | 0 | 2 | | | | 166 |
| B. Fugitive Emissions from Fuels | 885 | 60 | 0 | | | | 945 |
| 1. Solid Fuels | 7 | 0 | IE | | | | 7 |
| 2. Oil and Natural Gas | 879 | 60 | IE | | | | 939 |
| **2. Industrial Processes** | **4.228** | **8** | **74** | **765** | **69** | **47** | **5.191** |
| A. Mineral Products | 2.048 | NA | NE | | | | 2.048 |
| B. Chemical Industry | 130 | 7 | 74 | | | | 212 |
| C. Metal Production | 2.050 | 0 | NA,NO | | IE | IE | 2.050 |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NO | NO | NO | IE | IE | IE | IE,NO, |
| **3. Solvent and Other Product Use** | **204** | | **98** | | | | **303** |
| **4. Agriculture** | | **2.783** | **4.813** | | | | **7.596** |
| A. Enteric Fermentation | | 2.475 | | | | | 2.475 |
| B. Manure Management | | 308 | 428 | | | | 736 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NA,NE | 4.384 | | | | 4.384 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NO | NO | | | | NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **61** | **1.313** | **161** | | | | **1.534** |
| A. Solid Waste Disposal on Land | NO | 1.005 | 0 | | | | 1.005 |
| B. Waste-water Handling | | 308 | 155 | | | | 463 |
| C. Waste Incineration | 61 | 0 | 6 | | | | 66 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 56.121 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.26 Slovenia

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

Inventory 2013
Submission 2014 v1.0
SLOVENIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **15.022** | **1.800** | **1.101** | **232** | **26** | **17** | **18.197** |
| **1. Energy** | **14.209** | **344** | **147** | | | | **14.701** |
| A. Fuel Combustion (Sectoral Approach) | 14.129 | 136 | 147 | | | | 14.412 |
| 1. Energy Industries | 5.665 | 2 | 26 | | | | 5.692 |
| 2. Manufacturing Industries and Construction | 1.654 | 5 | 16 | | | | 1.675 |
| 3. Transport | 5.019 | 7 | 53 | | | | 5.078 |
| 4. Other Sectors | 1.788 | 122 | 53 | | | | 1.963 |
| 5. Other | 3 | 0 | 0 | | | | 3 |
| B. Fugitive Emissions from Fuels | 80 | 208 | 0 | | | | 289 |
| 1. Solid Fuels | 80 | 187 | IE | | | | 267 |
| 2. Oil and Natural Gas | 0 | 21 | IE | | | | 21 |
| **2. Industrial Processes** | **808** | **0** | **0** | **232** | **26** | **17** | **1.082** |
| A. Mineral Products | 629 | NA | NE | | | | 629 |
| B. Chemical Industry | 1 | 0 | 0 | | | | 1 |
| C. Metal Production | 178 | NA,NO | NO | | IE | IE | 178 |
| D. Other Production | NA | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **NA,NE** | | **65** | | | | **65** |
| **4. Agriculture** | | **1.036** | **828** | | | | **1.864** |
| A. Enteric Fermentation | | 648 | | | | | 648 |
| B. Manure Management | | 388 | 128 | | | | 517 |
| C. Rice Cultivation | | NO | | | | | NO, |
| D. Agricultural Soils(3) | | NO | 700 | | | | 700 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **5** | **419** | **60** | | | | **485** |
| A. Solid Waste Disposal on Land | NA,NO | 359 | 0 | | | | 359 |
| B. Waste-water Handling | | 60 | 60 | | | | 121 |
| C. Waste Incineration | 5 | NA | 0 | | | | 5 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 18.197 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

## 5.2.27 Slovakia

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

Inventory 2013
Submission 2014 v1.0
SLOVAKIA

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **36.520** | **4.180** | **2.792** | **494** | **22** | **22** | **44.030** |
| **1. Energy** | **28.691** | **1.126** | **175** | | | | **29.991** |
| A. Fuel Combustion (Sectoral Approach) | 28.690 | 54 | 175 | | | | 28.919 |
| 1. Energy Industries | 9.429 | 7 | 37 | | | | 9.473 |
| 2. Manufacturing Industries and Construction | 6.606 | 8 | 15 | | | | 6.629 |
| 3. Transport | 6.403 | 13 | 78 | | | | 6.493 |
| 4. Other Sectors | 5.277 | 24 | 44 | | | | 5.346 |
| 5. Other | 976 | 2 | 1 | | | | 978 |
| B. Fugitive Emissions from Fuels | 0 | 1.072 | 0 | | | | 1.072 |
| 1. Solid Fuels | NA,NO | 316 | IE | | | | 316 |
| 2. Oil and Natural Gas | 0 | 756 | IE | | | | 756 |
| **2. Industrial Processes** | **7.738** | **2** | **302** | **494** | **22** | **22** | **8.579** |
| A. Mineral Products | 2.383 | NA | NE | | | | 2.383 |
| B. Chemical Industry | 652 | 1 | 302 | | | | 955 |
| C. Metal Production | 4.703 | 1 | NA | | IE | IE | 4.704 |
| D. Other Production | NO | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **82** | | **91** | | | | **173** |
| **4. Agriculture** | | **1.065** | **2.071** | | | | **3.137** |
| A. Enteric Fermentation | | 914 | | | | | 914 |
| B. Manure Management | | 151 | 300 | | | | 451 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | NA,NO | 1.771 | | | | 1.771 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **10** | **1.987** | **153** | | | | **2.150** |
| A. Solid Waste Disposal on Land | NO | 1.624 | 0 | | | | 1.624 |
| B. Waste-water Handling | | 292 | 72 | | | | 363 |
| C. Waste Incineration | 10 | NO | 2 | | | | 12 |
| D. Other | NO | 71 | 79 | | | | 150 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 44.030 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

## 5.2.28 United Kingdom

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

Inventory 2013
Submission 2014 v1.0
UNITED KINGDOM

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **470.407** | **50.236** | **35.313** | **14.282** | **208** | **542** | **570.988** |
| **1. Energy** | **459.507** | **7.695** | **4.104** | | | | **471.306** |
| A. Fuel Combustion (Sectoral Approach) | 455.341 | 947 | 4.104 | | | | 460.392 |
| 1. Energy Industries | 171.004 | 203 | 1.449 | | | | 172.656 |
| 2. Manufacturing Industries and Construction | 64.511 | 125 | 899 | | | | 65.535 |
| 3. Transport | 111.169 | 60 | 974 | | | | 112.203 |
| 4. Other Sectors | 106.135 | 558 | 759 | | | | 107.452 |
| 5. Other | 2.522 | 1 | 23 | | | | 2.547 |
| B. Fugitive Emissions from Fuels | 4.166 | 6.748 | 0 | | | | 10.914 |
| 1. Solid Fuels | 177 | 1.551 | IE | | | | 1.728 |
| 2. Oil and Natural Gas | 3.989 | 5.197 | IE | | | | 9.186 |
| **2. Industrial Processes** | **10.648** | **86** | **64** | **14.282** | **208** | **542** | **25.831** |
| A. Mineral Products | 6.810 | 3 | NE | | | | 6.814 |
| B. Chemical Industry | 2.668 | 82 | 61 | | | | 2.811 |
| C. Metal Production | 1.170 | 0 | 3 | | IE | IE | 1.174 |
| D. Other Production | NE | 0 | 0 | | | | 0 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | NA | NA | NA | IE | IE | IE | IE,NA, |
| **3. Solvent and Other Product Use** | **NE** | | **NE,NO** | | | | **NENO,** |
| **4. Agriculture** | | **22.345** | **29.926** | | | | **52.271** |
| A. Enteric Fermentation | | 15.592 | | | | | 15.592 |
| B. Manure Management | | 6.753 | 2.604 | | | | 9.358 |
| C. Rice Cultivation | | NA,NO | | | | | NA,NO, |
| D. Agricultural Soils(3) | | IE,NA,NE,NO | 27.321 | | | | 27.321 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | NA,NO | NA,NO | | | | NA,NO, |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **252** | **20.109** | **1.219** | | | | **21.580** |
| A. Solid Waste Disposal on Land | NA,NE,NO | 18.483 | 0 | | | | 18.483 |
| B. Waste-water Handling | | 1.624 | 1.174 | | | | 2.798 |
| C. Waste Incineration | 252 | 2 | 45 | | | | 299 |
| D. Other | NA | NA | NA | | | | NA, |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 570.988 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.29 EU-15

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

Inventory 2013
Submission 2014 v1.0
EUROPEAN UNION (15)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **2.931.104** | **289.405** | **258.605** | **73.919** | **2.676** | **5.911** | **3.561.620** |
| **1. Energy** | **2.770.651** | **38.261** | **26.647** | | | | **2.835.559** |
| A. Fuel Combustion (Sectoral Approach) | 2.752.798 | 12.420 | 26.647 | | | | 2.791.865 |
| 1. Energy Industries | 998.200 | 2.670 | 8.099 | | | | 1.008.969 |
| 2. Manufacturing Industries and Construction | 437.188 | 1.239 | 4.934 | | | | 443.361 |
| 3. Transport | 752.604 | 954 | 7.518 | | | | 761.076 |
| 4. Other Sectors | 558.860 | 7.547 | 5.795 | | | | 572.201 |
| 5. Other | 5.946 | 10 | 301 | | | | 6.257 |
| B. Fugitive Emissions from Fuels | 17.853 | 25.842 | 0 | | | | 43.694 |
| 1. Solid Fuels | 854 | 6.251 | IE | | | | 7.105 |
| 2. Oil and Natural Gas | 16.999 | 19.590 | IE | | | | 36.589 |
| **2. Industrial Processes** | **152.972** | **623** | **7.541** | **73.919** | **2.676** | **5.911** | **243.642** |
| A. Mineral Products | 84.157 | 20 | NE | | | | 84.177 |
| B. Chemical Industry | 31.200 | 461 | 7.510 | | | | 39.170 |
| C. Metal Production | 37.282 | 106 | 19 | | IE | IE | 37.407 |
| D. Other Production | 29 | 0 | 0 | | | | 29 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 305 | 35 | 13 | IE | IE | IE | 353 |
| **3. Solvent and Other Product Use** | **5.214** | | **2.116** | | | | **7.329** |
| **4. Agriculture** | | **163.815** | **210.893** | | | | **374.707** |
| A. Enteric Fermentation | | 120.823 | | | | | 120.823 |
| B. Manure Management | | 40.172 | 20.842 | | | | 61.015 |
| C. Rice Cultivation | | 2.274 | | | | | 2.274 |
| D. Agricultural Soils(3) | | 9 | 189.925 | | | | 189.934 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 536 | 125 | | | | 661 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **2.268** | **86.707** | **11.408** | | | | **100.383** |
| A. Solid Waste Disposal on Land | 0 | 74.596 | 0 | | | | 74.596 |
| B. Waste-water Handling | | 10.926 | 10.007 | | | | 20.933 |
| C. Waste Incineration | 2.252 | 78 | 171 | | | | 2.501 |
| D. Other | 15 | 1.106 | 1.230 | | | | 2.352 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 3.561.620 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

### 5.2.30 EU-28

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

Inventory 2013
Submission 2014 v1.0
EUROPEAN UNION (28)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO2 (1) | CH4 | N2O | HFCs (2) | PFCs (2) | SF6 (2) | Total |
|---|---|---|---|---|---|---|---|
| | CO2 equivalent (Gg ) | | | | | | |
| **Total (Net Emissions) (1)** | **3.639.582** | **392.608** | **334.000** | **89.133** | **2.780** | **6.320** | **4.464.424** |
| **1. Energy** | **3.419.480** | **72.887** | **31.542** | | | | **3.523.908** |
| A. Fuel Combustion (Sectoral Approach) | 3.396.554 | 18.519 | 31.542 | | | | 3.446.615 |
| 1. Energy Industries | 1.340.803 | 2.871 | 9.658 | | | | 1.353.331 |
| 2. Manufacturing Industries and Construction | 520.445 | 1.468 | 5.352 | | | | 527.265 |
| 3. Transport | 875.354 | 1.204 | 9.364 | | | | 885.922 |
| 4. Other Sectors | 651.318 | 12.942 | 6.837 | | | | 671.096 |
| 5. Other | 8.634 | 35 | 331 | | | | 9.000 |
| B. Fugitive Emissions from Fuels | 22.926 | 54.368 | 0 | | | | 77.293 |
| 1. Solid Fuels | 2.681 | 17.747 | IE | | | | 20.429 |
| 2. Oil and Natural Gas | 20.244 | 36.620 | IE | | | | 56.864 |
| **2. Industrial Processes** | **210.589** | **1.098** | **11.703** | **89.133** | **2.780** | **6.320** | **321.623** |
| A. Mineral Products | 112.199 | 23 | NE | | | | 112.223 |
| B. Chemical Industry | 43.180 | 848 | 11.671 | | | | 55.699 |
| C. Metal Production | 52.654 | 191 | 19 | | IE | IE | 52.865 |
| D. Other Production | 47 | 0 | 0 | | | | 47 |
| E. Production of Halocarbons and SF6 | | | | IE | IE | IE | IE |
| F. Consumption of Halocarbons and SF6 (2) | | | | IE | IE | IE | IE |
| G. Other | 2.508 | 35 | 13 | IE | IE | IE | 2.556 |
| **3. Solvent and Other Product Use** | **6.620** | | **3.047** | | | | **9.666** |
| **4. Agriculture** | | **197.490** | **273.290** | | | | **470.780** |
| A. Enteric Fermentation | | 147.531 | | | | | 147.531 |
| B. Manure Management | | 46.865 | 30.007 | | | | 76.871 |
| C. Rice Cultivation | | 2.417 | | | | | 2.417 |
| D. Agricultural Soils(3) | | 18 | 243.108 | | | | 243.126 |
| E. Prescribed Burning of Savannas | | NE | NE | | | | NE |
| F. Field Burning of Agricultural Residues | | 660 | 175 | | | | 835 |
| G. Other | | NE | NE | | | | NE |
| **5. Land Use, Land-Use Change and Forestry(1)** | **NE** | **NE** | **NE** | | | | **NE** |
| A. Forest Land | NE | NE | NE | | | | NE |
| B. Cropland | NE | NE | NE | | | | NE |
| C. Grassland | NE | NE | NE | | | | NE |
| D. Wetlands | NE | NE | NE | | | | NE |
| E. Settlements | NE | NE | NE | | | | NE |
| F. Other Land | NE | NE | NE | | | | NE |
| G. Other | NE | NE | NE | | | | NE |
| **6. Waste** | **2.894** | **121.133** | **14.419** | | | | **138.446** |
| A. Solid Waste Disposal on Land | 0 | 99.122 | 0 | | | | 99.122 |
| B. Waste-water Handling | | 20.721 | 12.866 | | | | 33.587 |
| C. Waste Incineration | 2.879 | 79 | 207 | | | | 3.165 |
| D. Other | 15 | 1.211 | 1.346 | | | | 2.571 |
| **7. Other (as specified in Summary 1.A)** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** |

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

| | |
|---|---|
| Total CO2 Equivalent Emissions without Land Use, Land-Use Change and Forestry | 4.464.424 |
| Total CO2 Equivalent Emissions with Land Use, Land-Use Change and Forestry | NE, |

The estimates at the level of sub-sector and gas in this table have been compiled according to the methodology described in Annex 5.3. The EEA proxy estimates are based on a bottom up approach (by sector, gas and country). The tables in Annex 5.2 are shown here for transparency reasons as this is how EU estimates have been derived. The uncertainty in the numbers increases at finer levels of detail, particularly for non-$CO_2$ emissions. The uncertainty is lowest for $CO_2$ emissions from energy combustion.

## 5.3 Annex III. Methodology for the proxy calculated by EEA

The proxy inventory is now largely based on estimates from member states with gap filling only where necessary. Detail on the methodology of the proxy calculated by EEA that is used for gap filling is provided here.

### 5.3.1 Energy

#### *5.3.1.1 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 for transport | 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 and Slovenia 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.

In contrast to all other approaches for CO2 emissions from sector 1.A (Fuel Combustion), Approach III makes use of CO2 estimates for categories 1.A.1 (Energy Industries – chapter 5.3.1.2), 1.A.2 (Manufacturing Industries and Construction – chapter 5.3.1.3), 1.A.3 (Transport – chapter 5.3.1.4) and 1.A.4 (Other sectors i.e. Commercial/Institutional, Residential and Agriculture/Forestry/Fishing – chapter 5.3.1.5). In this 'bottom up' approach those CO2 emission esti-

mates for 2013 are complemented with reported 2012 CO2 emissions for category 1.A.5 (Other) in order to estimate 2013 CO2 emissions for 1A (Fuel Combustion) CO2 emissions.

In Approach IV, finally, early national energy statistics are used: For a considerable number of Member States, preliminary energy statistics were available. 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 2012 to 2013 was derived from the respective data sources (this applies to approaches I (BP), II (Eurostat) and IV (national energy statistics)). 2013 $CO_2$ 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 2013 $CO_2$ emissions from other fuels in source category 1.A (Fuel Combustion) were approximated using the respective emissions as reported by the Member States for 2012[22]. For some Member States country-specific adjustments were made for other fuels, e.g. for Finland reporting peat under 'other fuels' which is included under solid fuels in BP or Eurostat statistics. The general approach to the $CO_2$ emission calculation for 1.A (Fuel combustion) is depicted in Equation 1 (applies to approaches I (BP), II (Eurostat) and IV (national energy statistics)):

[22] In the case of Finland, $CO_2$ emissions from other fuels have an extraordinary high share in total 1A $CO_2$ emissions (16 % in 2012). This is due to the fact that Finland reports emissions from peat combustions in the other fuels category. For all other used data sources, however, peat would be classified as a solid fuel. Thus, Finnish $CO_2$ emissions from peat combustion in the past years were identified from the CRF submissions and transferred from "other fuels" to "solid fuels" in order to arrive at improved overall $CO_2$ emission estimates for category 1A Fuel Combustion.

*Equation 1*

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

*with*

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

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

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

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

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

*Equation 2*

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

*with*

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

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

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

All approaches were calculated for the years 2009 to 2013 (for BP data longer time series were available) and were compared with Member States' final inventory emissions. Based on the analysis of the data source time series and an expert judgment of the validity of the provisional Eurostat and Member States' energy statistics, a specific approach was chosen for each Member State. In this process, the overall selection criteria for $CO_2$ approaches in 1A are:

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

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

statistics data (Approach IV) were chosen for Austria, Croatia, Denmark, Finland, Latvia, Slovenia, Spain and Sweden.

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

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

*Equation 3*

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

*with*

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

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

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

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

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 2013

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, 2013 $CO_2$ emissions in this category are based on four different approximation approaches. Table 15 shows the calculation results for all Member States and highlights the approaches chosen per Member State.

*Table 15 2013 $CO_2$ emissions for source category 1.A Fuel combustion in various approximation approaches*

| Gg CO2 | **Approach I** BP (Trend) | **Approach II** Eurostat monthly (trend) | **Approach III** Bottom up: 1A1+1A2+1A3+ $(1A4+1A5)_{Y-1}$ | **Approach IV** preliminary national energy statistics (trend) |
|---|---|---|---|---|
| AT | 58.309 | 57.358 | 55.796 | 58.085 |
| BE | 93.397 | 92.563 | 89.569 | not available |
| BG | 40.909 | 40.431 | 40.949 | 40.297 |
| CY | not available | 5.562 | 5.772 | not available |
| CZ | 97.935 | 98.328 | 100.974 | 98.602 |
| DE | 783.943 | 780.588 | 781.651 | 794.015 |
| DK | 40.574 | 40.292 | 41.731 | 39.285 |
| EE | not available | 16.518 | 18.638 | 12.439 |
| ES | 223.758 | 224.930 | 236.396 | 230.996 |
| FI | 49.432 | 49.543 | 48.706 | 46.008 |
| FR | 343.387 | 342.939 | 341.065 | 344.020 |
| UK | 452.935 | 455.341 | 446.446 | 453.380 |
| GR | 76.242 | 76.367 | 79.449 | not available |
| HR | not available | 16.666 | 16.862 | 16.031 |
| HU | 39.693 | 39.820 | 41.314 | not available |
| IE | 36.206 | 35.194 | 34.734 | 35.697 |
| IT | 344.436 | 342.457 | 348.194 | 341.139 |
| LT | 10.724 | 10.649 | 10.739 | 10.415 |
| LU | not available | 9.931 | 9.995 | 10.265 |
| LV | not available | 6.511 | 7.095 | 6.800 |
| MT | not available | 2.615 | 2.438 | not available |
| NL | 157.032 | 157.571 | 155.933 | 158.877 |
| PL | 301.449 | 299.522 | 299.997 | not available |
| PT | 43.619 | 47.405 | 43.509 | 43.796 |
| RO | 65.447 | 62.334 | 64.543 | 64.422 |
| SE | 39.765 | 38.140 | 40.518 | 39.116 |
| SI | not available | 13.071 | 13.884 | 14.129 |
| SK | 28.690 | 26.229 | 27.282 | not available |

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

The figures presented in this table in the column 'Eurostat monthly trend' deviate from figures published by Eurostat as early $CO_2$ estimates from energy due to the fact that the Eurostat early estimates are based on the IPCC reference approach method and in this report a sectoral approach calculation method was performed which leads to different estimates for 2013 $CO_2$ emissions from the energy sector.

**Source**: EEA's proxy GHG emissions

Table 16, Table 17 and Table 18 show the results for the proxy inventory in 2013 compared to the inventory time series for the EU and all Member States for $CO_2$, $CH_4$ and $N_2O$ emissions respectively.

