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Approximated EU GHG inventory: early estimates for 2011

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European Environment Agency

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The full report and annexes are available at:

http://www.eea.europa.eu/publications/approximated-eu-ghg-inventory-2011

Executive summary

Objective of the report

The objective of this report is to provide an early estimate of greenhouse gas (GHG) emissions in the EU-15 and EU-27 for the year 2011. The official submission of 2011 data to the United Nations Framework Convention on Climate Change (UNFCCC) will occur in 2013.

In recent years, the EEA and its European Topic Centre on Air Pollution and Climate Change Mitigation have developed a methodology to estimate GHG emissions using a bottom up approach — based on data or estimates for individual countries, sectors and gases — to derive EU GHG estimates in the preceding year (t–1). For transparency, this report shows the country-level GHG estimates from which the EU estimates have been derived. The 2011 estimates are based on the latest activity data available at country level and assume no change in emission factors or methodologies as compared to the official 2012 submissions to UNFCCC (which relate to emissions in 2010).

Some Member States estimate and publish their own early estimates of GHG emissions for the preceding year. Where such estimates exist they are clearly referenced in this report in order to ensure complete transparency regarding the different GHG estimates available. Member State early estimates were also used for quality assurance and quality control of the EEA's GHG early estimates for 2011.

Finally, the EEA has also used the early estimates of 2011 GHG emissions produced by EEA member countries to assess progress towards the Kyoto targets in its annual trends and projections report (due to be published alongside the present report). In that report, the EEA's early estimates for 2011 were only used for countries that lack their own early estimates to track progress towards national and EU targets.

Rationale for early GHG emissions estimates

The European Union (EU), as a Party to the UNFCCC, reports annually on GHG inventories within the area covered by its Member States (i.e. emissions occurring within its territory). National GHG inventories for EU Member States are only available with a delay of 1.5 years. Inventories submitted on 15 April of the year t therefore include data up to the year t–2.

The latest official EU data available (1990–2010) covering all countries, sectors and gases were released on 30 May 2012 (EEA, 2012a) in connection with the annual submission of the EU GHG inventory to the UNFCCC (EEA, 2012b). The inventory data include GHG emissions not covered by the Montreal Protocol — both from sectors covered by the EU Emission Trading Scheme (ETS) and from non-trading sectors. However, whereas UNFCCC emissions run on a year t–2 timeline, Kyoto registries and EU ETS information is available on a year t–1 timeline. As such, verified EU ETS emissions are already available for 2011 (EEA, 2012c).

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

In addition, the EU's 2009 Climate and Energy Package encourages trading and non-trading sectors to run on similar timelines. The package represents the EU's initial response to limiting the global average temperature increase 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 (– 21 % and – 10 % for ETS and non-ETS sectors, respectively, compared to 2005). As with Kyoto, meeting the 2020 national targets will largely be determined by how countries reduce emissions in the non-trading sectors. Early GHG estimates can therefore help track progress towards the EU and national targets for 2020.

Finally, the Beyond GDP process (EU, 2011) likewise encourages authorities to generate environmental information in as timely a manner as socio-economic information.

Previous early GHG emission estimates for 2008, 2009 and 2010

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

In 2010 and 2011, the EEA published its early emission estimates for 2009 and 2010 (EEA, 2010 and 2011). Again, the EEA's early estimates for EU-15 and EU-27 were accurate, with subsequent official UNFCCC emissions falling within the expected range of uncertainty. The main factors explaining the trends in emissions in 2010 were further analysed in the 2012 EU GHG inventory submitted to the UNFCCC (EEA, 2012b).

Methodology for early GHG emission estimates

The present report sets out the estimated GHG emissions for 2011 for the EU Member States, the EU-15 and the EU-27 based on data sources that were published by mid-July of 2012. The estimates cover total GHG emissions as reported under the Kyoto Protocol and the UNFCCC excluding the land use, land-use change and forestry (LULUCF) sector.

