EEA Technical report | No 10/2010

# NEC Directive status report 2009

## Reporting by the Member States under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants

ISSN 1725-2237

European Environment Agency

X

# NEC Directive status report 2009

## Reporting by the Member States under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants

European Environment Agency

Cover design: EEA
Layout: Diadeis/EEA



Luxembourg: Office for Official Publications of the European Union, 2010

ISBN 978-92-9213-107-4
ISSN 1725-2237
doi:10.2800/43009

European Environment Agency
Kongens Nytorv 6
1050 Copenhagen K
Denmark
Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99
Web: www.eea.europa.eu
Enquiries: www.eea.europa.eu/help/infocentre/enquiries

# Contents

# Acknowledgements

This report was prepared by the European Environment Agency (EEA) and its European Topic Centre for Air and Climate Change (ETC/ACC, Umweltbundesamt Austria). The lead author was Sabine Göttlicher. Other authors (in alphabetical order) were Andreas Borgan, Michael Gager and Katarina Marečková. The EEA project manager was Martin Adams. The desk officer at the European Commission's Environment DG was André Zuber.

The EEA thanks those national representatives of the European environmental information and observation network (Eionet) who provided comments on the draft version of this report.

# Executive summary

This report documents the most recent emissions and projections information requested under the National Emission Ceilings Directive (NECD) ([1]) by the end of 2009. The directive requires all 27 Member States of the European Union to report information annually concerning emissions and projections for four main air pollutants: sulphur dioxide ($SO_2$), nitrogen oxides ($NO_X$), non-methane volatile organic compounds (NMVOCs) and ammonia ($NH_3$). These pollutants harm both human health and the environment by contributing to formation of ozone and particulate matter and by causing acidification and eutrophication. To help protect human health and the environment, the NECD sets pollutant-specific and legally binding emission ceilings for each of these pollutants and for each country, which must be met by 2010 and thereafter.

## Comparison of emissions and projected emissions with the NECD emission ceilings for 2010

All Member States submitted emission data and provided projection data required by the directive in the latest (2009) reporting round ([2]).

Fourteen Member States anticipate they will meet all four of the pollutant-specific emission ceilings specified in the NECD, with the remaining 13 Member States indicating they will miss at least one of their respective ceilings (Table ES.1). This is similar to the previous reporting round (2008). Following changes to their reported projections, Poland now anticipates meeting its emission ceilings for all four pollutants, but Malta no longer does.

As noted in last year's report ([3]), for many Member States the 2010 emission ceiling for $NO_X$ remains the most challenging. Eleven Member States now report that they anticipate missing it, based on the reported 'with measures' projections. Three Member States (Austria, Portugal and Spain) indicate they will miss their NMVOC ceiling; three Member States (Germany, the Netherlands and Spain) expect to miss their $NH_3$ ceiling, and one Member State (Malta) anticipates missing its $SO_2$ ceiling.

Higher than anticipated emissions in the road transport sector contribute to the difficulties many Member States have in attaining their $NO_X$ ceilings. The road transport sector contributed around 40 % of total EU-27 $NO_X$ emissions in 2008 ([4]) and, although overall emissions have decreased since 1990, the reduction has not always been as large as originally anticipated. This is partly because the sector has grown more than expected and partly because vehicle emission standards have not always delivered the foreseen level of $NO_X$ reductions.

Several Member States, including Slovenia, Sweden and the United Kingdom, expect to exceed their respective $NO_X$ ceilings by only small margins (less than 5 %). In contrast, France and Spain expect to exceed their ceilings by 261 kilotonnes and 236 kilotonnes respectively — equivalent to exceedances of 32 % and 28 %. Other countries, while expecting lower exceedances in absolute terms, anticipate exceeding their ceilings by even larger margins, notably Austria (42 %), Belgium (43 %) and Ireland (58 %).

However, for some of those Member States that do anticipate meeting their ceilings, considerable

([1]) Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (OJ L 309, 27.11.2001, p. 22, as amended).
([2]) Twenty-three of the 27 EU Member States reported their national inventories of $SO_2$, $NO_X$, NMVOC and $NH_3$ by the required date of 31 December 2009, while the remaining Member States reported data after this deadline. Thirteen Member States subsequently provided additional or revised data between 29 December 2009 and 1 June 2010.
([3]) *NEC Directive status report 2008*. European Environment Agency, Technical report No 11/2009.
([4]) *European Union emission inventory report 1990–2008* under the Convention on Long-range Transboundary Air Pollution. European Environment Agency, Technical report No 7/2010.

reductions compared with the reported 2008 emissions are still required. Italy, Denmark and the Netherlands, for example, project to attain their ceilings but report $NO_X$ emissions for the year 2008 that are more than 10 % away from their ceilings. This means significant emission reductions were needed in 2009 and in 2010 if the ceilings are to be attained. Similarly, Germany and Denmark report emissions for the year 2008 more than 10 % higher than their NMVOC ceilings. From the limited information provided by Member States under the NECD, it is not at all clear whether such significant reductions by 2010 will be feasible in all instances.

Analysis also shows that, with current measures in place, emissions in the EU-27 are anticipated to be

**Table ES.1 Overview of 'with measures' (WM) projections reported by Member States**

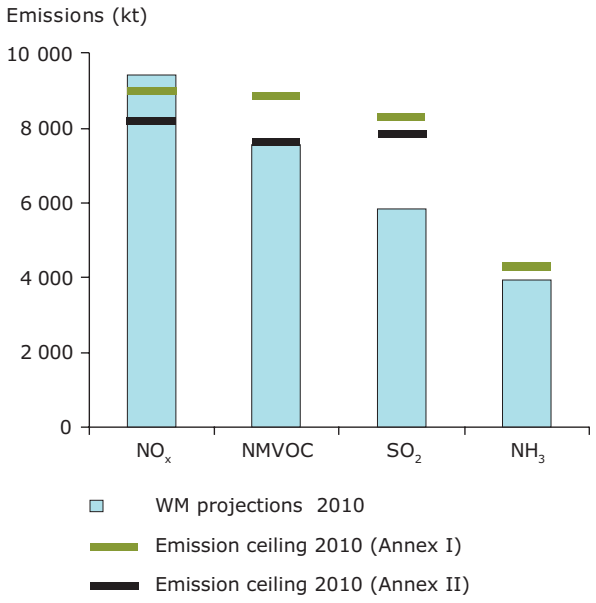
| Member State | $NO_x$ | NMVOCs | $SO_2$ | $NH_3$ |
|---|---|---|---|---|
| Austria | × | × | √ | √ |
| Belgium | × | √ | √ | √ |
| Bulgaria | √ | √ | √ | √ |
| Cyprus | √ | √ | √ | √ |
| Czech Republic | √ | √ | √ | √ |
| Denmark | √ | √ | √ | √ |
| Estonia | √ | √ | √ | √ |
| Finland | √ | √ | √ | √ |
| France | × | √ | √ | √ |
| Germany | × | √ | √ | × |
| Greece | √ | √ | √ | √ |
| Hungary | √ | √ | √ | √ |
| Ireland | × | √ | √ | √ |
| Italy | √ | √ | √ | √ |
| Latvia | √ | √ | √ | √ |
| Lithuania | √ | √ | √ | √ |
| Luxembourg | × | √ | √ | √ |
| Malta | × | √ | × | √ |
| Netherlands | √ | √ | √ | × |
| Poland | √ | √ | √ | √ |
| Portugal | √ | × | √ | √ |
| Romania | √ | √ | √ | √ |
| Slovakia | √ | √ | √ | √ |
| Slovenia | × | √ | √ | √ |
| Spain | × | × | √ | × |
| Sweden | × | √ | √ | √ |
| United Kingdom | × | √ | √ | √ |
| **√** | **16** | **24** | **26** | **24** |
| **×** | **11** | **3** | **1** | **3** |

**Notes**: '✓' indicates that a Member State anticipates meeting or surpassing its respective emission ceiling on the basis of currently implemented and adopted policies and measures.

'X' indicates that a ceiling will not be met without implementing additional measures to reduce emissions.

Member State emission ceilings are compared against reported 'with measures' (WM) projections. WM projections take into account currently implemented and adopted policies and measures. Where Member States have instead reported only 'business as usual' (BAU) projections, it is assumed for comparison with the ceilings that these are equivalent to a WM projection.

**Figure ES.1 Comparison of aggregated EU-27 WM emission projections and ceilings in 2010**




**Note:** EU-27 WM projections are aggregates of the projections reported by individual Member States. The emission ceilings shown are the aggregated EU-27 emission ceilings defined in Annexes I and II of the NECD. Annex II of the NECD does not define a ceiling for $NH_3$.

greater than the aggregated 2010 ceilings (Annex I of the NECD ([5])) for $NO_X$ but lower than the ceilings for the remaining pollutants ($SO_2$, NMVOC and $NH_3$) (Figure ES.1). Similarly, of the three more strict Annex II emission ceilings which are designed with the aim of broadly meeting the interim environmental objectives as set out in Article 5 of the NECD, only the $NO_X$ ceiling is projected to be missed. NMVOC emissions are projected to be only marginally below the Annex II ceiling.

Specifically for the four NECD pollutants:

- Projected EU-27 $NO_X$ emissions ([6]) are 4 % above the aggregate emission ceiling given in Annex I (calculated on the basis of the individual Member State ceilings defined in the NECD), and 14 % above the stricter Annex II ceiling of the NECD for the EU-27 as a whole.
- NMVOC projections for the EU-27 are 15 % below the aggregated emission ceiling given in Annex I for 2010, and are marginally below the Annex II ceiling.
- The EU-27 is projected to be 30 % below the Annex I $SO_2$ ceiling and 25 % below the Annex II $SO_2$ ceiling.
- The $NH_3$ WM projections are 8 % below the EU-27 Annex I emission ceiling; there is no separate ceiling for $NH_3$ defined in Annex II of the NECD.

## Progress of non-EU countries in meeting 2010 emission ceilings under the Gothenburg Protocol to the UNECE LRTAP Convention

For comparison, an overview of the progress in the non-EU EEA member countries in meeting their respective 2010 emission ceilings set under the UNECE (United Nations Economic Commission for Europe) Long-range Transboundary Air Pollution (LRTAP) Convention's Gothenburg Protocol is shown in Table ES.2. Each of these countries projects to miss at least one of their four emission ceilings, although only for Norway $NO_X$ is a sizeable exceedance (17 %) of the ceiling projected to occur in 2010; for the other countries and pollutants the projected exceedances are small.

**Table ES.2 Overview of 'with measures' (WM) projections reported by non-EU countries**

| Country | $NO_X$ | NMVOC | $SO_2$ | $NH_3$ |
|---|---|---|---|---|
| Liechtenstein | √ | √ | √ | x |
| Norway | x | √ | x | √ |
| Switzerland | √ | √ | √ | x |

**Note:** Projections for Liechtenstein, Norway and Switzerland are the latest reported projections under the LRTAP Convention and are compared with the respective emission ceilings of the Gothenburg Protocol. Liechtenstein has signed but not yet ratified the protocol. Turkey has not signed the protocol.

([5]) Annexes I and II of the NECD define aggregated emission ceilings for the EU-27. The Annex I EU-27 ceilings represent the aggregation of individual Member State ceilings defined in that Annex. The Annex II EU-27 ceilings are stricter than those of Annex I and are designed with the aim of attaining by 2010, for the European Union as a whole, the interim environmental objectives set out in Article 5 of the NECD (i.e. a reduction of acidification, health- and vegetation-related ground-level ozone exposure by 2010 compared with the 1990 situation). There is no separate ceiling for $NH_3$ defined in Annex II of the NECD.

([6]) EU-27 WM projections are based on the aggregated WM projection data reported by individual Member States.

## Effects of the economic recession on reported projections for 2010

Reduced rates of economic activity occurring as a result of the financial recession are anticipated to have caused emissions in certain sectors to decrease in a number of Member States, particularly for 2009 (for which no data are yet available) and continuing into 2010. Only limited information on the assumptions used when developing projections was provided by Member States. While some Member States have explicitly stated that the effects of the economic recession are not taken into account in the reported national projections, for a number of others it is not clear whether impacts arising from the recession are included or not. The actual 2010 emissions in a number of Member States may therefore be lower than is presently indicated by the reported projections data, thus somewhat improving the respective chances of these countries in meeting their obligations.

Importantly, the NECD also requires that future emissions stay below national ceilings after 2010.

## Past emission trends

Under the NECD, Member States must formally submit only two years of emission data ([7]). Thus not all Member States provide data over a series of years. This therefore prevents any reliable assessment of long-term emission trends (either within individual Member States or for the EU-27 as a whole) on the basis of data submitted under the NECD. Nevertheless, several Member States do submit updated emission data for all years back to 1990. These data show quite clearly that there has been a decrease in emissions of the four NECD pollutants in the majority of Member States. Several have already succeeded in reducing emissions to meet the requirements of the NECD or, as noted earlier, are projected to do so before 2010. A more complete picture of past emission trends in the European Union is provided by the annual European Union emission inventory submission to UNECE pursuant to its LRTAP Convention ([4]).

## Transparency of reported information

Only 10 Member States (Austria, Denmark, Estonia, Finland, Ireland, Malta, Poland, Romania, Slovenia and the United Kingdom) reported key socioeconomic data used in preparing their projections, despite this being a formal requirement of the NECD.

Providing inventory reports or additional explanatory information that describe the methods and sources of the reported data is not mandatory under the NECD, meaning that the transparency of submitted data remains rather limited. Nevertheless, eight Member States (Austria, Finland, Germany, the Netherlands, Poland, Romania, Slovakia and Sweden) voluntarily submitted an inventory report together with their NECD inventories.

Data described in this report is made available in an accompanying file (Annex 1 to this report) and also in an online dataviewer from the EEA's Dataservice ([8]).

([7]) By 31 December each year, Member States shall report to the European Commission and the EEA their national emission inventories; final emission data should be submitted for the previous year but one, and provisional emission data for the previous year.

([8]) http://dataservice.eea.europa.eu/PivotApp/pivot.aspx?pivotid=468.

# 1 Introduction

'The aim [of the National Emission Ceilings Directive] is to limit emissions of acidifying and eutrophying pollutants and ozone precursors in order to improve the protection in the Community of the environment and human health... by establishing national emission ceilings…'

The National Emission Ceilings Directive (NECD) ([9]) highlights the importance of reporting air pollutant emission data for assessing progress in reducing air pollution in the European Union region and for ascertaining the compliance of the Member States with their commitments.

This report provides an overview of emission and projection data submitted by Member States under the NECD. It also presents an analysis of the distance to emission ceilings of sulphur dioxide ($SO_2$), nitrogen oxides ($NO_X$), non-methane volatile organic compounds (NMVOCs) ([10]) and ammonia ($NH_3$) emissions for the year 2010. The report was prepared on behalf of the European Environment Agency (EEA) by its European Topic Centre on Air and Climate Change (ETC/ACC).

Throughout this report, the term 'European Union' refers to the 27 Member States as of 31 December 2009: 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.

## 1.1 Reporting obligations under the NECD

Articles 2, 6, 7 and 8 of the National Emission Ceilings Directive (NECD) set forth the requirements for the EU-27 Member States concerning their national inventories, projections and programmes. Member States shall accordingly prepare and annually update national total emissions and emission projections for 2010 for the pollutants $SO_2$, $NO_X$, NMVOC and $NH_3$. In addition, by 31 December each year, the Member States shall report to the European Commission and the EEA these national emission inventories and emission projections; final emission data should be submitted for the previous year but one, and provisional emission data for the previous year. Anticipated significant changes in the geographical distribution of national emissions shall also be indicated.

Member States were obliged to report their updated national programmes for progressive reduction of national emissions of $SO_2$, $NO_X$, NMVOC and $NH_3$ to the European Commission by 2006. The reported national programmes should have included information on policies (adopted and envisaged), and quantified estimates of the effect of these policies and measures on emissions of those pollutants in 2010. A detailed evaluation of the reported NECD programmes was performed in 2007 for the European Commission. It analysed projections and programmes submitted by the Member States and the measures they planned to implement (AEA Technology, 2007).

To help ensure that information on emissions reported by Member States is consistent and harmonised, the NECD further states that the Member States shall establish emission inventories using the methodologies agreed upon by the Convention on Long-range Transboundary Air Pollution (LRTAP Convention). It also requests (Annex III of the NECD) that, in preparing these inventories and projections, Member States should use the latest version of the *EMEP/Corinair emission*

([9]) Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (OJ L 309, 27.11.2001, p. 22); as amended by Council Directive 2006/105/EC of 20 November 2006 (OJ L 363, 20.12.2006, p. 368); the Act concerning the conditions of accession of the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Poland, the Republic of Slovenia and the Slovak Republic, and the adjustments to the Treaties on which the European Union is founded (OJ L 236, 23.9.2003 p. 33). A consolidated version of the NECD is available at: http://ec.europa.eu/environment/air/pdf/nec_eu_27.pdf [accessed 10 May 2010].

([10]) The NECD defines VOCs as being non-methane volatile organic compounds (NMVOC).

*inventory guidebook* (i.e. the since-renamed *EMEP/EEA air pollutant emission inventory guidebook*, EMEP/EEA 2009).

In preparing emission inventories and projections under the NECD, Member States should apply the principles outlined in the UNECE for reporting emission data under the LRTAP Convention (UNECE, 2009). The historic and projected emission data presented must be 'transparent, consistent, comparable, complete and accurate'.

The EMEP/EEA guidebook provides comprehensive guidance for the estimation of emissions from all relevant source sectors. It also allows the Member States to use national or international methodologies to estimate emissions and projections other than those recommended in the guidebook, as long as such methods are considered to be more representative of the national situation and are compatible with the guidebook. When using alternative methods, it is important that a description of the chosen alternative method be provided. To comply with the requirement for consistency in inventories, any time-series data provided pursuant to the NECD should be calculated in a consistent manner. Where methods are revised, these amended methods should be applied to the other years of the inventory and new estimates for these years should be compiled and reported.

### *1.1.1 Scope*

The NECD covers emissions from all sources of $NO_X$, NMVOCs, $SO_2$ and $NH_3$, which arise as a result of human activities within the territory of the Member States and their exclusive economic zones, except:

(a) emissions from international maritime traffic;
(b) aircraft emissions beyond the landing and take-off cycle;
(c) for Spain, emissions in the Canary Islands;
(d) for France, emissions in the overseas departments;
(e) for Portugal, emissions in Madeira and the Azores.

### *1.1.2 Accessibility of information*

As specified in Article 7 of the NECD, the European Commission, assisted by the EEA, shall, in cooperation with the Member States and on the basis of the information provided by them, establish inventories and projections for the relevant pollutants. The inventories and projections shall be made publicly available ([11]).

### *1.1.3 Emission ceilings*

By 2010 at the latest, Member States shall limit their annual emissions of $SO_2$, $NO_X$, NMVOC and $NH_3$ to the ceilings defined in the directive. In this report, emissions by Member States for the year 2008 and their projections for 2010 are compared with the emission ceilings defined in Annex I of the NECD. Emission ceilings for the individual Member States and for the EU-27 as a whole (as defined in Annexes I and II of the NECD) are shown in Table 1.1 and Table 1.2.

The emission ceilings given in Annex II of the NECD (Table 1.2) are designed with the aim of attaining the European Union's interim environmental objectives set out in Article 5 of the NECD by 2010. Meeting those objectives is expected to result in reduced acidification, health- and vegetation-related ground-level ozone exposure by 2010 compared with the 1990 situation. The Annex II emission ceilings for the European Union are stricter than the aggregated Member State emission ceilings given in Annex I of the NECD. There is no ceiling for $NH_3$ in Annex II of the NECD.

## 1.2 Preparation of NECD inventories in the European Union

### *1.2.1 Institutional arrangements and dataflow*

Preparation of the aggregated European Union NECD inventory involves several stages: the Member States provide data; the European Commission and the EEA receive the data; and the EEA (via its ETC/ACC) compiles the data and prepares the inventory data and this assessment report. The EEA and the European Commission also communicate with the Member States and disseminate the results.