*Table 16 $CO_2$ emissions for source category 1.A Fuel Combustion*

| Source Category | 1A | Fuel Combustion (Sectoral Approach) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 54.070 | 56.228 | 57.868 | 70.279 | 63.449 | 59.110 | 62.952 | 60.617 | 58.297 | 58.085 |
| BE | 110.196 | 114.507 | 115.148 | 113.543 | 108.834 | 99.020 | 105.157 | 95.736 | 92.828 | 92.563 |
| BG | 72.284 | 50.027 | 40.087 | 44.644 | 48.582 | 42.770 | 44.756 | 49.811 | 45.006 | 40.909 |
| CY | 3.858 | 4.930 | 6.182 | 6.946 | 7.563 | 7.465 | 7.231 | 6.984 | 6.519 | 5.772 |
| CZ | 145.593 | 116.346 | 113.591 | 114.332 | 109.136 | 104.458 | 106.585 | 104.497 | 101.289 | 97.935 |
| DE | 977.715 | 869.890 | 827.826 | 800.110 | 791.058 | 735.202 | 773.833 | 754.308 | 766.580 | 780.588 |
| DK | 51.303 | 58.893 | 51.363 | 48.888 | 49.014 | 47.243 | 47.533 | 42.600 | 38.023 | 39.285 |
| EE | 35.632 | 17.330 | 14.496 | 15.714 | 16.430 | 13.832 | 17.451 | 17.961 | 16.572 | 18.638 |
| ES | 204.841 | 241.081 | 281.869 | 336.023 | 307.082 | 272.883 | 258.579 | 260.710 | 257.187 | 230.996 |
| FI | 52.954 | 54.518 | 52.985 | 52.542 | 53.275 | 51.301 | 58.918 | 51.875 | 46.390 | 46.008 |
| FR | 363.902 | 364.706 | 382.707 | 393.135 | 368.798 | 353.226 | 360.306 | 335.045 | 340.913 | 341.065 |
| UK | 565.267 | 526.947 | 532.961 | 537.098 | 514.559 | 469.695 | 486.407 | 446.153 | 466.357 | 455.341 |
| GR | 74.363 | 78.079 | 93.665 | 103.293 | 101.424 | 97.078 | 90.135 | 89.326 | 85.003 | 76.242 |
| HR | 20.594 | 15.036 | 17.347 | 20.280 | 20.496 | 19.360 | 18.721 | 18.509 | 16.949 | 16.031 |
| HU | 66.313 | 56.617 | 53.565 | 55.067 | 52.041 | 47.360 | 47.941 | 46.223 | 42.679 | 39.820 |
| IE | 30.154 | 33.007 | 41.760 | 44.894 | 44.569 | 40.130 | 39.868 | 36.440 | 36.507 | 34.734 |
| IT | 400.728 | 413.811 | 433.642 | 457.250 | 434.918 | 391.313 | 400.897 | 389.735 | 366.277 | 348.194 |
| LT | 32.154 | 13.467 | 10.278 | 12.242 | 12.484 | 11.257 | 12.143 | 11.305 | 11.305 | 10.739 |
| LU | 10.327 | 8.213 | 8.044 | 11.436 | 10.560 | 10.124 | 10.659 | 10.531 | 10.326 | 9.931 |
| LV | 18.412 | 8.840 | 6.774 | 7.507 | 7.838 | 7.162 | 7.978 | 7.135 | 6.795 | 6.800 |
| MT | 1.865 | 2.211 | 2.345 | 2.703 | 2.715 | 2.642 | 2.640 | 2.667 | 2.806 | 2.438 |
| NL | 149.860 | 161.599 | 161.709 | 167.054 | 166.864 | 161.996 | 172.730 | 159.838 | 157.966 | 157.032 |
| PL | 350.820 | 338.994 | 296.475 | 297.549 | 301.363 | 291.363 | 309.430 | 304.709 | 298.404 | 299.522 |
| PT | 40.195 | 48.678 | 59.257 | 62.393 | 53.057 | 51.781 | 47.174 | 46.475 | 45.714 | 43.619 |
| RO | 157.710 | 108.791 | 79.484 | 83.314 | 84.094 | 71.997 | 68.562 | 73.903 | 72.786 | 62.334 |
| SE | 51.502 | 53.122 | 48.375 | 47.384 | 43.638 | 41.790 | 45.862 | 42.189 | 39.729 | 39.116 |
| SI | 13.646 | 14.078 | 14.237 | 15.528 | 16.820 | 15.228 | 15.312 | 15.339 | 14.839 | 14.129 |
| SK | 53.899 | 37.125 | 34.355 | 34.118 | 32.185 | 29.652 | 30.112 | 29.972 | 27.954 | 28.690 |
| EU-15 | 3.137.377 | 3.083.278 | 3.149.180 | 3.245.322 | 3.111.100 | 2.881.890 | 2.961.011 | 2.821.577 | 2.808.098 | 2.752.798 |
| EU-28 | 4.110.157 | 3.867.068 | 3.838.396 | 3.955.267 | 3.822.846 | 3.546.438 | 3.649.871 | 3.510.593 | 3.472.001 | 3.396.554 |

*Table 17 $CH_4$ emissions for source category 1.A Fuel Combustion*

| Source Category | 1A | Fuel Combustion (Sectoral Approach) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 22,1 | 20,5 | 15,2 | 13,4 | 11,7 | 11,0 | 12,0 | 10,7 | 11,4 | 11,3 |
| BE | 22,3 | 19,1 | 16,3 | 16,2 | 18,7 | 17,6 | 19,7 | 15,6 | 16,4 | 16,4 |
| BG | 16,8 | 12,0 | 11,8 | 12,9 | 12,8 | 11,8 | 13,2 | 14,3 | 14,8 | 13,4 |
| CY | 0,4 | 0,5 | 0,6 | 0,7 | 0,8 | 0,9 | 0,9 | 0,9 | 0,9 | 0,8 |
| CZ | 69,7 | 38,9 | 27,4 | 26,6 | 26,1 | 26,4 | 28,2 | 26,5 | 28,2 | 27,3 |
| DE | 209,1 | 94,1 | 78,8 | 82,1 | 98,5 | 101,8 | 126,9 | 131,1 | 139,6 | 142,2 |
| DK | 8,7 | 21,5 | 26,4 | 24,4 | 21,2 | 19,2 | 21,6 | 18,5 | 15,1 | 15,6 |
| EE | 4,7 | 5,7 | 5,4 | 5,0 | 5,9 | 6,2 | 6,5 | 5,7 | 6,0 | 6,7 |
| ES | 56,3 | 57,3 | 63,8 | 77,0 | 75,5 | 77,2 | 78,7 | 75,9 | 78,8 | 70,8 |
| FI | 14,6 | 14,2 | 13,6 | 14,5 | 14,9 | 15,3 | 16,9 | 14,9 | 15,8 | 15,7 |
| FR | 232,2 | 218,0 | 165,6 | 128,3 | 97,3 | 89,5 | 91,3 | 72,9 | 75,9 | 75,9 |
| UK | 118,3 | 82,6 | 69,4 | 50,6 | 50,0 | 47,1 | 49,9 | 46,1 | 46,2 | 45,1 |
| GR | 10,0 | 10,1 | 11,7 | 10,4 | 10,0 | 9,6 | 9,0 | 8,9 | 8,0 | 7,2 |
| HR | 9,7 | 5,4 | 6,4 | 5,8 | 5,1 | 5,2 | 5,7 | 6,5 | 6,6 | 6,2 |
| HU | 38,3 | 20,6 | 14,6 | 14,5 | 13,6 | 15,0 | 16,0 | 16,8 | 16,1 | 15,1 |
| IE | 20,3 | 14,1 | 10,9 | 9,8 | 9,6 | 9,9 | 9,4 | 8,6 | 8,4 | 8,0 |
| IT | 76,7 | 88,0 | 78,9 | 70,2 | 72,2 | 71,0 | 74,4 | 76,3 | 80,1 | 76,2 |
| LT | 11,3 | 7,4 | 8,6 | 9,4 | 9,8 | 9,8 | 9,9 | 9,7 | 9,8 | 9,4 |
| LU | 1,5 | 1,4 | 1,3 | 1,2 | 0,9 | 0,9 | 0,9 | 0,8 | 0,9 | 0,8 |
| LV | 12,5 | 13,5 | 11,3 | 13,1 | 11,7 | 12,9 | 12,2 | 10,5 | 11,3 | 11,3 |
| MT | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,1 |
| NL | 34,8 | 44,7 | 44,0 | 44,0 | 76,3 | 78,5 | 83,3 | 78,3 | 72,6 | 72,2 |
| PL | 125,0 | 178,5 | 115,2 | 125,9 | 137,5 | 139,4 | 162,8 | 145,3 | 149,5 | 150,0 |
| PT | 22,2 | 21,0 | 19,0 | 15,9 | 13,8 | 13,3 | 12,7 | 13,1 | 12,5 | 11,9 |
| RO | 33,0 | 22,2 | 37,9 | 43,5 | 51,6 | 49,8 | 51,1 | 47,3 | 47,9 | 41,0 |
| SE | 23,8 | 24,5 | 20,4 | 21,3 | 21,4 | 23,1 | 23,0 | 22,6 | 22,4 | 22,1 |
| SI | 7,5 | 7,2 | 6,5 | 5,9 | 6,0 | 6,5 | 6,3 | 6,8 | 6,8 | 6,5 |
| SK | 2,9 | 2,7 | 2,6 | 2,9 | 3,3 | 2,3 | 2,4 | 2,4 | 2,5 | 2,6 |
| EU-15 | 873,0 | 731,1 | 635,4 | 579,2 | 592,0 | 585,0 | 629,8 | 594,3 | 604,2 | 591,4 |
| EU-28 | 1.205,0 | 1.045,9 | 883,8 | 845,6 | 876,7 | 871,5 | 945,1 | 887,2 | 904,9 | 881,9 |

*Table 18 $N_2O$ emissions for source category 1.A Fuel Combustion*

| Source Category | 1A | Fuel Combustion (Sectoral Approach) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 1,8 | 2,1 | 2,4 | 2,7 | 2,4 | 2,3 | 2,3 | 2,2 | 2,2 | 2,2 |
| BE | 2,2 | 2,6 | 2,6 | 2,1 | 2,5 | 2,2 | 2,4 | 2,3 | 2,4 | 2,4 |
| BG | 1,1 | 1,4 | 1,2 | 0,9 | 0,9 | 0,8 | 0,8 | 0,9 | 0,9 | 0,8 |
| CY | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| CZ | 2,4 | 2,3 | 2,9 | 3,7 | 3,8 | 3,8 | 3,7 | 3,7 | 3,6 | 3,5 |
| DE | 22,4 | 19,4 | 17,6 | 16,3 | 17,3 | 16,7 | 18,0 | 18,5 | 19,0 | 19,3 |
| DK | 1,0 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,1 | 1,1 |
| EE | 0,4 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 |
| ES | 5,1 | 7,1 | 9,5 | 8,8 | 8,5 | 7,9 | 7,7 | 7,6 | 7,5 | 6,7 |
| FI | 3,2 | 3,2 | 3,1 | 3,1 | 3,1 | 2,9 | 3,3 | 3,1 | 3,0 | 2,9 |
| FR | 12,1 | 13,8 | 14,0 | 14,8 | 14,4 | 13,5 | 14,1 | 13,1 | 13,9 | 13,9 |
| UK | 19,0 | 18,6 | 16,6 | 15,7 | 13,7 | 12,4 | 12,6 | 12,3 | 13,6 | 13,2 |
| GR | 2,9 | 3,1 | 3,2 | 3,4 | 3,2 | 2,9 | 2,5 | 2,3 | 1,7 | 1,6 |
| HR | 0,3 | 0,2 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 |
| HU | 0,9 | 0,9 | 1,2 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,7 |
| IE | 0,8 | 1,2 | 1,2 | 1,4 | 1,3 | 1,3 | 1,2 | 1,2 | 1,1 | 1,1 |
| IT | 14,8 | 17,4 | 17,3 | 17,2 | 16,6 | 15,9 | 15,9 | 15,8 | 15,0 | 14,3 |
| LT | 0,4 | 0,2 | 0,2 | 0,3 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| LU | 0,2 | 0,2 | 0,3 | 0,4 | 0,4 | 0,3 | 0,4 | 0,4 | 0,4 | 0,3 |
| LV | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 1,1 | 1,6 | 1,8 | 1,9 | 1,9 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 |
| PL | 5,8 | 6,3 | 5,9 | 6,0 | 6,3 | 6,3 | 6,8 | 6,8 | 6,8 | 6,8 |
| PT | 1,5 | 2,4 | 2,0 | 2,1 | 2,0 | 1,9 | 1,8 | 1,7 | 1,7 | 1,6 |
| RO | 2,9 | 1,6 | 1,6 | 1,6 | 1,8 | 1,7 | 1,6 | 1,7 | 1,7 | 1,4 |
| SE | 3,4 | 3,6 | 3,0 | 3,1 | 3,1 | 3,1 | 3,5 | 3,2 | 3,2 | 3,1 |
| SI | 0,5 | 0,9 | 1,0 | 0,6 | 0,6 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| SK | 0,8 | 0,6 | 0,5 | 0,6 | 0,7 | 0,5 | 0,5 | 0,5 | 0,5 | 0,6 |
| EU-15 | 91,4 | 97,4 | 95,7 | 94,1 | 91,8 | 86,4 | 88,9 | 86,9 | 87,8 | 86,0 |
| EU-28 | 107,6 | 112,7 | 111,3 | 109,9 | 108,3 | 102,2 | 105,1 | 103,3 | 104,1 | 101,7 |

#### *5.3.1.2 1.A.1 Energy Industries*

## Methods and data sources used

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

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

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

*Equation 5*

$$E^{Y}_{1A1a\_CO2} = \frac{E^{Y}_{CITL(1/power)}}{E^{Y-1}_{CITL(1/power)}} \cdot E^{Y-1}_{1A1a\_CO2}$$

*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*

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

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

Since Croatia only in 2013 participated in the EU ETS, 1A1a emissions 2013 for Croatia were calculated using Member States data on gross electricity production from thermal power plants as follows:

*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*

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 2010–2012 of the $CH_4$ emission data from the last inventory submissions were used.
2. For the Member States with strong growth of $CH_4$ emissions in previous years a linear trend extrapolation of the years 2003 to 2012.
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*

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

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

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

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

The second option (linear trend extrapolation) was used for Germany, the third option (estimates on the basis of trend dynamics) was chosen for Bulgaria, Cyprus, Greece and Malta, Netherlands and Sweden. For all other EU 28 Member States, the $CH_4$ emissions were estimated on averages of the reported 2010–2012 $CH_4$ emissions.

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

1. For the Member States with no strong correlation between $CO_2$ and $N_2O$ emissions in the previous years the average 2010–2012 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*

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

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

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

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

The first option was used for Austria, Belgium, Denmark, Finland, Latvia, Italy, Lithuania, Luxembourg, Netherlands, Portugal, Slovakia, Spain, Sweden, United Kingdom. For all other EU-28

Member States, the $N_2O$ emissions were estimated on the basis of trend dynamics for $CO_2$ emissions (option 2).

The main source for the estimation of $CO_2$ emissions from source category 1.A.1.b (Petroleum Refining) is EUTL data. For Bulgaria, Croatia, Poland, Romania, Slovenia and Slovakia sufficient and consistent data were not available. Therefore the average of the $CO_2$ emissions of the years 2009–2010 from the last inventory submission were used for these countries. Cyprus, Estonia, Latvia, Luxembourg, Malta and Slovenia did not report emissions from source category 1.A.1.b, therefore no emissions were estimated for these countries. For all other countries the emissions were calculated as follows:

*Equation 9*

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

*with*

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

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

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

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

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

1. For the Member States with no strong correlation between $CO_2$ and $CH_4$ emissions in the previous years the average 2010–2012 of the $CH_4$ emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of $CO_2$ and $CH_4$ emissions in the previous years, the projection of $CH_4$ emissions is based on the following formula:

*Equation 10*

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

*with*

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

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

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

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

The first option was used for Austria, France, Ireland, Netherlands, Poland, Portugal and Romania. For all other EU-28 Member States that report $CH_4$ emissions, emissions were estimated on the basis of the trend dynamics for $CO_2$ emissions (option 2).

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

1. For the Member States with no strong correlation between $CO_2$ and $N_2O$ emissions in the previous years the average 2010–2012 of the $N_2O$ emission data from the last inventory submission were used.
2. For the Member States with a significant correlation for the trends of $CO_2$ and $N_2O$ emissions in the previous years, the projection of $N_2O$ emissions is based on the following formula.

*Equation 11*

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

*with*

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

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

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

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

The first option was used for Austria, Belgium, Croatia, Czech Republic, Denmark, Ireland, Netherlands, Poland, Portugal, Romania and United Kingdom. For all other EU-28 Member States that report $N_2O$ emissions, the $N_2O$ emissions were estimated on the basis of the trend dynamics for $CO_2$ emissions (option 2).

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

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

## Results for 2013

Table 19, Table 20 and Table 21 show the results for the proxy inventory as calculated by EEA for 1A1 Energy Industries compared to the inventory time series for the EU and all Member States for $CO_2$, $CH_4$ and $N_2O$ emissions respectively.

*Table 19 $CO_2$ emissions for 1.A.1 Energy Industries*

| Source Category | 1A1 | 1. Energy Industries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 13.792 | 12.919 | 12.221 | 16.223 | 13.632 | 12.598 | 13.947 | 13.723 | 12.325 | 9.171 |
| BE | 29.792 | 29.225 | 28.305 | 29.235 | 25.327 | 25.743 | 26.312 | 22.917 | 22.695 | 21.622 |
| BG | 38.661 | 27.120 | 23.977 | 26.934 | 32.072 | 29.505 | 31.419 | 36.211 | 31.446 | 27.907 |
| CY | 1.767 | 2.170 | 2.961 | 3.472 | 3.967 | 3.992 | 3.868 | 3.710 | 3.546 | 2.830 |
| CZ | 57.672 | 60.386 | 59.240 | 60.832 | 58.726 | 55.868 | 58.553 | 58.088 | 57.110 | 56.479 |
| DE | 423.418 | 365.317 | 356.812 | 377.293 | 364.582 | 339.966 | 352.522 | 349.937 | 360.077 | 363.676 |
| DK | 26.146 | 32.168 | 25.554 | 22.731 | 23.890 | 23.823 | 23.625 | 19.746 | 16.531 | 19.444 |
| EE | 28.821 | 14.386 | 11.897 | 12.362 | 12.577 | 10.658 | 14.195 | 14.492 | 13.042 | 15.140 |
| ES | 77.355 | 85.229 | 104.714 | 124.305 | 107.726 | 90.193 | 73.914 | 86.280 | 91.150 | 75.354 |
| FI | 19.051 | 23.894 | 21.864 | 21.664 | 23.877 | 24.936 | 30.226 | 24.390 | 20.371 | 23.383 |
| FR | 63.525 | 55.031 | 61.351 | 66.150 | 60.930 | 58.825 | 59.442 | 51.194 | 52.054 | 52.711 |
| UK | 234.408 | 200.676 | 196.698 | 210.869 | 207.586 | 184.528 | 190.280 | 177.176 | 188.349 | 171.004 |
| GR | 42.993 | 44.770 | 54.629 | 57.940 | 58.019 | 54.480 | 52.037 | 53.838 | 54.507 | 50.300 |
| HR | 7.127 | 5.262 | 5.877 | 6.779 | 6.705 | 6.373 | 5.884 | 6.253 | 5.598 | 5.141 |
| HU | 20.473 | 22.226 | 23.425 | 19.650 | 20.189 | 17.057 | 17.751 | 17.076 | 16.450 | 14.501 |
| IE | 11.159 | 13.317 | 16.050 | 15.657 | 14.495 | 12.926 | 13.176 | 11.798 | 12.647 | 11.042 |
| IT | 136.503 | 139.841 | 151.894 | 159.829 | 156.106 | 131.167 | 132.557 | 130.562 | 125.639 | 112.692 |
| LT | 13.516 | 6.354 | 5.037 | 5.625 | 4.807 | 4.782 | 5.287 | 4.420 | 4.371 | 3.727 |
| LU | 33 | 91 | 117 | 1.241 | 996 | 1.192 | 1.204 | 998 | 1.032 | 572 |
| LV | 6.268 | 3.418 | 2.473 | 2.048 | 1.917 | 1.867 | 2.250 | 2.072 | 1.855 | 2.169 |
| MT | 1.367 | 1.606 | 1.688 | 1.989 | 2.003 | 1.911 | 1.887 | 1.931 | 2.050 | 1.696 |
| NL | 52.501 | 61.416 | 63.630 | 67.313 | 65.204 | 64.234 | 66.212 | 62.424 | 59.939 | 60.027 |
| PL | 234.687 | 190.588 | 176.596 | 177.220 | 172.876 | 165.413 | 171.938 | 173.916 | 168.642 | 171.584 |
| PT | 16.261 | 19.808 | 21.490 | 25.331 | 19.143 | 19.291 | 14.392 | 16.345 | 17.290 | 16.024 |
| RO | 72.546 | 61.890 | 42.615 | 41.132 | 41.407 | 34.918 | 32.007 | 35.383 | 32.390 | 26.336 |
| SE | 9.797 | 11.147 | 8.599 | 10.358 | 9.653 | 10.026 | 12.460 | 10.127 | 9.726 | 11.178 |
| SI | 6.239 | 5.601 | 5.473 | 6.297 | 6.356 | 6.058 | 6.184 | 6.229 | 5.961 | 5.665 |
| SK | 19.560 | 12.463 | 12.884 | 12.451 | 11.262 | 10.161 | 9.827 | 9.983 | 9.427 | 9.429 |
| EU-15 | 1.156.733 | 1.094.851 | 1.123.930 | 1.206.139 | 1.151.168 | 1.053.929 | 1.062.307 | 1.031.455 | 1.044.333 | 998.200 |
| EU-28 | 1.665.436 | 1.508.321 | 1.498.072 | 1.582.929 | 1.526.031 | 1.402.492 | 1.423.358 | 1.401.221 | 1.396.222 | 1.340.803 |