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

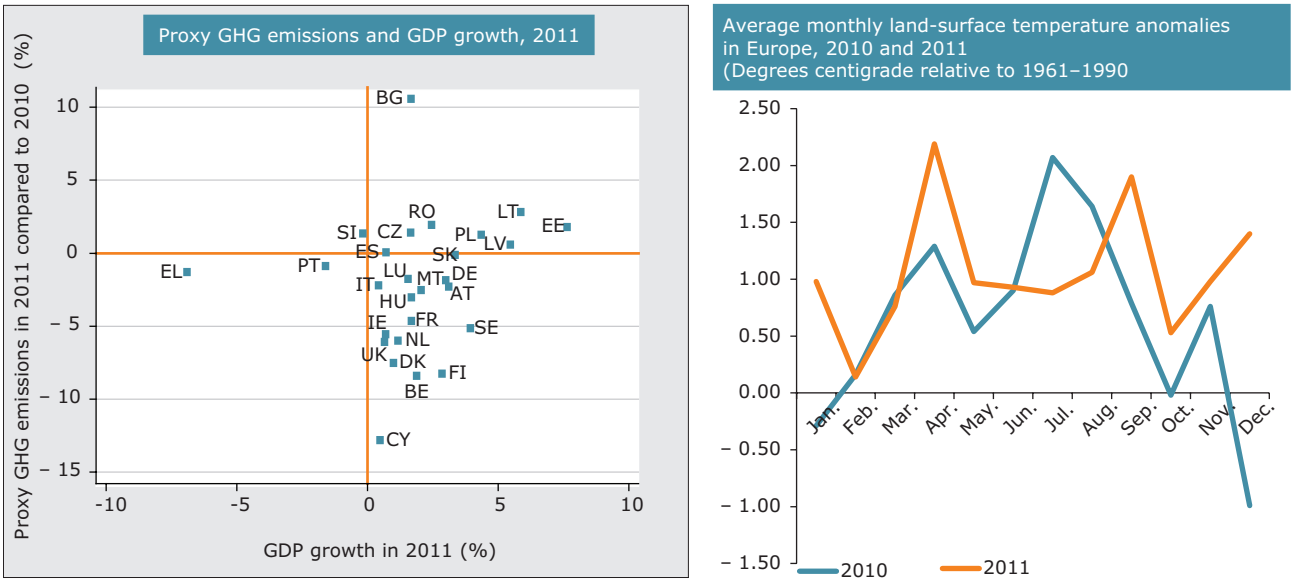
The EEA estimates are based on publicly available datasets at the national, European and international levels, disaggregated by major source categories in all sectors reported under the UNFCCC and the Kyoto Protocol. Some countries provided their own early greenhouse gas estimates (Austria, Denmark,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

Early GHG emission estimates for 2011 at EU level

The 2011 EEA estimates indicate that, after increases in emissions between 2009 and 2010, EU greenhouse gas emissions are once again following a decreasing trend just as in the period prior to 2010. Compared to the 2010 official emissions published earlier this year, the annual fall in emissions in 2011 is estimated to be – 3.5 % (+/– 0.6 %) for the EU-15 and – 2.5 % (+/– 0.3 %) for the EU-27 (total emissions without LULUCF). However, the greenhouse gas emissions for the new Member States (EU-12) increased by 1.5 % compared to the previous year. Based on these 2011 estimates, total EU-15 emissions in 2011 would be – 13.8 % below the 1990 level and 14.1 % below base year level. For EU-27, total GHG emissions in 2011 are estimated to be almost 17.5 % below 1990 emissions.

Such decrease in emissions came amid positive economic growth at the EU level between 2010 and 2011. Gross Domestic Product (GDP) increased by 1.5 %. Emissions decreased by – 3.5 %/– 2.5 % in EU-15/EU-27 respectively. Notwithstanding economic developments in specific sectors and countries, there was no apparent correlation between GDP growth and GHG emissions in the EU in 2011 (see Figure ES.0).

Figure ES.0 GHG emissions, GDP growth and monthly European temperatures, changes 2010–2011



Note: GDP from DG ECFIN''s Ameco database, European Commission; 2011 GHG emissions based on the EEA's own proxy estimates for EU Member States; average monthly land-surface temperatures from the UK's Met Office Hadley Centre, HadCRUT3 dataset. Other international sources, such as NASA's GISS and NOAA's NCDC, also confirm average warmer conditions in Europe in 2011 compared to 2010.

Source: EEA.

A milder 2011 winter compared to 2010 can partly explain lower fossil-fuel emissions (see Figure ES.0). In 2011, the winter was warmer than in the previous year in Central and Northern Europe leading to a lower heating demand and lower emissions from the residential and commercial sector. However, the winter was colder in some Southern European countries.

Overall the sectors covered by the EU Emissions Trading System (EU ETS) contributed less to the overall reduction in 2011 GHG emissions than the non-trading sectors (i.e. those outside the EU ETS). Between 2010 and 2011 the emission reductions were larger in the non-ETS sectors (– 3.8 %) than in the installations covered by the European Emissions Trading Scheme (– 3.1 %) for EU-15. Also for EU-27 the non-ETS sectors showed larger reductions (– 3.0 %) in the period 2010–2011 compared to the ETS sectors (– 1.8 %). For the new Member States (EU-12) that experienced emission growth in this period, the increase in the ETS sectors was higher (2.5 %) whereas the non-ETS emissions only grew by 0.6 %.

The residential and commercial sector contributed most to lower emissions in the EU-27 in 2011. This sector broadly falls outside the scope of the EU ETS. The milder winter conditions and the lower demand for heating were the principle reason for the approximately 62 million tonnes decrease in emissions in 2011, particularly from households. Among the EU ETS sectors, the largest decrease stemmed from energy industries, sector including emissions from heat and electricity production and refineries, with a net reduction in emissions of 47 million tonnes in 2011. The combined effect of these two sectors (residential/commercial and energy industries) contributed to about 90 % of the total reduction in GHG emissions in the EU in 2011. EU emissions from transport fell for the fourth consecutive year.