For reporting purposes, EU Member States are requested to make use of the EEA Eionet ReportNet tools. Within the Eionet priority dataflow agreement, the EEA requests its members to supply a copy of their report on NECD emissions, projections and programmes, as reported to the European Commission. The European Commission encourages EU accession and candidate countries to provide data on a voluntary basis.

([11]) Data submitted by Member States under the NECD are available through the EEA data service: http://dataservice.eea.europa.eu/dataservice/ [accessed 6 May 2010].

**Table 1.1 National 2010 emission ceilings for $SO_2$, $NO_x$, NMVOC and $NH_3$, as defined in Annex I of the NECD**

| Member State | $NO_x$ (Gg) | NMVOC (Gg) | $SO_2$ (Gg) | $NH_3$ (Gg) |
|---|---|---|---|---|
| Austria | 103 | 159 | 39 | 66 |
| Belgium | 176 | 139 | 99 | 74 |
| Bulgaria | 247 | 175 | 836 | 108 |
| Cyprus | 23 | 14 | 39 | 9 |
| Czech Republic | 286 | 220 | 265 | 80 |
| Denmark | 127 | 85 | 55 | 69 |
| Estonia | 60 | 49 | 100 | 29 |
| Finland | 170 | 130 | 110 | 31 |
| France | 810 | 1 050 | 375 | 780 |
| Germany | 1 051 | 995 | 520 | 550 |
| Greece | 344 | 261 | 523 | 73 |
| Hungary | 198 | 137 | 500 | 90 |
| Ireland | 65 | 55 | 42 | 116 |
| Italy | 990 | 1 159 | 475 | 419 |
| Latvia | 61 | 136 | 101 | 44 |
| Lithuania | 110 | 92 | 145 | 84 |
| Luxembourg | 11 | 9 | 4 | 7 |
| Malta | 8 | 12 | 9 | 3 |
| Netherlands | 260 | 185 | 50 | 128 |
| Poland | 879 | 800 | 1 397 | 468 |
| Portugal | 250 | 180 | 160 | 90 |
| Romania | 437 | 523 | 918 | 210 |
| Slovakia | 130 | 140 | 110 | 39 |
| Slovenia | 45 | 40 | 27 | 20 |
| Spain | 847 | 662 | 746 | 353 |
| Sweden | 148 | 241 | 67 | 57 |
| United Kingdom | 1 167 | 1 200 | 585 | 297 |
| **EU-27** | **9 003** | **8 848** | **8 297** | **4 294** |

**Table 1.2 European Union 2010 emission ceilings for $SO_2$, $NO_x$ and NMVOC, as defined in Annex II of the NECD**

| | $NO_x$ (Gg) | NMVOC (Gg) | $SO_2$ (Gg) |
|---|---|---|---|
| **EU-27** | 8 180 | 7 585 | 7 832 |

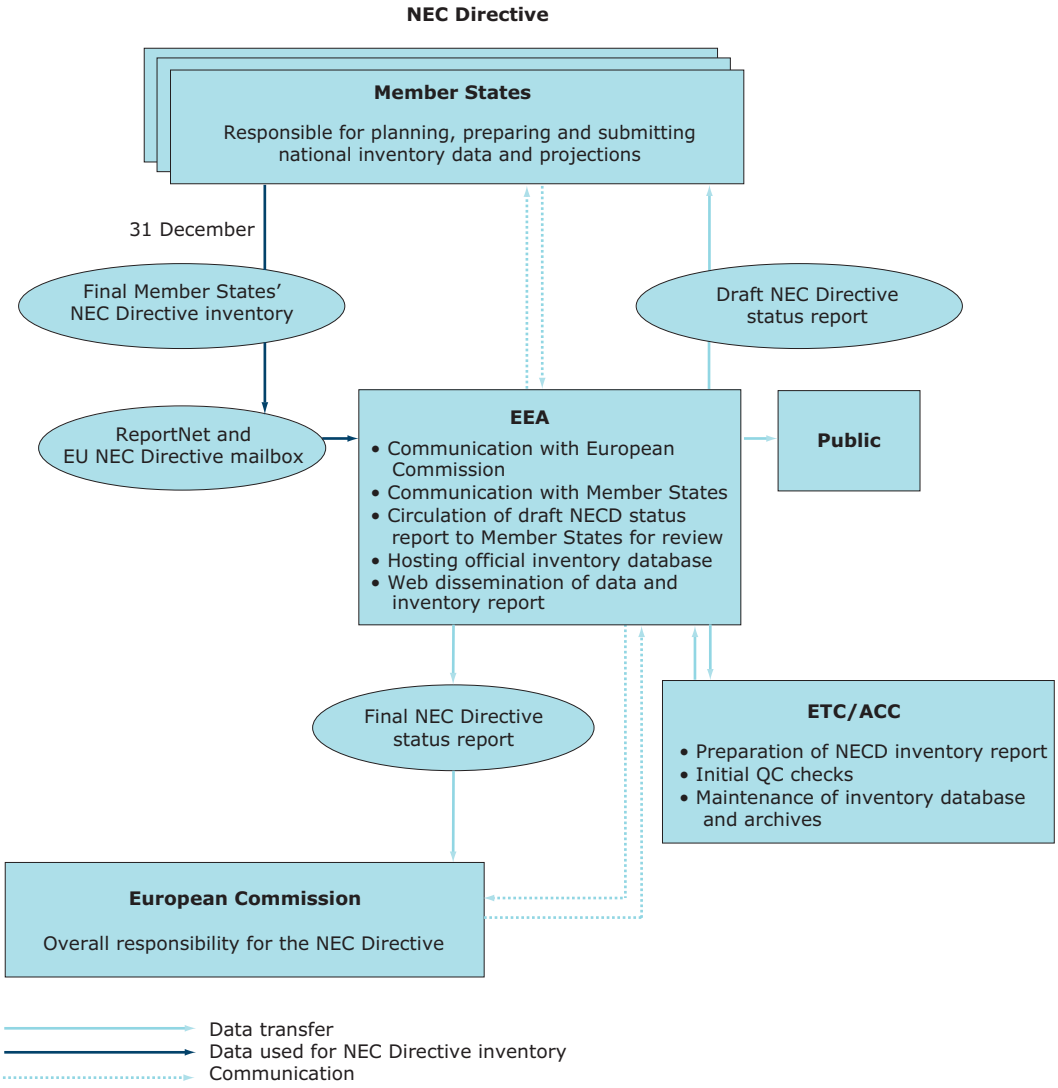
A flowchart diagram illustrating the dataflow necessary to compile the European Union's NECD emission inventory is presented in Figure 1.1.

### *1.2.2 Inventory QA/QC activities*

To ensure the data quality and to verify and validate their emission data, the Member States are encouraged to use appropriate quality assurance/quality control (QA/QC) procedures. These procedures should be consistent with those described in the EMEP/EEA guidebook.

There is no formal QA/QC plan in place for the European Union's NECD inventory. The main activities enhancing the quality of the inventory are the checks performed by the EEA's ETC/ACC on the status of each submission. More detailed quality assurance activities are performed by ETC/ACC and the 'Cooperative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe' (EMEP) in the process of annual reviews of emission inventories. The review process includes checks on timeliness, consistency, accuracy, completeness and comparability.

**Figure 1.1 Dataflow for the compilation of the EU NECD emission inventory**




A summary of the review findings is published annually by the EMEP Centre for Emission Inventories and Projections (CEIP) and the EEA (e.g. CEIP/EEA, 2010).

All NECD inventory documents (submissions, inventory master file, inventory report, status reports and related correspondence) are archived electronically at ETC/ACC.

### *1.2.3 Differences between NECD, LRTAP Convention and UNFCCC inventory reporting*

In addition to reporting emission data under the NECD, Member States are also required to report emissions of certain pollutants under two other international reporting obligations: the UNECE LRTAP Convention, and the EU monitoring mechanism ([12]) and its implementing provisions ([13]). Table 1.3 provides an overview of Member States' air pollution reporting obligations.

These three reporting obligations differ mainly in the number and type of air pollutants for which reporting is required, the geographical coverage of countries (e.g. the inclusion or not of overseas dependencies and territories of France, Spain, Portugal or the United Kingdom), and the inclusion of domestic and international aviation and navigation in the national total. The LRTAP

([12]) 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, p. 1).
([13]) Commission decision of 10 February 2005 laying down rules implementing 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 55, 1.3.2005, p. 57).

**Table 1.3 Overview of air emission reporting obligations in the European Union**

| Legal obligation | Emission reporting requirements | Annual reporting deadline for EU Member States | Annual reporting deadline for the European Union |
|---|---|---|---|
| **NEC Directive** | **Emissions of $SO_2$,$NO_x$, NMVOCs and $NH_3$** | **31 December** | **–** |
| LRTAP Convention | Emissions ([a]) of $NO_x$ (as $NO_2$), NMVOCs, $SO_x$ (as $SO_2$), $NH_3$, CO, HMs, POPs and PM | 15 February | 30 April |
| EU Monitoring Mechanism/UNFCCC | Emissions ([b]) of $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, $SF_6$, $NO_x$, CO, NMVOCs and $SO_2$ | 15 January (to the European Commission)<br>15 April (to the UNFCCC) | 15 April |

([a]) Parties are formally required to report only on the substances and for the years set forth in protocols that they have ratified and that have entered into force.

([b]) The greenhouse gases listed include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride ($SF_6$).

Convention and UNFCCC inventories differ in the pollutants included and slightly in terms of which sectors are included in the official national totals. The major differences are summarised in Table 1.4.

(a) 'NFR' denotes 'nomenclature for reporting', a sectoral classification system developed by UNECE/EMEP for reporting air emissions.

(b) 'CRF' is the sectoral classification system developed by UNFCCC for reporting greenhouse gases.

(c) Categories not included in national totals should still be reported by parties as additional so-called 'memo items'.

(d) In addition, parties may report emission estimates on a fuel consumed basis as a 'memo' item.

**Table 1.4 Major differences between the reporting obligations of the LRTAP Convention, NECD and Council Decision No 280/2004/EC**

| | EU NECD | LRTAP Convention — NFR ([a]) | EU monitoring mechanism/ UNFCCC — CRF ([b]) |
|---|---|---|---|
| **Air pollutants** | $NO_x$, $SO_2$, NMVOCs, $NH_3$ | $NO_x$, NMVOCs, $SO_x$, $NH_3$, CO, HMs, POPs, PM | $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, $SF_6$, $NO_x$, CO, NMVOCs and $SO_2$ |
| **Domestic aviation (landing and take-off)** | Included in national total | Included in national total | Included in national total |
| **Domestic aviation (cruise)** | Not included in national total ([c]) | Not included in nationaltotal ([c]) | Included in national total |
| **International aviation (landing and take-off)** | Included in national total | Included in national total | Not included in national total ([c]) |
| **International aviation (cruise)** | Not included in national total ([c]) | Not included in national total ([c]) | Not included in national total ([c]) |
| **National navigation (domesticshipping)** | Included in national total | Included in national total | Included in national total |
| **International inland shipping** | Included in national total | Included in national total | Not included in national total ([c]) |
| **International maritime** | Not included in national total ([c]) | Not included in national total ([c]) | Not included in national total ([c]) |
| **Road transport** | Emissions calculated basedon fuel sold ([d]) | Emissions calculated based on fuel sold ([d]) | Emissions calculated based on fuel sold |
| **Emissions from natural sources** | Not included in national total ([c]) | Not included in national total ([c]) | Not included in national total ([c]) |

([a]) 'NFR' denotes 'nomenclature for reporting', a sectoral classification system developed by UNECE/EMEP for reporting air emissions.

([b]) 'CRF' is the sectoral classification system developed by UNFCCC for reporting greenhouse gases.

([c]) Categories not included in national totals should still be reported by parties as additional so-called 'memo items'.

([d]) In addition, Member States/parties may report emission estimates on a fuel consumed basis as a 'memo' item.

# 2 Status of reporting

Information in this section is based on submissions from Member States delivered to the EEA via the Eionet ReportNet Central Data Repository (CDR), submissions delivered directly to the Commission and explanatory information provided by Member States directly to ETC/ACC. Trend tables include information on emissions submitted by Member States under the NECD in previous reporting cycles (see Table A1.1 in Appendix 1).

## 2.1 Timeliness

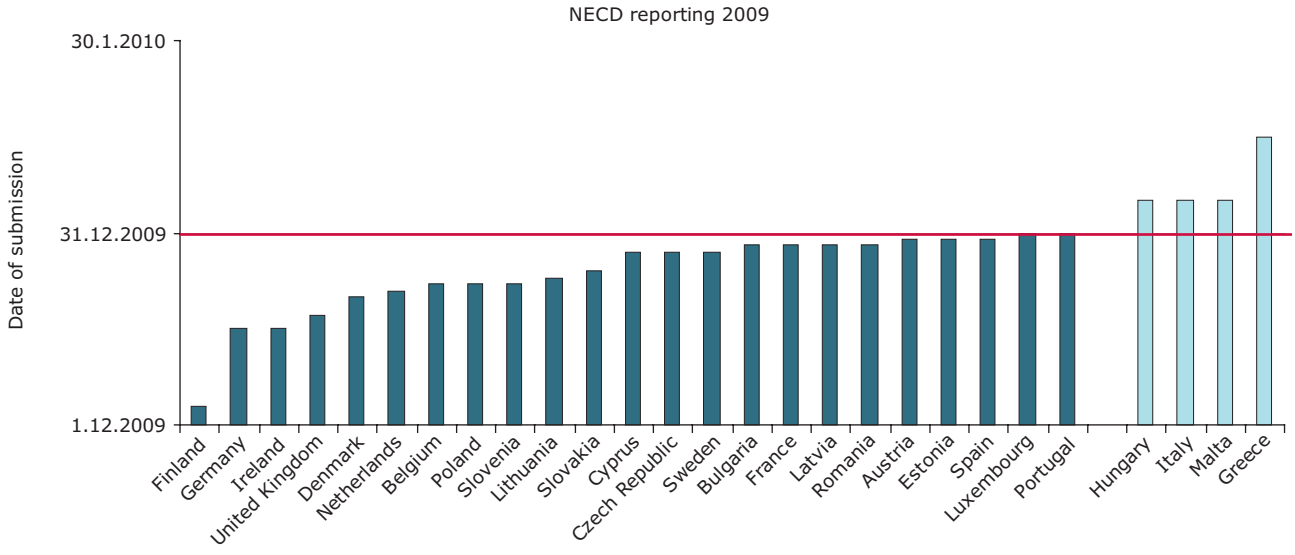
Pursuant to Article 8 of the NECD, by 31 December each year Member States are required to report their emission inventories for the previous year but one, along with preliminary emission inventories for the previous year. Emission projections for 2010 should also be submitted by the same date. In the 2009 reporting round (i.e. data due 31 December 2009), 23 of the 27 Member States submitted their national inventories of $SO_2$, $NO_X$, NMVOC and $NH_3$ to the Commission on or before the reporting deadline of 31 December 2009. The remaining Member States (Greece, Hungary, Italy and Malta) delivered their inventories between 5 January and 15 January 2010 (see Figure 2.1 and Table A2.1 in Appendix 2). This is a much improved timeliness of reporting compared with the previous year. In the previous year, 22 Member States reported by the required deadline and the remaining five provided data only by April 2009. Thirteen Member States provided additional or revised data between 29 December 2009 and 1 June 2010.

## 2.2 Completeness

In the 2009 reporting cycle ([14]), all 27 Member States provided the mandatory information on final emissions for the year 2007 and preliminary emission data for 2008.

All Member States submitted projections for 2010. Several Member States did not revise their 2010 'with measures' emission projections (for a

**Figure 2.1 Status of reporting — Date of first NECD inventory submission to the EEA or the European Commission**




([14]) The reporting deadline for the 2009 reporting cycle was 31 December 2009.

definition of projections terminology, see Textbox 3.1 below) compared with last years' submissions — Belgium, Estonia, Germany, Finland, Hungary, Ireland, Latvia, Luxembourg, Portugal and Sweden did not revise their reported projections in this reporting round. The projections documented in this report for these Member States are therefore the same as those in the previous year's NEC status report (EEA, 2009).

A compilation of data from all Member States is required in order to allow comparison with the respective EU-27 ceilings as defined in Annexes I and II of the NECD. It is therefore most important that Member States report complete emission datasets.

Many Member States report emissions from certain individual source categories as 'not estimated' (NE). According to the definition provided in Annex I of the guidelines for reporting emission data under the Convention on Long-range Transboundary Air Pollution (UNECE, 2009), the notation key 'NE' may be used by countries in situations when emissions occur, but have not been estimated or reported. This may be the case, for example, where emissions from such a source are known to be insignificant compared with the national total and/or resources do not allow an estimate to be made by the national inventory compilers. Chapter 4 presents an indicative analysis of the reporting of 'NE' by Member States, and the potential size of the underestimation introduced into national inventories as a result.

## 2.3 Consistency and comparability

NECD does not specify the reporting format for the Member States although the reporting format (NFR) is defined by the Guidelines for reporting emission data under the LRTAP Convention (UNECE, 2009). From a practical point of view, the Member States should provide their emission data in the latest standard NFR format since the EMEP/EEA Guidebook is geared towards the standard format and because subsequent analysis at the EU level is greatly facilitated. All Member States used the NFR format for reporting their emissions. Nineteen Member States submitted their inventories only in NFR09 format, five Member States used only older NFR formats and three Member States used a combination of NFR09 and older formats (for different years). Use of older and/or non-consistent formats significantly complicates the processing and analysis of data.

More detailed information about the quality of the 2009 NECD submissions (for example, in terms of its internal consistency and completeness) will be provided in the annual joint EEA and EMEP/CEIP inventory review report (EMEP/EEA, 2010).

## 2.4 Transparency of submitted information

Providing inventory reports or explanatory information that describe the methods and sources of the reported data is not mandatory under the NECD, meaning that the transparency of submitted information is rather limited. Nevertheless, eight Member States (Austria, Finland, Germany, the Netherlands, Poland, Romania, Slovakia and Sweden) voluntarily submitted an inventory report together with their NECD inventories ([15]).

## 2.5 Reporting of socioeconomic data and incorporation of financial recession effects in 2010 projections

Only 10 Member States (Austria, Denmark, Estonia, Finland, Ireland, Malta, Poland, Romania, Slovenia and the United Kingdom) reported the key socioeconomic parameters used in preparing their projections, despite this being a formal requirement of the NECD. For the vast majority of Member States, it is also not clear whether the anticipated effects of the financial recession have been taken into account in the reported 2010 projections.

([15]) For comparison, 19 Member States submitted Informative Inventory Reports (IIRs) under the LRTAP Convention by 7 May 2010.

# 3 Member State emission trends and projections

## 3.1 Introduction

This chapter presents the emission and projection trends of $NO_X$, NMVOC, $SO_2$ and $NH_3$, as reported by the Member States under the NECD. Totals for the EU-27 are available only for some years because **the NECD does not require that Member States annually report a complete time-series of emissions from 1990 onwards.** Rather, 'preliminary' emission data for the previous year, 'final' emission data for the previous year but one, and projections for the year 2010, are formally the only data for which reporting is required. Complete time-series data are thus not available for all Member States.

Appendix 1 (Tables A1.1, A1.2 and A1.3) provides an overview of the data available from the current and previous NECD reporting rounds used in the tables within this report. No additional information has been used to fill any of the gaps in the NECD data received from the Member States.

With respect to Member State projections, there are three basic different types of projections commonly provided (AEA Technology, 2007). These comprise: 'without measures' (WOM) projections, which some reports call 'business as usual' (BAU) projections; 'with measures' (WM) projections; and 'with additional measures' (WAM) projections.