*Table 20 $CH_4$ emissions for 1.A.1 Energy Industries*

| Source Category | 1A1 | 1. Energy Industries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,2 | 0,2 | 0,2 | 0,3 | 0,4 | 0,4 | 0,4 | 0,5 | 0,5 | 0,5 |
| BE | 0,8 | 0,8 | 0,7 | 0,7 | 1,7 | 1,7 | 2,0 | 1,8 | 1,7 | 1,7 |
| BG | 0,5 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,3 |
| CY | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 |
| CZ | 0,7 | 0,7 | 0,8 | 0,8 | 0,9 | 1,0 | 1,1 | 1,1 | 1,1 | 1,1 |
| DE | 11,2 | 14,0 | 16,9 | 32,3 | 48,0 | 52,5 | 62,7 | 70,1 | 78,0 | 79,5 |
| DK | 0,7 | 11,5 | 14,7 | 12,5 | 10,2 | 9,0 | 11,2 | 9,4 | 6,6 | 9,1 |
| EE | 0,4 | 0,3 | 0,3 | 0,4 | 0,4 | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 |
| ES | 1,2 | 1,2 | 2,0 | 5,4 | 10,0 | 7,9 | 9,0 | 7,9 | 7,9 | 8,1 |
| FI | 0,4 | 0,6 | 0,7 | 1,0 | 1,1 | 1,0 | 1,2 | 1,1 | 1,0 | 1,1 |
| FR | 2,7 | 2,0 | 1,4 | 1,7 | 1,5 | 1,6 | 1,6 | 1,5 | 1,4 | 1,5 |
| UK | 7,9 | 9,8 | 11,0 | 12,4 | 10,9 | 11,3 | 11,5 | 10,3 | 10,1 | 9,7 |
| GR | 0,6 | 0,6 | 0,8 | 0,8 | 0,9 | 0,8 | 0,7 | 0,7 | 0,7 | 0,7 |
| HR | 0,2 | 0,1 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| HU | 0,4 | 0,5 | 0,5 | 1,0 | 1,1 | 1,2 | 1,2 | 1,0 | 0,9 | 1,0 |
| IE | 0,3 | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 | 0,2 | 0,3 | 0,3 |
| IT | 9,3 | 8,6 | 6,8 | 6,3 | 5,6 | 5,2 | 5,0 | 5,6 | 5,4 | 5,2 |
| LT | 0,4 | 0,2 | 0,2 | 0,4 | 0,4 | 0,5 | 0,5 | 0,4 | 0,5 | 0,5 |
| LU | 0,0 | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LV | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| MT | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| NL | 2,8 | 3,8 | 4,4 | 6,0 | 4,8 | 5,3 | 5,3 | 5,0 | 4,5 | 5,0 |
| PL | 3,3 | 2,3 | 2,2 | 2,7 | 3,1 | 3,5 | 4,0 | 4,4 | 5,1 | 4,5 |
| PT | 0,2 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| RO | 1,6 | 1,2 | 0,8 | 0,7 | 0,6 | 0,5 | 0,5 | 0,6 | 0,5 | 0,5 |
| SE | 1,1 | 1,8 | 2,2 | 3,4 | 3,9 | 4,2 | 4,8 | 4,1 | 4,2 | 4,4 |
| SI | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| SK | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,3 | 0,4 | 0,3 |
| EU-15 | 39,3 | 55,6 | 62,6 | 83,7 | 99,8 | 101,6 | 116,0 | 118,7 | 122,9 | 127,1 |
| EU-28 | 47,5 | 61,9 | 68,3 | 90,8 | 107,7 | 110,0 | 125,3 | 128,3 | 133,1 | 136,7 |

*Table 21 $N_2O$ emissions for 1.A.1 Energy Industries*

| Source Category | 1A1 | 1. Energy Industries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,1 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,4 |
| BE | 0,6 | 0,6 | 0,7 | 0,4 | 0,4 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| BG | 0,4 | 0,3 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,5 | 0,4 | 0,3 |
| CY | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| CZ | 0,8 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 |
| DE | 10,6 | 8,5 | 8,0 | 9,0 | 9,3 | 9,0 | 9,3 | 9,4 | 9,8 | 9,9 |
| DK | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| EE | 0,1 | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| ES | 0,9 | 1,8 | 2,0 | 2,4 | 2,4 | 2,2 | 2,0 | 2,0 | 1,9 | 2,0 |
| FI | 0,4 | 0,6 | 0,7 | 0,8 | 1,0 | 0,9 | 1,2 | 1,1 | 1,0 | 1,1 |
| FR | 1,9 | 1,8 | 2,1 | 2,4 | 2,2 | 2,2 | 2,2 | 2,0 | 2,0 | 2,0 |
| UK | 6,6 | 5,5 | 4,9 | 5,3 | 4,8 | 4,3 | 4,4 | 4,5 | 5,3 | 4,7 |
| GR | 0,5 | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,5 |
| HR | 0,0 | 0,0 | 0,0 | 0,1 | 0,1 | 0,0 | 0,1 | 0,1 | 0,1 | 0,0 |
| HU | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,2 | 0,2 |
| IE | 0,2 | 0,2 | 0,3 | 0,3 | 0,5 | 0,5 | 0,5 | 0,4 | 0,5 | 0,4 |
| IT | 1,7 | 1,7 | 1,7 | 1,9 | 1,9 | 1,7 | 1,7 | 1,8 | 1,8 | 1,6 |
| LT | 0,1 | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LU | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| LV | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 0,4 | 0,5 | 0,6 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,9 | 0,9 |
| PL | 3,4 | 2,8 | 2,6 | 2,6 | 2,6 | 2,6 | 2,7 | 2,7 | 2,8 | 2,8 |
| PT | 0,2 | 0,2 | 0,4 | 0,5 | 0,4 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 |
| RO | 0,6 | 0,6 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 |
| SE | 1,1 | 1,1 | 1,0 | 1,3 | 1,3 | 1,5 | 1,7 | 1,4 | 1,5 | 1,5 |
| SI | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| SK | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| EU-15 | 25,6 | 23,6 | 23,5 | 26,4 | 26,3 | 25,3 | 25,9 | 25,6 | 26,7 | 26,1 |
| EU-28 | 31,6 | 28,8 | 28,2 | 31,4 | 31,4 | 30,2 | 31,0 | 30,8 | 31,9 | 31,2 |

#### *5.3.1.3 1.A.2 Manufacturing Industries and Construction*

## Methods and data sources used

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

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

*Equation 12*

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

*with*

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

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

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

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

For Croatia and Cyprus, the average 2010–2012 of the $CO_2$ emission data from the last inventory submission were used.

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

1. For the Member States with no strong correlation between $CO_2$ and $CH_4$ emissions in the previous years, the average 2010–2012 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 second option was used for Austria. For all other EU-27 Member States the $CH_4$ emissions were estimated on the average of 2010–2012 emissions (option 1).

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 2011–2012 of the $N_2O$ emission data from the last inventory submission were used.

2. For the Member States with a significant correlation for the trends of $CO_2$ and $N_2O$ emissions in the previous years, the projection of $N_2O$ emissions is based on the following formula.

*Equation 14*

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

*with*

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

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

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

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

The first option was used for Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Finland, Greece, Hungary, Latvia, Portugal, Romania and United Kingdom. For all other EU-28 Member States the $N_2O$ emissions were estimated on the basis of the trend dynamics for $CO_2$ emissions (option 2).

## Results for 2013

Table 22, Table 23 and Table 24 show the results for the proxy inventory in 2012 for 1A2 Manufacturing Industries and construction compared to the inventory time series for the EU and all Member States for $CO_2$, $CH_4$ and $N_2O$ emissions respectively.

*Table 22 $CO_2$ emissions from 1.A.2 Manufacturing Industries and Construction*

| Source Category | 1A2 | 2. Manufacturing Industries and Construction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 12.685 | 13.489 | 13.891 | 16.161 | 15.932 | 14.229 | 15.774 | 15.554 | 15.409 | 15.472 |
| BE | 32.605 | 32.492 | 33.148 | 28.689 | 28.146 | 19.809 | 23.540 | 22.871 | 20.712 | 19.835 |
| BG | 19.539 | 14.609 | 8.446 | 8.025 | 6.288 | 3.602 | 3.767 | 3.598 | 3.320 | 3.388 |
| CY | 529 | 740 | 801 | 886 | 845 | 713 | 625 | 542 | 413 | 527 |
| CZ | 46.485 | 27.703 | 27.132 | 23.161 | 20.159 | 19.315 | 18.700 | 18.690 | 16.464 | 16.786 |
| DE | 175.635 | 134.373 | 117.692 | 103.755 | 117.032 | 99.143 | 115.178 | 116.568 | 114.136 | 114.804 |
| DK | 5.444 | 5.909 | 6.016 | 5.551 | 5.061 | 4.111 | 4.524 | 4.494 | 4.235 | 5.236 |
| EE | 2.479 | 881 | 572 | 715 | 1.076 | 586 | 506 | 715 | 762 | 728 |
| ES | 44.157 | 58.382 | 57.724 | 68.774 | 57.304 | 47.995 | 49.588 | 46.522 | 45.493 | 43.328 |
| FI | 13.182 | 11.955 | 11.737 | 11.160 | 10.582 | 8.246 | 9.701 | 9.478 | 8.229 | 8.068 |
| FR | 85.397 | 81.930 | 83.346 | 78.024 | 74.545 | 63.562 | 67.058 | 62.527 | 62.607 | 63.067 |
| UK | 104.630 | 96.781 | 96.784 | 87.557 | 79.626 | 68.803 | 68.427 | 64.184 | 64.471 | 64.511 |
| GR | 9.163 | 9.216 | 9.722 | 10.171 | 9.346 | 7.412 | 6.717 | 5.271 | 5.496 | 6.468 |
| HR | 5.843 | 3.541 | 3.617 | 4.081 | 4.198 | 3.379 | 3.397 | 3.175 | 2.787 | 3.120 |
| HU | 16.367 | 10.630 | 6.045 | 5.862 | 5.556 | 4.341 | 4.602 | 4.544 | 3.969 | 3.670 |
| IE | 3.943 | 4.330 | 5.618 | 5.839 | 5.626 | 4.470 | 4.513 | 4.254 | 4.255 | 4.442 |
| IT | 85.276 | 85.037 | 82.245 | 78.551 | 70.905 | 54.580 | 60.015 | 59.852 | 53.656 | 51.360 |
| LT | 5.739 | 1.510 | 985 | 1.223 | 1.244 | 1.012 | 1.113 | 1.157 | 1.259 | 1.314 |
| LU | 6.285 | 3.344 | 1.438 | 1.558 | 1.405 | 1.284 | 1.385 | 1.283 | 1.256 | 1.560 |
| LV | 3.743 | 1.863 | 1.152 | 1.165 | 1.100 | 883 | 1.074 | 874 | 928 | 834 |
| MT | 59 | 60 | 57 | 51 | 48 | 40 | 46 | 73 | 73 | 64 |
| NL | 33.008 | 28.840 | 27.345 | 27.406 | 27.539 | 24.942 | 27.227 | 25.911 | 25.810 | 24.644 |
| PL | 42.235 | 62.427 | 47.514 | 35.186 | 32.944 | 29.381 | 31.032 | 31.488 | 30.635 | 31.143 |
| PT | 9.621 | 10.728 | 12.566 | 10.594 | 9.759 | 8.527 | 9.078 | 8.365 | 7.414 | 6.973 |
| RO | 56.226 | 30.256 | 18.858 | 18.341 | 17.929 | 12.816 | 13.117 | 14.456 | 15.271 | 13.422 |
| SE | 11.581 | 13.027 | 12.039 | 10.763 | 9.719 | 7.977 | 9.345 | 8.717 | 8.172 | 7.421 |
| SI | 3.085 | 2.587 | 2.240 | 2.450 | 2.269 | 1.888 | 1.874 | 1.683 | 1.616 | 1.654 |
| SK | 16.781 | 12.360 | 9.845 | 9.415 | 8.996 | 8.551 | 8.396 | 8.952 | 7.200 | 6.606 |
| EU-15 | 632.611 | 589.834 | 571.313 | 544.554 | 522.527 | 435.091 | 472.071 | 455.851 | 441.352 | 437.188 |
| EU-28 | 851.723 | 759.001 | 698.577 | 655.114 | 625.178 | 521.597 | 560.321 | 545.798 | 526.051 | 520.445 |

*Table 23 $CH_4$ emissions from 1.A.2 Manufacturing Industries and Construction*

| Source Category | 1A2 | 2. Manufacturing Industries and Construction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,3 | 0,4 | 0,4 | 0,6 | 0,7 | 0,6 | 0,6 | 0,7 | 0,6 | 0,7 |
| BE | 3,9 | 3,2 | 3,6 | 3,3 | 3,8 | 2,5 | 3,2 | 2,8 | 1,8 | 2,8 |
| BG | 1,1 | 1,1 | 0,7 | 0,7 | 0,6 | 0,4 | 0,5 | 0,5 | 0,6 | 0,5 |
| CY | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| CZ | 4,3 | 2,9 | 2,7 | 2,6 | 2,4 | 2,4 | 2,3 | 2,5 | 2,4 | 2,4 |
| DE | 9,7 | 8,4 | 8,6 | 9,5 | 10,1 | 9,0 | 9,8 | 10,1 | 10,1 | 9,7 |
| DK | 0,4 | 0,4 | 1,1 | 0,9 | 0,6 | 0,6 | 0,6 | 0,6 | 0,4 | 0,6 |
| EE | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| ES | 3,8 | 7,3 | 16,4 | 27,9 | 21,5 | 18,0 | 19,5 | 18,9 | 21,2 | 18,8 |
| FI | 0,6 | 0,7 | 0,7 | 0,6 | 0,6 | 0,5 | 0,7 | 0,8 | 0,8 | 0,7 |
| FR | 11,1 | 10,9 | 11,0 | 10,0 | 8,8 | 6,2 | 7,5 | 7,5 | 6,9 | 7,1 |
| UK | 7,3 | 7,6 | 8,1 | 7,3 | 6,7 | 5,9 | 6,0 | 5,9 | 5,9 | 6,0 |
| GR | 0,4 | 0,4 | 0,5 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,3 | 0,4 |
| HR | 0,5 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| HU | 1,0 | 0,7 | 0,5 | 0,5 | 0,6 | 0,5 | 0,5 | 0,5 | 0,4 | 0,5 |
| IE | 0,3 | 0,2 | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| IT | 6,8 | 7,0 | 5,7 | 6,3 | 6,2 | 4,2 | 5,5 | 6,9 | 8,1 | 5,5 |
| LT | 0,3 | 0,1 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| LU | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LV | 0,3 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,4 | 0,5 | 0,5 | 0,4 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 2,8 | 2,7 | 3,0 | 2,6 | 2,7 | 2,6 | 2,6 | 2,5 | 2,5 | 2,6 |
| PL | 4,6 | 6,9 | 5,2 | 4,2 | 4,2 | 4,0 | 4,3 | 4,5 | 4,5 | 4,2 |
| PT | 1,3 | 1,5 | 1,6 | 1,7 | 1,6 | 1,6 | 1,6 | 1,5 | 1,4 | 1,6 |
| RO | 4,8 | 3,0 | 1,8 | 1,9 | 1,9 | 1,5 | 1,7 | 1,9 | 2,2 | 1,7 |
| SE | 2,2 | 2,7 | 2,0 | 2,1 | 2,2 | 2,2 | 2,4 | 2,2 | 2,2 | 2,3 |
| SI | 0,4 | 0,3 | 0,2 | 0,4 | 0,3 | 0,3 | 0,3 | 0,2 | 0,2 | 0,3 |
| SK | 0,7 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| EU-15 | 51,1 | 53,5 | 63,3 | 73,8 | 66,6 | 54,7 | 60,9 | 61,3 | 62,9 | 59,0 |
| EU-28 | 69,3 | 69,6 | 75,5 | 85,5 | 78,0 | 64,9 | 71,9 | 72,9 | 74,6 | 69,9 |

*Table 24 $N_2O$ emissions from 1.A.2 Manufacturing Industries and Construction*

| Source Category | 1A2 | 2. Manufacturing Industries and Construction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,3 | 0,3 | 0,4 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| BE | 0,5 | 0,5 | 0,6 | 0,6 | 1,0 | 0,5 | 0,7 | 0,6 | 0,7 | 0,7 |
| BG | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 |
| CY | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| CZ | 0,6 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| DE | 4,3 | 3,1 | 2,5 | 2,2 | 2,5 | 2,2 | 2,5 | 2,6 | 2,5 | 2,5 |
| DK | 0,2 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| EE | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| ES | 1,4 | 1,6 | 1,8 | 2,1 | 1,8 | 1,6 | 1,6 | 1,5 | 1,5 | 1,4 |
| FI | 0,6 | 0,5 | 0,6 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| FR | 2,7 | 2,7 | 2,9 | 2,8 | 2,8 | 2,5 | 2,6 | 2,5 | 2,5 | 2,5 |
| UK | 5,1 | 4,7 | 4,2 | 4,2 | 3,7 | 3,0 | 3,1 | 2,7 | 2,9 | 2,9 |
| GR | 0,1 | 0,2 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| HR | 0,1 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| HU | 0,1 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| IE | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,0 | 0,0 | 0,0 |
| IT | 4,9 | 4,5 | 4,7 | 5,0 | 4,6 | 4,0 | 4,0 | 4,0 | 3,5 | 3,4 |
| LT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| LU | 0,1 | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LV | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,1 | 0,1 | 0,1 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| PL | 0,6 | 1,0 | 0,7 | 0,5 | 0,5 | 0,5 | 0,5 | 0,6 | 0,6 | 0,6 |
| PT | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,2 | 0,2 | 0,2 |
| RO | 0,3 | 0,2 | 0,1 | 0,2 | 0,2 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 |
| SE | 1,1 | 1,2 | 1,0 | 1,0 | 0,9 | 0,8 | 0,9 | 0,9 | 0,9 | 0,8 |
| SI | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| SK | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,0 | 0,1 | 0,1 | 0,0 |
| EU-15 | 21,6 | 19,9 | 19,5 | 19,8 | 19,3 | 16,2 | 17,1 | 16,4 | 16,2 | 15,9 |
| EU-28 | 23,7 | 21,8 | 20,9 | 21,2 | 20,6 | 17,5 | 18,4 | 17,8 | 17,6 | 17,3 |

#### *5.3.1.4 1.A.3 Transport*

## Methods and data sources used

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

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

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

Option 1 for calculating $CO_2$ emissions (Equation 15) was chosen for 16 Member States: Austria, Bulgaria, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Spain, Sweden and the United Kingdom:

*Equation 15*

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

*with*

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

$E^{Y}_{MS,CO2}$ *$CO_2$ emissions motor spirit (monthly total of internal market deliveries) x $CO_2$ factor*

$E^{Y}_{AD,CO2}$ *$CO_2$ emissions automotive diesel (monthly total of internal market deliveries) x $CO_2$ factor*

$E^{Y-1}_{MS,CO2}$ *$CO_2$ emissions motor spirit (monthly total of internal market deliveries) x $CO_2$ factor*

$E^{Y-1}_{AD,CO2}$ *$CO_2$ emissions automotive diesel (monthly total of internal market deliveries) x $CO_2$ factor*

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

$E^{Y}_{K,CO2}$ *$CO_2$ emissions kerosene (monthly total of internal market deliveries) x $CO_2$ factor*

$E^{Y-1}_{K,CO2}$ *$CO_2$ emissions kerosene (monthly total of internal market deliveries) x $CO_2$ factor*

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

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

Option 2 (Equation 16) was chosen for 6 Member States: Belgium, Cyprus, Czech Republic, Denmark, Finland and Latvia:

*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 6 Member States: Croatia, Estonia, Malta, Romania, Slovakia and Slovenia:

*Equation 17*

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

*with*

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

$Fw_{m}$ *Weighted Factor*

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

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

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

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

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

*with*

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

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

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

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

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

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

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

*Equation 18*

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

*with*

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

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

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

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

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

*Equation 19*

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

*with*

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

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

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

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

## Results for 2013

Table 25, Table 26 and Table 27 show the results for the proxy inventory in 2013 for 1A3 Transport compared to the inventory time series for the EU and all Member States for $CO_2$, $CH_4$ and $N_2O$ emissions respectively.

*Table 25 $CO_2$ emissions for source category 1.A.3*

| Source Category | 1A3 | Transport | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 13.771 | 15.675 | 18.621 | 24.675 | 22.317 | 21.524 | 22.191 | 21.511 | 21.418 | 22.264 |
| BE | 20.348 | 22.291 | 24.392 | 25.986 | 27.620 | 26.792 | 26.867 | 26.692 | 24.658 | 23.350 |
| BG | 6.578 | 4.364 | 5.492 | 7.579 | 8.401 | 8.083 | 7.844 | 8.036 | 8.322 | 7.736 |
| CY | 1.188 | 1.491 | 1.773 | 2.062 | 2.230 | 2.233 | 2.277 | 2.212 | 2.053 | 1.908 |
| CZ | 7.576 | 9.617 | 11.932 | 17.221 | 18.321 | 17.763 | 16.729 | 16.561 | 16.230 | 16.115 |
| DE | 162.368 | 175.691 | 180.963 | 160.423 | 153.215 | 152.742 | 153.491 | 155.468 | 153.861 | 162.063 |
| DK | 10.619 | 11.940 | 12.173 | 13.166 | 13.860 | 13.135 | 13.068 | 12.703 | 12.103 | 11.912 |
| EE | 2.418 | 1.540 | 1.628 | 2.104 | 2.277 | 2.100 | 2.222 | 2.237 | 2.256 | 2.258 |
| ES | 58.236 | 69.113 | 85.616 | 102.331 | 101.798 | 94.480 | 91.041 | 85.803 | 79.764 | 76.934 |
| FI | 12.483 | 11.735 | 12.592 | 13.470 | 13.363 | 12.689 | 13.198 | 13.015 | 12.471 | 12.308 |
| FR | 119.382 | 129.372 | 138.072 | 139.310 | 130.846 | 129.394 | 131.393 | 132.302 | 130.858 | 131.397 |
| UK | 113.406 | 115.016 | 120.990 | 125.783 | 121.612 | 117.205 | 115.658 | 114.191 | 113.775 | 111.169 |
| GR | 14.082 | 16.042 | 18.317 | 21.052 | 21.676 | 24.572 | 21.862 | 19.474 | 15.838 | 13.521 |
| HR | 4.019 | 3.407 | 4.464 | 5.553 | 6.178 | 6.181 | 5.961 | 5.825 | 5.648 | 5.685 |
| HU | 8.368 | 7.095 | 8.842 | 11.713 | 12.823 | 12.745 | 11.590 | 11.258 | 10.718 | 10.956 |
| IE | 5.022 | 6.054 | 10.562 | 12.906 | 13.595 | 12.383 | 11.471 | 11.162 | 10.776 | 10.697 |
| IT | 101.269 | 111.445 | 120.101 | 125.825 | 122.053 | 117.629 | 117.066 | 116.069 | 104.845 | 102.004 |
| LT | 7.386 | 3.812 | 3.360 | 4.319 | 5.321 | 4.367 | 4.490 | 4.462 | 4.487 | 4.511 |
| LU | 2.673 | 3.379 | 4.778 | 6.918 | 6.484 | 5.991 | 6.329 | 6.742 | 6.432 | 6.314 |
| LV | 2.898 | 2.014 | 2.112 | 2.990 | 3.529 | 3.130 | 3.205 | 2.839 | 2.737 | 2.796 |
| MT | 342 | 437 | 494 | 554 | 548 | 562 | 583 | 558 | 542 | 538 |
| NL | 25.994 | 29.166 | 32.395 | 34.638 | 35.483 | 34.071 | 34.659 | 34.896 | 33.659 | 32.704 |
| PL | 20.276 | 23.137 | 27.276 | 34.582 | 44.216 | 44.616 | 46.987 | 47.544 | 46.148 | 44.291 |
| PT | 10.139 | 13.322 | 19.157 | 19.586 | 18.947 | 18.933 | 18.711 | 17.361 | 16.812 | 16.498 |
| RO | 11.986 | 8.207 | 9.558 | 12.489 | 15.072 | 14.900 | 14.125 | 14.345 | 14.876 | 14.536 |
| SE | 18.890 | 19.219 | 19.571 | 21.267 | 20.780 | 20.389 | 20.636 | 20.162 | 18.913 | 19.469 |
| SI | 2.665 | 3.617 | 3.631 | 4.346 | 6.069 | 5.263 | 5.204 | 5.633 | 5.706 | 5.019 |
| SK | 4.888 | 4.243 | 4.150 | 6.163 | 6.615 | 6.081 | 6.558 | 6.304 | 6.481 | 6.403 |
| EU-15 | 688.681 | 749.461 | 818.298 | 847.337 | 823.648 | 801.929 | 797.643 | 787.549 | 756.184 | 752.604 |
| EU-28 | 769.269 | 822.442 | 903.010 | 959.014 | 955.248 | 929.954 | 925.417 | 915.363 | 882.389 | 875.354 |

