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NEC Directive status report 2006

Member States' reporting 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

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Summary

The National Emission Ceilings Directive (NECD) ([1]) sets pollutant-specific emission ceilings for each country to be met by 2010. It also lays down the requirements for the Member States of the European Union to compile and report their national inventories, projections and programmes. As part of these requirements, Member States shall prepare and annually update national emission inventories and emission projections for 2010 in respect of four important air pollutants: sulphur dioxide (SO_2), nitrogen oxides (NO_X), non-methane volatile organic compounds (NMVOC), and ammonia (NH_3).

This report presents the status of the reporting performed under the NECD for the year 2006, as of 15 September 2007. It provides details of the emissions in 2005 and projections for 2010 as reported by Member States as well as the aggregated European Community NECD emission inventory. Data described in this report are from the 25 Member States of the EU as of 31 December 2006. Bulgaria and Romania which joined the European Union after this date are therefore not included within the report's scope.

Emission trends and projections

Due to the fact that a number of countries have submitted incomplete inventories (for both the present and the previous reporting cycles), it is not yet possible to build a complete picture of the long-term emission trends either within each individual Member State or the EU-25 as a whole. At the same time, the available data show quite clearly a decrease in emissions of the four NECD pollutants in the majority of the Member States.

The 2006 data show that a number of countries have already succeeded in reducing their emissions below the level of the pollutant-specific emission ceilings specified in the directive. In addition, certain countries anticipate achieving the necessary reduction before 2010 as reflected in the reported 'with measures' (WM) and 'with additional measures' (WAM) projections. Details for each Member State are summarised in the table below.

At the European Community level, the following conclusions can be made when comparing the reported WM projections ([2]) with an aggregated (without Luxembourg) emission ceiling for EU-25 (being the sum of the individual Member States' ceilings as defined in the NECD):

- Of the four pollutant-specific ceilings, reaching the NO_X emission ceiling seems to be the most difficult for Member States. The projected NO_X emissions for the EU-25 are 8 % above the aggregated ceiling, and 11 Member States have indicated that without taking additional measures they would not reach their emission ceilings by 2010;

- Efforts to reduce NMVOC emissions seem to have been more successful. Even if four Member States (Spain, Hungary, Denmark and Portugal) show in their submitted WM projections that they do not envisage meeting their ceilings in 2010, NMVOC projections for the EU-25 as a whole are 5 % below an aggregated ceiling target;

- Only two Member States (Malta and the Netherlands) do not expect (under the WM scenario) to meet their SO_2 ceilings in 2010. The EU-25 as a whole is projected to be 39 % below the aggregate SO_2 ceiling;

- The NH_3 WM projections for the EU-25 are 7 % below the aggregated EU emission ceiling target. Seventeen Member States have already reduced ammonia emissions below their respective ceilings, and the remaining Member States (with the exceptions of Germany and Spain) expect to reach their targets by 2010.

([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.

([2]) EU-25 emission projections in this report are to be understood as the sum of Member States 'with measures' (WM) projections (where countries have reported projections as 'current legislation projection' (CLP) it is assumed that this is equivalent to a WM projection).

Whilst the projections data reported by the Member States have been assessed against the NECD ceilings by referring to their WM projections, it is recognised that, in order to meet their ceilings, eight Member States (Belgium, France, Germany, Ireland, Lithuania, Malta, Slovenia, and Sweden) are considering implementing 'additional' measures. A separate detailed evaluation of the reported NECD projections was recently performed for the European Commission ([3]). It analyses projections made by the Member States and the measures they plan to implement.

Data submissions

Timeliness

The NECD obliges Member States to submit information on emissions and projections annually. The submissions should have been made by the reporting deadline of 31 December 2006. Sixteen out of the 25 Member States submitted inventories on or before this date; six Member States submitted inventories between 1 January 2007 and 31 January 2007, and a further two Member States by 18 June 2007. Luxembourg provided no information. Twelve Member States subsequently provided additional or updated information up until 10 September 2007.