In general, GHG emissions decreased in the majority of key sectors in 2011, particularly those relying on fossil fuel combustion. On average, the total consumption of fossil fuels decreased by 2.4 % in EU-27. The combustion of fossil fuels fell by 3.3 % in the EU-15 whereas it increased in the new Member States by 2.1 %. The use of solid fuels, such as hard coal and lignite, increased by 5.4 % in the EU-27, whereas the use of liquid fuels decreased by – 3.8 %. Oil prices increased by 10 % between 2010 and 2011 for industry and households in the EU, whereas crude oil prices increased by 35 % in the same period. The consumption of natural gas fell

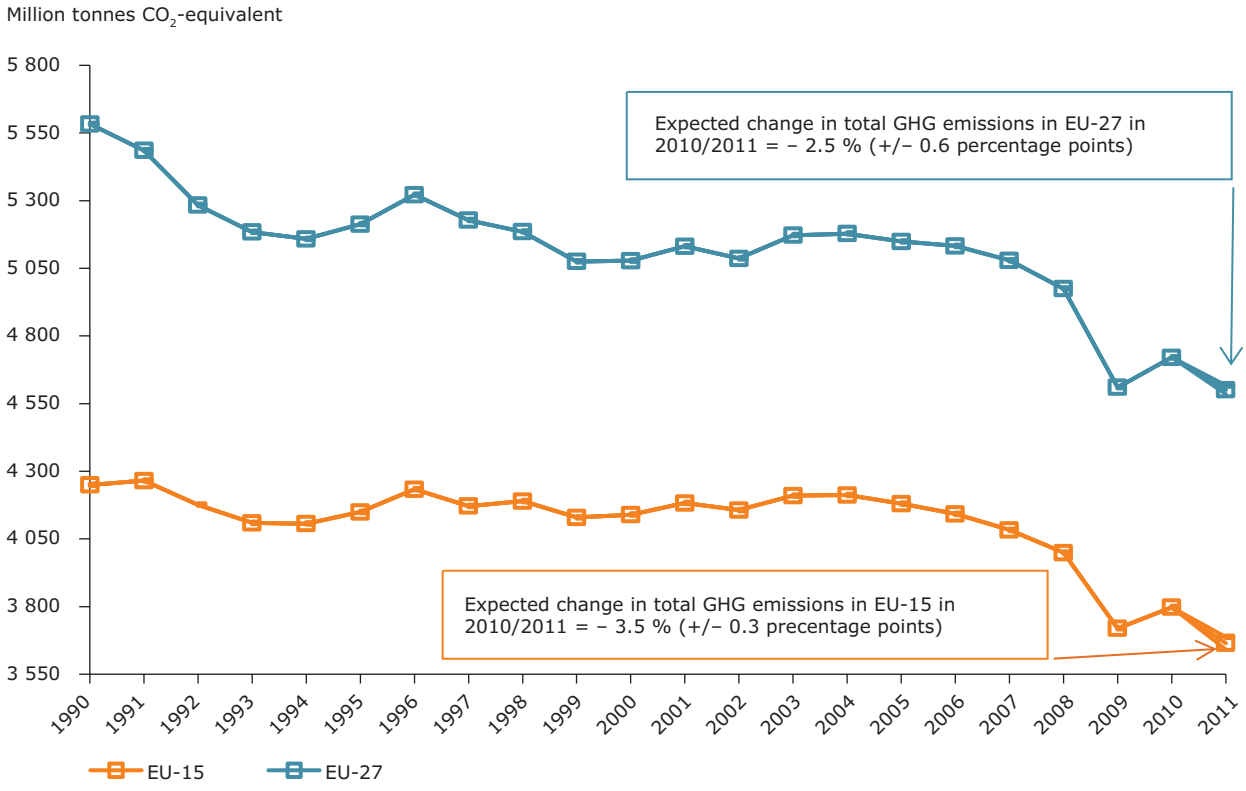
by – 5.2 % in the EU-27 — with a strong reduction in the EU-15 (– 6.4 %) but with an average increase in the new Member States of 3.7 %. Gas prices grew by 14 % for industrial consumers and by 8 % for households in the EU-27, whereas industrial gas prices rose only modestly in many of the new Member States.

Total energy consumption from renewable energy also increased in the EU-27 in 2011. The use of renewables continues to play an important role in GHG mitigation efforts by the EU and its Member States. Nuclear electricity consumption stayed stable in 2011 compared to 2010 at EU-27 level ([1]). This is despite the shutdown of eight nuclear plants in Germany.

Greenhouse gas emissions from industrial processes remained relatively constant in 2011 compared to the previous year, although emissions from mineral production decreased overall and particularly in Member States experiencing reduced activity in the construction industry. Finally, emissions from the agriculture sector decreased moderately due to a reduction in cattle livestock and the subsequent reduction in N_2O emissions from manure applied to soils and of CH_4 emissions from enteric fermentation.