*Table 26 $CH_4$ emissions for source category 1.A.3*

| Source Category | 1A3 | Transport | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 3,1 | 3,1 | 1,9 | 1,3 | 0,9 | 0,8 | 0,7 | 0,6 | 0,6 | 0,6 |
| BE | 4,9 | 3,8 | 2,5 | 1,6 | 1,1 | 1,0 | 0,9 | 0,8 | 0,7 | 0,7 |
| BG | 3,9 | 2,1 | 1,2 | 0,9 | 0,8 | 0,8 | 0,7 | 0,7 | 0,6 | 0,6 |
| CY | 0,2 | 0,2 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| CZ | 1,4 | 1,7 | 1,7 | 1,6 | 1,4 | 1,2 | 1,1 | 1,0 | 0,9 | 0,9 |
| DE | 53,5 | 33,9 | 21,5 | 12,9 | 9,2 | 8,6 | 7,8 | 7,6 | 7,1 | 7,5 |
| DK | 2,3 | 2,3 | 1,8 | 1,3 | 1,0 | 0,8 | 0,7 | 0,7 | 0,6 | 0,6 |
| EE | 0,9 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,2 | 0,2 | 0,2 |
| ES | 15,1 | 15,1 | 12,2 | 7,9 | 5,8 | 5,2 | 4,9 | 4,5 | 4,2 | 4,0 |
| FI | 4,7 | 3,9 | 3,2 | 2,4 | 1,9 | 1,8 | 1,8 | 1,8 | 1,6 | 1,6 |
| FR | 40,4 | 32,8 | 24,9 | 17,6 | 12,7 | 11,4 | 10,4 | 9,1 | 8,0 | 8,1 |
| UK | 30,4 | 23,1 | 14,5 | 8,3 | 6,0 | 4,4 | 3,8 | 3,3 | 2,9 | 2,9 |
| GR | 4,9 | 5,1 | 5,7 | 5,6 | 5,0 | 4,8 | 4,3 | 3,7 | 2,9 | 2,5 |
| HR | 1,6 | 1,2 | 1,4 | 1,0 | 0,9 | 0,8 | 0,7 | 0,7 | 0,6 | 0,6 |
| HU | 2,4 | 1,8 | 1,5 | 2,1 | 1,7 | 1,5 | 1,3 | 1,2 | 1,2 | 1,2 |
| IE | 1,8 | 1,8 | 1,7 | 1,3 | 1,1 | 1,0 | 0,9 | 0,9 | 0,8 | 0,8 |
| IT | 39,2 | 43,6 | 33,4 | 20,3 | 14,7 | 13,1 | 12,5 | 11,7 | 10,4 | 10,1 |
| LT | 1,8 | 1,0 | 0,8 | 0,8 | 0,7 | 0,7 | 0,6 | 0,5 | 0,5 | 0,5 |
| LU | 0,9 | 0,8 | 0,8 | 0,6 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| LV | 0,8 | 0,6 | 0,5 | 0,4 | 0,3 | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 |
| MT | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| NL | 7,6 | 5,9 | 4,1 | 2,9 | 2,7 | 2,5 | 2,4 | 2,4 | 2,2 | 2,2 |
| PL | 4,7 | 6,1 | 4,6 | 4,7 | 5,1 | 5,0 | 5,1 | 5,0 | 4,9 | 4,7 |
| PT | 4,1 | 4,4 | 3,8 | 2,5 | 1,8 | 1,8 | 1,6 | 1,4 | 1,2 | 1,2 |
| RO | 9,0 | 2,9 | 2,7 | 3,1 | 2,7 | 2,3 | 1,8 | 1,8 | 1,7 | 1,6 |
| SE | 8,9 | 7,4 | 5,1 | 3,5 | 2,9 | 2,7 | 2,6 | 2,4 | 2,4 | 2,5 |
| SI | 1,2 | 1,4 | 0,9 | 0,6 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 |
| SK | 1,2 | 1,2 | 1,0 | 0,9 | 0,8 | 0,7 | 0,7 | 0,6 | 0,6 | 0,6 |
| EU-15 | 221,7 | 187,1 | 137,2 | 90,2 | 67,0 | 60,3 | 55,8 | 51,2 | 46,0 | 45,5 |
| EU-28 | 250,9 | 208,1 | 154,2 | 107,1 | 82,8 | 74,9 | 69,3 | 64,0 | 58,2 | 57,3 |

*Table 27 $N_2O$ emissions for source category 1.A.3*

| Source Category | 1A3 | Transport | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,6 | 0,9 | 1,0 | 1,1 | 0,9 | 0,8 | 0,8 | 0,7 | 0,7 | 0,7 |
| BE | 0,8 | 1,1 | 1,0 | 0,7 | 0,8 | 0,9 | 0,9 | 0,9 | 0,9 | 0,8 |
| BG | 0,4 | 1,0 | 0,7 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| CY | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| CZ | 0,5 | 0,8 | 1,4 | 2,3 | 2,3 | 2,3 | 2,2 | 2,2 | 2,1 | 2,1 |
| DE | 4,0 | 5,6 | 5,3 | 3,4 | 3,7 | 3,9 | 4,2 | 4,5 | 4,8 | 5,0 |
| DK | 0,4 | 0,4 | 0,5 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| EE | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| ES | 1,8 | 2,7 | 4,6 | 3,0 | 3,0 | 2,8 | 2,8 | 2,7 | 2,6 | 2,5 |
| FI | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 |
| FR | 3,3 | 5,0 | 4,7 | 4,9 | 4,8 | 4,3 | 4,5 | 4,6 | 4,9 | 4,9 |
| UK | 4,0 | 5,6 | 4,8 | 3,9 | 3,1 | 2,9 | 3,0 | 3,1 | 3,2 | 3,1 |
| GR | 1,0 | 1,4 | 1,3 | 1,4 | 1,4 | 1,3 | 1,0 | 0,8 | 0,6 | 0,5 |
| HR | 0,1 | 0,1 | 0,3 | 0,4 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| HU | 0,3 | 0,4 | 0,8 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 | 0,4 |
| IE | 0,2 | 0,5 | 0,6 | 0,6 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 | 0,3 |
| IT | 3,2 | 5,6 | 5,3 | 3,8 | 3,7 | 3,6 | 3,6 | 3,6 | 3,2 | 3,1 |
| LT | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LU | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 |
| LV | 0,3 | 0,2 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 0,3 | 0,8 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 |
| PL | 0,6 | 0,7 | 1,0 | 1,2 | 1,7 | 1,7 | 1,9 | 1,9 | 1,9 | 1,8 |
| PT | 0,3 | 1,1 | 0,7 | 0,7 | 0,7 | 0,6 | 0,6 | 0,5 | 0,5 | 0,5 |
| RO | 1,8 | 0,6 | 0,6 | 0,5 | 0,6 | 0,5 | 0,4 | 0,5 | 0,5 | 0,5 |
| SE | 0,6 | 0,7 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,5 | 0,5 |
| SI | 0,1 | 0,6 | 0,7 | 0,2 | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| SK | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 |
| EU-15 | 21,1 | 32,1 | 31,8 | 26,2 | 25,1 | 23,9 | 24,2 | 24,4 | 24,4 | 24,3 |
| EU-28 | 25,9 | 36,9 | 37,9 | 32,1 | 31,7 | 30,1 | 30,3 | 30,6 | 30,5 | 30,2 |

#### *5.3.1.5 1.A.4 Other sectors*

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

- Multiple linear regression on gas and oil consumption data
- Previous year data
- 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 the 1.A.4 $CO_2$ emissions for some EU 28 Member States 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 2012. This approach was only 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[23] and on the other hand, emissions for total 1.A emissions were estimated by approach III (bottom-up approach). So this method for 1.A.4 based on gas and oil consumption was only used for France and Ireland.

For Cyprus, Estonia, Italy, Lithuania and Malta, previous year data from inventories was used as emission estimate.

For all other member states, 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 21*

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

*with*

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

This subtraction method was used for all member states, where total 1.A emissions were estimated using an approach other 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.

[23] Measured as coefficient of determination $R^2$>60% and change within 1 standard deviation ($\sigma$).

For all Member States, $CH_4$ and $N_2O$ inventory data from previous year was used as emission estimate for source category 1.A.4.

## Results for 2013

Table 25, Table 26 and Table 27 show the results for the proxy inventory in 2013 for 1A4 Other sectors compared to the inventory time series for the EU and all Member States for $CO_2$, $CH_4$ and $N_2O$ emissions respectively.

*Table 28 $CO_2$ emissions for source category 1.A.4*

| Source Category | 1A4 | Other Sectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 13.786 | 14.113 | 13.095 | 13.177 | 11.523 | 10.713 | 10.995 | 9.782 | 9.097 | 11.130 |
| BE | 27.287 | 30.390 | 29.206 | 29.537 | 27.677 | 26.616 | 28.386 | 23.211 | 24.717 | 27.711 |
| BG | 7.476 | 3.879 | 2.160 | 2.106 | 1.821 | 1.581 | 1.725 | 1.966 | 1.918 | 1.879 |
| CY | 363 | 511 | 626 | 505 | 478 | 510 | 444 | 500 | 490 | 490 |
| CZ | 32.259 | 17.448 | 14.054 | 12.024 | 10.797 | 10.394 | 11.520 | 10.065 | 10.390 | 7.460 |
| DE | 204.483 | 190.555 | 170.074 | 156.945 | 154.930 | 142.027 | 151.363 | 131.151 | 137.532 | 139.069 |
| DK | 8.976 | 8.623 | 7.509 | 7.168 | 6.096 | 6.014 | 6.209 | 5.465 | 5.038 | 2.577 |
| EE | 1.871 | 495 | 383 | 498 | 489 | 460 | 487 | 496 | 490 | 490 |
| ES | 25.093 | 28.357 | 33.815 | 40.612 | 40.254 | 40.215 | 44.035 | 42.106 | 40.781 | 35.381 |
| FI | 6.907 | 5.458 | 5.174 | 4.830 | 4.039 | 4.054 | 4.333 | 3.688 | 3.957 | 888 |
| FR | 95.598 | 98.372 | 99.938 | 109.651 | 102.477 | 101.444 | 102.412 | 89.021 | 95.393 | 93.890 |
| UK | 107.538 | 110.588 | 115.573 | 110.047 | 102.481 | 96.179 | 109.148 | 87.851 | 97.239 | 106.135 |
| GR | 8.126 | 8.051 | 10.997 | 14.130 | 12.384 | 10.613 | 9.519 | 10.742 | 9.161 | 5.953 |
| HR | 3.606 | 2.826 | 3.389 | 3.867 | 3.415 | 3.428 | 3.480 | 3.257 | 2.916 | 2.085 |
| HU | 21.104 | 16.667 | 15.253 | 17.842 | 13.473 | 13.218 | 13.997 | 13.345 | 11.541 | 10.693 |
| IE | 10.031 | 9.305 | 9.530 | 10.491 | 10.852 | 10.351 | 10.708 | 9.225 | 8.830 | 8.553 |
| IT | 76.634 | 76.047 | 78.596 | 91.847 | 85.117 | 87.092 | 90.631 | 82.757 | 81.812 | 81.812 |
| LT | 5.514 | 1.790 | 895 | 1.062 | 1.100 | 1.085 | 1.236 | 1.254 | 1.179 | 1.179 |
| LU | 1.310 | 1.389 | 1.699 | 1.719 | 1.675 | 1.657 | 1.740 | 1.509 | 1.606 | 1.484 |
| LV | 5.504 | 1.545 | 1.037 | 1.296 | 1.289 | 1.276 | 1.441 | 1.343 | 1.267 | 993 |
| MT | 96 | 108 | 105 | 109 | 116 | 129 | 123 | 105 | 140 | 140 |
| NL | 37.791 | 41.665 | 37.756 | 37.322 | 38.284 | 38.428 | 44.305 | 36.253 | 38.217 | 39.316 |
| PL | 53.622 | 62.842 | 45.089 | 50.561 | 51.327 | 51.953 | 59.473 | 51.762 | 52.978 | 52.504 |
| PT | 4.070 | 4.738 | 5.949 | 6.810 | 5.123 | 4.945 | 4.907 | 4.326 | 4.150 | 4.076 |
| RO | 14.434 | 7.880 | 8.215 | 10.192 | 8.875 | 9.092 | 9.046 | 9.180 | 9.690 | 7.481 |
| SE | 10.389 | 9.025 | 7.772 | 4.773 | 3.334 | 3.157 | 3.247 | 2.999 | 2.754 | 883 |
| SI | 1.625 | 2.271 | 2.889 | 2.432 | 2.122 | 2.016 | 2.046 | 1.791 | 1.552 | 1.788 |
| SK | 10.443 | 6.686 | 5.922 | 4.660 | 4.008 | 3.879 | 4.396 | 3.698 | 3.869 | 5.277 |
| EU-15 | 638.019 | 636.677 | 626.683 | 639.059 | 606.246 | 583.505 | 621.940 | 540.086 | 560.284 | 558.860 |
| EU-28 | 795.936 | 761.625 | 726.700 | 746.212 | 705.558 | 682.526 | 731.354 | 638.847 | 658.705 | 651.318 |

*Table 29 $CH_4$ emissions for source category 1.A.4*

| Source Category | 1A4 | Other Sectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 18,4 | 16,8 | 12,6 | 11,1 | 9,8 | 9,2 | 10,2 | 8,9 | 9,6 | 9,5 |
| BE | 12,7 | 11,4 | 9,5 | 10,7 | 12,1 | 12,4 | 13,7 | 10,1 | 12,2 | 11,2 |
| BG | 11,2 | 8,2 | 9,6 | 10,9 | 11,0 | 10,4 | 11,7 | 12,7 | 13,3 | 12,1 |
| CY | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| CZ | 63,0 | 33,4 | 22,2 | 21,6 | 21,3 | 21,8 | 23,6 | 21,9 | 23,7 | 22,8 |
| DE | 123,6 | 37,1 | 31,6 | 27,1 | 30,9 | 31,5 | 46,4 | 43,1 | 44,2 | 45,4 |
| DK | 5,4 | 7,3 | 8,7 | 9,7 | 9,4 | 8,9 | 9,1 | 7,9 | 7,5 | 5,4 |
| EE | 3,3 | 4,9 | 4,5 | 4,1 | 5,1 | 5,3 | 5,5 | 4,8 | 5,0 | 5,8 |
| ES | 36,2 | 33,7 | 33,2 | 35,8 | 38,1 | 46,1 | 45,3 | 44,6 | 45,5 | 39,9 |
| FI | 8,7 | 8,8 | 8,8 | 10,3 | 11,1 | 11,8 | 13,1 | 11,2 | 12,2 | 12,2 |
| FR | 177,9 | 172,4 | 128,2 | 99,0 | 74,3 | 70,3 | 71,8 | 54,8 | 59,6 | 59,3 |
| UK | 72,6 | 42,0 | 35,8 | 22,5 | 26,4 | 25,4 | 28,5 | 26,4 | 27,2 | 26,6 |
| GR | 4,0 | 3,9 | 4,8 | 3,5 | 3,7 | 3,6 | 3,6 | 4,0 | 4,1 | 3,6 |
| HR | 7,4 | 3,7 | 4,5 | 4,3 | 3,7 | 3,9 | 4,5 | 5,3 | 5,5 | 5,1 |
| HU | 34,5 | 17,5 | 12,2 | 10,9 | 10,2 | 11,9 | 13,0 | 14,1 | 13,7 | 12,4 |
| IE | 18,0 | 11,7 | 8,4 | 7,7 | 7,8 | 8,2 | 7,9 | 7,2 | 7,1 | 6,7 |
| IT | 21,3 | 28,5 | 32,7 | 37,1 | 45,5 | 48,4 | 51,3 | 52,0 | 56,2 | 55,3 |
| LT | 8,8 | 6,1 | 7,6 | 8,0 | 8,5 | 8,6 | 8,6 | 8,5 | 8,6 | 8,1 |
| LU | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 | 0,4 | 0,4 |
| LV | 11,2 | 12,5 | 10,5 | 12,2 | 11,0 | 12,1 | 11,3 | 9,6 | 10,4 | 10,5 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 21,7 | 32,1 | 32,4 | 32,4 | 66,0 | 68,1 | 72,9 | 68,3 | 63,2 | 62,4 |
| PL | 112,4 | 163,1 | 103,2 | 114,4 | 125,1 | 126,8 | 149,4 | 131,4 | 135,0 | 136,6 |
| PT | 16,6 | 14,8 | 13,3 | 11,3 | 10,0 | 9,6 | 9,1 | 9,8 | 9,4 | 8,7 |
| RO | 17,5 | 14,3 | 32,2 | 35,5 | 44,7 | 43,9 | 45,4 | 40,8 | 42,5 | 36,2 |
| SE | 11,6 | 12,6 | 11,1 | 12,4 | 12,4 | 14,0 | 13,2 | 13,8 | 13,5 | 12,9 |
| SI | 5,9 | 5,4 | 5,3 | 4,9 | 5,1 | 5,7 | 5,5 | 6,0 | 6,1 | 5,8 |
| SK | 0,5 | 0,6 | 0,8 | 1,2 | 1,7 | 0,9 | 0,9 | 1,0 | 1,0 | 1,2 |
| EU-15 | 549,1 | 433,6 | 371,5 | 330,7 | 358,0 | 367,8 | 396,4 | 362,5 | 372,0 | 359,4 |
| EU-28 | 824,8 | 703,5 | 584,2 | 558,9 | 605,6 | 619,3 | 676,3 | 619,0 | 637,2 | 616,3 |

*Table 30 $N_2O$ emissions for source category 1.A.4*

| Source Category | 1A4 | Other Sectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,8 | 0,8 | 0,8 | 0,8 | 0,7 | 0,7 | 0,7 | 0,6 | 0,6 | 0,6 |
| BE | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | 0,4 |
| BG | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 | 0,1 |
| CY | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| CZ | 0,4 | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| DE | 3,2 | 2,1 | 1,8 | 1,6 | 1,8 | 1,6 | 1,9 | 1,9 | 1,9 | 1,9 |
| DK | 0,2 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| EE | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 |
| ES | 1,0 | 1,0 | 1,1 | 1,3 | 1,3 | 1,4 | 1,4 | 1,4 | 1,4 | 0,7 |
| FI | 0,3 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,2 | 0,2 | 0,1 |
| FR | 4,2 | 4,3 | 4,3 | 4,8 | 4,5 | 4,5 | 4,8 | 4,1 | 4,5 | 4,5 |
| UK | 3,1 | 2,8 | 2,5 | 2,1 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | 2,4 |
| GR | 1,2 | 1,1 | 1,2 | 1,2 | 1,1 | 0,9 | 0,8 | 0,9 | 0,4 | 0,4 |
| HR | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| HU | 0,3 | 0,2 | 0,2 | 0,1 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,1 |
| IE | 0,3 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| IT | 4,8 | 5,3 | 5,5 | 6,2 | 6,2 | 6,4 | 6,5 | 6,4 | 6,5 | 6,1 |
| LT | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LU | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| LV | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,1 | 0,2 | 0,2 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 |
| PL | 1,2 | 1,8 | 1,6 | 1,7 | 1,5 | 1,5 | 1,7 | 1,6 | 1,6 | 1,6 |
| PT | 0,8 | 0,8 | 0,6 | 0,6 | 0,6 | 0,5 | 0,5 | 0,5 | 0,5 | 0,4 |
| RO | 0,2 | 0,2 | 0,4 | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,5 |
| SE | 0,6 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 |
| SI | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| SK | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| EU-15 | 21,0 | 20,1 | 19,6 | 20,3 | 19,9 | 19,8 | 20,6 | 19,5 | 19,6 | 18,7 |
| EU-28 | 24,1 | 23,4 | 22,8 | 23,8 | 23,4 | 23,2 | 24,2 | 22,9 | 23,1 | 22,1 |

#### *5.3.1.6 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.

#### *5.3.1.7 1.B Fugitive Emissions*

### Methods and data sources used

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

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

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

1. For the Member States with no strong correlation between $CO_2$ emissions and monthly production data for hard coal or lignite from Eurostat in the previous years the average 2010–2012 of the $CO_2$ emission data from the last inventory submissions were used.
2. For the Member States with a significant correlation for the trends of $CO_2$ and $CH_4$ emissions in the previous years, the projection of $CO_2$ emissions is based on the following equation:

*Equation 22*

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

*with*

$E^{Y}_{1B1,CO2}$ — *$CO_2$ emissions for source category 1B1*

$E^{Y-1}_{1B1,CO2}$ — *$CO_2$ emissions for source category 1B1 from previous year*

$AR^{Y}_{coal-prod}$ — *Hard coal or lignite production*

$AR^{Y-1}_{coal-prod}$ — *Hard coal or lignite productionfor previous year*

For Czech Republic and United Kingdom where hard coal production is the main determinant for $CO_2$ emissions from source category 1.B.1, the primary hard coal production (Eurostat indicator code 100100, Eurostat product code 2111) was used for the projection of $CO_2$ emissions arising from this source category. For all other Member states that report $CO_2$ emissions from 1B1, the inventory data, average 2010-2012, from the last available submission were used.

The estimates for $CH_4$ emissions for source category 1.B.1 (Solid Fuels) are based on the monthly production data for hard coal and lignite from Eurostat. Two different approaches were used for $CH_4$ emissions from source category 1.B.1 (Solid Fuels):

1. For the Member States with no strong correlation between $CH_4$ emissions and monthly production data for hard coal and lignite from Eurostat in the previous years the average 2010–2012 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 23*

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

*with*

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

For Czech Republic, Poland and United Kingdom where hard coal production is the main determinant for $CH_4$ emissions from source category 1.B.1, the primary hard coal production (Eurostat indicator code 100100, Eurostat product code 2111) was used for the projection of $CH_4$ emissions arising from this source category. For countries with a dominant lignite production (Bulgaria, Greece, Romania and Slovakia), the primary production data for lignite (Eurostat indicator code 100100, Eurostat product code 2210) were used. For all other Member states that report $CH_4$ emissions from 1B1, the inventory data, average 2009–2012, from the last available submission were used.