Overview of WM projections as reported by Member States

Member State	NO_x	NMVOC	SO_2	NH_3
Austria	x	√	√	√
Belgium	x	√	√	√
Cyprus	√	√	√	√
Czech Republic	√	√	√	√
Denmark	x	x	√	√
Estonia	√	√	√	√
Finland	√	√	√	√
France	x	x	√	√
Germany	x	√	√	x
Greece (*)	√	√	√	√
Hungary	√	√	√	√
Ireland	x	√	√	√
Italy	x	√	√	√
Latvia	√	√	√	√
Lithuania	√	√	√	√
Luxembourg (*)	N/A	N/A	N/A	N/A
Malta	x	√	x	√
Netherlands	√	√	x	√
Poland	√	√	√	√
Portugal (*)	√	x	√	√
Slovak Republic	√	√	√	√
Slovenia	x	√	√	√
Spain	x	x	√	x
Sweden	x	√	√	√
United Kingdom	√	√	√	√

Note: The '√' indicates that the Member State anticipates meeting or exceeding its respective emission ceiling, while 'x' indicates that a ceiling will not be met without future measures being implemented to reduce emissions.

(*) Luxembourg has not provided its NECD projections. Projections submitted by Portugal are provisional at the time of writing. As no data were submitted by Greece in the 2006 reporting round, use was made of projections reported in 2005.

([3]) AEA Technology (2007). Evaluation of national plans submitted in 2006 under the National Emission Ceilings Directive 2001/81/EC. European Commission (DG Environment) service contract 070501/2006/453041/MAR/C5. AEA/ED05435 September 2007. http://ec.europa.eu/environment/air/pdf/nec_report.pdf.

Format of submission

The NECD does not stipulate the format in which national inventory data and projections should be submitted by the Member States. In order to ensure future comparability of the information received from various countries, it is however considered essential for countries to report using standardised reporting formats. Twelve Member States provided their emission data using a standardised Excel reporting template and nomenclature for reporting (NFR) developed by EMEP (Austria, Belgium, Cyprus, Denmark, France, Greece, Ireland, Portugal, Slovak Republic, Slovenia, Spain, and Sweden). Ten inventories were submitted in a variety of modified templates. Hungary submitted its emissions data only as a Word file; Germany submitted trend tables not consistent with the standard NFR sector split.

Future improvements

The report makes a number of recommendations directed towards improving both the quality of emission inventories and projections, and ensuring greater harmonisation between reporting requirements. The underlying objectives of these recommendations are to:

- enable an earlier and more accurate definition of any further emission reduction policies and measures, thus facilitating potentially lower cost compliance solutions;
- reduce the administrative burden and facilitate greater consistency in assumptions and relevant parameters used in the estimation of emissions.

In order to improve the transparency of reported NECD data from Member States, future consideration should be given to submission of a mandatory short informative inventory report (IIR). Such a report could accompany the data submission and provide additional explanatory information concerning, for example, the methodological approaches employed in the estimation of emissions. The importance of providing inventories in standardised formats is also noted. The transfer of reported data into a standardised format to enable analysis is a potential source of error. Hence Member States are encouraged to submit information using the standard EMEP templates for reporting. In addition, a formal definition of inventory reporting formats and templates should be considered for inclusion in the proposal for a revised NECD.

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, taking years 2010 and 2020 as benchmarks, and by means of successive review…'

The National Emission Ceilings Directive (NECD) (European Commission, 2001), underscores the importance of reporting the air emission data for assessing progress in reducing the air pollution in the European Community region and for ascertaining the compliance of the Member States with their commitments. This report provides an overview of the NECD reporting in 2006, and a summary of the emission trends. It also presents projections of SO_2, NO_X, NMVOC ([4]) and NH_3 emissions for the year 2010 based on the data reported by Member States in their 2006 submissions. The report was prepared on behalf of the European Environment Agency (EEA) by its European Topic Centre on Air and Climate Change (ETC/ACC).