Figure ES.1 shows the emission trend for total GHG emissions without LULUCF in the period 1990–2011 ([2]).

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



Source: EEA European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/ACM), based on the 2012 EU greenhouse gas inventory submitted to the UNFCCC for the period 1990–2010 and early estimates for 2011.

([1]) Eurostat 2012b: Electricity production and supply statistics — Statistics Explained (2012/8/1), http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Electricity_production_and_supply_statistics.

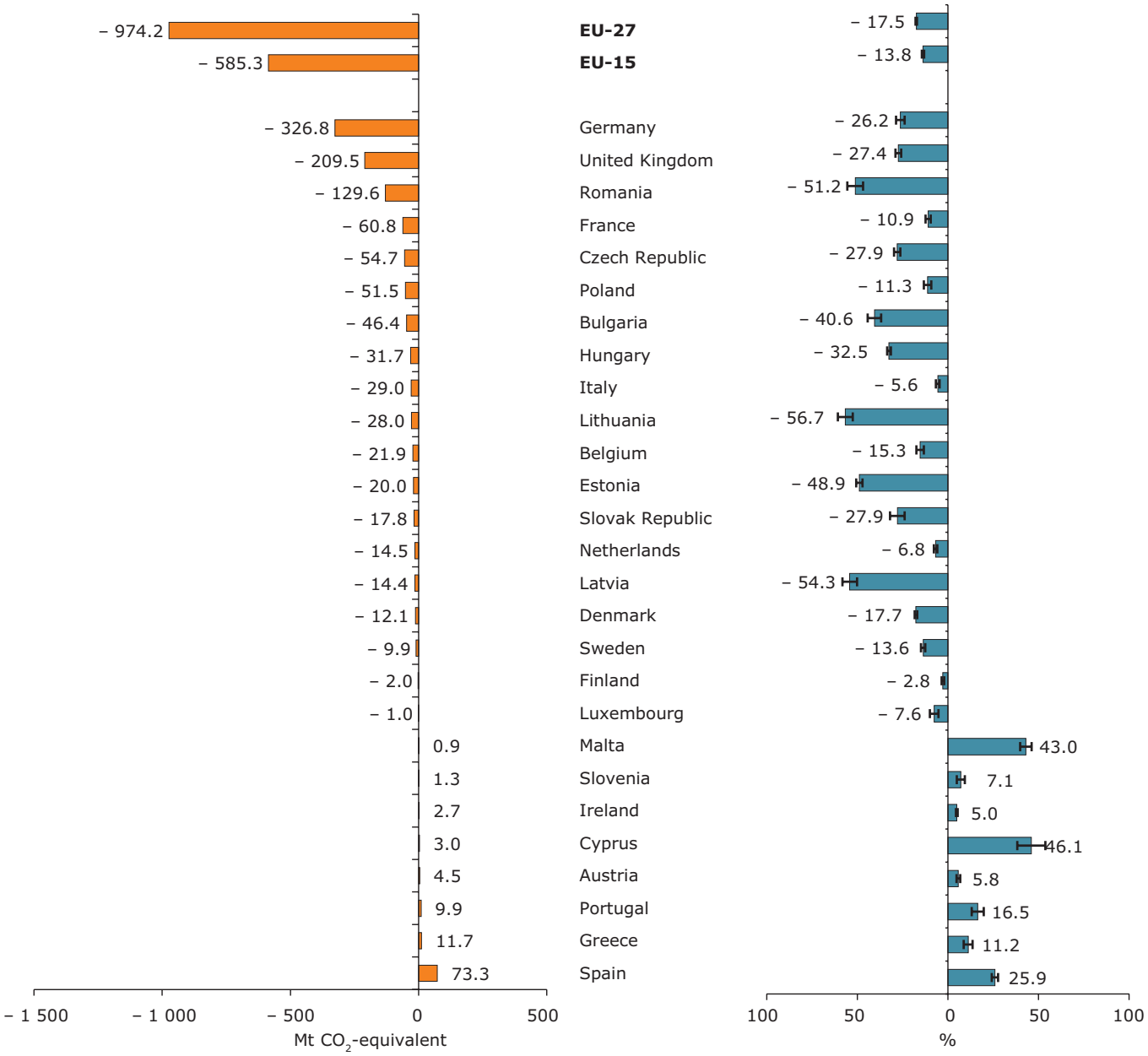
([2]) This is not equivalent to the difference to base year emissions because of accounting rules such as the selection of the base year for F-gases and the continuing recalculations of GHG inventories.

Change in GHG emissions in the period 1990–2011

Figure ES.2 presents the estimated change in GHG emissions for each Member State between 1990 and 2011 ([3]).

Aside from any recent economic impacts, a wide range of additional factors and policies (climatic and non-climatic) 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

Figure ES.2 Change in total GHG emissions (without LULUCF) in the EU and its Member States, 1990–2011



Note: Error bars are derived by doubling the average absolute deviations between the approximated GHG inventory estimated for the period 2008 to 2010 and the real 2008–2010 inventory submission at Member States' level and for the EU on either side of the mean estimate.