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

- Eurostat crude oil production (Indicator code 100100, product code 3100);
- Eurostat gas consumption (Indicator code 100900, product code 4100);
- Eurostat gas production (Indicator code 100100, product code 4100);
- EUTL main activity code 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 24*

$$E^{Y}_{1B2\,a,b,c\,CO2\,or\,CH4} = \frac{E^{Y}_{CITL}\ or\ AR^{Y}_{Eurostat}}{E^{Y\text{-}1}_{CITL}\ AR^{Y-1}_{Eurostat}} \cdot E^{Y-1}_{1B2a,b,c\,CO2\,or\,CH4}$$

*with*

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

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

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

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

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

*Table 31 Best fit trends for calculating $CO_2$ and $CH_4$ emissions from 1B2a, 1B2b and 1B2c*

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

For all other member states that report $CO_2$ and $CH_4$ emissions from 1.B.2 either the value for 2012 or the average of 2010–2012 $CO_2$ or $CH_4$ emissions from the last inventory submission was used.

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

## Results for 2013

Table 32 and Table 33 show the results for the proxy inventory in 2013 for 1B1 Fugitive Emissions from Solid Fuels compared to the inventory time series for the EU and all Member States for $CO_2$ and $CH_4$ emissions respectively.

*Table 32 $CO_2$ emissions from 1.B.1 Fugitive Emissions from Solid Fuels*

| Source Category | 1B1 | 1. Solid Fuels | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO |
| BE | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| BG | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| CY | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| CZ | 456 | 356 | 315 | 301 | 288 | 250 | 259 | 255 | 259 | 195 |
| DE | 12 | 14 | 16 | 3 | 1 | 2 | 2 | 4 | 2 | 3 |
| DK | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| EE | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| ES | 18 | 13 | 15 | 90 | 43 | 14 | 37 | 44 | 23 | 35 |
| FI | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| FR | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| UK | 855 | 225 | 102 | 111 | 231 | 146 | 208 | 239 | 227 | 177 |
| GR | NO | NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO |
| HR | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HU | 7 | 2 | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO | IE,NA,NO |
| IE | NE,NO | NE,NO | NO | NO | NO | NO | NO | NO | NO | NO |
| IT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LT | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| LU | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| LV | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| MT | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| NL | 403 | 517 | 422 | 599 | 710 | 547 | 972 | 637 | 284 | 631 |
| PL | 2.561 | 1.407 | 2.689 | 1.852 | 1.523 | 999 | 1.320 | 1.468 | 1.869 | 1.553 |
| PT | 10 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| RO | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SE | 5 | 6 | 6 | 5 | 4 | 15 | 5 | 6 | 9 | 7 |
| SI | 98 | 86 | 79 | 81 | 82 | 80 | 81 | 82 | 79 | 80 |
| SK | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| EU-15 | 1.302 | 777 | 562 | 810 | 991 | 724 | 1.227 | 931 | 546 | 854 |
| EU-28 | 4.425 | 2.629 | 3.645 | 3.044 | 2.884 | 2.053 | 2.887 | 2.736 | 2.753 | 2.681 |

*Table 33 $CH_4$ emissions from 1.B.1 Fugitive Emissions from solid Fuels*

| Source Category | 1B1 | 1. Solid Fuels | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 0,6 | 0,3 | 0,3 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| BE | 15,7 | 0,8 | 0,6 | 0,6 | 0,3 | 0,2 | 0,3 | 0,3 | 0,2 | 0,3 |
| BG | 83,3 | 76,5 | 49,1 | 34,6 | 38,4 | 38,4 | 41,5 | 51,3 | 44,7 | 33,4 |
| CY | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| CZ | 361,9 | 276,6 | 197,2 | 172,0 | 168,1 | 152,5 | 155,7 | 156,3 | 155,5 | 116,8 |
| DE | 963,9 | 706,3 | 590,6 | 274,2 | 183,4 | 133,3 | 133,1 | 125,6 | 160,5 | 139,8 |
| DK | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| EE | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| ES | 86,5 | 70,0 | 59,4 | 44,7 | 33,0 | 29,6 | 25,5 | 30,0 | 23,9 | 26,5 |
| FI | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| FR | 193,6 | 198,1 | 114,4 | 15,7 | 3,0 | 2,5 | 2,5 | 4,7 | 1,6 | 2,9 |
| UK | 871,5 | 601,1 | 323,3 | 154,7 | 110,9 | 107,0 | 99,4 | 94,9 | 94,6 | 73,8 |
| GR | 52,2 | 58,0 | 64,2 | 69,7 | 66,0 | 65,2 | 56,8 | 59,0 | 63,3 | 49,8 |
| HR | 2,3 | 1,1 | NO | NO | NO | NO | NO | NO | NO | NO |
| HU | 31,4 | 16,3 | 14,8 | 1,0 | 0,9 | 0,7 | 0,6 | 0,5 | 0,5 | 0,5 |
| IE | NE,NO | NE,NO | NO | NO | NO | NO | NO | NO | NO | NO |
| IT | 6,0 | 3,1 | 3,6 | 3,3 | 3,5 | 2,2 | 3,2 | 3,4 | 3,0 | 3,2 |
| LT | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| LU | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| LV | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| MT | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| NL | 1,6 | 1,6 | 1,1 | 1,1 | 1,0 | 0,8 | 1,0 | 1,0 | 0,9 | 1,0 |
| PL | 634,7 | 607,6 | 529,6 | 463,1 | 392,2 | 353,6 | 349,6 | 341,8 | 359,3 | 346,8 |
| PT | 3,5 | 0,7 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| RO | 156,0 | 128,9 | 127,7 | 97,2 | 49,9 | 43,0 | 36,3 | 40,9 | 38,6 | 26,0 |
| SE | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| SI | 14,4 | 13,0 | 12,0 | 12,2 | 12,1 | 11,9 | 11,9 | 12,1 | 11,5 | 8,9 |
| SK | 27,2 | 29,8 | 29,0 | 17,6 | 18,5 | 19,3 | 15,3 | 16,3 | 16,1 | 15,0 |
| EU-15 | 2.195,2 | 1.639,9 | 1.158,0 | 564,5 | 401,6 | 341,3 | 322,3 | 319,2 | 348,4 | 297,7 |
| EU-28 | 3.506,4 | 2.789,8 | 2.117,6 | 1.362,1 | 1.081,8 | 960,7 | 933,1 | 938,5 | 974,6 | 845,1 |

Table 34 and Table 35 show the results for the proxy inventory for 2013 for 1B1 Fugitive Emissions from Oil and Natural Gas compared to the inventory time series for the EU and all Member States for $CO_2$ and $CH_4$ emissions respectively.

*Table 34 $CO_2$ emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas*

| Source Category | 1B2 | 2. Oil and Natural Gas | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 102 | 127 | 165 | 205 | 212 | 265 | 237 | 233 | 237 | 235 |
| BE | 84 | 84 | 165 | 104 | 117 | 117 | 103 | 93 | 92 | 95 |
| BG | 4 | 5 | 3 | 25 | 11 | 2 | 5 | 20 | 18 | 14 |
| CY | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | 0 |
| CZ | 4 | 11 | 14 | 24 | 19 | 17 | 14 | 13 | 12 | 12 |
| DE | 1.943 | 2.252 | 2.405 | 2.295 | 1.945 | 1.826 | 1.627 | 1.553 | 1.454 | 1.490 |
| DK | 327 | 449 | 720 | 543 | 392 | 265 | 357 | 256 | 221 | 277 |
| EE | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0 |
| ES | 1.656 | 1.800 | 2.108 | 2.053 | 2.109 | 2.049 | 2.137 | 2.518 | 3.293 | 2.649 |
| FI | 219 | 171 | 128 | 127 | 139 | 114 | 138 | 121 | 133 | 129 |
| FR | 4.420 | 4.466 | 4.321 | 4.005 | 4.910 | 4.622 | 4.215 | 3.982 | 3.396 | 3.332 |
| UK | 5.778 | 8.429 | 5.684 | 5.851 | 4.302 | 4.490 | 4.398 | 4.017 | 3.550 | 3.989 |
| GR | 70 | 39 | 24 | 9 | 5 | 8 | 11 | 9 | 9 | 9 |
| HR | 640 | 869 | 739 | 780 | 659 | 595 | 562 | 577 | 503 | 547 |
| HU | 290 | 317 | 227 | 137 | 212 | 211 | 220 | 216 | 175 | 194 |
| IE | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | IE,NO | 0 |
| IT | 3.344 | 3.178 | 2.588 | 2.117 | 2.264 | 2.170 | 2.322 | 2.315 | 2.223 | 2.070 |
| LT | 1 | 10 | 25 | 17 | 10 | 9 | 9 | 9 | 8 | 7 |
| LU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MT | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | 0 |
| NL | 775 | 441 | 267 | 1.074 | 920 | 1.066 | 1.052 | 900 | 791 | 914 |
| PL | 45 | 75 | 172 | 1.309 | 1.294 | 1.280 | 1.176 | 1.719 | 1.854 | 1.849 |
| PT | 268 | 724 | 662 | 967 | 918 | 948 | 911 | 910 | 991 | 931 |
| RO | 1.213 | 1.068 | 962 | 901 | 724 | 682 | 652 | 646 | 608 | 621 |
| SE | 292 | 295 | 351 | 310 | 888 | 898 | 883 | 879 | 874 | 879 |
| SI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SK | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU-15 | 19.278 | 22.456 | 19.588 | 19.662 | 19.123 | 18.839 | 18.391 | 17.786 | 17.264 | 16.999 |
| EU-28 | 21.475 | 24.813 | 21.730 | 22.856 | 22.051 | 21.636 | 21.028 | 20.987 | 20.444 | 20.244 |

*Table 35 $CH_4$ emissions from 1.B.2 Fugitive Emissions from Oil and Natural Gas*

| Source Category | 1B2 | 2. Oil and Natural Gas | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 10,6 | 12,0 | 12,1 | 11,0 | 10,8 | 11,0 | 11,3 | 11,2 | 11,6 | 11,1 |
| BE | 25,2 | 25,1 | 21,6 | 19,8 | 18,7 | 18,8 | 20,9 | 19,1 | 18,1 | 19,4 |
| BG | 38,4 | 33,4 | 29,6 | 33,6 | 32,5 | 23,4 | 25,3 | 32,0 | 29,8 | 29,0 |
| CY | 0,0 | 0,1 | 0,1 | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | 0,0 |
| CZ | 42,7 | 31,9 | 33,1 | 32,4 | 30,3 | 32,3 | 33,9 | 31,7 | 25,6 | 30,3 |
| DE | 370,8 | 337,8 | 317,3 | 293,6 | 282,2 | 284,3 | 274,4 | 278,3 | 276,3 | 276,3 |
| DK | 2,1 | 3,5 | 4,0 | 5,2 | 6,0 | 5,6 | 5,3 | 5,3 | 5,0 | 5,2 |
| EE | 8,5 | 4,0 | 4,6 | 5,5 | 5,3 | 3,6 | 3,9 | 3,5 | 3,6 | 3,7 |
| ES | 29,2 | 37,3 | 34,9 | 40,7 | 24,3 | 25,2 | 25,8 | 25,9 | 27,2 | 26,1 |
| FI | 0,5 | 3,8 | 2,6 | 3,0 | 2,3 | 2,2 | 1,9 | 1,7 | 1,8 | 1,8 |
| FR | 71,4 | 60,9 | 56,0 | 50,0 | 51,3 | 50,6 | 55,3 | 52,6 | 55,6 | 54,3 |
| UK | 493,3 | 445,5 | 322,3 | 278,0 | 251,9 | 252,3 | 248,6 | 245,5 | 248,4 | 247,5 |
| GR | 4,4 | 2,6 | 6,5 | 6,9 | 7,9 | 8,4 | 9,0 | 9,0 | 9,5 | 9,3 |
| HR | 57,3 | 54,8 | 53,0 | 63,4 | 72,7 | 70,2 | 72,7 | 68,0 | 58,7 | 53,0 |
| HU | 73,2 | 93,5 | 97,5 | 97,5 | 96,5 | 98,7 | 101,4 | 100,0 | 97,0 | 98,6 |
| IE | 6,3 | 5,4 | 4,1 | 2,7 | 2,5 | 1,7 | 1,5 | 1,3 | 1,1 | 1,3 |
| IT | 347,5 | 324,6 | 302,3 | 268,9 | 237,8 | 233,8 | 243,7 | 238,5 | 235,4 | 226,0 |
| LT | 7,1 | 8,7 | 10,7 | 11,7 | 12,0 | 12,4 | 12,4 | 12,4 | 12,4 | 12,4 |
| LU | 0,8 | 1,0 | 1,2 | 2,1 | 2,0 | 2,0 | 2,2 | 1,9 | 1,9 | 1,9 |
| LV | 9,9 | 7,9 | 6,0 | 5,3 | 4,0 | 3,8 | 3,7 | 2,0 | 2,8 | 2,8 |
| MT | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | NA,NE,NO | 0,0 |
| NL | 78,2 | 77,9 | 38,6 | 36,1 | 37,9 | 32,4 | 35,5 | 35,9 | 35,0 | 35,3 |
| PL | 147,4 | 151,7 | 168,3 | 205,6 | 209,8 | 201,9 | 212,4 | 214,1 | 226,1 | 240,0 |
| PT | 1,8 | 2,2 | 9,1 | 19,9 | 21,7 | 30,7 | 14,4 | 7,7 | 18,8 | 14,4 |
| RO | 817,1 | 537,6 | 433,2 | 421,1 | 371,8 | 342,1 | 334,1 | 333,7 | 309,0 | 304,0 |
| SE | 3,7 | 4,2 | 4,4 | 3,9 | 3,4 | 3,2 | 3,0 | 2,9 | 3,2 | 2,9 |
| SI | 2,1 | 2,0 | 1,4 | 1,1 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 |
| SK | 24,5 | 29,1 | 34,1 | 32,0 | 34,9 | 37,8 | 34,7 | 36,0 | 36,1 | 36,0 |
| EU-15 | 1.445,8 | 1.343,8 | 1.137,2 | 1.041,8 | 960,6 | 962,1 | 952,7 | 936,9 | 948,8 | 932,9 |
| EU-28 | 2.673,9 | 2.298,4 | 2.008,7 | 1.951,1 | 1.831,6 | 1.789,2 | 1.788,2 | 1.771,3 | 1.751,0 | 1.743,8 |

### 5.3.2 Industrial Processes

#### *5.3.2.1 2.A Mineral products*

## Methods and data sources used

The emissions from 2.A Mineral products are based on $CO_2$ emission data for Cement (2.A.1) Lime (2.A.2) and Glass Production (2.A.7) from the EUTL data 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, 30 and 34 and a scaling factor based on comparison inventory data - EUTL data for 2012.

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

*Equation 25*

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

*with*

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

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

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

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

Malta did not report 2.A.1 emissions for 2012 therefore no emissions were estimated. Luxembourg, Malta and Netherlands did not report 2.A.2 emissions for 2012 therefore no emissions were estimated.

Since Croatia did not participated 2012 in the EU ETS and therefore emissions could not be estimated from the equation above, 2.A.1 and 2.A.2 emissions 2013 for Croatia were calculated by linear trend extrapolation via minimum square deviation of the emissions of the years 2008–2012.

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

1. For the Member States with no strong correlation between $CO_2$ emissions and EUTL data Main activity code 7 in the previous years the average 2010–2012 of the $CO_2$ emission data from the last inventory submissions were used.
2. For the Member States with a significant correlation between $CO_2$ emissions and EUTL data Main activity code 7 in the previous years, the projection of $CO_2$ emissions is based on the following equation:

*Equation 26*

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

*with*

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

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

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

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

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

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

## Results for 2013

Table 36 shows the $CO_2$ emissions for the proxy inventory in 2012 for 2A Mineral Products compared to the inventory time series for the EU and all Member States.

*Table 36 $CO_2$ emissions from 2.A Mineral Products*

| Source Category | 2A | Mineral Products | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 3.274 | 2.863 | 2.966 | 3.133 | 3.531 | 2.916 | 2.936 | 3.030 | 2.946 | 3.055 |
| BE | 5.751 | 6.193 | 6.146 | 5.765 | 5.961 | 4.691 | 4.805 | 5.096 | 4.691 | 4.550 |
| BG | 3.907 | 3.240 | 2.120 | 2.809 | 3.474 | 2.206 | 2.468 | 2.721 | 2.853 | 2.921 |
| CY | 759 | 839 | 847 | 895 | 896 | 724 | 585 | 572 | 554 | 792 |
| CZ | 4.830 | 3.602 | 4.166 | 3.855 | 4.130 | 3.449 | 3.425 | 3.824 | 3.487 | 3.309 |
| DE | 22.615 | 23.029 | 22.157 | 19.424 | 20.183 | 17.784 | 18.247 | 19.415 | 18.942 | 19.667 |
| DK | 1.069 | 1.405 | 1.616 | 1.544 | 1.320 | 881 | 796 | 972 | 972 | 965 |
| EE | 628 | 367 | 402 | 416 | 648 | 282 | 339 | 453 | 468 | 447 |
| ES | 15.427 | 15.887 | 19.121 | 21.906 | 18.831 | 14.661 | 14.547 | 12.999 | 11.844 | 10.625 |
| FI | 1.269 | 931 | 1.127 | 1.260 | 1.303 | 938 | 1.221 | 1.314 | 1.165 | 1.181 |
| FR | 16.525 | 13.943 | 13.856 | 14.141 | 13.625 | 11.584 | 12.309 | 12.296 | 11.668 | 11.821 |
| UK | 10.505 | 9.493 | 9.548 | 9.290 | 8.485 | 6.163 | 6.381 | 6.699 | 6.501 | 6.810 |
| GR | 6.802 | 7.206 | 7.503 | 7.932 | 6.963 | 5.325 | 4.925 | 3.116 | 3.741 | 4.379 |
| HR | 1.305 | 760 | 1.423 | 1.786 | 1.858 | 1.461 | 1.432 | 1.220 | 1.173 | 1.432 |
| HU | 3.240 | 2.293 | 2.242 | 2.238 | 2.256 | 1.606 | 1.402 | 1.224 | 1.281 | 1.085 |
| IE | 1.117 | 1.084 | 1.909 | 2.553 | 2.302 | 1.485 | 1.299 | 1.167 | 1.392 | 1.320 |
| IT | 21.303 | 20.976 | 21.455 | 23.481 | 21.729 | 17.466 | 17.553 | 17.003 | 13.968 | 12.656 |
| LT | 2.142 | 425 | 357 | 445 | 521 | 305 | 326 | 382 | 455 | 517 |
| LU | 623 | 519 | 580 | 505 | 466 | 440 | 453 | 473 | 435 | 422 |
| LV | 585 | 150 | 147 | 189 | 215 | 207 | 469 | 569 | 588 | 563 |
| MT | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NL | 1.172 | 1.733 | 1.411 | 1.447 | 1.460 | 1.274 | 1.254 | 1.295 | 1.189 | 1.165 |
| PL | 9.087 | 9.901 | 9.641 | 8.685 | 10.648 | 9.267 | 9.999 | 11.512 | 10.064 | 9.538 |
| PT | 3.493 | 3.949 | 4.461 | 4.754 | 4.787 | 3.917 | 4.030 | 3.396 | 3.263 | 3.491 |
| RO | 8.173 | 5.596 | 4.778 | 5.597 | 6.621 | 4.710 | 4.608 | 4.881 | 5.001 | 4.426 |
| SE | 1.722 | 1.763 | 1.880 | 2.004 | 2.132 | 1.810 | 2.051 | 2.073 | 2.146 | 2.048 |
| SI | 725 | 609 | 682 | 761 | 895 | 663 | 629 | 585 | 573 | 629 |
| SK | 2.966 | 2.305 | 2.524 | 2.970 | 3.145 | 2.456 | 2.303 | 2.681 | 2.474 | 2.383 |
| EU-15 | 112.667 | 110.974 | 115.735 | 119.139 | 113.079 | 91.334 | 92.807 | 90.343 | 84.864 | 84.157 |
| EU-28 | 151.016 | 141.062 | 145.064 | 149.785 | 148.386 | 118.670 | 120.793 | 120.967 | 113.836 | 112.199 |

### *5.3.2.2 2.C Metal production*

## Methods and data sources used

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

1. Crude steel production data from the World Steel Association;
2. Blast furnace iron production data from the World Steel Association;
3. EUTL main activity code 22 (Production of coke) and 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;
4. EUTL main activity code 22 (Production of coke), 23 (Metal ore roasting or sintering) 24 (Production of pig iron or steel), 25 (Production or processing of ferrous metals), 27 (Production of secondary aluminium) and 28 (Production or processing of non-ferrous metals) 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 27*

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

*with*

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

This equation and the World Steel Association monthly crude steel production data was used for Czech Republic. For Bulgaria, Finland, Greece, Italy, Luxembourg and Slovakia the World Steel Association monthly blast furnace iron production data was used. For Austria, Finland, Germany, Portugal, Slovenia, Spain and Sweden emission trends from EUTL data were used for the calculation.

For Member States with no strong correlation between one of the trends and $CO_2$ emissions in the previous years, the emission data average 2010–2012 from the last inventory submission were used. This includes Croatia, France, Hungary, Lithuania, Latvia, Netherlands, Poland, Romania and United Kingdom. Cyprus, Denmark, Estonia, Ireland and Malta did not report emissions in 2.C.1 therefore no emissions were estimated.

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

## Results for 2013

Table 37 shows the $CO_2$ emissions for the proxy inventory in 2013 for 2C Metal Production compared to the inventory time series for the EU and all Member States.