By providing summary information on the status of reporting carried out by the Member States, this report helps the EEA and the European Commission to communicate with the constituent countries. The information contained can also be of use for the Commission and EEA when they seek to improve further the reporting, under the NECD, of air emissions and other related topics.

Throughout this report, the term 'European Community' refers to the 25 Member States, as of 31 December 2006: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom. Bulgaria and Romania which joined the European Union after this date are therefore not included within the report's scope.

Note:

- The term 'EU-15' refers to the 15 Member States up to 30 April 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
- The term 'EU-10' refers to the Member States that joined the European Community on 1 May 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, and Slovenia.

1.1 Reporting obligations under the NECD

Articles 2, 6, 7 and 8 of the National Emission Ceilings Directive (NECD) set forth the requirements from the Member States concerning their national inventories, projections and programmes. As specified in the directive, EU Member States shall 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 of each year, the Member States shall report to the Commission and EEA their national emission inventories and emission projection for the year 2010; final emissions data should be submitted for the previous year but one, and provisional emissions data for the previous year. Anticipated significant changes in the geographical distribution of national emissions shall also be indicated.

The Member States shall further report to the European Commission on their updated national programmes for progressive reduction of national emissions of SO_2, NO_X, NMVOC and NH_3 by 2006. The national programmes shall include information on policies, adopted and envisaged, and quantified estimates of the effect of these policies and measures on the emissions of those pollutants in 2010. According to the requirements of Article 6, this

([4]) The NEC Directive defines VOCs as being non-methane volatile organic compounds (NMVOC).

information should be made available to the general public and relevant organisations, and should be presented in a clear, comprehensible and easily accessible manner.

To help ensure that the information on emissions reported by the 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). They are also requested (Annex III of NECD) that in preparing these inventories and projections, they should use the joint EMEP/CORINAIR Emission Inventory Guidebook (EMEP/EEA, 2006).

It is considered good practice that the Member States, in preparing their emission inventories and projections under the NECD, should ensure adherence to the principles outlined in the UNECE Guidelines for Estimating and Reporting Emission Data under the Convention on Long-range Transboundary Air Pollution (UNECE, 2003). The historic and projected emissions data presented should be 'transparent, consistent, comparable, complete and accurate.'

The EMEP/CORINAIR Guidebook allows the Member States to use various national or international methodologies to estimate emissions and projections, 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 imperative that the transparency of inventory be maintained and, therefore, a description of the chosen alternative method should also be recorded. To comply with the quality requirements of consistency in inventories, time-series data provided for the NECD should be calculated in a consistent manner. Where methods are revised, these revisions should also 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 NEC Directive covers emissions from all sources of the pollutants referred to in Article 4, which arise as a result of human activities within the territory of the Member States and their exclusive economic zones, except:

(a) emission from international maritime traffic;

(b) aircraft emissions beyond the LTO cycle;

(c) for Spain, emissions in the Canary islands;

(d) for France, emissions in the overseas departments;

(e) for Portugal, emissions in Madeira and Azores.

1.1.2 Accessibility of information

As specified in Article 7 of the NECD, the Commission, assisted by the EEA, shall, in cooperation with the Member States and 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 ([5]).

1.1.3 Emission ceilings

By the year 2010 at the latest, the Member States shall limit their annual emissions of the pollutants SO_2, NO_X, NMVOC, and NH_3 to the ceilings defined in the directive. In this report, emissions by the Member States in 2005 and their projections for 2010 are compared with the emission ceilings as defined in the NECD. Emission ceilings for the new EU-10 Member States and the European Community as a whole are listed in the Annex of the Accession Treaty (European Commission, 2003) (Table 1).

The emission ceilings (Table 2), as given in the Accession Treaty for the European Community and replacing Annex II of the NECD, are designed with the aim of broadly meeting the interim environmental objectives as set out in Article 5 of the NECD. Meeting those objectives is expected to result in a reduction of soil eutrophication to such an extent that, compared with the situation in 1990, the Community area with depositions of nutrient nitrogen in excess of the critical loads will be reduced by about 30 %.