Source: EEA's ETC ACM based on the 2012 EU greenhouse gas inventory to UNFCCC for 1990–2010 and early estimates for 2011.

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

fuels and the strong increase in renewable energy use. Implementation of the EU's Climate and Energy Package should lead to further reductions in emissions. The direct effects of the Montreal Protocol in reducing emissions of ozone-depleting substances have also indirectly contributed to significant reductions in emissions of some potent greenhouse gases such as CFCs. Other EU policies such as the Nitrates Directive, the Common Agricultural Policy (CAP) and the Landfill Waste Directive have also been successful in indirectly reducing greenhouse gas emissions from non-CO_2 gases such as methane and nitrous oxides.

Change in GHG emissions in the period 2010–2011 at Member State level

As Figure ES.3 illustrates, GHG emissions decreased in most Member States (Austria, Belgium, Cyprus, Denmark, Germany, Greece, Finland, France, Hungary, Ireland, Italy, Luxembourg, Malta, the Netherlands, Sweden and the United Kingdom). GHG emissions remained at a similar level as in 2010 for four Member States (Latvia, Portugal, Slovakia and Spain) and increased for seven others. The largest absolute growth in emissions occurred in Bulgaria, whereas the other Member States with growing emissions experienced rather small increases (Czech Republic, Estonia, Lithuania, Poland, Romania and Slovenia). Only new Member States showed growing emissions between 2010 and 2011. Cyprus experienced the largest relative emission decrease, followed by Belgium, Denmark and Finland. Different to previous years, the emission trend changes between 2010 and 2011 are not a simple consequence of the economic situation. The Member States with current economic and financial problems are not connected with the strongest emission reductions.

Fourteen Member States have estimated and partly published their own early GHG emissions for 2011, which differ from the EEA data presented in Figure ES.3. Austria, Denmark, Germany, France, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovenia and Spain have estimated complete emissions in the form of UNFCCC's Common Reporting Format summary Table 2, similar to the approach in this report.

Finland, Greece, and the United Kingdom have provided national-total emission estimates for 2011 but not for all the disaggregated subcategories of CRF summary Table 2. According to the country estimates, the expected change in GHG emissions in 2011 compared to 2010 is as follows: Austria (– 3.1 %), Denmark (– 8.1 %), Finland (– 9.7 %), France (– 4.8 %), Germany (– 2.1 %), Greece (+ 0.2 %), Ireland (– 6.5 %), Italy (– 1.5 %), Luxembourg (+ 1.8 %), the Netherlands (– 6.8 %), Poland (+ 2.1 %), Slovenia (+ 0.1 %), Spain (+ 0.1 %) and the United Kingdom (– 7.0 %).

The list below provides links to the early GHG estimates for 2011 that individual EEA member countries have published.

Germany

http://www.umweltbundesamt.de/uba-info-presse/2012/pd12-017_weniger_treibhausgase_mit_weniger_atomenergie.htm.

France

http://www.citepa.org/images/III-1_Rapports_Inventaires/secten_avril2012-indb_sec.pdf.

Finland

http://www.stat.fi/til/khki/2010/khki_2010_2012-04-26_tie_001_en.html;
http://www.stat.fi/tup/khkinv/suominir_2012.pdf.

Norway

http://www.ssb.no/english/subjects/01/04/10/klimagassn_en/.

Netherlands

http://www.cbs.nl/en-GB/menu/themas/natuur-milieu/publicaties/artikelen/archief/2012/2012-3674-wm.htm?Languageswitch=on.

Switzerland

http://www.bafu.admin.ch/dokumentation/medieninformation/00962/index.html?lang=de&msg-id=45430.