*Table 37 $CO_2$ emissions from 2.C Metal Production*

| Source Category | 2C | C. Metal Production | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CO2 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 3.725 | 3.942 | 4.221 | 5.015 | 5.828 | 4.597 | 5.481 | 5.693 | 5.474 | 5.329 |
| BE | 2.022 | 1.975 | 1.879 | 1.701 | 1.656 | 859 | 899 | 540 | 444 | 333 |
| BG | 1.383 | 3.138 | 2.388 | 2.100 | 1.018 | 80 | 55 | 68 | 50 | 38 |
| CY | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| CZ | 12.431 | 7.398 | 6.890 | 6.559 | 7.019 | 5.191 | 5.801 | 5.503 | 5.250 | 4.995 |
| DE | 24.153 | 19.225 | 21.152 | 21.821 | 19.927 | 13.868 | 17.861 | 16.995 | 16.475 | 16.018 |
| DK | 28 | 39 | 41 | 16 | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| EE | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| ES | 3.384 | 2.247 | 2.919 | 3.512 | 3.511 | 2.650 | 3.475 | 3.060 | 2.749 | 2.604 |
| FI | 1.936 | 2.047 | 2.351 | 2.372 | 2.524 | 1.945 | 2.408 | 2.343 | 2.278 | 2.149 |
| FR | 4.524 | 5.637 | 4.349 | 4.708 | 4.007 | 3.445 | 4.614 | 3.829 | 3.021 | 3.825 |
| UK | 2.341 | 1.953 | 2.049 | 2.542 | 3.121 | 1.228 | 1.669 | 1.347 | 924 | 1.170 |
| GR | 940 | 963 | 946 | 1.203 | 1.110 | 685 | 860 | 1.051 | 1.052 | 1.021 |
| HR | 252 | 36 | 18 | 11 | 24 | 11 | 27 | 29 | 0 | 19 |
| HU | 615 | 408 | 360 | 489 | 448 | 255 | 295 | 334 | 218 | 282 |
| IE | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| IT | 3.878 | 3.403 | 1.754 | 1.922 | 1.875 | 1.307 | 1.465 | 1.610 | 1.520 | 1.456 |
| LT | 21 | 5 | 7 | 7 | 5 | 4 | 4 | 4 | 3 | 4 |
| LU | 985 | 465 | 146 | 153 | 169 | 129 | 134 | 124 | 100 | 87 |
| LV | 13 | 4 | 8 | 12 | 9 | 10 | 11 | 0 | 2 | 5 |
| MT | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO | NA,NO |
| NL | 2.661 | 1.908 | 1.519 | 1.476 | 1.214 | 1.076 | 998 | 1.548 | 1.404 | 1.177 |
| PL | 6.074 | 4.208 | 3.348 | 2.391 | 2.681 | 1.693 | 1.726 | 2.165 | 2.297 | 2.135 |
| PT | 170 | 213 | 238 | 98 | 108 | 69 | 46 | 50 | 58 | 63 |
| RO | 6.737 | 7.186 | 5.046 | 6.276 | 5.444 | 3.606 | 3.367 | 3.008 | 2.592 | 3.014 |
| SE | 3.208 | 3.444 | 3.206 | 3.134 | 2.952 | 1.669 | 3.107 | 2.932 | 2.557 | 2.050 |
| SI | 285 | 211 | 186 | 275 | 188 | 85 | 109 | 166 | 178 | 178 |
| SK | 4.283 | 4.344 | 3.355 | 3.980 | 4.267 | 3.576 | 4.248 | 3.649 | 4.068 | 4.703 |
| EU-15 | 53.955 | 47.460 | 46.769 | 49.672 | 48.003 | 33.526 | 43.017 | 41.123 | 38.058 | 37.282 |
| EU-28 | 86.047 | 74.399 | 68.376 | 71.773 | 69.104 | 48.037 | 58.659 | 56.050 | 52.718 | 52.654 |

### *5.3.2.3 Other source categories*

For all other source categories covering industrial processes (CRF 2) and solvent and other product use (CRF 3), 2013 activity data from alternative data sources are lacking. These categories were extrapolated from 2012 GHG inventories, either by linear trend extrapolation via minimum square deviation of the emissions of the years 2008–2012 or by taking the constant values of the year 2012. Constant values were used when past trends were inconsistent and strongly fluctuating and trend extrapolation were used when the historic time series showed good correlations with a linear trend (i.e. if the coefficient of determination $R^2$ of the trend 2008–2012 is greater than or equal to 0.80).

Annex 5.3.2 provides a detailed overview of methods and data sources used for each source category and Member State.

### 5.3.3 Agriculture

#### *5.3.3.1 4.A Enteric fermentation*

## Methods and data sources uses

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

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

Livestock surveys do not include poultry as Eurostat only provides livestock surveys for laying hens without broilers and hens. Horses, mules and asses are also not covered by Eurostat animal production data. Therefore, the emissions of the corresponding animal categories were updated using data of previous years via trend extrapolation of UNFCCC inventory data. The proxy $CH_4$ emissions for source category 4A were calculated based on the following equation:

*Equation 28*

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

*with*

$E_{4A}^{Y}$ — *Emissions for source category 4A*

$AF_{i}^{Y-1}$ — *Adjustment factor for animal category i from previous year(s)*

$IEF_{i}^{Y-1}$ — *Implied emission factor for animal category i from previous year(s)*

$AR_{i}^{Y}$ — *Activity rate (livestock) for animal category i*

$E_{other}^{Y-1}$ — *Emissions for other animals for source category 4A from previous year(s)*

Activity rates provided by Eurostat encompass two animal livestock surveys in May/June and in December for the year Y-1. For each Member State how well the respective livestock surveys correspond with the data used in national GHG inventories was analysed. The results of the best fits differed for each Member States and also for animal categories. For the estimation of approximated 2013 emissions, the animal population surveys were chosen which best corre-

sponded with the livestock data reported in GHG inventories for past years. For some Member States and animal categories Eurostat livestock population tended to show a constant deviation over the time series compared to the animal population reported in GHG inventories. In such cases, a scaling factor was applied to achieve a 2012 data set comparable to animal population reported in GHG inventories. The scaling factor was derived on the basis of the most recent inventory data and the best fitting Eurostat dataset. For some Member States (Romania, Belgium, France, Ireland and Spain) country-specific adjustments were made by applying a percentage trend of the activity data (source: EUROSTAT time series) to the emissions of the previous year 2012.

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

## Results for 2013

*Table 38 $CH_4$ emissions in Gg from 4.A Enteric Fermentation*

| Source Category | 4A | A. Enteric Fermentation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 178,7 | 172,1 | 162,7 | 153,7 | 153,5 | 155,5 | 155,1 | 153,1 | 152,0 | 152,4 |
| BE | 201,5 | 202,6 | 189,6 | 173,5 | 173,9 | 174,5 | 175,2 | 172,3 | 169,6 | 170,5 |
| BG | 181,5 | 91,9 | 83,2 | 73,4 | 66,0 | 62,8 | 61,3 | 62,4 | 60,6 | 62,8 |
| CY | 7,7 | 8,6 | 8,5 | 8,7 | 8,5 | 8,5 | 8,9 | 9,1 | 9,2 | 8,5 |
| CZ | 200,9 | 125,3 | 106,7 | 99,7 | 100,1 | 97,5 | 95,2 | 95,4 | 96,5 | 94,6 |
| DE | 1.409,3 | 1.195,0 | 1.107,8 | 1.021,4 | 1.015,3 | 1.016,3 | 1.007,4 | 993,0 | 992,0 | 999,6 |
| DK | 154,6 | 149,2 | 136,2 | 130,3 | 134,8 | 134,4 | 136,3 | 135,2 | 138,3 | 136,8 |
| EE | 48,4 | 24,9 | 19,2 | 19,5 | 19,3 | 19,0 | 19,3 | 19,6 | 20,2 | 20,9 |
| ES | 529,5 | 521,5 | 568,1 | 559,9 | 535,5 | 531,5 | 521,1 | 500,6 | 488,6 | 474,8 |
| FI | 87,2 | 77,2 | 76,1 | 74,2 | 72,8 | 73,5 | 75,0 | 74,2 | 73,5 | 74,1 |
| FR | 1.463,9 | 1.423,1 | 1.453,3 | 1.366,1 | 1.398,7 | 1.383,7 | 1.377,0 | 1.354,2 | 1.342,9 | 1.341,8 |
| UK | 894,0 | 878,3 | 850,8 | 789,8 | 751,2 | 737,9 | 741,5 | 737,7 | 736,4 | 742,5 |
| GR | 149,0 | 146,7 | 149,3 | 150,7 | 148,9 | 148,5 | 148,7 | 149,0 | 148,7 | 150,9 |
| HR | 68,7 | 48,8 | 42,9 | 44,6 | 40,1 | 40,3 | 40,4 | 40,1 | 39,6 | 37,0 |
| HU | 143,2 | 84,8 | 82,0 | 73,9 | 71,0 | 70,0 | 69,2 | 69,2 | 71,5 | 73,4 |
| IE | 455,9 | 460,9 | 452,1 | 430,1 | 422,6 | 416,1 | 406,7 | 402,9 | 419,6 | 416,7 |
| IT | 584,7 | 588,0 | 583,1 | 519,7 | 523,6 | 524,1 | 511,0 | 512,1 | 508,0 | 512,9 |
| LT | 153,6 | 75,8 | 56,9 | 61,4 | 63,4 | 60,2 | 58,4 | 57,2 | 56,4 | 55,0 |
| LU | 12,4 | 12,2 | 11,8 | 11,1 | 11,6 | 11,7 | 12,0 | 11,6 | 11,4 | 11,9 |
| LV | 102,3 | 41,5 | 30,7 | 31,9 | 31,8 | 31,5 | 31,7 | 31,8 | 32,7 | 33,5 |
| MT | 1,0 | 2,0 | 1,8 | 1,7 | 1,6 | 1,5 | 1,4 | 1,4 | 1,4 | 1,4 |
| NL | 364,2 | 351,5 | 313,1 | 301,4 | 312,1 | 313,8 | 315,7 | 311,5 | 312,1 | 324,4 |
| PL | 758,8 | 532,3 | 452,5 | 416,8 | 431,6 | 425,0 | 425,0 | 425,7 | 427,5 | 421,5 |
| PT | 130,0 | 139,2 | 146,7 | 142,1 | 139,4 | 135,1 | 132,9 | 130,6 | 129,9 | 126,3 |
| RO | 758,8 | 531,7 | 423,2 | 426,0 | 437,9 | 428,8 | 376,0 | 375,0 | 381,4 | 388,8 |
| SE | 140,5 | 141,6 | 131,6 | 127,6 | 124,5 | 123,7 | 123,3 | 122,7 | 120,9 | 117,9 |
| SI | 31,1 | 30,6 | 33,0 | 31,4 | 32,3 | 32,0 | 31,8 | 31,1 | 30,9 | 30,8 |
| SK | 95,9 | 67,7 | 50,8 | 45,5 | 43,1 | 41,2 | 40,8 | 40,8 | 42,0 | 43,5 |
| EU-15 | 6.755,6 | 6.458,9 | 6.332,5 | 5.951,7 | 5.918,4 | 5.880,3 | 5.838,9 | 5.760,8 | 5.743,9 | 5.753,5 |
| EU-28 | 9.307,4 | 8.125,0 | 7.723,9 | 7.286,3 | 7.265,2 | 7.198,6 | 7.098,2 | 7.019,6 | 7.013,9 | 7.025,3 |

*5.3.3.2 4.B Manure Management*

## Methods and data sources used

Manure management (CRF Source Category 4B) emissions calculations use the same Eurostat data as for Enteric Fermentation. Data from livestock surveys provided by Eurostat were used according presented to Table 88, Annex 1. The emission estimation follows a similar equation than the one for 4.A because of the same proxy methodology:

*Equation 29*

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

*with*

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

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

## Results for 2013

Table 39 and Table 40 show 4B Manure Management $CH_4$ and $N_2O$ emissions for the EEA calculated proxy inventory along with selected time series for the EU and Member States as submitted to the UNFCCC.

*Table 39 $CH_4$ emissions in Gg from 4.B Manure Management*

| Source Category | 4B | B. Manure Management | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | CH4 | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 20,52 | 19,5 | 17,5 | 16,1 | 15,7 | 15,9 | 15,9 | 15,6 | 15,4 | 15,4 |
| BE | 68,47 | 71,3 | 71,3 | 63,4 | 64,9 | 65,5 | 67,0 | 66,5 | 66,7 | 66,1 |
| BG | 182,10 | 66,6 | 20,0 | 26,5 | 29,3 | 28,5 | 27,8 | 27,1 | 24,5 | 25,1 |
| CY | 4,19 | 5,5 | 5,7 | 5,9 | 6,1 | 6,1 | 6,1 | 5,9 | 5,4 | 5,0 |
| CZ | 51,20 | 33,3 | 28,5 | 27,9 | 27,0 | 25,2 | 23,4 | 22,7 | 22,4 | 21,7 |
| DE | 316,55 | 287,1 | 281,1 | 267,6 | 255,8 | 252,8 | 242,5 | 235,8 | 235,9 | 235,9 |
| DK | 46,91 | 52,0 | 55,8 | 62,1 | 60,6 | 60,5 | 61,9 | 62,3 | 61,8 | 61,7 |
| EE | 3,60 | 1,8 | 1,2 | 1,8 | 2,0 | 2,0 | 2,2 | 2,2 | 2,2 | 2,2 |
| ES | 246,30 | 268,7 | 310,4 | 324,2 | 322,9 | 321,9 | 312,4 | 314,8 | 330,5 | 320,0 |
| FI | 9,64 | 10,6 | 10,8 | 12,4 | 12,5 | 12,3 | 12,4 | 12,1 | 11,9 | 12,0 |
| FR | 404,03 | 419,3 | 472,5 | 480,7 | 504,8 | 494,0 | 491,7 | 486,1 | 481,4 | 477,6 |
| UK | 426,48 | 422,1 | 388,2 | 340,4 | 324,4 | 320,0 | 317,9 | 315,2 | 314,3 | 321,6 |
| GR | 20,16 | 20,1 | 20,1 | 19,9 | 19,4 | 19,2 | 19,1 | 19,1 | 19,0 | 19,3 |
| HR | 12,26 | 8,9 | 8,5 | 8,4 | 9,5 | 10,1 | 9,8 | 9,8 | 9,4 | 8,8 |
| HU | 149,68 | 87,4 | 86,2 | 70,7 | 66,5 | 61,8 | 61,2 | 60,4 | 59,6 | 60,2 |
| IE | 112,08 | 112,6 | 110,2 | 107,9 | 104,5 | 103,7 | 102,5 | 101,7 | 106,6 | 105,1 |
| IT | 165,08 | 156,6 | 156,3 | 150,1 | 141,1 | 136,9 | 122,3 | 100,7 | 81,1 | 81,0 |
| LT | 52,08 | 28,5 | 21,6 | 26,4 | 25,1 | 24,4 | 25,0 | 23,6 | 24,1 | 23,1 |
| LU | 3,74 | 4,4 | 4,9 | 4,5 | 4,3 | 4,2 | 4,3 | 4,3 | 4,3 | 4,4 |
| LV | 9,67 | 4,0 | 3,5 | 3,9 | 4,2 | 4,3 | 4,5 | 4,4 | 4,6 | 4,7 |
| MT | 1,11 | 1,4 | 1,6 | 1,4 | 1,3 | 1,3 | 1,3 | 1,0 | 1,0 | 1,1 |
| NL | 145,36 | 151,8 | 137,9 | 126,0 | 130,1 | 140,0 | 137,9 | 125,4 | 125,1 | 128,3 |
| PL | 157,85 | 148,7 | 132,7 | 153,6 | 145,2 | 139,6 | 139,0 | 131,4 | 117,4 | 113,3 |
| PT | 56,17 | 58,6 | 56,1 | 49,1 | 50,2 | 50,2 | 49,8 | 49,1 | 49,3 | 49,9 |
| RO | 80,49 | 31,8 | 19,1 | 34,3 | 38,5 | 35,1 | 29,0 | 28,3 | 27,8 | 27,8 |
| SE | 11,86 | 13,2 | 12,3 | 16,0 | 15,3 | 14,9 | 14,9 | 15,2 | 14,9 | 14,7 |
| SI | 22,52 | 20,2 | 20,4 | 20,4 | 20,1 | 20,4 | 20,1 | 19,3 | 18,6 | 18,5 |
| SK | 22,44 | 16,4 | 11,9 | 9,6 | 7,8 | 7,8 | 7,5 | 6,9 | 7,2 | 7,2 |
| EU-15 | 2.053,37 | 2.068,1 | 2.105,3 | 2.040,4 | 2.026,4 | 2.011,9 | 1.972,4 | 1.924,0 | 1.918,4 | 1.913,0 |
| EU-28 | 2.802,58 | 2.522,6 | 2.466,3 | 2.431,3 | 2.409,1 | 2.378,4 | 2.329,3 | 2.267,0 | 2.242,8 | 2.231,7 |

*Table 40 N2O emissions in Gg from 4.B Manure Management*

| Source Category | 4B | B. Manure Management | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | N2O | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 3,0 | 3,1 | 3,0 | 2,9 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| BE | 3,1 | 3,2 | 2,9 | 2,6 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 |
| BG | 5,0 | 2,8 | 2,3 | 2,2 | 1,9 | 1,8 | 1,7 | 1,7 | 1,7 | 1,6 |
| CY | 0,4 | 0,4 | 0,6 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| CZ | 5,5 | 3,5 | 3,1 | 2,5 | 2,4 | 2,3 | 2,2 | 2,1 | 2,1 | 2,0 |
| DE | 12,5 | 10,3 | 9,7 | 9,5 | 9,4 | 9,4 | 9,2 | 9,0 | 9,0 | 8,8 |
| DK | 1,9 | 1,8 | 1,7 | 1,7 | 1,5 | 1,4 | 1,4 | 1,3 | 1,3 | 1,2 |
| EE | 1,0 | 0,5 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| ES | 4,3 | 4,7 | 5,1 | 5,4 | 5,3 | 5,2 | 5,3 | 5,3 | 4,9 | 5,0 |
| FI | 1,6 | 1,4 | 1,4 | 1,4 | 1,3 | 1,4 | 1,4 | 1,3 | 1,3 | 1,4 |
| FR | 20,9 | 20,4 | 19,2 | 16,9 | 16,6 | 16,5 | 16,5 | 16,2 | 16,0 | 15,9 |
| UK | 10,8 | 11,3 | 11,3 | 9,9 | 9,1 | 8,8 | 8,7 | 8,6 | 8,6 | 8,4 |
| GR | 1,7 | 1,7 | 1,8 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 | 1,9 |
| HR | 1,3 | 0,9 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 |
| HU | 5,7 | 3,5 | 3,5 | 3,2 | 2,9 | 2,8 | 2,8 | 2,7 | 2,7 | 2,7 |
| IE | 1,4 | 1,5 | 1,5 | 1,6 | 1,5 | 1,5 | 1,4 | 1,4 | 1,5 | 1,4 |
| IT | 12,7 | 12,2 | 12,5 | 12,0 | 12,2 | 12,3 | 12,0 | 12,0 | 12,1 | 11,9 |
| LT | 2,9 | 1,3 | 0,9 | 1,0 | 1,0 | 0,9 | 0,9 | 0,9 | 0,8 | 0,8 |
| LU | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| LV | 1,8 | 0,7 | 0,5 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| MT | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| NL | 3,8 | 3,8 | 3,3 | 3,0 | 3,2 | 3,2 | 3,2 | 3,4 | 3,2 | 3,4 |
| PL | 25,6 | 21,1 | 18,8 | 17,7 | 17,4 | 16,6 | 16,8 | 16,5 | 15,7 | 15,5 |
| PT | 1,7 | 1,6 | 1,5 | 1,2 | 1,0 | 1,0 | 1,0 | 1,0 | 0,9 | 0,9 |
| RO | 6,8 | 4,5 | 2,9 | 4,7 | 4,9 | 4,5 | 4,0 | 3,9 | 3,9 | 3,5 |
| SE | 2,4 | 2,1 | 1,9 | 1,6 | 1,6 | 1,5 | 1,5 | 1,4 | 1,4 | 1,4 |
| SI | 0,8 | 0,7 | 0,6 | 0,5 | 0,5 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 |
| SK | 3,5 | 2,3 | 1,6 | 1,3 | 1,2 | 1,2 | 1,2 | 1,0 | 1,0 | 1,0 |
| EU-15 | 82,1 | 79,1 | 77,0 | 71,6 | 70,1 | 69,6 | 69,1 | 68,5 | 67,8 | 67,2 |
| EU-28 | 142,4 | 121,4 | 113,1 | 106,7 | 104,5 | 102,4 | 101,2 | 99,8 | 98,3 | 96,8 |

### *5.3.3.3 4.D Agricultural Soils*

## Methods and data sources used

Emissions from 4.D Agricultural Soils are mainly as $N_2O$ produced as a result of applying fertilizers, manure, and other agricultural practices. Only Austria actually reports $CH_4$ emissions from soils in its inventory. Now that the final proxy uses member state information wherever possible these estimates are of course included.

The EEA proxy for this sub-sector extrapolates aggregated EU 4D emissions and allocates the change by proportion among the EU-28. A previous EEA proxy methodology for $N_2O$ emissions for 4.D Agricultural Soils, 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 (4.D.1.1) typically contribute 25% of soil related emissions. While there is some Eurostat data for fertiliser use, there is only data for 16 Member States for 2012 and none for 2013. Based on totals for 2007 to 2009, the volume of reported artificial nitrogen fertiliser used by these 16 was about 85% of the EU total use. Although this data could not be used for proxy calculations, the trend in artificial nitrogen fertiliser use largely matches the time series for total EU-28 emissions from 4.D Agricultural Soils.

For meaningful trend extrapolation, time series data needs to be reasonably smooth so that the underlying trend is apparent. At the top level the trend for 4.D Agricultural Soils is fairly consistent for the years after the global financial crisis, with an average annual increase of 0.9% between 2009 and 2012. This method of extrapolating aggregate EU 4D emissions and allocate the change by proportion among the EU-28 was used this year (for the 2013 EEA proxy calculated in 2014) and last year for the 2012 proxy calculated in 2013.

## Results for 2013

Table 41 shows 4D Agricultural Soils $N_2O$ emissions for the EEA calculated proxy inventory along with selected time series for the EU and Member States as submitted to the UNFCCC.