([5]) Data submitted by Member States under the NECD is available through the Dataservice of the EEA: http://dataservice.eea.europa.eu/dataservice/.

Table 1 National EU emission ceilings for SO_2, NO_x, NMVOC and NH_3 to be attained by 2010 under Annex I of the NECD as updated in the Accession Treaty

Member State	SO_2 kilotonnes	NO_x kilotonnes	NMVOC kilotonnes	NH_3 kilotonnes
Austria	39	103	159	66
Belgium	99	176	139	74
Cyprus	39	23	14	9
Czech Republic	265	286	220	80
Denmark	55	127	85	69
Estonia	100	60	49	29
Finland	110	170	130	31
France	375	810	1 050	780
Germany	520	1 051	995	550
Greece	523	344	261	73
Hungary	500	198	137	90
Ireland	42	65	55	116
Italy	475	990	1 159	419
Latvia	101	61	136	44
Lithuania	145	110	92	84
Luxembourg	4	11	9	7
Malta	9	8	12	3
Netherlands	50	260	185	128
Poland	1 397	879	800	468
Portugal	160	250	180	90
Slovak Republic	110	130	140	39
Slovenia	27	45	40	20
Spain	746	847	662	353
Sweden	67	148	241	57
UK	585	1 167	1 200	297
EU-25	**6 543**	**8 319**	**8 150**	**3 976**

Table 2 European Community ceilings for SO_2, NO_x, and NMVOC (in Gg) to be attained by 2010 under Annex II of the NECD as updated in the EU-10 Accession Treaty

	SO_2 kilotonnes	NO_x kilotonnes	NMVOC kilotonnes	NH_3 kilotonnes
EU-25	6 176	7 558	6 980	N/A

1.2 Preparation of the European Community NECD Inventory

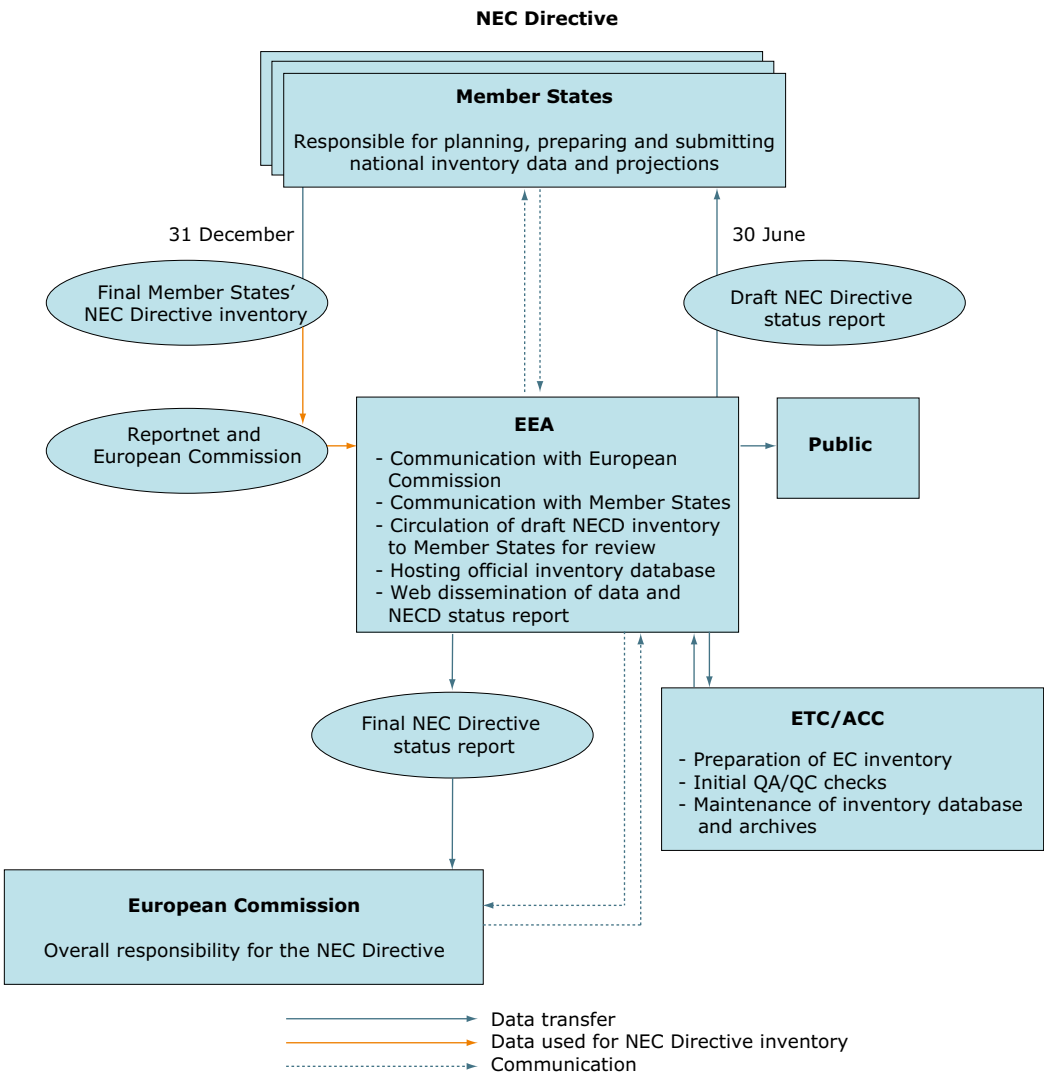
1.2.1 Institutional arrangements and dataflow