Box 3.1 sets out a definition for each of these projection types, in accordance with the Clean Air for Europe (CAFE) Working Group on Implementation (WGI) reporting guidelines (CAFE, 2006). Member States providing projections in older versions of the EMEP NFR file template refer to current legislation scenarios (CLS) and current reduction plans (CRP). In these instances CLS has been taken to correspond to WM projections and CRP to WAM projections. The NECD itself makes reference to policies 'adopted and envisaged'. However, Annex III of the NECD also points to the methodologies of the LRTAP Convention under which the terms CLS and CRP previously used.

In providing detailed information on adopted and envisaged policies and measures under the NECD, Member States have previously demonstrated a certain ambiguity in using these terms. For example, some Member States use 'business as usual' (BAU) ([16]) to mean 'without measures', whereas other Member States used the term to mean 'with measures' (AEA Technology, 2007).

**Box 3.1 Projection scenarios as defined in the CAFE WGI reporting guidelines**

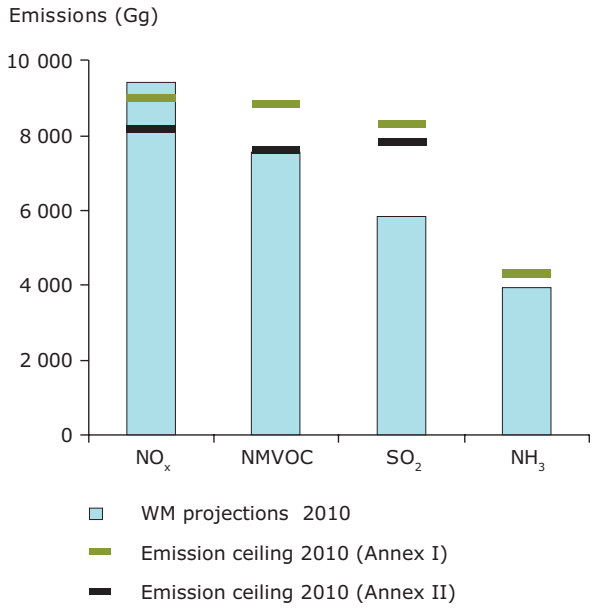
- A **business as usual** (or **without measures**) projection should exclude all policies and measures implemented, adopted or planned after the year chosen as the starting year for the projection.
- A **with measures** projection is taking into account all currently implemented and adopted policies and measures.
- A **with additional measures** projection is taking into account all currently implemented and adopted plus all planned policies and measures.

### *3.1.1 EU-27 projections overview*

Figure 3.1 and Table 3.1 illustrate the progress of the EU-27 towards meeting its emission ceilings specified in Annexes I and II of the NECD. Analysis shows that emissions in the EU-27 are anticipated to be greater than the aggregated 2010 ceiling (Annex I of the NECD) for $NO_X$ but lower than the ceilings for the remaining pollutants ($SO_2$, NMVOC and $NH_3$). Similarly, of the three more strict Annex II emission ceilings which are designed with the aim of broadly meeting the interim environmental objectives as set out in Article 5 of the NECD, only the $NO_X$ ceiling is projected to be missed. NMVOC emissions are projected to be only marginally below the Annex II ceiling.

([16]) Henceforth, the term 'business as usual' (BAU) is not further used in this report due to the ambiguity concerning its definition. It is replaced with 'without measures' (WOM).

**Figure 3.1 Aggregated Member State projections compared with WM emission ceilings defined in NECD Annexes I and II**




**Note**: EU-27 WM projections comprise the aggregated WM projection data reported by the individual Member States.

The emission ceilings shown are the aggregated EU-27 emission ceilings defined in Annexes I and II of the NECD. Annex II of the NECD does not define a ceiling for $NH_3$.

Table 3.2 provides an overview of Member State emission projections submitted under the NECD in comparison with the 2010 ceilings. Further information on the progress by individual Member States towards achieving the emission ceilings is provided in subsequent sections of this chapter.

Data on 2010 WM projections are available from all Member States.

Comparison of the WM 2010 projections reported by Member States in 2009 with the previous 2008 reports shows that a number have revised their projections downwards (10 Member States for $NO_X$, $SO_2$ and $NH_3$, and 8 for NMVOC). This may reflect the lower emissions that are expected to occur as a result of lower activity due to the economic recession, but only a small number of Member States have formally indicated whether their reported projections include recession-related impacts or not. Several Member States have explicitly stated that the reported projections do not include effects of the economic recession.

In contrast, some Member States now expect higher emissions to occur in 2010 than were projected before (see Figure 3.3, Figure 3.5, Figure 3.7, Figure 3.9). Overall, the changes in the reported data submitted in 2009 resulted in decreased projections for $NO_X$ (– 162 Gg), NMVOC (– 399 Gg) and $NH_3$ (– 64 Gg) and increased projections (+ 92 Gg) for $SO_2$ for the EU-27. The latter increase is largely driven by a significant projected increase in $SO_2$ emissions in just one Member State, Bulgaria.

The trend tables (Table 3.4, Table 3.5, Table 3.6 and Table 3.7) below show, for each pollutant, a comparison ([17]) between 2008 emissions and those reported for the years 1990 and 2007. This illustrates the development of the emission trends within individual Member States and across the EU-27 as a whole. Figure 3.2, Figure 3.4, Figure 3.6 and Figure 3.8 illustrate the relative difference ([18])

**Table 3.1 Projections and emission ceilings for the EU-27**

| | Annex I emission ceilings (Gg) | WM projections (Gg) | Difference from WM (Gg) | Difference from WM (%) | Annex II emission ceilings (Gg) | Difference from WM (Gg) | Difference from WM (%) |
|---|---|---|---|---|---|---|---|
| **$NO_X$** | 9 003 | 9 363 | 360 | 4 % | 8 180 | 1 183 | 14 % |
| **NMVOC** | 8 848 | 7 562 | – 1 286 | – 15 % | 7 585 | – 23 | – 0 % |
| **$SO_2$** | 8 297 | 5 843 | – 2 454 | – 30 % | 7 832 | – 1 989 | – 25 % |
| **$NH_3$** | 4 294 | 3 930 | – 364 | – 8 % | | | |

**Note:** EU-27 WM projections comprise the aggregated WM projection data reported by the individual Member States.

The emission ceilings shown are the aggregated EU-27 emission ceilings defined in Annexes I and II of the NECD. Annex II of the NECD does not define a ceiling for $NH_3$.

([17]) Changes of emissions in each country during 2007–08 are expressed as 100 x ($E_{curr}$ — $E_{prev}$)/$E_{prev}$ (%), where $E_{curr}$ and $E_{prev}$ are current and previous total emissions in each year. Changes of emissions in each country in 1990–2008 are expressed as 100 x ($E_{curr}$ — $E_{1990}$)/$E_{1990}$ (%), where $E_{curr}$ and $E_{1990}$ are current and 1990 total emissions in each year.

([18]) The relative difference between emissions in 2008 and the emission ceilings was estimated as 100 x ($E_{2008}$ — $E_{ceiling}$)/$E_{ceiling}$ (%), where $E_{2008}$ and $E_{ceiling}$ are the 2008 emissions and the 2010 emission ceiling value. The relative difference between Member State projected emissions for 2010 and the respective ceilings was estimated as 100 x ($P_{2010}$ — $E_{ceiling}$)/$E_{ceiling}$ (%), where $P_{2010}$ is the reported WM projection for 2010 and $E_{ceiling}$ is the 2010 emission ceiling value.

**Table 3.2 Overview of Member State emission projections submitted under the NECD (as of 27 July 2010) and emission ceilings for 2010**

| Member State | $NO_x$ projections (Gg) | | $NO_x$ | Comparison WM to ceiling | NMVOC projections (Gg) | | NMVOC | Comparison WM to ceiling | $SO_2$ projections (Gg) | | $SO_2$ | Comparison WM to ceiling | $NH_3$ projections (Gg) | | $NH_3$ | Comparison WM to ceiling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WM | WAM | Ceilings | | WM | WAM | Ceilings | | WM | WAM | Ceilings | | WM | WAM | Ceilings | |
| Austria | 146 | NE | 103 | x | 164 | NE | 159 | x | 26 | NE | 39 | √ | 61 | NE | 66 | √ |
| Belgium | 253 | NE | 176 | x | 134 | NE | 139 | √ | 90 | NE | 99 | √ | 69 | NE | 74 | √ |
| Bulgaria | 247 | 247 | 247 | √ | 175 | 175 | 175 | √ | 836 | 380 | 836 | √ | 108 | 108 | 108 | √ |
| Cyprus | 19 | NE | 23 | √ | 12 | NE | 14 | √ | 23 | NE | 39 | √ | 6 | NE | 9 | √ |
| Czech Republic | 272 | NE | 286 | √ | 170 | NE | 220 | √ | 207 | NE | 265 | √ | 60 | NE | 80 | √ |
| Denmark | 126 | NE | 127 | √ | 85 | NE | 85 | √ | 20 | NE | 55 | √ | 65 | NE | 69 | √ |
| Estonia | 39 | NE | 60 | √ | 41 | NE | 49 | √ | 80 | NE | 100 | √ | 9 | NE | 29 | √ |
| Finland | 151 | NE | 170 | √ | 130 | NE | 130 | √ | 98 | NE | 110 | √ | 31 | NE | 31 | √ |
| France | 1 071 | 1 044 | 810 | x | 1 050 | 1 043 | 1 050 | √ | 337 | 343 | 375 | √ | 729 | 729 | 780 | √ |
| Germany | 1 112 | 1 051 | 1 051 | x | 987 | 995 | 995 | √ | 459 | 520 | 520 | √ | 610 | 550 | 550 | x |
| Greece | 320 | 320 | 344 | √ | 244 | 235 | 261 | √ | 408 | 315 | 523 | √ | 60 | 50 | 73 | √ |
| Hungary | 164 | NE | 198 | √ | 123 | NE | 137 | √ | 72 | NE | 500 | √ | 78 | NE | 90 | √ |
| Ireland | 103 | 101 | 65 | x | 54 | 52 | 55 | √ | 30 | 104 | 42 | √ | 104 | 28 | 116 | √ |
| Italy | 970 | NE | 990 | √ | 917 | NE | 1 159 | √ | 269 | NE | 475 | √ | 409 | NE | 419 | √ |
| Latvia | 45 | NE | 61 | √ | 55 | NE | 136 | √ | 4 | NE | 101 | √ | 14 | NE | 44 | √ |
| Lithuania | 44 | NE | 110 | √ | 56 | NE | 92 | √ | 36 | NE | 145 | √ | 55 | NE | 84 | √ |
| Luxembourg | 13 | 13 | 11 | x | 9 | 9 | 9 | √ | 3 | 3 | 4 | √ | 5 | 5 | 7 | √ |
| Malta | 9 | 8 | 8 | x | 4 | 4 | 12 | √ | 14 | 9 | 9 | x | 2 | 2 | 3 | √ |
| Netherlands | 244 | 261 | 260 | √ | 143 | 162 | 185 | √ | 41 | 48 | 50 | √ | 129 | 123 | 128 | x |
| Poland | 827 | NE | 879 | √ | 603 | NE | 800 | √ | 994 | NE | 1397 | √ | 284 | NE | 468 | √ |
| Portugal | 242 | 242 | 250 | √ | 194 | 194 | 180 | x | 133 | 133 | 160 | √ | 69 | 69 | 90 | √ |
| Romania | 350 | 349 | 437 | √ | 343 | 341 | 523 | √ | 785 | 779 | 918 | √ | 206 | 205 | 210 | √ |
| Slovakia | 109 | 105 | 130 | √ | 69 | 61 | 140 | √ | 75 | 73 | 110 | √ | 26 | 25 | 39 | √ |
| Slovenia | 46 | 49 | 45 | x | 38 | 37 | 40 | √ | 16 | 17 | 27 | √ | 20 | 19 | 20 | √ |
| Spain | 1 083 | NE | 847 | x | 778 | NE | 662 | x | 364 | NE | 746 | √ | 381 | NE | 353 | x |
| Sweden | 149 | NE | 148 | x | 168 | NE | 241 | √ | 33 | NE | 67 | √ | 50 | NE | 57 | √ |
| United Kingdom | 1 210 | NE | 1 167 | x | 814 | NE | 1 200 | √ | 390 | NE | 585 | √ | 289 | NE | 297 | √ |
| **EU-27** | **9 363** | **NE** | **9 003** | **x** | **7 562** | **NE** | **8 848** | **√** | **5 843** | **NE** | **8 297** | **√** | **3 930** | **NE** | **4 294** | **√** |

**Note:** '✓' indicates that a Member State anticipates meeting or surpassing its respective emission ceiling on the basis of currently implemented and adopted policies and measures.

'X' indicates that a ceiling will not be met without implementing additional measures to reduce emissions.

between emissions in 2008 and the emission ceilings, and between Member State projected emissions for 2010 and the ceilings. Where percentage values are positive, it indicates that 2008 emissions were above the emission ceilings or that WM projections imply that the 2010 ceiling will not be achieved unless the Member State in question takes additional measures to reduce emissions further.

The trends of emission data reported by Member States under the NECD and the LRTAP Convention are not consistent for all countries. An explicit analysis of these differences is not within the scope of this report, but is provided in the joint EMEP/EEA Stage 2 emission inventory review (EMEP/EEA, 2010).

### *3.1.2 Progress of non-EU countries in meeting 2010 emission ceilings under the Gothenburg Protocol to the UNECE LRTAP Convention*

For comparison, an overview of the progress in the non-EU EEA member countries in meeting their respective 2010 emission ceilings set under the UNECE LRTAP Convention's Gothenburg Protocol is shown in Table 3.3. Each of these countries projects to miss at least one of its four emission ceilings, although only for Norway $NO_x$ is a sizeable exceedance (17 %) of the ceiling projected to occur in 2010. For the other countries and pollutants the projected exceedances are small.

**Table 3.3 Overview of non-EU EEA member countries' emission projections submitted under the Gothenburg Protocol to the UNECE LRTAP Convention and emission ceilings for 2010**

| Country | $NO_x$ (Gg) | | Comparison to ceiling | NMVOC (Gg) | | Comparison to ceiling | $SO_2$ (Gg) | | Comparison to ceiling | $NH_3$ (Gg) | | Comparison to ceiling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WM | Ceilings | | WM | Ceilings | | WM | Ceilings | | WM | Ceilings | |
| Liechtenstein | 0.22 | 0.37 | √ | 0.53 | 0.86 | √ | 0.04 | 0.11 | √ | 0.17 | 0.15 | x |
| Norway | 183 | 156 | x | 157 | 195 | √ | 23 | 22 | x | 23 | 23 | √ |
| Switzerland | 70 | 79 | √ | 88 | 144 | √ | 17 | 26 | √ | 66 | 63 | x |

**Note:** Projections for Liechtenstein, Norway and Switzerland are the latest reported projections under the LRTAP Convention and are compared with the respective emission ceilings of the Gothenburg Protocol. Liechtenstein has signed but not yet ratified the protocol.

## 3.2 $NO_x$ emissions and projections

For the EU-27, aggregated emission totals for $NO_x$ are given only for the years 2005–08, because not all Member States have reported the whole data time-series ([19]) (Table 3.4). Compared with 1990, emissions decreased in 15 Member States (from 19 Member States which reported 1990 data). The largest emitters in 2008 were the United Kingdom, Germany, France, Spain and Italy.

Between 2007 and 2008, 24 Member States reported emission reductions, resulting in a total emission reduction of – 6 % for the EU-27. The highest absolute reductions between 2007 and 2008 were achieved in Spain and the United Kingdom.

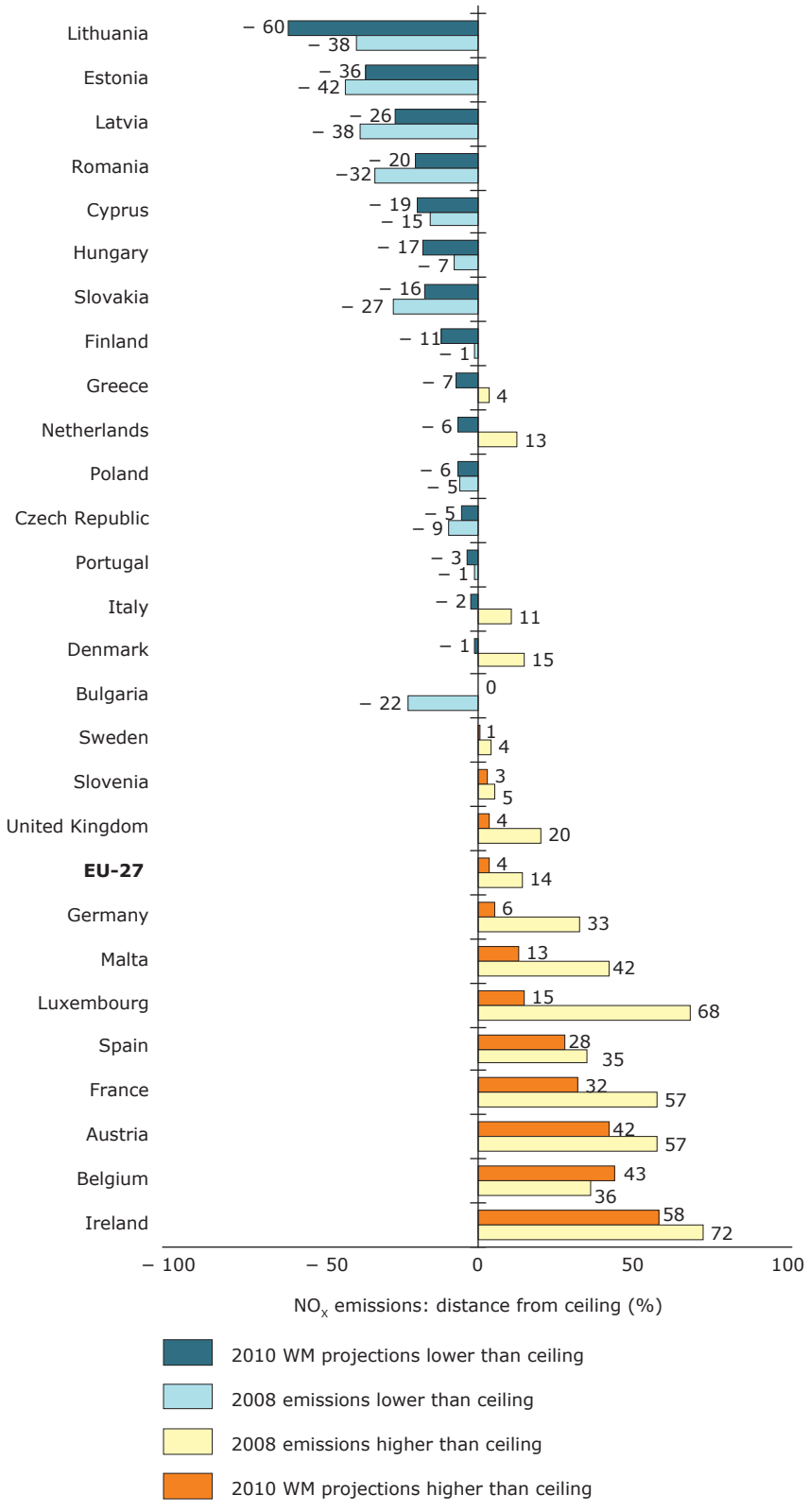
**Table 3.4 $NO_x$ emission trends for Member States, 1990–2008**