Spain

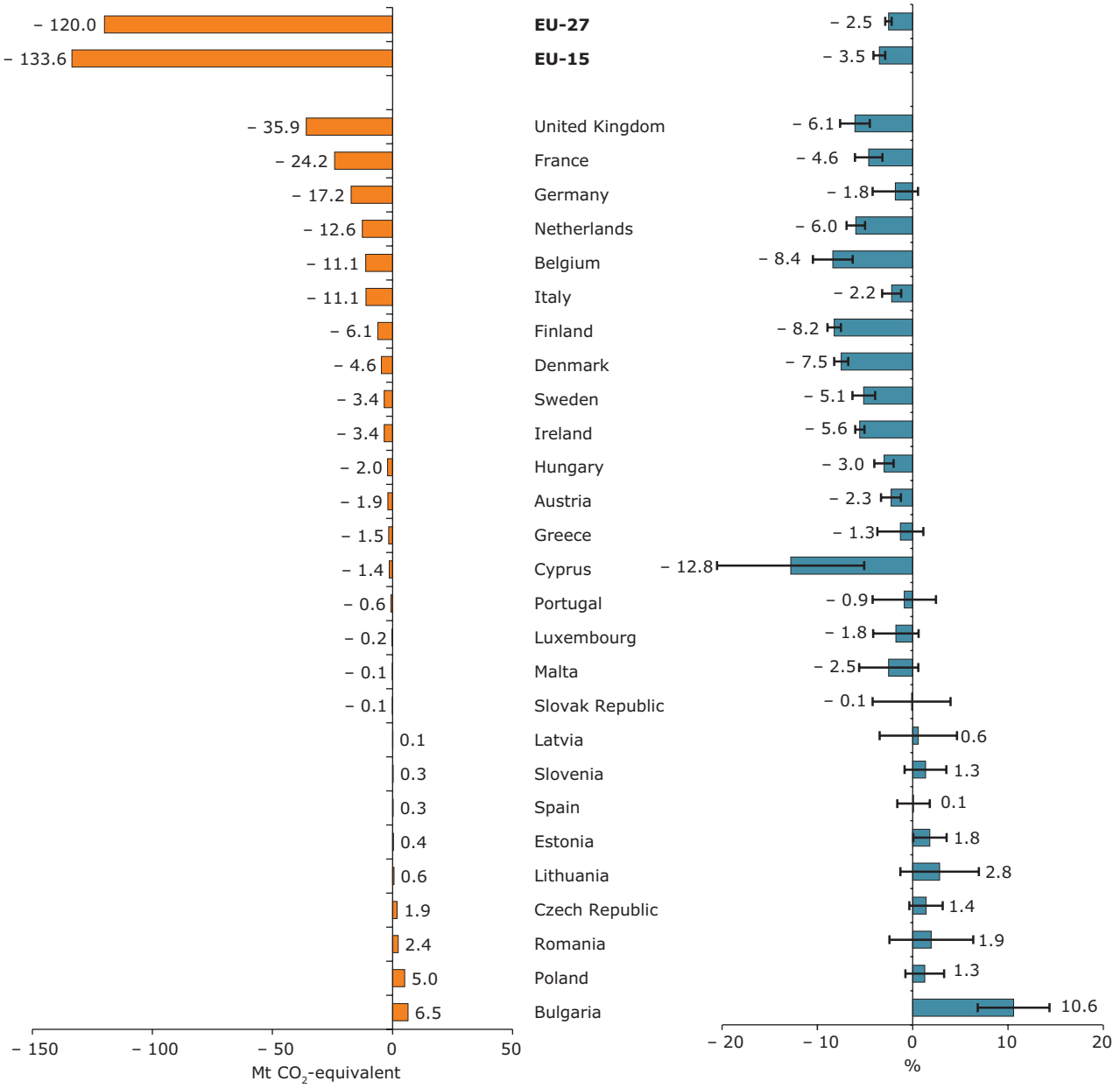
http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/Avance_de_la_estimaci%C3%B3n_de_emisiones_GEI_2011_tcm7-217059.pdf.

The United Kingdom

http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/uk_emissions.aspx.

Figure ES.3 illustrates that the largest absolute decrease of emissions occurred in United Kingdom (– 35.9 Mt CO_2-equivalent or – 6.1 %), followed by France (– 24.2 Mt CO_2-equivalent or – 4.6 %) and Germany (– 17.2 Mt CO2eq or – 1.8 %). The largest relative fall in emission compared to the previous year took place in Cyprus (– 12.8), followed by Belgium (– 8.4 %), Finland (– 8.2 %) and Denmark (– 7.5 %). The largest absolute growth in emissions occurred in Bulgaria (6.5 Mt CO_2-equivalent or 10.6 %) and Poland (5.0 Mt CO_2-equivalent or 1.3 %).

Figure ES.3 Changes in total GHG emissions without LULUCF for the EU and its Member States, 2010–2011



Note: For two Member States — Denmark and the United Kingdom — inventories submitted to the UNFCCC are different to the inventories submitted under the EU Monitoring Mechanism Decision due to the fact that Kyoto inventories include non-EU territories. The comparison in this table refers to the EC GHG inventory as consistent with the inventory submitted under the EC Monitoring Mechanism Decision.
Error bars are derived by doubling the average absolute deviations between the approximated GHG inventory estimated for the years period 2008–2010 and the real 2008–2010 inventory submission at Member States' level and for the EU on either side of the mean estimate.