Within this legal framework, preparation of the aggregated European Community NECD inventory involves several stages. It means the Member States providing their data, the European Commission and EEA receiving the data, and the EEA (via its ETC/ACC) compiling the data and preparing the actual inventory and inventory reports. The EEA and the European Commission also communicate with the Member States and disseminate the results.

For reporting purposes, the EU Member States are requested to make use of the EEA's Eionet ReportNet tools. Within the Eionet priority dataflow agreement with EEA member countries, the EEA requests a copy of the report containing the NECD emissions, projections and programmes as reported to the European Commission. The EU acceding and candidate countries are encouraged by the Commission to provide data on a voluntary basis.

A flowchart diagram illustrating the dataflow that is necessary to compile the Community's NECD emission inventories is presented in Figure 1.

Figure 1 Dataflow for the compilation of the EU NEC Directive Emission Inventory



1.2.2 Inventory QA/QC activities

To ensure the data quality and to verify and validate their emissions data, Member States are encouraged to use appropriate QA/QC procedures These procedures should be consistent with those described in the EMEP/CORINAIR Guidebook.

There is no formal quality assurance and quality control (QA/QC) plan in place for the European Community inventory. The main activities enhancing the quality of the inventory are the checks performed by EEA-ETC/ACC on the status of each submission. More detailed quality assurance activities are performed by the EEA-ETC/ACC and EMEP (European monitoring evaluation programme) in the process of annual reviews of the emission inventory. The review process includes checks on timeliness, consistency, accuracy, completeness and comparability; a summary of the review findings is published annually (EMEP/EEA, 2007).

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

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

In addition to reporting emissions data under the NECD, the 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 ([6]) and its implementing provisions ([7]). Table 3 provides an overview of the various air pollution reporting obligations for the Member States.

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. France, Spain, Portugal, the United Kingdom), and the inclusion of domestic and international aviation and navigation in the national total. The LRTAP Convention and EU-MM/UNFCCC inventories differ only in the pollutants included and slightly in the sector split. The major differences are summarised in the table below (Table 4).