| $No_x$ (Gg) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Change 2007–08 (%) | Change 1990–2008 (%) | Contribution to EU-27 in 2008 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 182 | 164 | 165 | 166 | 164 | 166 | 164 | 169 | 168 | 167 | 162 | – 3 | – 11 | 2 |
| Belgium | 400 | 392 | 332 | 316 | 299 | 297 | 300 | 288 | 266 | 257 | 239 | – 7 | – 40 | 2 |
| Bulgaria | NE | NE | NE | NE | NE | NE | NE | 233 | 246 | 188 | 193 | 3 | NE | 2 |
| Cyprus | 15 | 18 | 21 | 20 | 21 | 21 | 21 | 21 | 20 | 21 | 20 | – 6 | 27 | 0 |
| Czech Republic | NE | NE | 291 | 291 | 284 | 283 | 286 | 293 | 281 | 283 | 260 | – 8 | NE | 3 |
| Denmark | 274 | 266 | 198 | 195 | 192 | 200 | 184 | 176 | 177 | 163 | 146 | – 11 | – 47 | 1 |
| Estonia | 74 | 39 | 36 | 41 | 41 | 42 | 39 | 37 | 35 | 38 | 35 | – 9 | – 53 | 0 |
| Finland | 300 | 259 | 210 | 220 | 208 | 219 | 205 | 177 | 193 | 184 | 168 | – 9 | – 44 | 2 |
| France | 1 922 | 1 775 | 1 642 | 1 599 | 1 559 | 1 529 | 1 501 | 1 489 | 1 414 | 1 362 | 1 272 | – 7 | – 34 | 12 |
| Germany | 2 876 | 2 152 | 1 854 | 1 771 | 1 677 | 1 614 | 1 574 | 1 515 | 1 520 | 1 455 | 1 393 | – 4 | – 52 | 14 |
| Greece | 296 | 315 | 337 | 351 | 350 | 361 | 359 | 386 | 361 | 376 | 357 | – 5 | 21 | 3 |
| Hungary | 238 | NE | 186 | NE | NE | 180 | 185 | 203 | 208 | 190 | 184 | – 3 | – 23 | 2 |
| Ireland | 126 | 127 | 138 | 140 | 131 | 126 | 125 | 126 | 122 | 120 | 112 | – 7 | – 11 | 1 |
| Italy | 1 947 | 1 808 | 1 378 | 1 367 | 1 276 | 1 245 | 1 173 | 1 114 | 1 061 | 1 141 | 1 098 | – 4 | – 44 | 11 |
| Latvia | 73 | 44 | 40 | 43 | 42 | 43 | 42 | 41 | 41 | 41 | 38 | – 7 | – 48 | 0 |
| Lithuania | NE | NE | NE | NE | 51 | 53 | 55 | 58 | 61 | 67 | 68 | 2 | NE | 1 |
| Luxembourg | 23 | 19 | 16 | 16 | 16 | 16 | 14 | 14 | 14 | 19 | 18 | – 1 | – 21 | 0 |
| Malta | 11 | 12 | 8 | 9 | 9 | 10 | 12 | 12 | 12 | 12 | 11 | – 2 | 8 | 0 |
| Netherlands | 557 | 464 | 390 | 381 | 372 | 371 | 353 | 341 | 324 | 299 | 293 | – 2 | – 47 | 3 |
| Poland | NE | NE | NE | NE | NE | 808 | 804 | 811 | 879 | 860 | 831 | – 3 | NE | 8 |
| Portugal | 232 | 267 | 293 | 296 | 306 | 286 | 289 | 293 | 271 | 259 | 248 | – 4 | 7 | 2 |
| Romania | NE | NE | 296 | NE | NE | NE | NE | 303 | 326 | 309 | 295 | – 5 | NE | 3 |
| Slovakia | NE | NE | 107 | 108 | 100 | 96 | 99 | 104 | 97 | 97 | 95 | – 2 | NE | 1 |
| Slovenia | NE | NE | NE | NE | 58 | 56 | 58 | 47 | 47 | 45 | 47 | 6 | NE | 0 |
| Spain | 1 179 | 1 259 | 1 311 | 1 283 | 1 325 | 1 312 | 1 359 | 1 345 | 1 316 | 1 324 | 1 143 | – 14 | – 3 | 11 |
| Sweden | 302 | 266 | 211 | 202 | 196 | 190 | 181 | 174 | 169 | 164 | 154 | – 6 | – 49 | 2 |
| United Kingdom | NE | NE | 1 512 | 1 828 | 1 715 | 1 710 | 1 708 | 1 682 | 1 654 | 1 557 | 1 403 | – 10 | NE | 14 |
| **EU-27** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **11 453** | **11 285** | **10 998** | **10 285** | **– 6** | **NE** | **100** |

**Note:** 'NE' denotes 'not estimated or not provided'.

([19]) As noted previously, the NECD does not require the reporting of emissions from 1990; however, Member States are encouraged to do so to enable an improved analysis of the emission trends.

**Figure 3.2 Distance from ceiling for $NO_x$ emissions in 2008 and for projected $NO_x$ emissions in 2010 (with measures)**



For 12 Member States, $NO_X$ emissions in the year 2008 were already lower than their respective ceilings (Figure 3.2). Four Member States had $NO_X$ emissions in 2008 higher than their emission ceilings but are confident that they will reach their respective ceilings in 2010. Of the EU-27 Member States, only 16 (compared with 15 in the previous 2008 submission) expect to be at, or below, their respective emission ceilings by 2010 (Figure 3.1). Bulgaria reports WM projections identical to the 2010 $NO_X$ emission ceilings set in the NECD. As the 2008 emissions reported are already significantly below its 2010 ceilings, it seems likely that Bulgaria will indeed meet the 2010 $NO_X$ ceilings. Five Member States submitted WM projections more than 20 % above the ceilings (Figure 3.1). WM projections submitted in the 2009 reporting round show that the largest exceedances above the NECD ceilings in absolute terms are expected in France (261 Gg) and Spain (236 Gg).

A comparison of $NO_X$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009 (Figure 3.3) shows that Austria, Belgium, Estonia, Finland, France, Lithuania and Spain changed their projections considerably during those years ([20]).

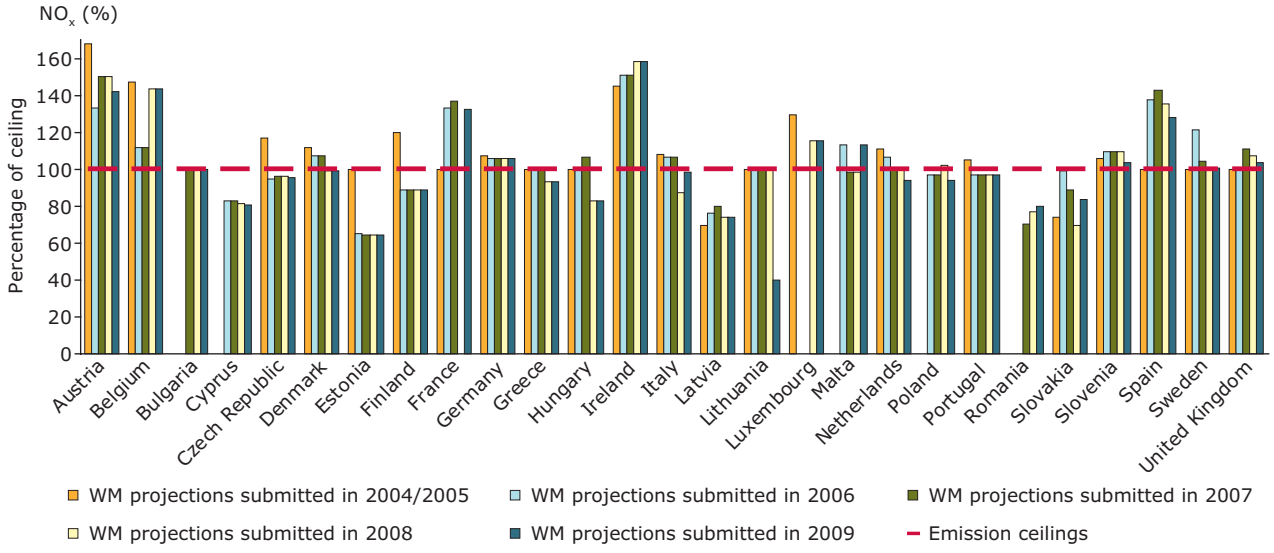
Compared with the projections submitted in 2008, 10 Member States revised their $NO_X$ projections downwards in their 2009 submission. The highest relative changes ([21]) were reported by Lithuania (– 60 %) and Slovakia (+ 20 %). Twelve Member States have not changed their $NO_X$ projections since the 2008 submission.

## 3.3 NMVOC emissions and projections

For the EU-27, aggregated emission totals for NMVOC are given only for the years 2005–08, because not all Member States have reported the whole data time-series ([22]) (Table 3.4). Compared with 1990, emissions decreased in all Member States which reported 1990 data (19 Member States). The largest emitters in 2008 were Germany, Italy, France and the United Kingdom.

Between 2007 and 2008, 21 Member States reported emission reductions, resulting in a total emission reduction of – 3 % for the EU-27. The highest absolute reductions between 2007 and 2008 were achieved in France and the United Kingdom.

**Figure 3.3 Comparison of $NO_x$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009, and ceilings in 2010**




([20]) The changes were greater than 30 percentage points.
([21]) Changes of projections reported in 2008 and 2009 are expressed as 100 x ($WM_{2009}$ – $WM_{2008}$)/$WM_{2008}$ (%), where $WM_{2009}$ and $WM_{2008}$ are 'with measures' projections for 2010 submitted in 2008 and 2009.
([22]) As noted previously, the NECD does not require the reporting of emissions from 1990; however, Member States are encouraged to do so to enable an improved analysis of the emission trends.

**Table 3.5 NMVOC emission trends for Member States, 1990–2008**

| NMVOC (Gg) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Change 2007–08 (%) | Change 1990–2008 (%) | Contribution to EU-27 in 2008 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 273 | 225 | 177 | 176 | 178 | 177 | 157 | 163 | 172 | 161 | 161 | – 0 | – 41 | 2 |
| Belgium | 314 | 267 | 203 | 195 | 181 | 171 | 158 | 150 | 143 | 124 | 119 | – 4 | – 62 | 1 |
| Bulgaria | NE | NE | NE | NE | NE | NE | NE | 147 | 159 | 120 | 123 | 3 | NE | 1 |
| Cyprus | 14 | 14 | 13 | 12 | 13 | 14 | 14 | 13 | 13 | 13 | 12 | – 10 | – 18 | 0 |
| Czech Republic | NE | NE | 213 | 204 | 197 | 193 | 192 | 176 | 179 | 174 | 167 | – 4 | NE | 2 |
| Denmark | 190 | 167 | 142 | 134 | 131 | 126 | 123 | 121 | 116 | 110 | 105 | – 4 | – 45 | 1 |
| Estonia | 69 | 44 | 40 | 40 | 39 | 41 | 41 | 37 | 35 | 36 | 35 | – 2 | – 49 | 0 |
| Finland | 226 | 185 | 168 | 155 | 154 | 145 | 140 | 131 | 133 | 129 | 117 | – 9 | – 48 | 1 |
| France | 2 726 | 2 320 | 1 865 | 1 769 | 1 633 | 1 582 | 1 475 | 1 386 | 1 289 | 1 179 | 1 086 | – 8 | – 60 | 13 |
| Germany | 3 735 | 2 076 | 1 581 | 1 485 | 1 409 | 1 340 | 1 350 | 1 329 | 1 296 | 1 274 | 1 267 | – 1 | – 66 | 15 |
| Greece | 255 | 273 | 305 | 270 | 268 | 288 | 332 | 289 | 211 | 206 | 219 | 6 | – 14 | 3 |
| Hungary | 205 | NE | 173 | NE | NE | 155 | 157 | 177 | 177 | 148 | 141 | – 5 | – 31 | 2 |
| Ireland | 82 | 75 | 70 | 69 | 64 | 62 | 60 | 59 | 58 | 58 | 57 | – 1 | – 30 | 1 |
| Italy | 2 032 | 2 023 | 1 544 | 1 456 | 1 346 | 1 299 | 1 263 | 1 207 | 1 174 | 1 195 | 1 164 | – 3 | – 43 | 14 |
| Latvia | 102 | 62 | 56 | 57 | 58 | 59 | 59 | 59 | 58 | 57 | 54 | – 5 | – 47 | 1 |
| Lithuania | NE | NE | NE | NE | 72 | 74 | 69 | 84 | 78 | 77 | 71 | – 7 | NE | 1 |
| Luxembourg | 14 | 14 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 11 | 10 | – 13 | – 31 | 0 |
| Malta | 4 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | – 10 | – 31 | 0 |
| Netherlands | 461 | 322 | 227 | 204 | 193 | 180 | 170 | 175 | 166 | 164 | 160 | – 3 | – 65 | 2 |
| Poland | NE | NE | NE | NE | NE | 585 | 896 | 885 | 911 | 568 | 583 | 3 | NE | 7 |
| Portugal | 299 | 264 | 242 | 230 | 230 | 222 | 217 | 209 | 205 | 198 | 199 | 0 | – 33 | 2 |
| Romania | NE | NE | 362 | NE | NE | NE | NE | 320 | 353 | 436 | 449 | 3 | NE | 5 |
| Slovakia | NE | NE | 67 | 71 | 69 | 70 | 72 | 74 | 71 | 68 | 68 | 0 | NE | 1 |
| Slovenia | NE | NE | NE | NE | 48 | 46 | 46 | 42 | 41 | 39 | 38 | – 4 | NE | 0 |
| Spain | 1 060 | 998 | 982 | 962 | 889 | 901 | 889 | 854 | 844 | 835 | 788 | – 6 | – 26 | 9 |
| Sweden | 352 | 247 | 199 | 187 | 185 | 187 | 185 | 183 | 178 | 180 | 173 | – 4 | – 51 | 2 |
| United Kingdom | NE | NE | 1 683 | 1 237 | 1 157 | 1 113 | 1 128 | 1 070 | 1 029 | 1 012 | 942 | – 7 | NE | 11 |
| **EU-27** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **9 355** | **9 101** | **8 575** | **8 310** | **– 3** | **NE** | **100** |

**Note:** NE' denotes 'not estimated or not provided'.

For 17 Member States, NMVOC emissions in the year 2008 were already lower than their respective ceilings (Figure 3.4). Seven Member States had NMVOC emissions in 2008 higher than their emission ceilings but are confident that they will reach their respective ceilings in 2010. Of the EU-27 Member States, 24 (23 in 2008 submission) expect to be at, or below, their respective emission ceilings by 2010 (Figure 3.4). Bulgaria, Denmark, Finland and France report WM projections identical to their 2010 NMVOC emission ceilings set in the NECD. As the emissions reported in 2008 for two Member States (Bulgaria, Finland) are already significantly below their 2010 ceilings, it seems likely that they will indeed meet the 2010 NMVOC ceilings. No Member State submitted WM projections more than 20 % above the ceiling (Figure 3.4). Exceedances above the NECD ceilings are only expected by Spain (116 Gg), Portugal (14 Gg) and Austria (5 Gg).

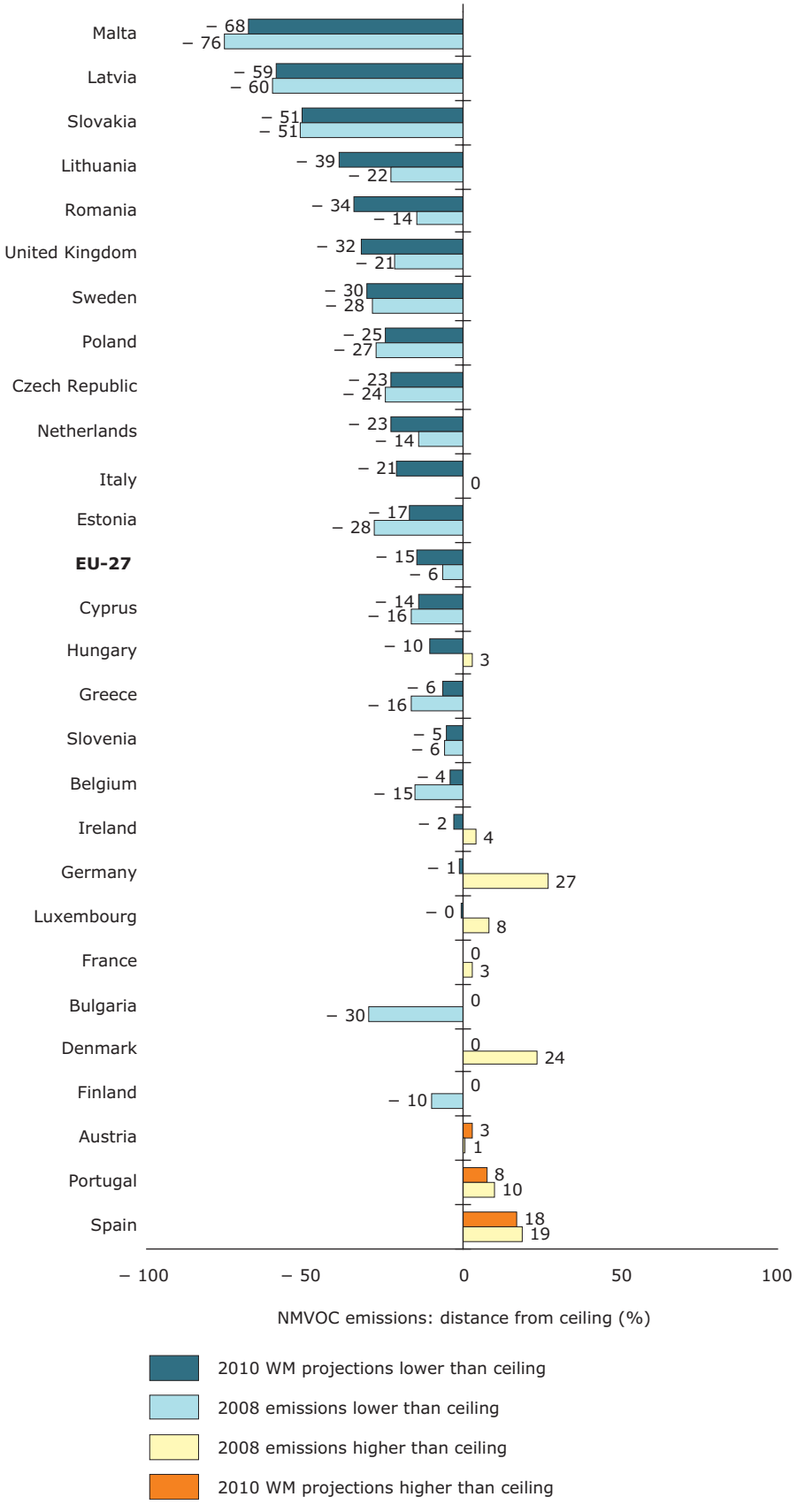
A comparison of NMVOC projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009 (Figure 3.5) shows that Lithuania, Poland, Portugal, Spain, Sweden and the United Kingdom changed their projections considerably during those years ([23]).

Compared with the projections submitted in 2008, eight Member States revised their NMVOC projections downwards in their 2009 submission. The highest relative changes ([24]) were reported by Cyprus (+ 51 %), Lithuania (– 39 %) and Poland (– 36 %). Thirteen Member States have not changed their NMVOC projections since the 2008 submission.

([23]) The changes in reported projections were greater than 30 percentage points.

([24]) Changes of projections reported in 2008 and 2009 are expressed as 100 x ($WM_{2009}$ — $WM_{2008}$)/$WM_{2008}$ (%), where $WM_{2009r}$ and $WM_{2008}$ are 'with measures' projections for 2010 submitted in 2008 and 2009.

**Figure 3.4 Distance from ceiling for NMVOC emissions in 2008 and for projected NMVOC emissions in 2010 (with measures)**



## 3.4 $SO_2$ emissions and projections

For the EU-27, aggregated emission totals for $SO_2$ are given only for the years 2005–08, because not all Member States have reported the whole data time-series ([25]) (Table 3.6). Compared with 1990, emissions decreased in all Member States which reported 1990 data (19 Member States). The largest emitters in 2008 were Poland, Bulgaria and Romania.

Between 2007 and 2008, 26 Member States reported emission reductions, resulting in a total emission reduction of – 19 % for the EU-27. The highest absolute reductions between 2007 and 2008 were achieved in Spain and Poland.