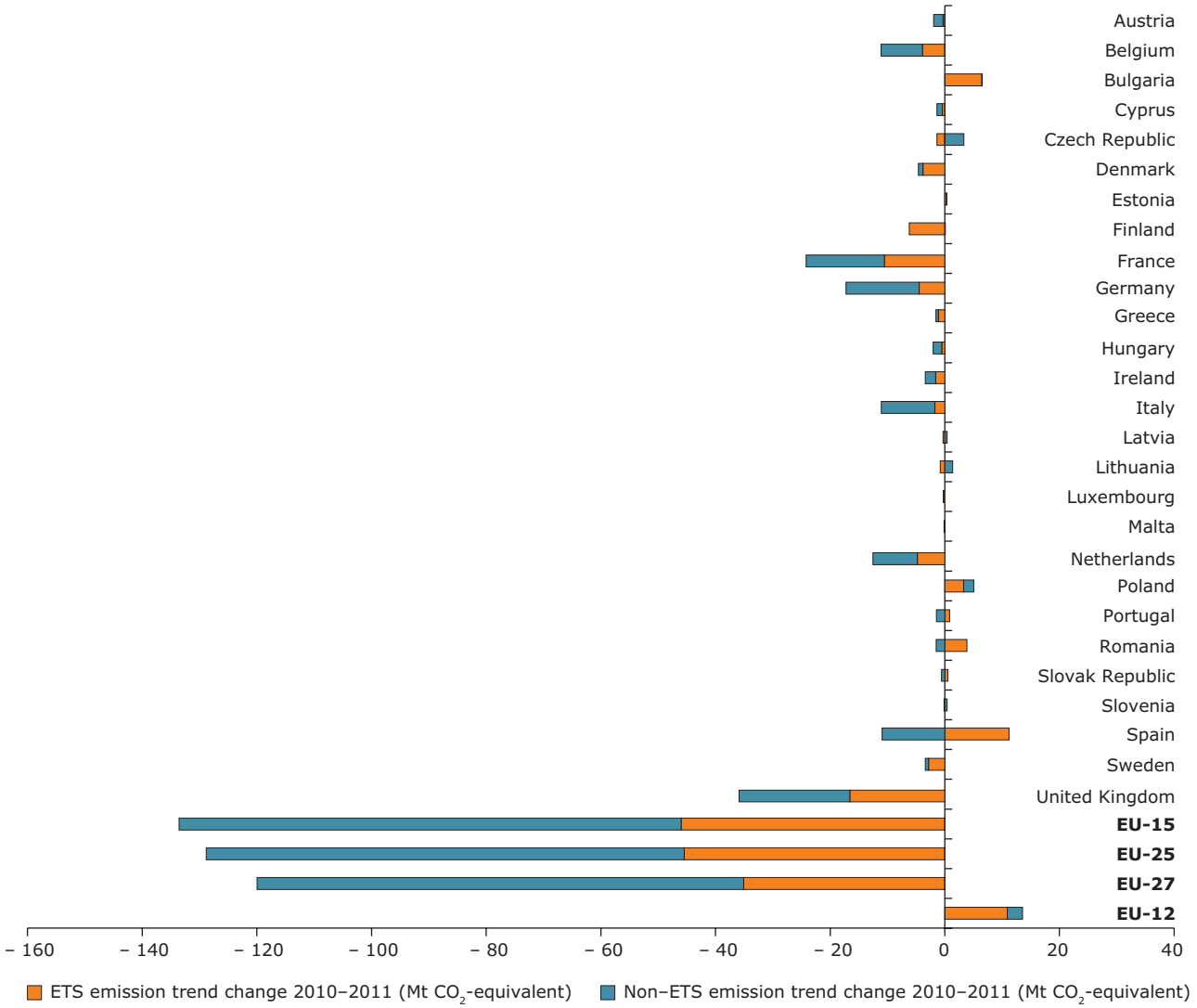
Source: EEA's ETC ACM based on the 2012 EU greenhouse gas inventory to UNFCCC for 1990–2010 and early estimates for 2011.

In Germany, the largest EU economy and GHG emitter, showed an emission decrease of – 1.8 % or 17.2 Mt CO_2-equivalent in 2011 compared to 2010. This emission reduction between 2010 and 2011 occurred despite the shutdown of eight nuclear plants after the nuclear accident in Fukushima in 2011. The increasing use of renewable electricity contributed to this reduction as well as lower electricity exports, but also the mild winter was favourable and lowered the heating demand (lower natural gas and oil consumption). The emission reduction in the ETS sector between 2010 and 2011 (– 1.0 %) was smaller than in the non-ETS sector (– 2.6 %).

In the United Kingdom greenhouse gas emissions fell by – 6.1 % or – 35.9 Mt CO_2-equivalent in 2011 relative to 2010. The decrease in CO_2 emissions between 2010 and 2011 resulted primarily from a decrease in residential gas use due to a mild winter, combined with a reduction in demand for electricity. This was accompanied by lower use of gas and greater use of nuclear power for electricity generation after technical problems at some nuclear power stations in 2010 were resolved (nuclear power generation increased by 17.1 %).

In France the results indicate that greenhouse gas emissions declined by – 4.6 % or – 24.2 Mt CO_2-equivalent in 2011 compared to

Figure ES.4 Change in GHG emission trends in Europe separated for ETS and non-ETS emissions between 2010 and 2011 in Mt CO_2-equivalent



Source: EEA's ETC ACM based on the 2012 EU greenhouse gas inventory to UNFCCC for 1990–2010 and early estimates for 2011, verified emissions from CITL as of 15 August 2012.