Table 3 Overview of air emission reporting obligations in the European Community

Legal obligation		Reporting requirements	Annual reporting deadline for EU Member States	Annual EC reporting deadline
CLRTAP	1979 Convention on Long-range Transboundary Air Pollution	Emission of SO_X (as SO_2), NO_X (as NO_2), NH_3, NMVOC, CO, heavy metals (HMs), persistent organic pollutants (POPs), and particulate matter (PM)	15 February	15 February
NECD	Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants	Emission of SO_2, NO_X, NMVOC, NH_3	31 December	–
UNFCCC	Council Decision 280/2004/EC, concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol	Emission of CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NO_X, CO, NMVOC, SO_2	15 January ([8]) (to the European Commission) 15 April (to the UNFCCC)	15 April

Table 4 Major differences between the reporting obligations as defined by the LRTAP Convention, NECD and the Council Decision 280/2004/EC

	NECD	LRTAP Convention (NFR) ([a])	UNFCCC (CRF) ([b])
Air pollutants	NO_X, SO_X, NMVOC, NH_3	NO_X, SO_X, CO, NMVOC, NH_3, HMs, POPs, PM	NO_X, SO_X, NMVOC, CO
Domestic aviation (LTO)	Included in national total	Included in national total	Included in national total
Domestic aviation (Cruise)	*Not included in national total*	Included in national total	Included in national total
International aviation (LTO)	Included in national total	*Not included in national total*	*Not included in national total*
International aviation (Cruise)	*Not included in national total*	*Not included in national total*	*Not included in national total*
International inland shipping	Included in national total	*Not included in national total*	*Not included in national total*
International maritime	*Not included in national total*	*Not included in national total*	*Not included in national total*
Road transport	Emissions calculated on the basis of fuel sold or consumed		Emissions calculated on the basis of fuel sold

Note: ([a]) NFR = Nomenclature for reporting — sectoral classification system developed by UNECE/EMEP for the reporting of air emissions;

([b]) CRF = sectoral classification system developed by UNFCCC for reporting of GHGs.

([6]) 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, 19.02.2004, p. 1.

([7]) 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, 01.03.2005, p. 57.

([8]) Deadline for submission of GHG projections to the European Commission is 15 March.

2 Status of reporting

Information in this section is based on submissions from the Member States delivered to the EEA via the Eionet ReportNet Central Data Repository (CDR), as well as submissions delivered directly to the European Commission, and explanatory information provided by the Member States directly to ETC/ACC. Trend tables contain, amongst other data, the information on emissions submitted by the Member States under the NECD in previous reporting cycles (see Table 6).

2.1 Timeliness

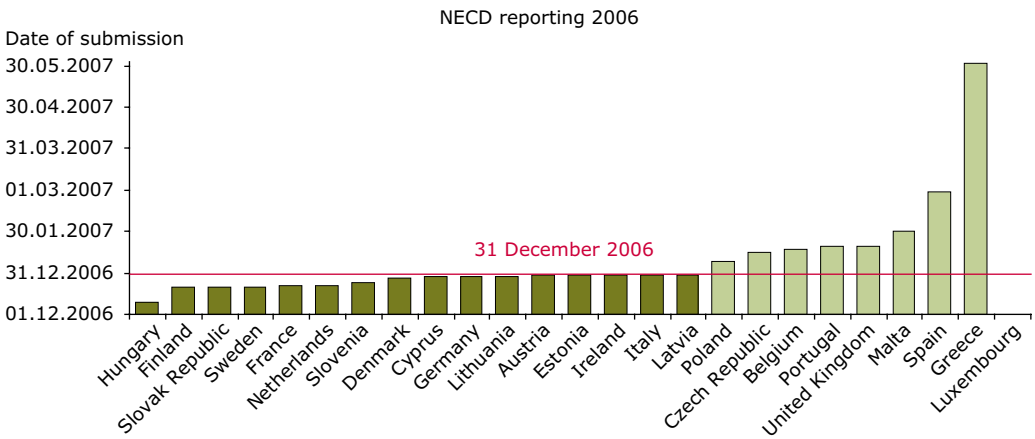
Pursuant to Article 8 of the NEC Directive, by 31 December each year, the Member States are required to report their emission inventories for the previous year but one, along with preliminary emission inventories for the previous year. Emission projections for the year 2010 should also be submitted by the same date. Sixteen out of 25 Member States submitted their national inventories of SO_2, NO_X, NMVOC and NH_3 to the European Commission on or before 31 December 2006. Czech Republic, Poland, Belgium, Portugal, United Kingdom, and Malta delivered inventories between 1 and 31 January 2007, Spain by 31 March 2007, and Greece by 1 June 2007. Luxembourg did not submit any information up to 15 September 2007 (see Figure 2 and Table 5). Twelve Member States provided additional or revised data between 15 January and 10 September 2007.