For 23 Member States, $SO_2$ emissions in the year 2008 were already lower than their respective ceilings (Figure 3.6). Three Member States had $SO_2$ emissions in 2008 higher than their emission ceilings but are confident that they will reach their respective ceilings in 2010. Of the EU-27 Member States, 26 (also 26 in 2008 submission) expect to be at, or below, their respective emission ceilings by 2010 (Figure 3.6) and only Malta projects that it will not reach its emission ceiling (exceedance above the ceiling of 58 %). Bulgaria reports WM projections identical to its 2010 $SO_2$ emission ceilings set in NECD. As the emissions reported in 2008 are already significantly below its 2010 ceilings, it seems likely that Bulgaria indeed meets the 2010 $SO_2$ ceilings.

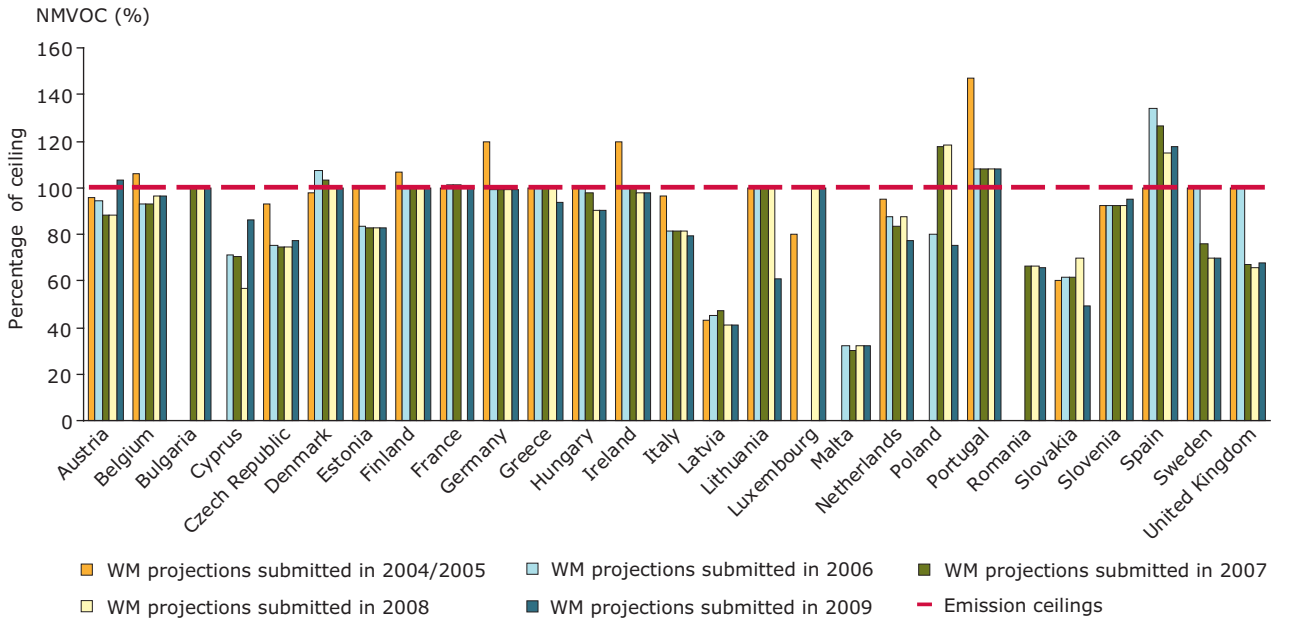
A comparison of $SO_2$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009 (Figure 3.7) shows that 12 Member States changed their projections considerably during those years ([26]).

Compared with the projections submitted in 2008, 10 Member States revised their $SO_2$ projections downwards in their 2009 submission. The highest relative changes ([27]) were reported by Bulgaria (+ 120 %), Lithuania (– 75 %) and Malta (+ 62 %). Ten Member States have not changed their $SO_2$ projections since the 2008 submission.

## 3.5 $NH_3$ emissions and projections

For the EU-27, aggregated emission totals for $NH_3$ are given only for the years 2005–08, because not all Member States have reported the whole data time-series ([28]) (Table 3.7). Compared with 1990, emissions decreased in 15 Member States (from 18 Member States which reported 1990 data). The largest emitters in 2008 were France, Germany and Italy.

**Figure 3.5 Comparison of NMVOC projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009, and ceilings in 2010**




([25]) As noted previously, the NECD does not require the reporting of emissions from 1990; however, Member States are encouraged to do so to enable an improved analysis of the emission trends.
([26]) The changes in reported projections were greater than 30 percentage points.
([27]) Changes of projections reported in 2008 and 2009 are expressed as 100 x ($WM_{2009}$ — $WM_{2008}$)/$WM_{2008}$ (%), where $WM_{2009r}$ and $WM_{2008}$ are 'with measures' projections for 2010 submitted in 2008 and 2009.
([28]) As noted previously, the NECD does not require the reporting of emissions from 1990; however, Member States are encouraged to do so to enable an improved analysis of the emission trends.

**Table 3.6 $SO_2$ emission trends for Member States, 1990–2008**

| $SO_2$ (Gg) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Change 2007–08 (%) | Change 1990–2008 (%) | Contribution to EU-27 in 2008 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 74 | 46 | 31 | 32 | 31 | 32 | 28 | 27 | 28 | 25 | 22 | – 9 | – 70 | 0 |
| Belgium | 361 | 261 | 172 | 167 | 157 | 155 | 158 | 145 | 135 | 125 | 103 | – 18 | – 71 | 2 |
| Bulgaria | NE | NE | NE | NE | NE | NE | NE | 900 | 877 | 854 | 737 | – 14 | NE | 12 |
| Cyprus | 30 | 37 | 46 | 43 | 44 | 45 | 38 | 36 | 29 | 27 | 22 | – 19 | – 27 | 0 |
| Czech Republic | NE | NE | 291 | 291 | 284 | 283 | 227 | 218 | 211 | 216 | 174 | – 20 | NE | 3 |
| Denmark | 178 | 138 | 29 | 27 | 26 | 32 | 26 | 23 | 26 | 24 | 20 | – 19 | – 89 | 0 |
| Estonia | 268 | 113 | 94 | 90 | 87 | 100 | 88 | 76 | 70 | 88 | 69 | – 21 | – 74 | 1 |
| Finland | 259 | 95 | 90 | 85 | 79 | 99 | 84 | 69 | 85 | 83 | 69 | – 17 | – 73 | 1 |
| France | 1 335 | 976 | 621 | 566 | 505 | 504 | 486 | 471 | 429 | 415 | 358 | – 14 | – 73 | 6 |
| Germany | 5 311 | 1 713 | 637 | 633 | 585 | 570 | 555 | 525 | 532 | 506 | 498 | – 2 | – 91 | 8 |
| Greece | 493 | 541 | 483 | 498 | 509 | 545 | 529 | 545 | 534 | 540 | 448 | – 17 | – 9 | 8 |
| Hungary | 1 010 | NE | 487 | NE | NE | 347 | 248 | 129 | 118 | 84 | 92 | 8 | – 91 | 2 |
| Ireland | 183 | 161 | 140 | 134 | 101 | 79 | 71 | 71 | 60 | 54 | 45 | – 18 | – 75 | 1 |
| Italy | 1 795 | 1 320 | 753 | 708 | 632 | 528 | 496 | 417 | 389 | 338 | 316 | – 7 | – 82 | 5 |
| Latvia | 102 | 49 | 15 | 11 | 10 | 8 | 5 | 5 | 4 | 4 | 3 | – 23 | – 97 | 0 |
| Lithuania | NE | NE | NE | NE | 43 | 43 | 42 | 44 | 43 | 36 | 32 | – 11 | NE | 1 |
| Luxembourg | 18 | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | – 2 | – 83 | 0 |
| Malta | 19 | 30 | 24 | 26 | 25 | 27 | 17 | 17 | 17 | 17 | 16 | – 6 | – 14 | 0 |
| Netherlands | 192 | 129 | 73 | 74 | 68 | 64 | 66 | 65 | 64 | 60 | 52 | – 14 | – 73 | 1 |
| Poland | NE | NE | NE | NE | NE | 1 375 | 1 241 | 1 222 | 1 203 | 1 216 | 999 | – 18 | NE | 17 |
| Portugal | 291 | 304 | 281 | 264 | 262 | 176 | 177 | 181 | 161 | 156 | 146 | – 6 | – 50 | 2 |
| Romania | NE | NE | 720 | NE | NE | NE | NE | 727 | 863 | 575 | 562 | – 2 | NE | 10 |
| Slovakia | NE | NE | 127 | 131 | 103 | 105 | 96 | 89 | 88 | 71 | 69 | – 2 | NE | 1 |
| Slovenia | NE | NE | NE | NE | 71 | 66 | 54 | 41 | 18 | 14 | 14 | – 4 | NE | 0 |
| Spain | 2 091 | 1 730 | 1 426 | 1 401 | 1 503 | 1 237 | 1 280 | 1 234 | 1 133 | 1 128 | 486 | – 57 | – 77 | 8 |
| Sweden | 105 | 69 | 41 | 40 | 40 | 41 | 37 | 36 | 36 | 33 | 31 | – 6 | – 71 | 1 |
| United Kingdom | NE | NE | 1 165 | 1 119 | 978 | 966 | 813 | 687 | 669 | 595 | 512 | – 14 | NE | 9 |
| **EU-27** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **8 001** | **7 822** | **7 289** | **5 895** | **– 19** | **NE** | **100** |

**Note:** 'NE' denotes 'not estimated or not provided'.

Between 2007 and 2008, 20 Member States reported emission reductions, resulting in a total emission reduction of – 2 % for the EU-27. The highest absolute reduction between 2007 and 2008 was achieved in Spain and Romania.

For 23 Member States, $NH_3$ emissions in the year 2008 were already lower than their respective ceilings (Figure 3.8). Of the EU-27 Member States, 24 (25 in 2008 submission) expect to be at, or below, their respective emission ceilings by 2010 (Figure 3.8). Bulgaria and Finland report WM projections identical to their 2010 $NH_3$ emission ceilings set in the NECD. As the emissions reported in 2008 for Bulgaria are already significantly below its 2010 ceilings, it seems likely that Bulgaria will indeed meet the 2010 $NH_3$ ceilings. Finland had $NH_3$ emissions in 2008 higher than its emission ceiling. Finland is currently updating the ammonia emission inventory and projections and will submit the revised data to the NECD by 31st December 2010. According to the updated emission inventory methodology, Finland will now not meet its $NH_3$ ceiling in 2010.

No Member State submitted WM projections more than 20 % above the ceiling (Figure 3.8). WM projections submitted in the 2009 reporting round show that the largest exceedances above the NECD ceilings in absolute terms are expected in Germany (60 Gg) and Spain (28 Gg).

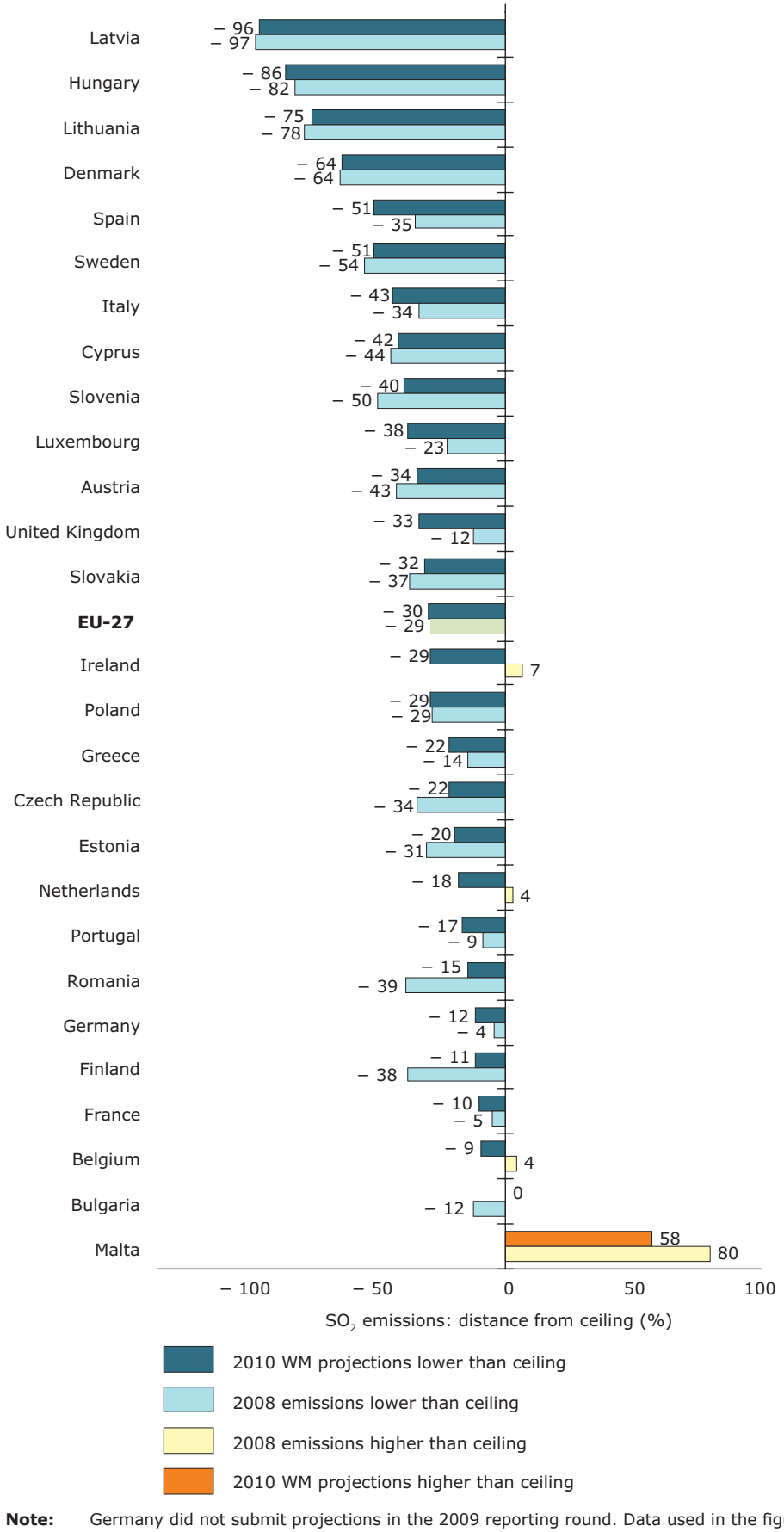
A comparison of $NH_3$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009 (Figure 3.9) shows that Estonia and Lithuania changed their projections considerably during those years ([29]).

Compared with the projections submitted in 2008, 10 Member States revised their $NH_3$ projections downwards in their 2009 submission. The highest relative change ([30]) was reported by Lithuania (– 34 %). Thirteen Member States have not changed their $NH_3$ projections since the 2008 submission.

([29]) The changes in reported projections were greater than 30 percentage points.

([30]) Changes of projections reported in 2008 and 2009 are expressed as 100 x ($WM_{2009}$ — $WM_{2008}$)/$E_{2008}$ (%), where $WM_{2009r}$ and $WM_{2008}$ are 'with measures' projections for 2010 submitted in 2008 and 2009.

**Figure 3.6 Distance from ceiling for $SO_2$ emissions in 2008 and for projected $SO_2$ emissions in 2010 (with measures)**




**Note:** Germany did not submit projections in the 2009 reporting round. Data used in the figure were taken from the 2008 submission.

**Figure 3.7 Comparison of $SO_2$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009, and ceilings in 2010**

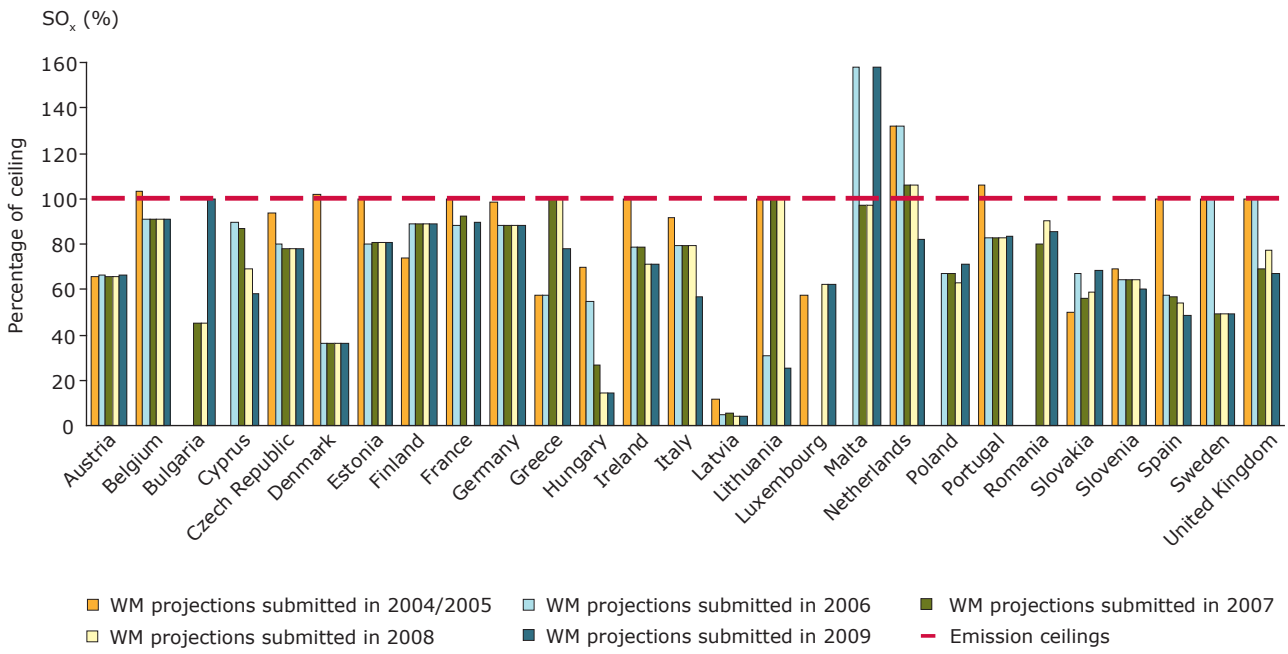



**Table 3.7 $NH_3$ emission trends for Member States, 1990–2008**

| $NH_3$ (Gg) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Change 2007–08 (%) | Change 1990–2008 (%) | Contribution to EU-27 in 2008 (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 65 | 71 | 65 | 65 | 63 | 63 | 62 | 62 | 62 | 63 | 63 | – 1 | – 4 | 2 |
| Belgium | 120 | 115 | 84 | 82 | 80 | 77 | 72 | 70 | 70 | 70 | 70 | – 0 | – 42 | 2 |
| Bulgaria | NE | NE | NE | NE | NE | NE | NE | 57 | 55 | 58 | 68 | 16 | NE | 2 |
| Cyprus | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 1 | 4 | 0 |
| Czech Republic | NE | NE | 74 | 67 | 65 | 74 | 70 | 66 | 64 | 60 | 55 | – 7 | NE | 1 |
| Denmark | 95 | 84 | 80 | 78 | 76 | 74 | 74 | 70 | 69 | 69 | 68 | – 1 | – 28 | 2 |
| Estonia | 26 | 12 | 10 | 10 | 9 | 10 | 10 | 9 | 9 | 10 | 9 | – 4 | – 64 | 0 |
| Finland | 42 | 35 | 33 | 33 | 33 | 33 | 33 | 36 | 36 | 35 | 35 | 0 | – 17 | 1 |
| France | 791 | 773 | 797 | 784 | 786 | 759 | 752 | 746 | 740 | 740 | 754 | 2 | – 5 | 20 |
| Germany | 671 | 591 | 594 | 606 | 594 | 589 | 588 | 581 | 578 | 581 | 587 | 1 | – 13 | 15 |
| Greece | 79 | 85 | 74 | 74 | 73 | NE | NE | 68 | 68 | 65 | 63 | – 3 | – 20 | 2 |
| Hungary | 124 | NE | 84 | NE | NE | 67 | 76 | 80 | 81 | 71 | 69 | – 3 | – 45 | 2 |
| Ireland | 110 | 115 | 121 | 115 | 113 | 112 | 111 | 110 | 110 | 106 | 104 | – 2 | – 5 | 3 |
| Italy | 405 | 417 | 425 | 434 | 435 | 433 | 426 | 413 | 408 | 418 | 406 | – 3 | 0 | 11 |
| Latvia | 48 | 16 | 13 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 1 | – 66 | 0 |
| Lithuania | NE | NE | NE | NE | 51 | 34 | 33 | 39 | 35 | 38 | 29 | – 23 | NE | 1 |
| Luxembourg | 5 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 1 | – 19 | 0 |
| Malta | NE | NE | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | – 9 | NE | 0 |
| Netherlands | 253 | 196 | 155 | 147 | 142 | 138 | 137 | 137 | 137 | 137 | 135 | – 2 | – 47 | 4 |
| Poland | NE | NE | NE | NE | NE | 323 | 317 | 326 | 287 | 289 | 285 | – 1 | NE | 8 |
| Portugal | 64 | 63 | 67 | 65 | 65 | 59 | 60 | 59 | 57 | 58 | 57 | – 1 | – 11 | 1 |
| Romania | NE | NE | 206 | NE | NE | NE | NE | 194 | 199 | 203 | 187 | – 8 | NE | 5 |
| Slovakia | NE | NE | 32 | 32 | 33 | 32 | 29 | 29 | 27 | 27 | 25 | – 6 | NE | 1 |
| Slovenia | NE | NE | NE | NE | 19 | 19 | 17 | 18 | 19 | 19 | 18 | – 5 | NE | 0 |
| Spain | 339 | 338 | 377 | 378 | 375 | 389 | 383 | 364 | 375 | 386 | 356 | – 8 | 5 | 9 |
| Sweden | 54 | 62 | 56 | 53 | 52 | 53 | 53 | 53 | 52 | 50 | 50 | – 1 | – 8 | 1 |
| United Kingdom | NE | NE | 297 | 337 | 326 | 298 | 311 | 305 | 305 | 295 | 282 | – 5 | NE | 7 |
| **EU-27** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **NE** | **3 922** | **3 871** | **3 875** | **3 801** | **– 2** | **NE** | **100** |