2010. The drop in emissions was, on the one hand, caused by the mild winter leading to a considerably reduced heating demand in the residential and services sectors. On the other hand favourable conditions led to a larger production of nuclear electricity in 2011 compared to the previous year. This resulted in a strong emission decrease from electricity generation.

The case of Spain is quite exceptional. Spanish GHG emissions remained almost constant (see Figure ES.4). In Spain, the emissions covered under the EU ETS show a strong increase (9.2 %) whereas the non-ETS emissions declined by – 4.7 %. The strong growth in emissions in the energy sector is due to a switch from liquid and gaseous fuels to solid fuels for power generation. Renewable energies decreased as well as the use of nuclear energy. In the transport, services and agriculture sectors emissions decreased. Low economic activity continued throughout 2011, and lower demand for construction also resulted in lower emissions from mineral products.

Bulgaria showed the strongest increase in emissions. Bulgaria also recorded a large increase in electricity generation of 7.5 % and nuclear electricity generation dropped by 16.8 % in 2011 compared to the previous year. Different to central Europe, the 2011 winter was colder than usual leading to a higher heating demand. Similar to Spain, the emission increase is also due to a change in fuel use from liquid fuel to coal. The solid fuel consumption increased by 18.6 % between 2010 and 2011. This led to a drastic increase in EU ETS emissions (19.4 %) whereas non-ETS emissions remained more or less constant.

Poland also faced increasing emissions, but only by 1.3 % in 2011 relative to 2010. Fuel consumption of all fuel types rose, in particular solid fuel consumption (9.5 %) and natural gas consumption (10.3 %). This development is mainly influenced by economic issues as GDP increased by 4.3 % in the period considered.

Uncertainty in early GHG emissions estimates

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

The early 2011 estimates are based on the national methodologies and emission factors used by Member States in their 2012 official submissions to the UNFCCC. Current quality improvements in Member State inventories take effect in next year's official submissions to the UNFCCC and are therefore a source of uncertainty for the proxy inventory.

The uncertainty ranges presented for the early 2011 estimates are derived from comparing the official national data submitted to the UNFCCC for the period 2008 to 2010 to the EEA early estimates for these three years. The uncertainties presented in the text and graphs are the average absolute deviation between the proxy inventory estimates and final Member State emissions submitted to the UNFCCC. However, by assessing the early greenhouse gas estimates that several Member States have produced for 2011 (Austria, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovenia, Spain and the United Kingdom), the EEA was able to verify the most suitable methodology for calculating emissions, resulting in a reduced uncertainty range.

Official 2011 greenhouse gas emissions for the EU will be available towards the end of May or early June 2013, when the EEA publishes its EU greenhouse gas inventory 1990–2011 and inventory report 2013 for submission to the UNFCCC.

References

BP, 2012, BP Statistical Review of World Energy 2012 (http://www.bp.com/extendedsectiongenericarticle.do?categoryId=9041234&contentId=7075077) accessed 16 June 2012.

EC, 2004, Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol, (OJ L 49, 19.2.2004).

EC, 2012, *Quarterly report on European electricity markets* (http://ec.europa.eu/energy/observatory/electricity/electricity_en.htm) accessed 15 August 2012.

EEA, 2011, *Greenhouse gas emission trends and projections in Europe 2011 — Tracking progress towards Kyoto and 2020 targets* (http://www.eea.europa.eu/publications/ghg-trends-and-projections-2011).

EEA, 2012a, 'EEA greenhouse gas data viewer' (http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer) accessed 15 August 2012.

EEA, 2012b, *Annual European Union greenhouse gas inventory 1990–2010 and inventory report 2012,* EEA Technical Report No 3/2012 (http://www.eea.europa.eu/publications/european-union-greenhouse-gas-inventory-2012) accessed 14 August 2012.

EEA, 2012c, *European Union Emissions Trading Scheme (EU ETS) data viewer* (http://www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer) accessed 15 August 2012.

EU, 2011, *Beyond GDP — Measuring progress, true wealth and the well-being of nations* (http://www.beyond-gdp.eu/) accessed 24 September 2011.

Eurostat, 2012, *Energy — Database* (http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database) accessed 15 August 2012.

IEA/OECD, 2012a, *Renewables Information 2012*, International Energy Agency and Organisation for Economic Co-operation and Development, Paris.

IEA/OECD, 2012b, *End-use energy prices database*, International Energy Agency and Organisation for Economic Co-operation and Development, Paris

ISSB Limited, 2012, *UK Crude Steel Production 1991–2011* (http://www.issb.co.uk/uk.html) accessed 6 October 2011.

UNFCCC, 2012, *Kyoto Protocol base year data*, (http://unfccc.int/ghg_data/kp_data_unfccc/base_ year_data/items/4354.php) accessed 24 July 2012.

World Steel Association, 2012a, *Crude steel production* (http://www.worldsteel.org/statistics/crude-steel-production.html) accessed in June 2012.

World Steel Association, 2012b, *Blast furnace iron (BFI) production* (http://www.worldsteel.org/statistics/BFI-production.html) accessed in June 2012.

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