2.2 Completeness

In the 2006 reporting cycle ([9]), 23 Member States provided the mandatory information on final emissions for the year 2004 (exceptions were Luxembourg and Greece) and 24 Member States (except Luxembourg) submitted, as required, preliminary emission data for 2005. Greece did not report its NH_3 emissions for either 2004 or 2005, while Hungary did not report either NMVOC or NH_3 emissions for the year 2005.

As no agreed gap-filling procedures exist with respect to the NECD inventory, compilation of the EU-25 inventories for 2004 and 2005 is not possible for as long as a number of countries have not reported their complete emission inventories (Table 5).

Figure 2 Status of reporting — date of first NECD inventory provision to the CDR or European Commission



([9]) The reporting deadline for the 2006 reporting cycle was 31 December 2006.

Twentythree out of 25 Member States provided their updated projections within the 2006 submission. Updated 2010 projections were not provided by Greece. Luxembourg did not submit its projections required by the NECD. Projections submitted by Portugal are provisional and have yet to be approved by the Portuguese Government.

2.3 Consistency and comparability

The NEC Directive does not require that emissions data should be provided using a standard format. However when estimating and reporting emissions, the Member States are encouraged by the European Commission and EEA to use the standardised NFR templates as defined in the EMEP Guidelines (UNECE, 2003). Twelve Member States — Austria, Belgium, Cyprus, Denmark, France, Greece, Ireland, Portugal, Slovak Republic, Slovenia, Spain, and Sweden — provided emissions in a comparable and consistent format using the standard Excel template (NFR Table 1a).

Emission inventories from the remaining 12 Member States were submitted in the form of modified Excel tables or a Word file (Hungary). The trend tables submitted by Germany were not consistent with the standard NFR sector split. When information is provided in a non-standard format, it significantly complicates the processing and analysis of the data. Automated consistency and completeness tests could be performed for these 12 Member States only after the ETC/ACC converted their submissions into the NFR standard tables. More detailed information about the quality of the 2006 NEC submissions can be found in the joint EEA & EMEP/MSC-W Inventory Review 2007 report (EMEP/EEA, 2007).