**Note:** 'NE' denotes 'not estimated or not provided

**Figure 3.8 Distance from ceiling for $NH_3$ emissions in 2008 and for projected $NH_3$ emissions in 2010 (with measures)**

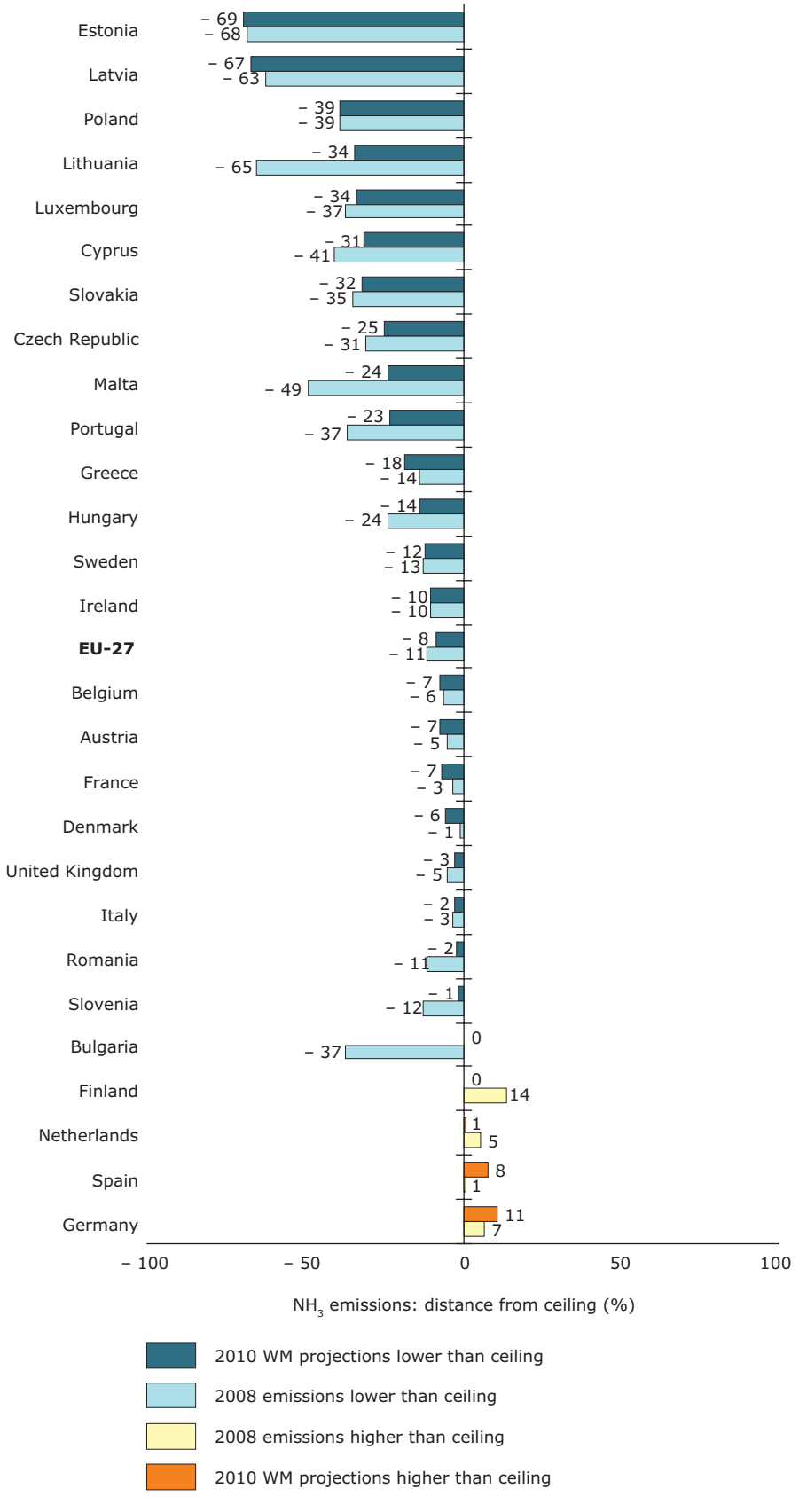
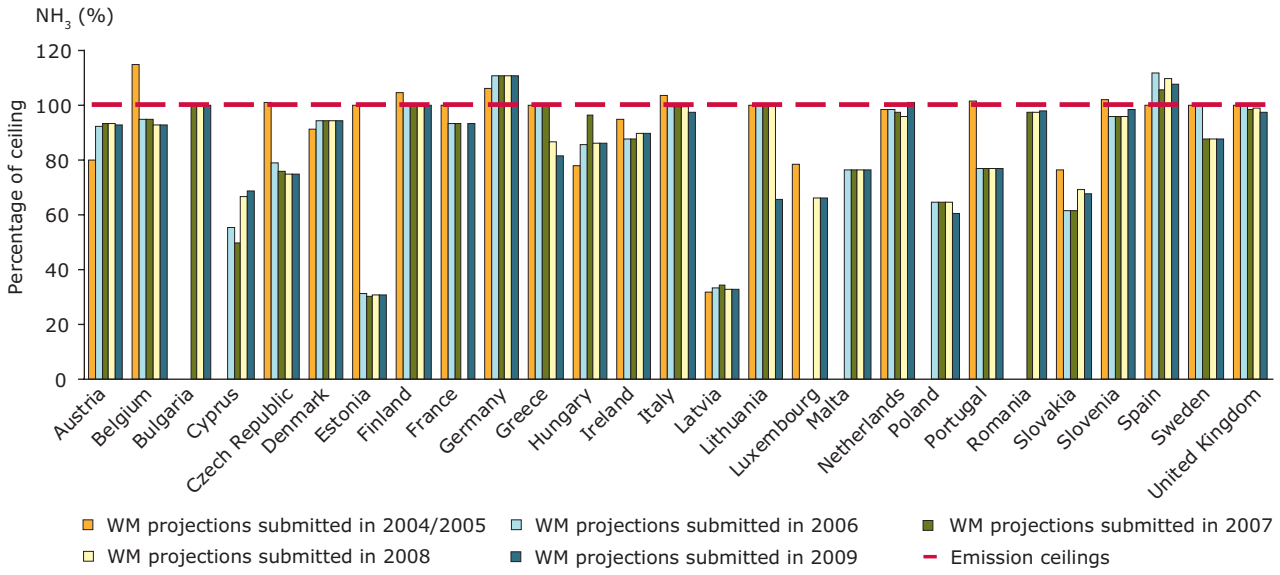


**Figure 3.9 Comparison of $NH_3$ projections (WM) submitted in 2005, 2006, 2007, 2008 and 2009, and ceilings in 2010**



# 4 Potential underestimation of Member State emissions due to non-reporting of sectors

## 4.1 Objectives

A complete compilation of data from all Member States is required in order to allow comparison with the respective EU-27 ceilings as defined in Annexes I and II of the NECD. It is therefore most important that Member States report complete emission datasets.

The official reporting guidelines of the LRTAP Convention (UNECE, 2009) (and through Annex III of the NECD, by extension applicable also to reporting under the NECD) allow countries to report emissions as 'not estimated' (NE) for those sectors where emissions are known to occur but have not been estimated or reported. Ideally 'NE' should only be used for sources that are very small in the respective Member State, where, for example, it may not be cost-effective to develop a specific estimation methodology compared with improving estimates for more significant sources.

Countries should separately report the reasons why emissions are not estimated. The *EMEP/EEA air pollutant emission inventory guidebook* (EMEP/EEA, 2009) recommends the following points concerning 'NE' emissions as elements to be included in a transparent inventory report:

- a list of sources not estimated in the inventory;
- a qualitative assessment of their importance, currently and in future;
- a description of intentions to calculate these in future or an explanation of why there are no such plans.

For this report a simple assessment was made of possible underestimation in national emission inventories that may occur due to the use of the notation key 'NE' by Member States. A main intention of the analysis is to encourage Member States to review the source categories that are 'NE' and in future provide estimates where these sources may add significantly to the currently reported national totals.

## 4.2 Assessment method

Member States were assigned to one of two general 'eastern' and 'western' groupings ([31]). For each group, the average contribution made to total emissions in 2008 by the specific NFR source categories was firstly estimated. Source categories reported as 'NE' in national inventories were then assumed to contribute (in percentage terms) as much to the national total of the Member State as the mean contribution made by the same source sector to the aggregated total for the respective country group. In a final step the potential underestimated emissions arising from use of the 'NE' notation key were added to the 2008 national total of the Member States and compared with the ceilings within the NECD to see whether the difference in emission is likely to affect the number of Member States attaining their ceilings or not.

This relatively simple approach might be considered to provide a somewhat conservative estimate, as Member States that report source categories as 'NE' are perhaps more likely to have a smaller share of national emissions from these source categories than those Member States that do report emission values.

## 4.3 Assessment results

Certain Member States used the notation key 'NE' for a considerable number of source categories (Table 4.1). Spain, for example, reported 'NE' for 41 source categories of $NH_3$. In contrast, a number of Member States used 'NE' for only a limited number of source categories (or for no source category at all).

Table 4.1 also shows, for the sources reported as 'NE', the estimated underestimation of these sources

([31]) 'Eastern Member States' are defined as: Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. 'Western Member States' are defined as: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

as a percentage of the original reported national total. Generally, the potential underestimation is low for all pollutants. There are only three cases where the potential underestimations are above 10 % (Cyprus and Slovenia for NMVOC and the Czech Republic for $NH_3$). In general, it seems that for $NO_X$ and $SO_2$ the potential underestimation is lower than for NMVOC and $NH_3$. There is also no strong correlation between the number of source categories which are reported as 'NE' and the magnitude of the potential underestimation.

For almost all Member States, the addition of the potential underestimate to their national totals does not change the evaluation if a Member State has emissions above or below the emission ceilings in 2008. Only for Portugal ($NO_X$) and Slovenia (NMVOC) does the addition of the underestimation push their 2008 emissions above the level of the respective 2010.

Nine Member States provided reasons for the 'NE' emissions in their data submissions under the NECD. Note that Member States might provide more information under their LRTAP Convention submissions. The provided information was, however, of rather varying informative value.

**Table 4.1 Number of source categories that are 'not estimated' and an indication of the contribution of these source categories to the reported total emissions of Member States for $NO_x$, NMVOC, $SO_2$ and $NH_3$**

| | $NO_x$ | | | | NMVOC | | | | $SO_2$ | | | | $NH_3$ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of source categories NE | Potential underesti-mation of emissions (%) | Are 2008 emissions lower than ceiling? | Are 2008 emissions + potential underesti-mation lower than ceiling? | Number of source categories NE | Potential underesti-mation of emissions (%) | Are 2008 emissions lower than ceiling? | Are 2008 emissions + potential underesti-mation lower than ceiling? | Number of source categories NE | Potential underesti-mation of emissions (%) | Are 2008 emissions lower than ceiling? | Are 2008 emissions + potential underesti-mation lower than ceiling? | Number of source categories NE | Potential underesti-mation of emissions (%) | Are 2008 emissions lower than ceiling? | Are 2008 emissions + potential underesti-mation lower than ceiling? |
| Austria | 3 | 0 | NO | NO | 3 | 1 | NO | NO | 4 | 1 | YES | YES | 3 | 0 | YES | YES |
| Belgium | 30 | 2 | NO | NO | 27 | 7 | YES | YES | 20 | 6 | NO | NO | 26 | 2 | YES | YES |
| Bulgaria | 28 | 1 | YES | YES | 28 | 5 | YES | YES | 28 | 1 | YES | YES | 28 | 3 | YES | YES |
| Cyprus | 25 | 3 | YES | YES | 15 | 12 | YES | YES | 15 | 1 | YES | YES | 20 | 7 | YES | YES |
| Czech Republic | 18 | 0 | YES | YES | 18 | 6 | YES | YES | 3 | 0 | YES | YES | 7 | 19 | YES | YES |
| Denmark | 5 | 0 | NO | NO | 4 | 1 | NO | NO | 5 | 1 | YES | YES | 4 | 0 | YES | YES |
| Estonia | 1 | 0 | YES | YES | 1 | 0 | YES | YES | 1 | 0 | YES | YES | 2 | 0 | YES | YES |
| Finland | 0 | 0 | YES | YES | 0 | 0 | YES | YES | 0 | 0 | YES | YES | 4 | 0 | NO | NO |
| France | 1 | 0 | NO | NO | 2 | 0 | NO | NO | 1 | 0 | YES | YES | 1 | 0 | YES | YES |
| Germany | 9 | 0 | NO | NO | 12 | 2 | NO | NO | 6 | 1 | YES | YES | 7 | 0 | NO | NO |
| Greece | 10 | 1 | NO | NO | 14 | 6 | YES | YES | 9 | 1 | YES | YES | 0 | 0 | YES | YES |
| Hungary | 0 | 0 | YES | YES | 0 | 0 | NO | NO | 0 | 0 | YES | YES | 0 | 0 | YES | YES |
| Ireland | 7 | 0 | NO | NO | 7 | 2 | NO | NO | 7 | 1 | NO | NO | 37 | 3 | YES | YES |
| Italy | 0 | 0 | NO | NO | 0 | 0 | NO | NO | 0 | 0 | YES | YES | 0 | 0 | YES | YES |
| Latvia | 2 | 0 | YES | YES | 4 | 1 | YES | YES | 2 | 0 | YES | YES | 20 | 2 | YES | YES |
| Lithuania | 6 | 0 | YES | YES | 10 | 8 | YES | YES | 5 | 0 | YES | YES | 20 | 6 | YES | YES |
| Luxembourg | 2 | 0 | NO | NO | 2 | 0 | NO | NO | 2 | 0 | YES | YES | 2 | 0 | YES | YES |
| Malta | 1 | 0 | NO | NO | 6 | 9 | YES | YES | 1 | 0 | NO | NO | 1 | 0 | YES | YES |
| Netherlands | 2 | 0 | NO | NO | 1 | 1 | YES | YES | 1 | 1 | NO | NO | 0 | 0 | NO | NO |
| Poland | 5 | 2 | YES | YES | 7 | 1 | YES | YES | 6 | 0 | YES | YES | 0 | 0 | YES | YES |
| Portugal | 14 | 1 | YES | NO | 12 | 2 | NO | NO | 15 | 4 | YES | YES | 20 | 1 | YES | YES |
| Romania | 15 | 2 | YES | YES | 19 | 4 | YES | YES | 15 | 2 | YES | YES | 16 | 3 | YES | YES |
| Slovakia | 0 | 0 | YES | YES | 1 | 0 | YES | YES | 0 | 0 | YES | YES | 8 | 0 | YES | YES |
| Slovenia | 32 | 5 | NO | NO | 34 | 11 | YES | NO | 32 | 3 | YES | YES | 23 | 8 | YES | YES |
| Spain | 20 | 2 | NO | NO | 31 | 4 | NO | NO | 24 | 3 | YES | YES | 41 | 8 | NO | NO |
| Sweden | 4 | 0 | NO | NO | 20 | 4 | YES | YES | 5 | 0 | YES | YES | 15 | 1 | YES | YES |
| United Kingdom | 0 | 0 | NO | NO | 0 | 0 | YES | YES | 0 | 0 | YES | YES | 0 | 0 | YES | YES |

**Note:** To enable comparison between Member States, the analysis is based on converted NFR tables for Member States that submitted their inventories in older NFR formats. Therefore, in these instances the number of source categories that were not estimated presented in the table above could vary slightly from the number originally reported by Member States.

# 5 Recalculations

In order to ensure comparable and consistent data, it is considered good practice for Member States to recalculate emissions for all years when new information (i.e. activity or emission factor data) becomes available. However, for those Member States that do recalculate time-series data, it is not formally required to provide any explanation for these and so the reasons for changes to the reported emission values are not always clear.

In order to evaluate officially reported emission data, it is important to identify such inventory recalculations and to understand their origin. This is especially true when emission ceilings are expressed in absolute terms (as in the NECD) rather than as percentage reduction targets (as under the Kyoto Protocol for greenhouse gases). In some instances (as encouraged by the European Commission and the EEA), Member States have submitted an informative inventory report (IIR) together with their emission inventory data. Details of recalculations performed should be explained within these inventory reports.

The differences between data reported by Member States under the NECD in 2009 and the previous year 2008 are presented in the tables below.

## 5.1 $NO_x$ recalculations

The highest relative recalculations (in percentage terms) to the 2007 emission data, reported in 2008 as 'provisional' data under the NECD, occurred in Luxembourg followed by Cyprus and Slovakia (Table 5.1). Neither Luxembourg nor Cyprus provided an IIR under the NECD, which means the reasons for these changes are not known. For Slovakia, the major recalculations occurred in the transport sector due to a new implementation of the Copert 4 road transport model (Copert, 2010).