*Table 41 $N_2O$ emissions in Gg from 4.D Agricultural Soils*

| Source Category | 4D | D. Agricultural Soils | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gas | $N_2O$ | | | | | | | | | |
| Member State | Inventory data | | | | | | | | | Proxy |
| | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| | Gg | | | | | | | | | |
| AT | 11,1 | 12,0 | 10,3 | 9,5 | 10,2 | 10,0 | 9,5 | 10,0 | 9,9 | 9,9 |
| BE | 15,5 | 15,4 | 13,9 | 12,3 | 11,6 | 11,9 | 12,0 | 11,8 | 11,4 | 11,5 |
| BG | 27,2 | 12,3 | 10,5 | 10,7 | 11,1 | 10,8 | 11,5 | 11,4 | 12,6 | 12,7 |
| CY | 1,1 | 1,3 | 1,3 | 1,2 | 1,1 | 1,1 | 1,1 | 1,2 | 1,1 | 1,2 |
| CZ | 30,0 | 19,2 | 17,1 | 16,3 | 17,1 | 16,1 | 15,8 | 16,2 | 15,8 | 15,9 |
| DE | 153,8 | 133,7 | 141,0 | 133,4 | 135,4 | 129,1 | 126,6 | 134,7 | 132,0 | 133,1 |
| DK | 24,8 | 21,9 | 19,0 | 17,1 | 17,3 | 16,4 | 16,2 | 16,5 | 16,1 | 16,3 |
| EE | 5,7 | 2,5 | 2,1 | 2,0 | 2,5 | 2,2 | 2,3 | 2,3 | 2,4 | 2,4 |
| ES | 62,1 | 56,8 | 73,1 | 61,8 | 57,1 | 57,3 | 62,5 | 59,1 | 58,6 | 59,1 |
| FI | 13,0 | 11,9 | 11,3 | 11,3 | 11,8 | 11,2 | 11,7 | 11,5 | 11,3 | 11,4 |
| FR | 176,8 | 164,3 | 173,8 | 161,0 | 163,5 | 154,3 | 152,3 | 158,4 | 147,9 | 149,2 |
| UK | 108,7 | 107,1 | 102,6 | 96,5 | 88,5 | 87,3 | 89,6 | 89,1 | 87,4 | 88,1 |
| GR | 23,3 | 19,9 | 18,6 | 17,2 | 16,4 | 15,5 | 16,6 | 15,7 | 15,5 | 15,6 |
| HR | 8,2 | 6,3 | 6,8 | 7,5 | 7,5 | 7,1 | 6,8 | 7,2 | 6,7 | 6,8 |
| HU | 23,2 | 14,1 | 15,5 | 16,4 | 17,0 | 15,8 | 15,8 | 16,6 | 16,4 | 16,6 |
| IE | 23,5 | 25,2 | 24,8 | 22,8 | 21,3 | 21,2 | 22,1 | 20,5 | 20,8 | 21,0 |
| IT | 63,1 | 62,9 | 62,6 | 58,6 | 54,7 | 50,2 | 49,0 | 49,8 | 53,6 | 54,1 |
| LT | 16,4 | 6,8 | 8,2 | 9,4 | 9,5 | 9,6 | 9,6 | 9,8 | 10,0 | 10,1 |
| LU | 1,2 | 1,1 | 1,1 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 |
| LV | 9,7 | 3,6 | 3,5 | 4,1 | 4,3 | 4,4 | 4,6 | 4,6 | 4,9 | 4,9 |
| MT | 0,1 | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| NL | 34,4 | 33,7 | 27,0 | 22,6 | 20,9 | 19,9 | 19,9 | 19,1 | 18,4 | 18,6 |
| PL | 87,5 | 65,2 | 62,0 | 61,7 | 68,8 | 66,8 | 64,5 | 66,1 | 65,5 | 66,1 |
| PT | 11,2 | 10,9 | 12,1 | 9,6 | 9,6 | 9,5 | 9,6 | 9,5 | 9,5 | 9,6 |
| RO | 54,1 | 34,6 | 26,4 | 31,2 | 29,3 | 29,2 | 28,6 | 29,3 | 26,6 | 26,9 |
| SE | 16,5 | 15,6 | 15,2 | 14,4 | 14,6 | 14,1 | 14,3 | 14,3 | 14,0 | 14,1 |
| SI | 2,4 | 2,5 | 2,6 | 2,4 | 2,3 | 2,4 | 2,3 | 2,3 | 2,2 | 2,3 |
| SK | 11,8 | 6,3 | 5,6 | 5,3 | 5,5 | 5,4 | 5,6 | 5,5 | 5,7 | 5,7 |
| EU-15 | 738,9 | 692,4 | 706,4 | 649,0 | 633,9 | 608,8 | 613,0 | 620,8 | 607,4 | 612,7 |
| EU-28 | 1.016,5 | 867,4 | 868,1 | 817,3 | 810,0 | 779,8 | 781,8 | 793,3 | 777,5 | 784,2 |

#### *5.3.3.4 Other source categories in the agricultural sector*

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

### 5.3.4 Waste

#### *5.3.4.1 6.A Solid Waste Disposal*

## Methods and data sources used

The most important source category in the waste sector is $CH_4$ emissions from source category 6.A. Solid Waste Disposal. For this source category, most Member States use higher tier methods, i.e. a first order decay approach that uses a number of activity data on certain types of waste deposited on landfills and a number of country-specific parameters. For the EU inventory

2013, among the EU-28 all Member States except Cyprus used higher tier methodologies for estimating emissions from this source category (EU NIR 2013). The first order decay approach is challenging for the proxy estimation because an estimation method would not only need to use updated activity data, but would also need to mirror the chosen model approach for $CH_4$ emissions from landfills in each Member States. The original idea in the feasibility study was the development of approximate first order decay models for each Member State based on submitted inventory data since 1990.[24] Such a model with specific results for each Member State was developed by the European Topic Centre on Resource and Waste Management; however results were checked for 2007 and were less accurate than the extrapolation approach used in 2007 because a number of parameters are harmonized in this model that reflect Member States estimates in a less accurate way.

In the absence of a detailed approach reflecting the first order decay assumptions, a simple approach was used to estimate $CH_4$ emissions from Solid Waste Disposal on land. A linear extrapolation of the trend of 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. The detailed approach for each Member State is provided in Table 103.

#### *5.3.4.2 Other categories in the waste sector*

The other source categories in the Waste sector are not very significant for total GHG emissions in the EU. Total emissions from 6.B. Wastewater Handling were 0.56 % of EU-15 total emissions in 2013 and total emissions from 6.C Waste Incineration contributed to 0.07 % to total EU-15 emissions in that year. For EU 27 the share from 6.B Wastewater Handling were 0.65% of EU-27 total emissions. 6.C Waste Incineration contributed to 0.07% to total EU-27 emissions in 2013.

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

### 5.3.5 Other source categories

For all other source categories, no 2013 activity data was available that could be combined with IEFs from GHG inventories. These categories were extrapolated from 2012 GHG inventories, either by trend extrapolation or by taking the constant values of 2012. Constant values were

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

used when past trends were inconsistent and strongly fluctuating; trend extrapolation was used when historic time series showed good correlations with a linear trend.

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

Annex 5.3 provides a detailed overview of methods and data sources used for each source category and Member State.

## 5.4 Annex IV. Methods and data sources used for the proxy calculated by EEA

*Table 42 Methods and data: $CO_2$ emissions from 1.A Fuel combustion*

| Source Category | 1A | Fuel Combustion (Sectoral Approach) | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| BE | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| BG | Emissions calculation based on activity data | BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2014 | trend to consumption data of previous year |
| CY | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| CZ | Emissions calculation based on activity data | BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2014 | trend to consumption data of previous year |
| DE | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| DK | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| EE | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| ES | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| FI | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| FR | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| UK | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| GR | Emissions calculation based on activity data | BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2014 | trend to consumption data of previous year |
| HR | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| HU | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| IE | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| IT | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| LT | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| LU | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| LV | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| MT | Emissions calculation based on activity data | Summation of Proxy CRF 1A1, 1A2, 1A3, 1A4, 1A5 | 1A5 from previous year |
| NL | Emissions calculation based on activity data | BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2014 | trend to consumption data of previous year |
| PL | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| PT | Emissions calculation based on activity data | BP Statistical Review of World Energy, consumption of oil, gas and coal, June 2014 | trend to consumption data of previous year |
| RO | Emissions calculation based on activity data | Eurostat data from Monthly Oil and Gas Questionnaires and from Eurostat database for solid fuels | trend to consumption data of previous year |
| SE | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| SI | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |
| SK | Emissions calculation based on activity data | Early national energy statistics (annual data) | trend to consumption data of previous year |

*Table 43 Methods and data: CH4 and N2O emissions from 1.A Fuel combustion*

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

*Table 44 Methods and data: $CO_2$, $CH_4$ and $N_2O$ emissions for 1.A.1 Energy industries*

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

*Table 45 Methods and data: $CO_2$ emissions from 1A1a Public electricity and heat production*

| Source Category | 1A1a | a. Public Electricity and Heat Production | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| BG | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| CY | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| CZ | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| DE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| DK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| EE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| FI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| FR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| UK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| HR | Emission trends (dynamics) from other sources | ENTSO-E data on electricity generation | Electricity production from fossil fuels |
| HU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| IE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| IT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| LT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| LU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| LV | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |
| MT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| NL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| PL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| RO | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| SE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| SI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | identification of power sector by Öko-Institut's analysis |
| SK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL activity code 20 |

*Table 46 Methods and data: $CH_4$ emissions from 1A1a Public electricity and heat production*

| Source Category | 1A1a | a. Public Electricity and Heat Production | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| CY | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| CZ | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Data from previous years | UNFCCC 2014 submission | Extrapol. 2003-2014 |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LV | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| NL | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 47 Methods and data: $N_2O$ emissions from 1A1a Public electricity and heat production*

| Source Category | 1A1a | a. Public Electricity and Heat Production | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| CY | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| CZ | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| DE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| HR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| HU | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| IE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| IT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LV | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1a for CO2 | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 48 Methods and data: $CO_2$ emissions from 1A1b Petroleum refining*

| Source Category | 1A1b | b. Petroleum Refining | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| DE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| DK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| FI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| FR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| UK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| IE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| IT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| LT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 49 Methods and data: $CH_4$ emissions from 1A1b Petroleum refining*

| Source Category | 1A1b | b. Petroleum Refining | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | UNFCCC 2014 submission | |
| BG | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| DE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| DK | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| FI | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| GR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| IE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| LT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |

*Table 50 Methods and data: $N_2O$ emissions from 1A1b Petroleum refining*

| Source Category | 1A1b | b. Petroleum Refining | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| FI | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| FR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| IE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| LT | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |
| SI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SK | Emission trends (dynamics) from other sources | Proxy-inventory source categories 1A1b for CO2 | |

*Table 51 Methods and data sources used for CO2, CH4 and N2O emissions from 1A1c Manufacture of solid fuels and other energy industries*

| **Source Category** | **1A1c** | **c. Manufacture of Solid Fuels and Other Energy Industries** |
|---|---|---|
| **Gas** | **CO2** | |
| **Member State** | **Projection Approach** | **Data Sources** |
| AT | Data from previous years | UNFCCC 2014 submission |
| BE | Data from previous years | UNFCCC 2014 submission |
| BG | Data from previous years | UNFCCC 2014 submission |
| CY | Data from previous years | UNFCCC 2014 submission |
| CZ | Data from previous years | UNFCCC 2014 submission |
| DE | Data from previous years | UNFCCC 2014 submission |
| DK | Data from previous years | UNFCCC 2014 submission |
| EE | Data from previous years | UNFCCC 2014 submission |
| ES | Data from previous years | UNFCCC 2014 submission |
| FI | Data from previous years | UNFCCC 2014 submission |
| FR | Data from previous years | UNFCCC 2014 submission |
| UK | Data from previous years | UNFCCC 2014 submission |
| GR | Data from previous years | UNFCCC 2014 submission |
| HR | Data from previous years | UNFCCC 2014 submission |
| HU | Data from previous years | UNFCCC 2014 submission |
| IE | Data from previous years | UNFCCC 2014 submission |
| IT | Data from previous years | UNFCCC 2014 submission |
| LT | Data from previous years | UNFCCC 2014 submission |
| LU | Data from previous years | UNFCCC 2014 submission |
| LV | Data from previous years | UNFCCC 2014 submission |
| MT | Data from previous years | UNFCCC 2014 submission |
| NL | Data from previous years | UNFCCC 2014 submission |
| PL | Data from previous years | UNFCCC 2014 submission |
| PT | Data from previous years | UNFCCC 2014 submission |
| RO | Data from previous years | UNFCCC 2014 submission |
| SE | Data from previous years | UNFCCC 2014 submission |
| SI | Data from previous years | UNFCCC 2014 submission |
| SK | Data from previous years | UNFCCC 2014 submission |

*Table 52 Methods and data: CO2 emissions from 1.A.2 Manufacturing industries and construction*

| Source Category | 1A2 | 2. Manufacturing Industries and Construction | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| BG | Data from previous years | UNFCCC 2014 submission | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| CY | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CZ | Activity trends (dynamics) from other sources | World Steel Association crude steel production (monthly data) | |
| DE | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| DK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| EE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 31, 32, 35, 36 |
| FI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| FR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| UK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 31, 32, 35, 36 |
| IE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 31, 32, 35, 36 |
| IT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| LT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| LU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| LV | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| MT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| NL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (only iron), 22, 23, 24, 25, 26, 27, 28 |
| PL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| RO | Data from previous years | UNFCCC 2014 submission | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| SE | Data from previous years | UNFCCC 2014 submission | Main activity codes 29, 30, 31, 32, 34, 35, 36 |
| SI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 20 (w/o power), 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36 |
| SK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity codes 29, 30, 31, 32, 34, 35, 36 |

*Table 53 Methods and data: CH4 emissions from 1.A.2 Manufacturing industries and construction*

| **Source Category** | **1A2** | **2. Manufacturing Industries and Construction** | |
|---|---|---|---|
| **Gas** | **CH4** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CZ | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LV | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 54 Methods and data: N2O emissions from 1.A.2 Manufacturing industries and construction*

| **Source Category** | **1A2** | **2. Manufacturing Industries and Construction** | |
|---|---|---|---|
| **Gas** | **N2O** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CZ | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| DK | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| EE | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| ES | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| IT | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| LT | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| LU | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| LV | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| NL | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| PL | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| SI | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |
| SK | Emission trends (dynamics) from other sources | Proxy inventory source categories 1A2 for CO2 | |

*Table 55 Methods and data: $CO_2$ emissions from 1.A.3 Transport*

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

*Table 56 Methods and data: $CH_4$ and $N_2O$ emissions from 1.A.3 Transport*

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

*Table 57 Methods and data: $CO_2$ emissions from 1.A.4 Other sectors*

| Source Category | 1A4 | Other Sectors | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| BE | Data from previous year | UNFCCC 2014 submission | |
| BG | Data from previous year | UNFCCC 2014 submission | |
| CY | Data from previous year | UNFCCC 2014 submission | |
| CZ | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| DE | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| DK | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| EE | Data from previous year | UNFCCC 2014 submission | |
| ES | Data from previous year | UNFCCC 2014 submission | |
| FI | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| FR | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| UK | Data from previous year | UNFCCC 2014 submission | |
| GR | Data from previous year | UNFCCC 2014 submission | |
| HR | Data from previous year | UNFCCC 2014 submission | |
| HU | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| IE | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| IT | Data from previous year | UNFCCC 2014 submission | |
| LT | Data from previous year | UNFCCC 2014 submission | |
| LU | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| LV | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| MT | Data from previous year | UNFCCC 2014 submission | |
| NL | Data from previous year | UNFCCC 2014 submission | |
| PL | Data from previous year | UNFCCC 2014 submission | |
| PT | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| RO | Data from previous year | UNFCCC 2014 submission | |
| SE | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| SI | Complex calculation with gas and oil consumption data | Eurostat (monthly data):<br>• Natural gas: Gross Inland Consumption<br>• Total fuel oil, Heating and other gas oil: Gross Inland Deliveries | • Indicator code 100100, product code 4100<br>• Indicator code 100520, product code 3266<br>• Indicator code 100520, product code 3270A |
| SK | Data from previous year | UNFCCC 2014 submission | |

*Table 58 Methods and data: CH4 and N2O emissions from 1.A.4 Other sectors*

| Source Category | 1A4 | Other Sectors | |
|---|---|---|---|
| Gas | CH4 | N2O | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous year | UNFCCC 2014 submission | Average 2010-2012 |
| BE | Data from previous year | UNFCCC 2014 submission | Average 2010-2012 |
| BG | Data from previous year | UNFCCC 2014 submission | |
| CY | Data from previous year | UNFCCC 2014 submission | |
| CZ | Data from previous year | UNFCCC 2014 submission | |
| DE | Data from previous year | UNFCCC 2014 submission | |
| DK | Data from previous year | UNFCCC 2014 submission | |
| EE | Data from previous year | UNFCCC 2014 submission | |
| ES | Data from previous year | UNFCCC 2014 submission | |
| FI | Data from previous year | UNFCCC 2014 submission | |
| FR | Data from previous year | UNFCCC 2014 submission | |
| UK | Data from previous year | UNFCCC 2014 submission | |
| GR | Data from previous year | UNFCCC 2014 submission | |
| HR | Data from previous year | UNFCCC 2014 submission | |
| HU | Data from previous year | UNFCCC 2014 submission | |
| IE | Data from previous year | UNFCCC 2014 submission | |
| IT | Data from previous year | UNFCCC 2014 submission | |
| LT | Data from previous year | UNFCCC 2014 submission | |
| LU | Data from previous year | UNFCCC 2014 submission | |
| LV | Data from previous year | UNFCCC 2014 submission | |
| MT | Data from previous year | UNFCCC 2014 submission | |
| NL | Data from previous year | UNFCCC 2014 submission | |
| PL | Data from previous year | UNFCCC 2014 submission | |
| PT | Data from previous year | UNFCCC 2014 submission | |
| RO | Data from previous year | UNFCCC 2014 submission | |
| SE | Data from previous year | UNFCCC 2014 submission | |
| SI | Data from previous year | UNFCCC 2014 submission | |
| SK | Data from previous year | UNFCCC 2014 submission | |

*Table 59 Methods and data: $CO_2$ emissions from 1.B.1 Fugitive emissions from solid fuels*

| Source Category | 1B1 | 1. Solid Fuels | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | |
| BE | Data from previous years | UNFCCC 2014 submission | |
| BG | Data from previous years | UNFCCC 2014 submission | |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | Eurostat Primary Hard Coal Production (monthly data) | Indicator code 100100, product Code 2111 |
| DE | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| DK | Data from previous years | UNFCCC 2014 submission | |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| FI | Data from previous years | UNFCCC 2014 submission | |
| FR | Data from previous years | UNFCCC 2014 submission | |
| UK | Activity trends (dynamics) from other sources | Eurostat Primary Hard Coal Production (monthly data) | Indicator code 100100, product Code 2111 |
| GR | Data from previous years | UNFCCC 2014 submission | |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Data from previous years | UNFCCC 2014 submission | |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| LT | Data from previous years | UNFCCC 2014 submission | |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| RO | Data from previous years | UNFCCC 2014 submission | |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| SI | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| SK | Data from previous years | UNFCCC 2014 submission | |

*Table 60 Methods and data: $CH_4$ emissions from 1.B.1 Fugitive emissions from solid fuels*

| Source Category | 1B1 | 1. Solid Fuels | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| BG | Activity trends (dynamics) from other sources | Eurostat Primary Lignite Production (monthly data) | Indicator code 100100, product Code 2210 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | Eurostat Primary Hard Coal Production (monthly data) | Indicator code 100100, product Code 2111 |
| DE | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| DK | Data from previous years | UNFCCC 2014 submission | |
| EE | Activity trends (dynamics) from other sources | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| FI | Data from previous years | UNFCCC 2014 submission | |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| UK | Activity trends (dynamics) from other sources | Eurostat Primary Hard Coal Production (monthly data) | Indicator code 100100, product Code 2111 |
| GR | Activity trends (dynamics) from other sources | Eurostat Primary Lignite Production (monthly data) | Indicator code 100100, product Code 2210 |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| LT | Data from previous years | UNFCCC 2014 submission | |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| PL | Activity trends (dynamics) from other sources | Eurostat Primary Hard Coal Production (monthly data) | Indicator code 100100, product Code 2111 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| RO | Activity trends (dynamics) from other sources | Eurostat Primary Lignite Production (monthly data) | Indicator code 100100, product Code 2210 |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2010-2012 |
| SI | Activity trends (dynamics) from other sources | Eurostat Primary Lignite Production (monthly data) | Indicator code 100100, product Code 2210 |
| SK | Activity trends (dynamics) from other sources | Eurostat Primary Lignite Production (monthly data) | Indicator code 100100, product Code 2210 |

*Table 61 Methods and data: $CO_2$ emissions from 1B2a Fugitive emissions from oil*

| Source Category | 1B2a | a. Oil | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| BE | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| DE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DK | Activity trends (dynamics) from other sources | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| FR | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Activity trends (dynamics) from other sources | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| LT | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Activity trends (dynamics) from other sources | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| SE | Activity trends (dynamics) from other sources | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 62 Methods and data: $CH_4$ emissions from 1B2a Fugitive emissions from oil*

| Source Category | 1B2a | a. Oil | | |
|---|---|---|---|---|
| Gas | CH4 | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| BE | Activity trends (dynamics) from other sources | | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| BG | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| DE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| DK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | | UNFCCC 2014 submission | |
| ES | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Activity trends (dynamics) from other sources | | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| FR | Activity trends (dynamics) from other sources | | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| UK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Activity trends (dynamics) from other sources | | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| IE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| LT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Data from previous years | | UNFCCC 2014 submission | |
| LV | Data from previous years | | UNFCCC 2014 submission | |
| MT | Data from previous years | | UNFCCC 2014 submission | |
| NL | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| PT | Activity trends (dynamics) from other sources | | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| RO | Activity trends (dynamics) from other sources | | Eurostat Primary Crude Oil Production (monthly data) | Indicator code 100100, product code 3100 |
| SE | Data from previous years | | CITL data (operator holding accounts) 2008-2013 | Main activity Code 21 |
| SI | Data from previous years | | UNFCCC 2014 submission | |
| SK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |

*Table 63 Methods and data: CO2 emissions from 1B2b Fugitive emissions from gas*

| Source Category | 1B2b | b. Natural Gas | | |
|---|---|---|---|---|
| Gas | CO2 | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | | UNFCCC 2014 submission | |
| CZ | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| DK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | | UNFCCC 2014 submission | |
| ES | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | | UNFCCC 2014 submission | |
| HU | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| LT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| LV | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Data from previous years | | UNFCCC 2014 submission | |
| NL | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| SE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| SK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |

*Table 64 Methods and data: $CH_4$ emissions from 1B2b Fugitive emissions from gas*

| Source Category | 1B2b | b. Natural Gas | | |
|---|---|---|---|---|
| Gas | CH4 | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| BE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | | UNFCCC 2014 submission | |
| CZ | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| DE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| DK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| ES | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| FI | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| HU | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| IE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| IT | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| LT | Data from previous years | | UNFCCC 2014 submission | |
| LU | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| LV | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Data from previous years | | UNFCCC 2014 submission | |
| NL | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| PL | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| PT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Consumption (monthly data) | Indicator code 100900, product code 4100 |
| SE | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| SK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |

*Table 65 Methods and data: $CO_2$ emissions from 1B2c Venting*

| Source Category | 1B2c | c. Venting | | |
|---|---|---|---|---|
| Gas | CO2 | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | Data from previous years | | UNFCCC 2014 submission | |
| BE | Data from previous years | | UNFCCC 2014 submission | |
| BG | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| DE | Data from previous years | | UNFCCC 2014 submission | |
| DK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | | UNFCCC 2014 submission | |
| DK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | | UNFCCC 2014 submission | |
| FR | Activity trends (dynamics) from other sources | | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| UK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| IE | Data from previous years | | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LT | Activity trends (dynamics) from other sources | | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LU | Data from previous years | | UNFCCC 2014 submission | |
| LV | Data from previous years | | UNFCCC 2014 submission | |
| MT | Data from previous years | | UNFCCC 2014 submission | |
| NL | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Activity trends (dynamics) from other sources | | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| PT | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Activity trends (dynamics) from other sources | | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| SE | Data from previous years | | UNFCCC 2014 submission | |
| SI | Data from previous years | | UNFCCC 2014 submission | |
| SK | Data from previous years | | UNFCCC 2014 submission | Average 2012-2014 |

*Table 66 Methods and data: $CH_4$ emissions from 1B2c Venting*

| **Source Category** | **1B2c** | **c. Venting** | |
|---|---|---|---|
| **Gas** | **CH4** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | |
| BE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| DE | Data from previous years | UNFCCC 2014 submission | |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | |
| FR | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding account) 2008-2013 | Main activity code 21 |
| HR | Activity trends (dynamics) from other sources | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | |
| PT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| RO | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| SE | Data from previous years | UNFCCC 2014 submission | |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 67 Methods and data: $CO_2$ emissions from 1B2c Flaring*

| **Source Category** | **1B2c c. flaring** | | |
|---|---|---|---|
| **Gas** | **CO2** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding account) 2008-2013 | Main activity code 21 |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| DE | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | |
| PT | Data from previous years | UNFCCC 2014 submission | |
| RO | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 68 Methods and data: $CH_4$ emissions from 1B2c Flaring*

| **Source Category** | **1B2c** | **c. flaring** | |
|---|---|---|---|
| **Gas** | **CH4** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | |
| BE | Data from previous years | UNFCCC 2014 submission | |
| BG | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| DE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| DK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FI | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HR | Data from previous years | UNFCCC 2014 submission | |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | Eurostat Total Natural Gas Production (monthly data) | Indicator code 100100, product code 4100 |
| LT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| LU | Data from previous years | UNFCCC 2014 submission | |
| LV | Data from previous years | UNFCCC 2014 submission | |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | |
| PT | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | Eurostat Crude Oil production Production (monthly data) | Indicator code 100100, product code 3100 |
| SE | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SI | Data from previous years | UNFCCC 2014 submission | |
| SK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |

*Table 69 Methods and data: $CO_2$ emissions from 2.A.1 Cement Production*

| Source Category | 2A1 | Cement Production | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| BG | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| CY | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| CZ | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| DE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| DK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| EE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| FI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| FR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| UK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| IE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| IT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LV | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| MT | Data from previous year | UNFCCC 2013 Submission | Value of 2012 |
| NL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| PL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| RO | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |

*Table 70 Methods and data: $CO_2$ emissions from 2.A.2 Lime Production*

| Source Category | 2A2 | Lime Production | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| BG | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| CY | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| CZ | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| DE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| DK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| EE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| FI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| FR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| UK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| GR | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| IE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| IT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LU | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| LV | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| MT | Data from previous year | UNFCCC 2013 Submission | Value of 2012 |
| NL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| PL | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| RO | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |
| SK | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL data Main activity codes 29, 30, 34 + scaling factor based on comparison inventory data - CITL data for 2005-2012 |

*Table 71 Methods and data: $CH_4$ emissions from 2.A Mineral products*

| Source Category | 2A | Mineral Products | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | | | |
| DK | | | |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | | | |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | | | |
| HR | | | |
| HU | | | |
| IE | | | |
| IT | | | |
| LT | | | |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | | | |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 72 Methods and data: $CO_2$ emissions from 2.B.1 Ammonia Production*

| Source Category | 2B1 | Ammonia Production | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | | | |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | | | |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous year | UNFCCC 2014 Submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | | | |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | | | |
| SI | | | |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 73 Methods and data: $N_2O$ emissions from 2.B.2 Nitric Acid Production*

| Source Category | 2B2 | Nitric Acid Production | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | | | |
| EE | | | |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous year | UNFCCC 2014 Submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | | | |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 74 Methods and data: $N_2O$ emissions from 2.B.3 Adipic Acid Production*

| Source Category | 2B3 | Adipic Acid Production | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | | | |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | | | |
| GR | | | |
| HR | | | |
| HU | | | |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | | | |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | | | |
| PL | | | |
| PT | | | |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 75 Methods and data: $CH_4$ emissions from 2.C Metal production*

| Source Category | 2.C | 2.C Metal Production | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | | | |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | | | |
| EE | | | |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | | | |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | | | |
| LU | | | |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | | | |
| NL | | | |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | | | |
| RO | | | |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | | | |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 76 Methods and data: $CO_2$ emissions from 2.C Metal production*

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

*Table 77 Methods and data: $N_2O$ emissions from 2.C Metal production*

| Source Category | 2.C | 2.C Metal Production | | |
|---|---|---|---|---|
| Gas | N2O | | | |
| Member State | Projection Approach | | Data Sources | Notes |
| AT | | | | |
| BE | | | | |
| BG | | | | |
| CY | | | | |
| CZ | | | | |
| DE | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| DK | | | | |
| EE | | | | |
| ES | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| FI | | | | |
| FR | | | | |
| UK | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| GR | | | | |
| HR | | | | |
| HU | | | | |
| IE | | | | |
| IT | | | | |
| LT | | | | |
| LU | | | | |
| LV | | | | |
| MT | | | | |
| NL | | | | |
| PL | | | | |
| PT | | | | |
| RO | | | | |
| SE | | | | |
| SI | | | | |
| SK | | | | |

*Table 78 Methods and data: $CO_2$ emissions from 2.C.1 Iron and steel production*

| Source Category | 2C1 | 1. Iron and Steel Production | |
|---|---|---|---|
| Gas | CO2 | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories iron and bf-gas |
| BE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories coke, ore,iron, bf-gas |
| BG | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| CY | Data from previous years | UNFCCC 2014 submission | |
| CZ | Activity trends (dynamics) from other sources | World Steel Association crude steel production (monthly data) | |
| DE | Activity trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories coke, ore,iron, bf-gas |
| DK | Data from previous years | UNFCCC 2014 submission | |
| EE | Data from previous years | UNFCCC 2014 submission | |
| ES | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories iron |
| FI | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| FR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| UK | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| GR | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| HR | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| HU | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| IE | Data from previous years | UNFCCC 2014 submission | |
| IT | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| LT | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| LU | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |
| LV | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| MT | Data from previous years | UNFCCC 2014 submission | |
| NL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PL | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| PT | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories iron |
| RO | Data from previous years | UNFCCC 2014 submission | Average 2012-2014 |
| SE | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories iron |
| SI | Emission trends (dynamics) from other sources | CITL data (operator holding accounts) 2008-2013 | CITL categories iron |
| SK | Activity trends (dynamics) from other sources | World Steel Association blast furnace iron production (monthly data) | |

*Table 79 Methods and data: $CO_2$ emissions from 2.D Other production*

| Source Category | 2.D | 2.D Other Production | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | | | |
| UK | | | |
| GR | | | |
| HR | | | |
| HU | | | |
| IE | | | |
| IT | | | |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 80 Methods and data: SF6 emissions*

| Source Category | 2 2. Industrial Processes | | |
|---|---|---|---|
| Gas | SF6 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous years | UNFCCC 2013 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |

*Table 81 Methods and data: HFC emissions*

| Source Category | 2 2. Industrial Processes | | |
|---|---|---|---|
| Gas | HFC | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |

*Table 82 Methods and data: PFC emissions*

| Source Category | 2 2. Industrial Processes | | |
|---|---|---|---|
| Gas | PFC | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | | | |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | | | |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | | | |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | | | |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 83 Methods and data: $CO_2$ emissions from 2.G Other*

| Source Category | 2.G | 2.G Other | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | | | |
| UK | | | |
| GR | | | |
| HR | | | |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | | | |
| LT | | | |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | | | |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 84 Methods and data: $CH_4$ emissions from 2.G Other*

| **Source Category** | **2.G** | **2.G Other** | |
|---|---|---|---|
| **Gas** | **CH4** | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | | | |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | | | |
| UK | | | |
| GR | | | |
| HR | | | |
| HU | | | |
| IE | | | |
| IT | | | |
| LT | | | |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | | | |
| PT | | | |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 85 Methods and data: $N_2O$ emissions from 2.G Other*

| Source Category | 2.G | 2.G Other | | |
|---|---|---|---|---|
| Gas | N2O | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | | | | |
| BE | | | | |
| BG | | | | |
| CY | | | | |
| CZ | | | | |
| DE | | | | |
| DK | | | | |
| EE | | | | |
| ES | | | | |
| FI | | | | |
| FR | | | | |
| UK | | | | |
| GR | | | | |
| HR | | | | |
| HU | | | | |
| IE | | | | |
| IT | | | | |
| LT | | | | |
| LU | | | | |
| LV | | | | |
| MT | | | | |
| NL | Extrapolation from previous years | | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PL | | | | |
| PT | | | | |
| RO | | | | |
| SE | | | | |
| SI | | | | |
| SK | | | | |

*Table 86 Methods and data: $CO_2$ emissions from 3 Solvent and other product use*

| Source Category | 3 3. Solvent and Other Product Use | | |
|---|---|---|---|
| Gas | CO2 | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | | | |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | | | |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | | | |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 87 Methods and data: $N_2O$ emissions from 3 Solvent and other product used*

| Source Category | 3 3. Solvent and Other Product Use | | |
|---|---|---|---|
| Gas | N2O | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | | | |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 88 Methods and data: CH4 emissions from 4.A. Enteric fermentation and from 4.B Manure management*

| Source Category | 4.A, 4.B A. Enteric Fermentation, 4.B Manure Management: | | |
|---|---|---|---|
| Gas | CH4 | Dairy cows, Live bovine animals, Sheep, Goats, Swine | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Emissions calculation based on activity data | Livestock activity data (Live bovine animals, Dairy Cows, Sheep, Goats, Swine) from Eurostat, IEF from UNFCCC 2012 inventories | Live bovine animals, Dairy Cows, Sheep, Goats, Swine: Eurostat December survey. |
| BE | | | Eurostat December survey: Live bovine animals, Dairy cows, Swine: trend change. Sheep and Goats repeat emissions value from last inventory year. |
| BG | | | Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey. |
| CY | | | Dairy cows, Live bovine animals, Goats, Swine: Eurostat December survey. Sheep: UNFCCC AD, repeat value from last inventory year. |
| CZ | | | Dairy cows, Live bovine animals, Swine: Eurostat December survey. Sheep, Goats: UNFCCC AD, repeat value from last inventory year. |
| DE | | | Dairy cows, Live bovine animals, Sheep, Goats: Eurostat December survey; Swine: Eurostat December survey plus adjustment factor. |
| DK | | | Dairy cows, Swine: Eurostat June survey; Live bovine animals: Eurostat December survey; Sheep, Goats: UNFCCC AD, repeat value from last inventory year. |
| EE | | | Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: UNFCCC AD, repeat value from last inventory year. |
| ES | | | Dairy cows: Eurostat June survey; Live bovine animals, Sheep, Goats, Swine: Eurostat December survey |
| FI | | | Dairy cows, Live bovine animals, Swine, Sheep, Goats: Eurostat December survey with emissions extrapolation by AD trend change. |
| FR | | | Dairy cows, Sheep, Goats, Live bovine animals, Swine: Eurostat December survey, plus adjustment factor for Sheep and Goats. |
| UK | | | Dairy cows, Live bovine animals, Swine: Eurostat June survey; Sheep: Eurostat December survey plus adjustment factor; Goats: UNFCCC AD, repeat value from last inventory year. |
| GR | | | Dairy cows, Live bovine animals, Goats, Sheep Eurostat December survey; Swine Eurostat December survey plus adjustment factor; |
| HR | | | Dairy cows, Live bovine animals, Sheep, Swine, Goats: Eurostat December survey. |
| HU | | | Dairy cows, Live bovine animals, Sheep, Goats (plus adjustment factor), Swine: Eurostat December survey |
| IE | | | Dairy cows: Eurostat December survey (plus adjustment factor); Live bovine animals, Swine, Sheep, Goats: Eurostat June survey |
| IT | | | Dairy cows, Live bovine animals, Swine, Sheep, Goats: Eurostat December survey with emissions extrapolation by AD trend change. |
| LT | | | Dairy cows, Live bovine animals (plus adjustment factor), Goats, Sheep (plus adjustment factor), Swine: Eurostat December survey. |
| LU | | | Dairy cows (plus adjustment factor), Live bovine animals, Swine (plus adjustment factor): Eurostat December survey. Sheep, Goats: UNFCCC AD, repeat value from last inventory year. |
| LV | | | Dairy cows, Live bovine animals, Swine: Eurostat December.Sheep, Goats: UNFCCC AD, repeat value from last inventory year. |
| MT | | | Dairy cows, Live bovine animals, Sheep, Goats, Swine: Eurostat December survey |
| NL | | | Dairy cows, Swine: Eurostat June survey; Live bovine animals, Sheep: Eurostat December survey; Goats: Eurostat December survey plus adjustment factor. |
| PL | | | Dairy cows: Eurostat June survey plus adjustment factor; Live bovine animals, Goats, Swine: Eurostat December survey; Sheep: UNFCCC AD, repeat value from last inventory year. |
| PT | | | Dairy cows, Live bovine animals, Sheep, Swine, Goats: Eurostat December survey. |
| RO | | | Dairy cows, Live bovine animals, Sheep, Swine (plus adjustment factor), Goats: Eurostat December survey |
| SE | | | Dairy cows, Live bovine animals, Swine: Eurostat June survey; Sheep: Eurostat December survey plus adjustment factor; Goats: UNFCCC CH4 emissions. |
| SI | | | Dairy cows, Live bovine animals, Swine: Eurostat December survey; Sheep, Goats: Eurostat December survey with extrapolation for 2010 |
| SK | | | Dairy cows, Live bovine animals: Eurostat December survey plus adjustment factor; Swine, Sheep, Goats: Eurostat December survey |

*Table 89 Methods and data: CH4 emissions from 4.A Enteric Fermentation, Horses*

| Source Category | 4.A | A. Enteric Fermentation; Horses | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CZ | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| MT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| NL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 90 Methods and data: $CH_4$ emissions from 4.B Manure Management, Horses*

| Source Category | 4.B | B. Manure Management; Horses | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LV | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |

*Table 91 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Mules and Asses*

| Source Category | 4.A | A. Enteric Fermentation; Mules and Asses | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | | | |
| CZ | | | |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | | | |
| EE | | | |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | | | |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | | | |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | | | |
| MT | | | |
| NL | | | |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 92 Methods and data: $CH_4$ emissions from 4.B Manure Management, Mules and Asses*

| Source Category | 4.B | B. Manure Management, Mules and Asses | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CY | | | |
| CZ | | | |
| DE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| DK | | | |
| EE | | | |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | | | |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | | | |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | | | |
| MT | | | |
| NL | | | |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 93 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Poultry*

| Source Category | 4.A | A. Enteric Fermentation; Poultry | |
|---|---|---|---|
| Gas | CH4 | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| EE | | | |
| ES | | | |
| FI | | | |
| FR | | | |
| UK | | | |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| IE | | | |
| IT | | | |
| LT | | | |
| LU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LV | | | |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | | | |
| PL | | | |
| PT | | | |
| RO | | | |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 94 Methods and data: CH4 emissions from 4.B Manure Management, Poultry*

| Source Category | 4.B | B. Manure Management; Poultry | |
|---|---|---|---|
| Gas | CH4 | | |
| Member State | Projection Approach | Data Sources | Notes |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| UK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| GR | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |

*Table 95 Methods and data: $CH_4$ emissions from 4.A Enteric Fermentation, Other*

| Source Category | 4.A | A. Enteric Fermentation; Other | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | | | |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | | | |
| UK | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| GR | | | |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | | | |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | | | |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | | | |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | | | |
| SK | | | |

*Table 96 Methods and data: $CH_4$ emissions from 4.B Manure Management, Other*

| Source Category | 4.B | B. Manure Management; Other | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| BE | | | |
| BG | | | |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FR | | | |
| UK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| GR | | | |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LU | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| LV | | | |
| MT | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | | | |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | | | |
| SK | | | |

*Table 97 Methods and data: N2O emissions from 4.B Manure management*

| Source Category | 4.B | B. Manure Management | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| MT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| NL | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |

*Table 98 Methods and data: CH4 emissions from 4.C Rice cultivation*

| Source Category | 4.C | C. Rice cultivation | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | | | |
| BE | | | |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| CY | | | |
| CZ | | | |
| DE | | | |
| DK | | | |
| EE | | | |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 |
| FI | | | |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| UK | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| IE | | | |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | | | |
| LU | | | |
| LV | | | |
| MT | | | |
| NL | | | |
| PL | | | |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| RO | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| SE | | | |
| SI | | | |
| SK | | | |

*Table 99 Methods and data: CH4 emissions from 4.D Agricultural soils*

| **Source Category** | **4.D** | **D. Agricultural Soils** | | |
|---|---|---|---|---|
| **Gas** | **CH4** | | | |
| **Member State** | **Projection Approach** | | **Data Sources** | **Notes** |
| AT | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| BE | | | | |
| BG | | | | |
| CY | | | | |
| CZ | | | | |
| DE | | | | |
| DK | | | | |
| EE | | | | |
| ES | | | | |
| FI | | | | |
| FR | | | | |
| UK | | | | |
| GR | | | | |
| HR | | | | |
| HU | | | | |
| IE | | | | |
| IT | | | | |
| LT | | | | |
| LU | | | | |
| LV | | | | |
| MT | | | | |
| NL | | | | |
| PL | | | | |
| PT | | | | |
| RO | | | | |
| SE | | | | |
| SI | | | | |
| SK | | | | |

*Table 100 Methods and data: N2O emissions from 4.D Agricultural soils*

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

*Table 101 Methods and data: CH4 emissions from 4.F Field burning of agricultural residues*

| Source Category | 4.F | F. Field Burning of Agricultural Residues | | |
|---|---|---|---|---|
| Gas | CH4 | | | |
| Member State | Projection Approach | Data Sources | Notes | |
| AT | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| BE | | | | |
| BG | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| CY | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| CZ | | | | |
| DE | | | | |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation | |
| EE | | | | |
| ES | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation | |
| FR | | | | |
| UK | | | | |
| GR | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation | |
| HR | | | | |
| HU | | | | |
| IE | | | | |
| IT | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| LT | | | | |
| LU | | | | |
| LV | | | | |
| MT | | | | |
| NL | | | | |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | linear trend projection via minimum square deviation | |
| PT | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| RO | Data from previous years | UNFCCC 2014 submission | Value of 2012 | |
| SE | | | | |
| SI | | | | |
| SK | | | | |

*Table 102 Methods and data: N2O emissions from 4.F Field burning of agricultural residues*

| Source Category | 4.F | F. Field Burning of Agricultural Residues | | |
|---|---|---|---|---|
| Gas | N2O | | | |
| Member State | Projection Approach | | Data Sources | Notes |
| AT | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| BE | | | | |
| BG | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| CY | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| CZ | | | | |
| DE | | | | |
| DK | Extrapolation from previous years | | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| EE | | | | |
| ES | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| FI | Extrapolation from previous years | | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| FR | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| UK | | | | |
| GR | Extrapolation from previous years | | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| HR | | | | |
| HU | | | | |
| IE | | | | |
| IT | Extrapolation from previous years | | UNFCCC 2014 submission | linear trend projection via minimum square deviation |
| LT | | | | |
| LU | | | | |
| LV | | | | |
| MT | | | | |
| NL | | | | |
| PL | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| PT | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| RO | Data from previous years | | UNFCCC 2014 submission | Value of 2012 |
| SE | | | | |
| SI | | | | |
| SK | | | | |

*Table 103 Methods and data: $CH_4$ emissions from 6.A Solid waste disposal on land*

| Source Category | 6A | A. Solid Waste Disposal on Land | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| BE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | Value from previous year |
| CZ | Extrapolation from previous years | UNFCCC 2014 submission | Value from previous year |
| DE | Data from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| DK | Extrapolation from previous years | UNFCCC 2014 submission | Value from previous year |
| EE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| ES | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| UK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| GR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HU | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| IE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| IT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| MT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| NL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| RO | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SI | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |

*Table 104 Methods and data: $CH_4$ emissions from 6.B Wastewater handling*

| Source Category | 6B | B. Waste Water Handling | |
|---|---|---|---|
| Gas | CH4 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| BE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| BG | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| CZ | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| DK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| EE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| ES | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| FI | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| FR | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| UK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| GR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HU | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| IE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| IT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| LT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| MT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| NL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| RO | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SI | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |

*Table 105 Methods and data: $N_2O$ emissions from 6.B Wastewater handling*

| Source Category | 6B | B. Waste Water Handling | |
|---|---|---|---|
| Gas | N2O | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| BG | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| CY | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| CZ | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| DE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| DK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| EE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| ES | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| FI | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| FR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| UK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| GR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HU | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| IE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| IT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| LT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LU | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| LV | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| MT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| NL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PL | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| PT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| RO | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SE | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SI | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SK | Data from previous years | UNFCCC 2014 submission | Value from previous year |

Table 106 Methods and data: $CO_2$ emissions from 6.C Waste incineration

| Source Category | 6C | C. Waste Incineration | |
|---|---|---|---|
| Gas | CO2 | | |
| **Member State** | **Projection Approach** | **Data Sources** | **Notes** |
| AT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| BE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| BG | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| CY | | | |
| CZ | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| DE | | | |
| DK | | | |
| EE | Data from previous years | | Value from previous year |
| ES | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| FI | | | |
| FR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| UK | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| GR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HR | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| HU | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| IE | Data from previous years | | **Value from previous year** |
| IT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| LT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| LU | | | |
| LV | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| MT | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| NL | | | |
| PL | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| PT | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| RO | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SE | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |
| SI | Data from previous years | UNFCCC 2014 submission | Value from previous year |
| SK | Extrapolation from previous years | UNFCCC 2014 submission | Linear trend projection (minimum square deviation) |

*Table 107 Methods and data: $CH_4$ emissions from 6.C Waste incineration*

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

*Table 108 Methods and data: $N_2O$ emissions from 6.C Waste incineration*

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

*Table 109 Methods and data: $CO_2$ emissions from 6.D Other*

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

*Table 110 Methods and data: $CH_4$ emissions from 6.D Other*

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

*Table 111 Methods and data: $N_2O$ emissions from 6.D Other*

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