**Table 5.1 Member State $NO_x$ recalculations for 1990–2007 (%)**

| | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 1.4 | 0.9 | 0.5 | 0.4 | – 0.7 | – 1.0 | – 1.0 | 1.7 | 1.4 | 2.5 |
| Belgium | 5.4 | 5.6 | 0.7 | 0.6 | 0.5 | 0.8 | 1.0 | 1.4 | – 0.0 | – 0.5 |
| Bulgaria | – | – | – | – | – | – | – | | | – 0.0 |
| Cyprus | 8.9 | 4.7 | 10.4 | 6.4 | 5.7 | 4.2 | 14.1 | 21.3 | 20.6 | 22.7 |
| Czech Republic | – | – | | | | | | | | 0.8 |
| Denmark | 0.2 | 0.4 | – 1.1 | – 1.2 | – 1.6 | – 1.8 | – 2.2 | – 1.9 | – 2.0 | – 2.0 |
| Estonia | 0.1 | 1.2 | 4.8 | 8.8 | 2.4 | 5.4 | 6.2 | 13.0 | 13.3 | 11.3 |
| Finland | 4.9 | 8.7 | 0.1 | – 0.1 | – 0.1 | – 0.0 | – 0.0 | 0.0 | 0.2 | 1.2 |
| France | – 0.8 | 0.6 | 1.5 | 1.9 | 1.7 | 2.1 | 1.5 | 2.1 | 1.2 | 1.3 |
| Germany | 0.5 | 1.0 | 2.2 | 2.1 | 2.2 | 2.1 | 2.8 | 4.7 | 12.3 | 13.3 |
| Greece | | | | | | | | | | 0.7 |
| Hungary | | – | | – | – | | | | | 0.0 |
| Ireland | – 3.4 | – 2.6 | 9.9 | 9.8 | 8.8 | 8.1 | 8.8 | 8.2 | 7.3 | 6.1 |
| Italy | | | | | | | | | | 10.3 |
| Latvia | 8.5 | 8.9 | 6.9 | 13.5 | 11.0 | 7.7 | – 8.2 | – 3.3 | – 6.8 | – 4.0 |
| Lithuania | – | – | – | – | | | | | | 0.0 |
| Luxembourg | | | | | | | | | | 36.2 |
| Malta | | | – 3.3 | – 8.4 | – 8.1 | – 7.8 | – 4.9 | – 0.7 | 2.7 | 2.3 |
| Netherlands | – 0.6 | 0.8 | – 2.1 | – 9.2 | – 6.0 | – 5.4 | – 7.1 | – 2.9 | – 0.9 | – 0.3 |
| Poland | – | – | – | – | – | | | | | – 0.1 |
| Portugal | – 8.9 | – 6.7 | – 1.5 | – 1.4 | – 0.7 | 0.2 | 0.2 | 1.6 | 1.8 | 2.4 |
| Romania | – | – | 0.0 | – | – | – | – | | | – 6.1 |
| Slovakia | – | – | – 1.6 | – 0.8 | – 0.7 | – 1.8 | 1.2 | 6.1 | 11.5 | 16.7 |
| Slovenia | – | – | – | – | | | | | | 0.0 |
| Spain | 0.0 | – 0.0 | – 3.1 | – 3.9 | – 4.7 | – 5.3 | – 4.0 | – 4.7 | – 3.8 | – 3.9 |
| Sweden | 0.4 | 0.5 | – 0.6 | – 0.6 | – 0.8 | – 0.9 | – 0.7 | – 0.6 | – 0.7 | – 0.8 |
| United Kingdom | – | – | | | | | 3.1 | 3.7 | 3.6 | 4.8 |

**Note:** Negative values indicate that the emission values submitted in 2009 were lower than those submitted in a previous reporting round.
'0' indicates that the change in reported emissions was less than 0.05 %.
A blank cell indicates that, while data is available from a previous reporting year, no new data were reported in 2009.
A dash indicates instances where one of the two submissions did not contain data.

## 5.2 NMVOC recalculations

Significant recalculations (in percentage terms) for the 'provisional' emission data of 2007 reported in 2008 were again made by Cyprus, followed by Poland and Portugal (Table 5.2). However, as Cyprus and Portugal did not provide an IIR under the NECD, the reasons for these changes are again unknown. Poland provided its IIR in Polish.

**Table 5.2 Member State NMVOC recalculations for 1990–2007 (%)**

| NMVOC (%) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 0.2 | 0.8 | 0.6 | – 1.5 | – 1.7 | – 3.9 | – 4.8 | – 6.2 | – 5.6 | – 8.5 |
| Belgium | 2.0 | 3.1 | 0.8 | – 0.2 | – 0.4 | – 1.6 | – 1.3 | – 2.0 | – 3.8 | – 14.0 |
| Bulgaria | – | – | – | – | – | – | – | | | – 0.0 |
| Cyprus | 9.6 | – 4.1 | – 10.1 | – 13.7 | – 8.5 | – 6.9 | 23.8 | 32.2 | 48.4 | 59.0 |
| Czech Republic | – | – | | | | | | | | – 2.7 |
| Denmark | 6.3 | 5.0 | 8.1 | 9.3 | 8.1 | 8.4 | 8.6 | 8.3 | 9.4 | 6.8 |
| Estonia | – 0.8 | – 3.7 | – 2.1 | – 1.4 | – 2.8 | 1.5 | 1.2 | 2.0 | 1.2 | – 2.1 |
| Finland | – 0.6 | – 0.5 | 5.3 | – 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 |
| France | – 0.1 | – 1.2 | – 2.6 | – 1.1 | – 0.5 | – 0.4 | – 0.2 | – 0.5 | – 1.3 | – 1.6 |
| Germany | – 0.9 | – 0.9 | – 2.0 | – 2.6 | – 2.9 | – 3.6 | – 3.7 | – 4.1 | – 0.1 | – 0.3 |
| Greece | | | | | | | | | | 0.7 |
| Hungary | | – | | – | – | | | | | – 0.0 |
| Ireland | – 6.4 | – 3.1 | 6.8 | 7.6 | 6.2 | 5.9 | 4.9 | 4.2 | 3.4 | 3.9 |
| Italy | | | | | | | | | | 5.3 |
| Latvia | 13.5 | 14.7 | 5.6 | 6.7 | 4.5 | 3.0 | – 2.4 | – 2.2 | – 3.2 | – 2.6 |
| Lithuania | – | – | – | – | | | | | | 0.0 |
| Luxembourg | | | | | | | | | | 29.7 |
| Malta | | | 1.5 | 4.5 | 6.1 | 7.3 | 7.2 | 0.3 | 1.9 | 2.3 |
| Netherlands | 0.5 | 0.8 | 1.3 | – 18.8 | – 16.9 | – 19.5 | – 6.0 | 2.6 | – 0.6 | – 0.5 |
| Poland | – | – | – | – | – | | | | | – 36.6 |
| Portugal | – 4.3 | – 15.4 | – 19.5 | – 23.0 | – 23.8 | – 25.1 | – 26.9 | – 28.6 | – 29.5 | – 31.6 |
| Romania | – | – | | – | – | – | – | | | 9.9 |
| Slovakia | – | – | – 11.9 | – 11.5 | – 10.1 | – 14.5 | – 12.4 | – 6.2 | – 6.0 | – 7.7 |
| Slovenia | – | – | – | – | | | | | | 0.0 |
| Spain | – 0.0 | – 0.0 | – 5.7 | – 5.4 | – 9.1 | – 9.8 | – 9.1 | – 10.0 | – 9.9 | – 9.6 |
| Sweden | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.7 | 0.9 | 1.2 |
| United Kingdom | – | – | | | | | 7.4 | 7.8 | 7.2 | 7.5 |

**Note:** Negative values indicate that the emission values submitted in 2009 were lower than those submitted in a previous reporting round.

'0' indicates that the change in reported emissions was less than 0.05 %.

A blank cell indicates that, while data is available from a previous reporting year, no new data were reported in 2009.

A dash indicates instances where one of the two submissions did not contain data.

## 5.3 $SO_2$ recalculations

The highest relative recalculations (in percentage terms) for the 'provisional' 2007 data, reported in the previous reporting cycle under the NECD, occurred in Luxembourg, Romania and Portugal (Table 5.3). For Romania the high recalculation for the year 2007 occurred due to the new use of emission factors/methods from the revised EMEP/EEA emission inventory guidebook (EMEP/EEA, 2009). Portugal and Luxembourg did not provide an IIR under the NECD, meaning the reasons for changes to their emission values are not known. Recalculations to the Latvian data for the years 1997–2004 resulted in a significant change in reported emissions. This is due to a correction made to the assumed sulphur content in liquid fuels which is now based on the reported average sulphur content in fuel used by enterprises.

**Table 5.3 Member State $SO_2$ recalculations for 1990–2007 (%)**

| $SO_2$ (%) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | – 0.0 | – 0.2 | 0.0 | 0.7 | – 0.3 | – 0.8 | 0.5 | 1.3 | – 2.2 | – 3.4 |
| Belgium | – 0.2 | – 0.5 | 0.6 | 0.5 | – 0.3 | 0.6 | 0.6 | 0.5 | 0.6 | – 0.6 |
| Bulgaria | – | – | – | – | – | – | – | | | – 0.0 |
| Cyprus | – 18.8 | – 15.2 | – 12.3 | – 14.0 | – 8.9 | – 12.5 | – 14.2 | – 14.6 | – 15.1 | – 15.1 |
| Czech Republic | – | – | | | | | | | | 0.1 |
| Denmark | 0.4 | 0.7 | 2.8 | 3.0 | 3.1 | 2.8 | 3.0 | 3.2 | 2.9 | 4.3 |
| Estonia | – 1.9 | – 3.4 | – 1.6 | – 0.6 | – 0.9 | – 0.7 | – 0.8 | – 1.2 | – 1.5 | – 0.4 |
| Finland | – 0.5 | – 0.9 | 17.6 | – 0.1 | 0.2 | 0.0 | 0.0 | – 0.0 | – 0.1 | 1.6 |
| France | – 0.2 | – 0.4 | – 0.1 | – 0.1 | – 2.6 | – 0.7 | – 3.4 | – 3.0 | – 5.5 | – 4.5 |
| Germany | – 0.8 | – 0.6 | – 0.1 | – 1.4 | – 2.7 | – 5.8 | – 4.6 | – 8.5 | 3.5 | 2.7 |
| Greece | | | | | | | | | | – 0.5 |
| Hungary | | – | | – | – | | | | | 0.0 |
| Ireland | – 0.3 | – 0.4 | – 0.1 | – 0.3 | – 0.2 | – 0.2 | 0.1 | 0.9 | 0.4 | – 0.1 |
| Italy | | | | | | | | | | – 7.8 |
| Latvia | 0.6 | 0.4 | 53.7 | 42.1 | 55.1 | 53.1 | 33.8 | – 0.1 | – 1.5 | 9.3 |
| Lithuania | – | – | – | – | | | | | | 0.0 |
| Luxembourg | | | | | | | | | | 141.7 |
| Malta | | | – 0.1 | – 0.0 | 0.0 | 0.2 | – 4.8 | – 5.2 | – 5.2 | – 5.3 |
| Netherlands | 0.2 | 0.3 | – 0.1 | – 16.8 | 1.1 | – 1.9 | 2.0 | – 3.4 | – 0.6 | – 0.0 |
| Poland | – | – | – | – | – | | | | | 7.7 |
| Portugal | – 9.3 | – 9.2 | – 8.6 | – 10.7 | – 11.3 | – 12.8 | – 17.1 | – 15.5 | – 16.3 | – 15.8 |
| Romania | – | – | | – | – | – | – | | | – 23.5 |
| Slovakia | – | – | – 0.0 | – 0.1 | 0.0 | – 0.6 | – 0.7 | – 0.0 | 0.0 | – 0.0 |
| Slovenia | – | – | – | – | | | | | | 0.0 |
| Spain | – 0.0 | 0.0 | 0.3 | 0.6 | 0.5 | 0.7 | 0.7 | 0.3 | 0.6 | 1.1 |
| Sweden | 0.3 | 0.7 | – 5.2 | – 4.6 | – 4.6 | – 3.4 | – 4.1 | – 2.8 | – 2.8 | – 2.7 |
| United Kingdom | – | – | | | | | 0.1 | 0.1 | – 0.2 | 0.7 |

**Note:** Negative values indicate that the emission values submitted in 2009 were lower than those submitted in a previous reporting round.

'0' indicates that the change in reported emissions was less than 0.05 %.

A blank cell indicates that, while data is available from a previous reporting year, no new data were reported in 2009.

A dash indicates instances where one of the two submissions did not contain data.

## 5.4 $NH_3$ recalculations

The highest relative recalculations (in percentage terms) for the previously reported 'provisional' 2007 data occurred in Luxembourg and Slovakia (Table 5.4). Luxembourg did not provide an IIR under the NECD. Slovakia provides information on recalculations but gives no specific reason for changes in $NH_3$.

**Table 5.4 Member State $NH_3$ recalculations for 1990–2007 (%)**

| $NH_3$ (%) | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | – 8.0 | – 6.2 | – 6.5 | – 6.3 | – 5.9 | – 5.7 | – 5.7 | – 5.3 | – 5.2 | – 4.4 |
| Belgium | – 5.1 | – 4.4 | – 7.5 | – 6.8 | – 6.1 | – 5.6 | – 4.2 | – 4.5 | – 3.7 | – 0.7 |
| Bulgaria | – | – | – | – | – | – | – | | | 0.4 |
| Cyprus | 14.0 | 11.3 | 9.9 | 8.8 | 8.9 | 10.6 | 11.0 | 8.9 | 3.4 | 4.9 |
| Czech Republic | – | – | | | | | | | | – 5.4 |
| Denmark | – 10.6 | – 8.0 | – 9.4 | – 11.0 | – 10.8 | – 4.1 | – 4.2 | – 3.3 | – 2.6 | – 1.2 |
| Estonia | 0.0 | – 0.0 | 0.8 | 1.4 | 0.4 | 0.3 | – 0.3 | – 1.1 | – 0.7 | – 0.3 |
| Finland | 11.2 | 1.3 | – 0.0 | – 0.1 | – 0.1 | 0.0 | 0.0 | – 0.0 | 0.0 | – 2.9 |
| France | – 0.0 | – 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 |
| Germany | – 9.0 | – 6.3 | – 5.3 | – 5.2 | – 5.3 | – 6.8 | – 5.9 | – 6.3 | – 6.7 | – 6.9 |
| Greece | | | | | | – | – | | | – 0.0 |
| Hungary | | – | | – | – | | | | | – 0.0 |
| Ireland | – 0.1 | – 0.0 | 0.3 | 0.3 | 0.3 | 0.3 | 0.9 | 0.3 | 0.3 | 0.2 |
| Italy | | | | | | | | | | 1.8 |
| Latvia | 2.9 | 8.8 | 9.0 | 9.7 | 9.5 | 8.7 | 10.3 | 8.4 | 8.1 | 7.2 |
| Lithuania | – | – | – | – | | | | | | 0.0 |
| Luxembourg | | | | | | | | | | – 16.6 |
| Malta | – | – | 6.2 | 0.9 | 5.9 | – 9.4 | – 9.4 | – 15.5 | – 4.8 | – 8.5 |
| Netherlands | 1.1 | 1.6 | 2.1 | 3.4 | 4.2 | 5.6 | 2.1 | 3.3 | 4.9 | 2.9 |
| Poland | – | – | – | – | – | | | | | – 0.5 |
| Portugal | – 3.7 | – 6.5 | – 5.9 | – 6.5 | – 7.4 | – 9.0 | – 8.0 | – 6.8 | – 7.0 | – 1.0 |
| Romania | – | – | | – | – | – | – | | | 8.3 |
| Slovakia | – | – | 6.5 | 4.5 | 5.5 | 8.8 | 6.2 | 6.5 | 1.9 | – 16.6 |
| Slovenia | – | – | – | – | | | | | | – 4.8 |
| Spain | 0.0 | 0.0 | – 7.5 | – 7.5 | – 7.5 | – 7.4 | – 8.7 | – 9.4 | – 9.4 | – 8.6 |
| Sweden | – 0.0 | – 0.0 | – 0.1 | – 0.1 | – 0.1 | – 0.1 | – 0.1 | – 0.1 | – 0.1 | – 0.1 |
| United Kingdom | – | – | | | | | 2.4 | 2.8 | 2.5 | 2.1 |

**Note:** Negative values indicate that the emission values submitted in 2009 were lower than those submitted in a previous reporting round.

'0' indicates that the change in reported emissions was less than 0.05 %.

A blank cell indicates that, while data is available from a previous reporting year, no new data were reported in 2009.

A dash indicates instances where one of the two submissions did not contain data.

# 6 Conclusions

This chapter summarises the overall emission trends in the Member States, problems encountered during the compilation of the inventory submissions and suggestions for improvements. The recommendations are directed towards improving the quality and transparency of national inventories and projections reported under the NECD. They also aim to ensure better harmonisation between submitted NECD national programmes and inventories. The objectives to be achieved are:

- *higher quality emission inventories and projections* enabling an accurate monitoring of progress towards the ceilings and an earlier and more accurate definition of any further emission reduction policies and measures, thus facilitating potentially lower costs for compliance solutions;
- *greater harmonisation of international reporting requirements*, thereby reducing the administrative burden for Member States and facilitating greater consistency in assumptions and relevant parameters.

It is also important that there is improved transparency regarding measures taken by Member States and the contribution of these measures to compliance with the national emission ceilings, e.g. increasing the standards for best available techniques (BAT) or specific additional requirements for certain types of industry or agriculture.

## 6.1 Trends and projected emissions

Despite data back to 1990 not being a formal requirement under the NECD, it is clear from the available data that emissions of the four NECD pollutants have decreased since 1990 in most EU Member States. Several countries have already succeeded in reducing emissions below their 2010 emission ceilings in line with the requirements of the NECD, or are projected to do so before 2010 (see projections in Figures 3.2, 3.4, 3.6 and 3.8).

- $NO_X$ emissions continue to pose the greatest challenge, with 11 Member States predicting they will miss their national ceilings. Projected emissions for the EU-27 are 4 % above the aggregated ceiling calculated as the sum of individual Member States' Annex I ceilings (and 14 % above the EU-27 Annex II NECD ceiling). The exceedances above the NECD ceilings in absolute values are largest for 'with measures' projections submitted in the 2009 reporting round for France (261 Gg) and Spain (236 Gg). Austria, Belgium, France, Ireland and Spain submitted 'with measures' projections more than 20 % above their respective ceilings.
- Progress in reducing NMVOC emissions seems to have been more successful. Even if three Member States, according to their submitted 'with measures' projections, will not meet the ceilings in 2010, NMVOC projections for the EU-27 are 15 % below the aggregated ceiling, and marginally below the Annex II ceiling. Exceedances above the NECD ceilings are expected by Spain (116 Gg), Portugal (14 Gg) and Austria (5 Gg).
- Only Malta does not expect to meet its $SO_2$ ceiling in 2010 according to 'with measures' projections. The EU-27 as a whole is projected to be 30 % below the aggregated ceiling. The Annex II ceiling for $SO_2$ should also be achieved (projected emissions are 25 % below).
- The $NH_3$ projections for the EU-27 are 8 % under the aggregated emission ceiling of Annex I of the NECD. For 23 Member States, $NH_3$ emissions in the year 2008 were already lower than their respective ceilings. WM projections submitted in the 2009 reporting round show that the highest exceedances above the NECD ceiling in absolute terms are expected in Germany (60 Gg) and Spain (28 Gg).

Based on the 'with measures' projection data, it is clear that only 14 Member States forecast that they will meet their ceilings for all pollutants. While the assessments against the NECD ceilings have been conducted by referring to Member State 'with measures' projections, it is noted that 12 ([32]) Member States (Bulgaria, France, Germany, Greece, Ireland,

([32]) WAM projections submitted by Luxembourg and Portugal were identical with WM projections.

Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia) are apparently considering implementing 'additional' measures during 2010 to further reduce their emissions (i.e. additional to the measures already included in their 'with measures' projections).

A comparison of projections (WM) submitted in 2005, 2006, 2007 and 2008 (Figures 3.3, 3.5, 3.7 and 3.9) shows that several Member States have made considerable changes to the projection data reported in these years. As Member States are not required to explain changes under the NECD, the reasons for the past changes in the projections are generally not known.

The 2010 revision of the projection data submitted in 2009 in individual countries resulted in decreased projections for $NO_X$ (– 162 Gg), NMVOC (– 399 Gg) and $NH_3$ (– 64 Gg) and increased projections (+ 92 Gg) for $SO_2$ for the EU-27. The latter increase is largely driven by a significant projected increase in $SO_2$ emissions in just one Member State, Bulgaria.

A number of Member States used the notation key 'NE' to signify that emissions from specific source categories were not estimated. Generally, the potential underestimation occurring as a result of this (in percentage terms) is low for all pollutants. There are only three cases where the potential underestimations are above 10 % (Cyprus and Slovenia for NMVOC and the Czech Republic for $NH_3$). Member States are encouraged to review their use of 'NE' when reporting emission data, and to provide numerical estimates where resources allow adequate estimates to be made.

## 6.2 Data reporting issues

### *6.2.1 Timeliness and completeness*

The timeliness of Member State reporting has again improved in comparison with the previous NECD reporting cycle. This reporting round was the first instance since reporting began under the NECD that all Member States submitted almost all information required. Twenty-three Member States provided inventories by the required deadline, compared with 22 in the previous cycle. All Member States submitted 2010 projections in the 2009 reporting round.

### *6.2.2 Consistency and comparability*

All Member States used the NFR format for reporting of their emissions. Nineteen Member States submitted their inventories only in the NFR09 format and five Member States used only older NFR formats for reporting and three Member States used NFR09 and older formats (for different years). The consistency of reporting improved as compared with last year, but use of older reporting formats continues to create processing problems when compiling submissions and in checking the consistency and completeness of data.

### *6.2.3 Transparency of submitted information*

Eight Member States (Austria, Finland, Germany, the Netherlands, Poland, Romania, Slovakia and Sweden) submitted an inventory report together with their inventories ([33]). Similarly, only 10 Member States (Austria, Denmark, Estonia, Finland, Ireland, Malta, Poland, Romania, Slovenia and the United Kingdom) reported the key socioeconomic data used in preparing their projections, despite this being a formal requirement of the NECD.

### *6.2.4 Recalculations*

The highest relative recalculations for the 'provisional' emission data of 2007 (originally reported in 2008) occurred in Luxembourg, followed by Cyprus and Slovakia for $NO_X$, in Cyprus, followed by Poland and Portugal for NMVOC, in Luxembourg, followed by Romania and Portugal for $SO_2$, and in Slovakia and Luxembourg for $NH_3$. Due to these Member State recalculations the EU-27 total for this year changed by + 333, – 389, – 145 and – 60 Gg for $NO_X$, NMVOC, $SO_2$ and $NH_3$ emissions respectively.

## 6.3 Suggested improvements

To help improve the transparency of the reported NECD data, part of the formal inventory reporting by the Member States should, in the future, involve submitting an accompanying inventory report, for example under a future amended NECD. Such a report should include the explanatory information concerning the reported inventory, for example:

- whether countries report on the basis of fuel used or sold (to prevent double-counting or omissions when compiling the EU-27 inventory);
- all countries should clearly describe how the NECD national totals reflect the requirements of Article 4 as related to maritime traffic and aircraft emissions (landing and take-off (LTO) cycle or cruise);

([33]) Nineteen Member States submitted informative inventory reports (IIRs) under the LRTAP Convention until 7 May 2010.

- Member States such as France, Portugal and Spain should confirm which territory is covered in their submitted inventory;
- Member States are invited to provide updated information on their 1990 and 2000 emissions so as to enable better evaluation of trends; similarly an overview of recalculations could be made (particularly with regard to the previous year's submission) including quantitative information and brief explanations for any recalculations performed.

The importance of providing inventories in standardised formats has been repeatedly stressed by the European Commission and the EEA in their communications with Member States. The need each year to transfer reported data provided in older reporting formats is both time-consuming and a potential source of errors. A mandatory definition of inventory reporting formats should be considered for inclusion in any future amended NECD.

# References

AEA Technology (2007), *Evaluation of national plans submitted in 2006 under the national emission ceilings Directive 2001/81/EC*. AEA Group report to the European Commission (Environment DG), service contract 070501/2006/453041/MAR/C5, AEA/ED05435, September 2007. Available at: http://ec.europa.eu/environment/air/pdf/nec_report.pdf [accessed 2 August 2010].

CAFE (2006), *Recommendations on developing and reporting national programmes under the National Emission Ceilings Directive*. Working Group on the Implementation of the Clean Air for Europe (CAFE) programme, 3 April 2006. Available at: http://ec.europa.eu/environment/air/pdf/recom_nec.pdf [accessed 2 August 2010].

Copert (2010), Copert 4 — Computer programme to calculate emissions from road transport. Laboratory of Applied Thermodynamics (LAT), Aristotle University of Thessaloniki. Available at: http://lat.eng.auth.gr/copert/ [accessed 2 August 2010].

EEA (2009), *NEC Directive status report 2008*. EEA Technical Report No 11/2009. Available at: www.eea.europa.eu/publications/nec-directive-status-report-2008 [accessed 6 May 2010].

EEA (2010), *European Union emission inventory report 1990–2008 under the Convention on Long-range Transboundary Air Pollution*. EEA Technical Report No 7/2010. Available at: www.eea.europa.eu/publications/european-union-emission-inventory-report [accessed 22 July 2010].

EMEP/EEA (2009), *EMEP/EEA air pollutant emission inventory guidebook*. EEA Technical Report No 9/2009. Available at: www.eea.europa.eu/publications/emep-eea-emission-inventory-guidebook-2009 [accessed 7 May 2010].

EMEP/EEA (2010), Inventory Review 2010: Review of emission data reported under the LRTAP Convention and NEC Directive Stage 1 and 2 review; Status of gridded data and LPS data; Mareckova, K., Wankmueller, R., Pazdernik, K., Purzner, M., Zechmeister, A. and Jöbstl, R., EMEP/CEIP Technical Report No 1/2010 — in preparation.

UNECE (2009), *Guidelines for reporting emission data under the Convention on Long-range Transboundary Air Pollution* (ECE/EB.AIR/97). Available at: www.ceip.at/fileadmin/inhalte/emep/reporting_2009/Rep_Guidelines_ECE_EB_AIR_97_e.pdf [accessed 5 March 2010].

# Units and abbreviations

| | |
|---|---|
| kg | 1 kilogram = $10^3$ g |
| t | 1 tonne (metric) = 1 megagram (Mg) = $10^6$ g |
| Mg | 1 megagram =$10^6$ g = 1 tonne (t) |
| Gg | 1 gigagram =$10^9$ g = 1 kilotonne (kt) |

| | |
|---|---|
| BAU | (projections) business as usual |
| CAFE | the Cleaner Air for Europe (CAFE) |
| CEIP | EMEP Centre on Emission Inventories and Projections |
| CDR | Eionet Central Data Repository |
| $CH_4$ | methane |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| CLS | current legislation projections |
| CRP | current reduction projections |
| CRF | common reporting format (UNFCCC) |
| EEA | European Environment Agency |
| Eionet | European environmental information and observation network of the EEA |
| EMEP | Cooperative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe |
| ETC/ACC | European Topic Centre on Air and Climate Change |
| EU | European Union |
| GDP | gross domestic product |
| IIR | Informative Inventory Report |
| LRTAP Convention | UNECE Convention on Long-range Transboundary Air Pollution |
| LTO | aircraft landing and take-off cycle |
| NE | Not estimated |
| NECD | National Emission Ceilings Directive |
| NFR | nomenclature for reporting (UNECE) |
| $NH_3$ | ammonia |
| NMVOC | non-methane volatile organic compounds |
| $NO_2$ | nitrogen dioxide |
| $NO_X$ | nitrogen oxides |
| PM | particulate matter |
| QA/QC | quality assurance/quality control |
| $SO_2$ | sulphur dioxide |
| $SO_x$ | sulphur oxides |
| UNECE | United Nations Economic Commission for Europe |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VOCs | volatile organic compounds (non-methane) |
| WAM | (projections) with additional measures |
| WM | (projections) with measures |
| WOM | (projections) without measures |

# Appendix 1 Data sources

**Table A1.1 Overview of emission data sources used in the trend tables (Tables 3.4 to 3.7), as of 27 July 2010**

| Member State | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Belgium | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Bulgaria | | | | | | | | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Cyprus | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Czech Republic | | | SUBM06 | SUBM06 | SUBM06 | SUBM06 | SUBM06 | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Denmark | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Estonia | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Finland | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| France | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Germany | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Greece | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM09 | SUBM09 |
| Hungary | PROG05 | | PROG06 | | | SUBM05 | PROG06 | SUBM07 | SUBM07 | SUBM09 | SUBM09 |
| Ireland | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Italy | SUBM05 | SUBM05 | SUBM05 | SUBM05 | SUBM05 | SUBM05 | SUBM06 | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Latvia | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Lithuania | | | | | SUBM04 | SUBM04 | SUBM07 | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Luxembourg | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM08 | SUBM09 | SUBM09 |
| Malta | PROG06 | PROG06 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Netherlands | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Poland | | | | | | PROG05 | PROG06 | SUBM06 | SUBM07 | SUBM09 | SUBM09 |
| Portugal | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Romania | | | PROG07 | | | | | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Slovakia | | | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Slovenia | | | | | SUBM05 | SUBM05 | SUBM06 | SUBM07 | SUBM08 | SUBM09 | SUBM09 |
| Spain | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| Sweden | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |
| United Kingdom | | | SUBM03 | SUBM06 | SUBM07 | SUBM08 | SUBM09 | SUBM09 | SUBM09 | SUBM09 | SUBM09 |

**Note:** SUBM09 = inventory submission with the reporting deadline on 31 December 2009;
SUBM08 = inventory submission with the reporting deadline on 31 December 2008;
SUBM07 = inventory submission with the reporting deadline on 31 December 2007;
SUBM06 = inventory submission with the reporting deadline on 31 December 2006;
SUBM05 = inventory submission with the reporting deadline on 31 December 2005;
PROG06 = national programme report with the reporting deadline on 31 December 2006;
PROG07 = national programme submitted in 2007.

**Table A1.2 Overview of Member State WM emission projection data sources, as of 27 July 2010**

| | 2010 | 2015 | 2020 | 2030 | 2050 |
|---|---|---|---|---|---|
| Austria | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | |
| Belgium | NFR09, Table 2a (2009) | | | | |
| Denmark | NFR02, Table 2a (2009) | NFR02, Table 2a (2009) | NFR02, Table 2a (2009) | | |
| Finland | Letter (2009) | | NFR09, Table 2a (2009) | | NFR09, Table 2a (2009) |
| France | NFR09, Table 2a (2009) | | NFR09, Table 2a (2009) | | |
| Germany | NFR02, Table 2a (2009) | NFR02, Table 2a (2009) | NFR02, Table 2a (2009) | | |
| Greece | NFR09, Table 2a (2009) | | | | |
| Ireland | NFR09, Table 2a (2009) | | | | |
| Italy | Excel table (2009) | | | | |
| Luxembourg | NFR09, Table 2a (2009) | | | | |
| Netherlands | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | |
| Portugal | NFR09, Table 2a (2009) | | NFR09, Table 2a (2009) | | |
| Spain | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | |
| Sweden | NFR02, Table 2a modified (2009) | NFR02, Table 2a modified (2009) | NFR02, Table 2a modified (2009) | NFR02, Table 2a modified (2009) | |
| United Kingdom | NFR09, Table 2a (2009) | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | | |
| Bulgaria | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | |
| Czech Republic | NFR09, Table 2a (2009) | | | | |
| Cyprus | NFR09, Table 1 (2009) | | | | |
| Estonia | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | | |
| Hungary | NFR09,Table 2a modified (2009) | | | | |
| Latvia | NFR09, Table 1 (2009) | | | | |
| Lithuania | NFR02, Table 2a (2009) | | NFR02, Table 2a (2009) | | |
| Malta | NFR09, Table 2a (2009) | | | | |
| Poland | NFR09, Table 2a (2009) | | | | |
| Romania | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | |
| Slovakia | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) |
| Slovenia | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | | |

**Note:** 'NFR' denotes 'nomenclature for reporting' — the sectoral classification system developed by UNECE/EMEP for reporting air emissions. The table numbers refer to the table numbering of the NFR reporting template. NFR09 is the most recent version of the reporting template. Definitions for WM, WAM and WOM projections are provided in Chapter 3 of this report.

([b]) Estonia, Finland, Germany, Hungary, Ireland, Latvia, Luxembourg, Portugal and Sweden did not revise any of the pollutant projections in the 2008 reporting round.

**Table A1.3 Overview of Member State WAM emission projection data sources, as of 27 July 2010**

| | 2010 | 2015 | 2020 | 2030 | 2050 |
|---|---|---|---|---|---|
| Austria | | | | | |
| Belgium | | | | | |
| Denmark | | | | | |
| Finland | | | | | |
| France | NFR09, Table 2a (2009) | | NFR09, Table 2a (2009) | | |
| Germany | NFR02, Table 2a (2009) | | | | |
| Greece | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) (only $NO_x$) | | | |
| Ireland | NFR09, Table 2a (2009) | | | | |
| Italy | | | | | |
| Luxembourg | NFR09, Table 2a (2009) | | | | |
| Netherlands | NFR04, Table 2a (2008) | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | | |
| Portugal | NFR02, Table 2a (2008) | | | | |
| Spain | | | | | |
| Sweden | | | | | |
| United Kingdom | | | | | |
| Bulgaria | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | | |
| Czech Republic | | | | | |
| Cyprus | | | | | |
| Estonia | | | | | |
| Hungary | | | | | |
| Latvia | | | | | |
| Lithuania | | | | | |
| Malta | NFR09, Table 2a (2009) | | | | |
| Poland | | | | | |
| Romania | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | |
| Slovakia | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) | NFR09, Table 2a (2009) |
| Slovenia | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | NFR02, Table 2a (2008) | | |

**Note:** 'NFR' denotes 'nomenclature for reporting' — the sectoral classification system developed by UNECE/EMEP for reporting air emissions. The table numbers refer to the table numbering of the NFR reporting template. NFR09 is the most recent version of the reporting template. Definitions for WM, WAM and WOM projections are provided in Chapter 3 of this report.
([a]) Germany did not submit projections in the 2009 reporting round. Data used in this report were therefore taken from the previous 2008 submission.
([b]) Belgium, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Luxembourg, Portugal and Sweden did not revise any of the pollutant projections in the 2008 reporting round.

# Appendix 2 Status of reporting

## Table A2.1 NECD emissions and projections, 2009 reporting round, as of 27 July 2010

| Member State | Submission | | Resub-missions | Years covered | Format | $SO_2$, $NO_X$, $NH_3$, NMVOC | | Projections table | socio-economic data | IIR |
|---|---|---|---|---|---|---|---|---|---|---|
| | uploaded to CDR | to the EC | | | | 2007 final | 2008 preliminary | | | |
| Austria | 30.12.2009 | 30.12.2009 | | 1990–2008 | NFR 2009–1 | x | x | 2010, 2015, 2020 | x | 30.12.2009 |
| Belgium | 23.12.2009 | 23.12.2009 | | 1990–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Bulgaria | 29.12.2009 | 29.12.2009 | | 2007–2008 | NFR 2009–1 | x | x | np | | np |
| Cyprus | 28.12.2009 | 28.12.2009 | 12.02.2010 | 1990–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Czech Republic | 28.12.2009 | | 04.01.2010 | 2007–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Denmark | 21.12.2009 | 21.12.2009 | | 1980–2008 | NFR 2002–1 | x | x | 2010, 2015, 2020 | x | np |
| Estonia | 30.12.2009 | 30.12.2009 | | 1990–2008 | NFR 2009–1 | x | x | 2010, 2015 | x | np |
| Finland | 04.12.2009 | 04.12.2009 | | 1980–2008 | 1990–2006: NFR 2004–1; 2007–2008: NFR 2009–1 | x | x | 2020, 2050 | x | 04.12.2009 |
| France | 29.12.2009 | 29.12.2009 | | 1980–2008 | NFR 2009–1 | x | x | 2010, 2020 | | np |
| Germany | 16.12.2009 | 16.12.2009 | | 1990–2008 | NFR 2009–1 | x | x | 2010 | | 16.12.2009 |
| Greece | 15.01.2010 | | 19.01.2010 | 2007–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Hungary | 05.01.2010 | 05.01.2010 | 25.01.2010, 13.04.2010 | 2007–2008 | NFR 2004–1, NFR 2009–1 | x | x | 2010 | | np |
| Ireland | 16.12.2009 | 16.12.2009 | 31.03.2010 | 1990–2008 | NFR 2009–1 | x | x | 2010 | x | np |
| Italy | 05.01.2010 | | 26.01.2010, 30.01.2010 | 2007–2008 | NFR 2004–1 | x | x | 2010 | | np |
| Latvia | 29.12.2009 | 30.12.2009 | 18.03.2010 | 1990–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Lithuania | 24.12.2009 | 24.12.2009 | | 2007–2008 | NFR 2004–1 | x | x | 2010, 2020 | | np |
| Luxembourg | 31.12.2009 | | 02.03.2010, 26.03.2010 | 2007–2008 | NFR 2009–1 | x | x | 2010 | | np |
| Malta | 05.01.2010 | | | 2000–2008 | NFR 2009–1 | x | x | 2010 | x | np |
| Netherlands | 22.12.2009 | 22.12.2009 | 19.02.2010, 04.05.2010 | 1990–2008 | NFR 2009–1 | x | x | 2010, 2015, 2020 | | 12.03.2010 |
| Poland | 23.12.2009 | 23.12.2009 | 08.01.2010, 10.05.2010, 01.06.2010 | 2007–2008 | NFR 2009–1 | x | x | 2010 | x | 23.12.2009 |
| Portugal | 31.12.2009 | 31.12.2009 | 05.02.2010 | 1990–2008 | NFR 2008–1 | x | x | 2010, 2015, 2020 | | np |
| Romania | 29.12.2009 | 05.01.2010 | 15.03.2010 | 2007–2008 | NFR 2009–1 | x | x | 2010, 2015, 2020, 2030 | x | 15.03.2010 |
| Slovakia | 25.12.2009 | 29.12.2009 | 29.12.2009 | 2000–2008 | NFR 2009–1 | x | x | 2010, 2015, 2020, 2030, 2050 | | 25.12.2009 |
| Slovenia | 23.12.2009 | | | 2007–2008 | NFR 2009–1 | x | x | 2010, 2015, 2020 | x | np |
| Spain | 30.12.2009 | 30.12.2009 | | 1990–2008 | 1990–1999: nat. tot.; 2000–2008: NFR 2008–1 | x | x | 2010, 2015, 2020 | | np |
| Sweden | 28.12.2009 | 28.12.2009 | | 1980–2008 | 1980–1989: NFR 2004–1; 1990–2008: NFR 2009–1 | x | x | 2010, 2015, 2020, 2025, 2030 | | 28.12.2009 |
| United Kingdom | 18.12.2009 | 21.12.2009 | | 2004–2008 | NFR 2009–1 | x | x | 2010 | x | np |

**Note:** 'np' denotes 'not provided'.
'x' denotes 'provided'.
'NFR' denotes 'nomenclature for reporting' — the sectoral classification system developed by UNECE/EMEP for reporting air emissions.
Greece did not report $NH_3$ emissions for the years 2003–04 and for 1990–2000 submitted only national totals.
Poland submitted data for 2005 emissions only in PDF tables in the 2007 reporting round.
Romania: emissions for the year 2000 have been provided as reference year emissions in an Excel file 'Annex B' from the 2007 reporting round.

# Annex 1 Member State sectoral inventories, based on data received by 27 July 2010

For Annex 1, see separate file.

European Environment Agency

**NEC Directive status report 2009**
Reporting by the Member States under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants

2010 – 48 pp. – 21 x 29.7 cm

ISBN 978-92-9213-107-4
doi:10.2800/43009

TH-AK-10-010-EN-N
doi:10.2800/43009

European Environment Agency
Kongens Nytorv 6
1050 Copenhagen K
Denmark

Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99

Web: eea.europa.eu
Enquiries: eea.europa.eu/enquiries



European Environment Agency