Table 5 NECD emissions and projections submissions 2006: status of reporting

Member State	Submission		Resubmissions	Years covered	Format	SO_2, NO_x, NH_3, NMVOC		Projections table	Updated NECD programmes
	Uploaded to CDR	To the EC				2004 final	2005 prelimin		
Austria	29.12.2006			1990–2005	NFR	x	x	Totals (2010), NH_3 sectoral, all only in pdf file	December 2006
Belgium	17.01.2007		13.09.2007	1991–1994, 2004–2005	NFR	x	x	Sectoral (2010)	September 2007
Cyprus	28.12.2006		19.01.2007	1990–2005	Excel tables	x	x	Totals (2010)	December 2006
Czech Republic	15.01.2007		01.03.2007	2004–2005	Modified NFR2004	x	x	Sectoral (2010) as Excel table	March 2007
Denmark	27.12.2006		08.01.2007, 12.01.2007	1982–2005	NFR 2002v	x	x	total 2010, 2015, 2020 sectoral (2010)	December 2006
Estonia	29.12.2006			1990–2005	Modified NFR2004	x	x	Table 2a, Sectoral (2010)	December 2006
Finland	21.12.2006			2004, 2005	Modified NFR2004	x	x	Totals (2010)	To EC
France	22.12.2006		28.03.2007	1980–2005	NFR 2002v	x	x	Totals (2010),	March 2007
Germany	28.12.2006			1990–2005	Excel file CRF trend tables	x	x	Table 2a Totals (2010)	Provisional to EC
Greece	01.06.2007		21.08.2007	2005	Modified NFR2004	x	x	Not updated (submitted 2005)	Not updated
Hungary	26.01.2007	10.12.2006	14.02.2007	2004–2005	Word, nat. totals only	x	x	Sectoral (2010)	Summary
Ireland	21.12.2006			2001–2005	NFR	x	x	Totals (2010)	June 2007
Italy	19.01.2007	29.12.2007		2004–2005	2000–2005, only nat. totals	x	x	Sectoral (2010, 2015, 2020),	Executive summary
Latvia	29.12.2007			1990–2005	NFR 2002v	x	x	Totals (2010)	December 2006
Lithuania	28.12.2006		08.01.2007	2004–2005	Modified NFR2004	x	x	Table 2a Totals (2010)	December 2006
Luxembourg	np			np	np	np	np	np	np
Malta	30.01.2007		15.02.2007	2004–2005	NFR v2002 modified	x	x	Sectoral (2010)	January 2007
Netherlands	22.12.2006		29.01.2007	2004–2005	NFR v2002 modified	x	x	Totals (2010)	January 2007
Poland	08.01.2007		05.09.2007	2005, 2004 Word only	NFR not consitent	x	x	Sectoral (2010)	August 2007
Portugal	19.01.2007	16.01.2007		1990–2005	NFR 2002v	x	x	Provisional in Programme reprot	Provisional to EC
Slovak Republic	21.12.2006			2004, 2005	NFR	x	x	Table 2a Totals (2010)	Informative report
Slovenia	24.12.2006		05.01.2007	2004, 2005	NFR	x	x	Table 2a Totals (2010, 2015, 2020)	January 2007
Spain	28.02.2007			2000–2005	NFR 2002v	x	x	Sectoral (2010)	April 2007
Sweden	21.12.2006			1980–2005	NFR	x	x	Table 2a Totals (2010)	np
United Kingdom	19.01.2007			2001–2005	NFR v2002 modified	x	x	Sectoral (2010)	To EC

Note: np = not provided; x = provided; NFR — Nomenclature for reporting — sectoral classification system developed by UNECE/EMEP for the reporting of air emissions.

3 Member State emission trends and projections

3.1 Introduction

3.1.1 Emissions

The following sections show trends in emissions of NO_X, NMVOC, SO_2, and NH_3 as reported by the Member States under the NEC Directive. Totals for the EU-15, EU-10 and EU-25 are available only for some years because of a lack of complete time-series data at the level of individual Member States. **It must, however, be noted that the NECD does not require that Member States should annually report a complete time series of emissions from 1990 onwards.**

Table 6 provides an overview of the data available from the current and previous NECD reports ([10]).

Table 6 Overview of emission data sources used in the trend tables in Chapter 3 (status as of 15 September 2007)

Member State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Belgium	SUBM05	SUBM06	SUBM06	SUBM06	SUBM06	SUBM05					SUBM04	SUBM05	SUBM05	SUBM05	SUBM06	SUBM06
Cyprus	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Czech Republic															SUBM06	SUBM06
Denmark	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Estonia	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Finland											SUBM03	SUBM03	SUBM03	SUBM05	SUBM06	SUBM06
France	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Germany	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Greece	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM04	SUBM05	SUBM05	SUBM06
Hungary	PROG05										PROG06			SUBM05	PROG06	PROG06
Ireland												SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Italy	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM05	SUBM06	SUBM06
Latvia	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Lithuania													SUBM04	SUBM04	SUBM06	SUBM06
Luxembourg												np	np	np	np	np
Malta	PROG06													SUBM05	SUBM06	SUBM06
Netherlands												SUBM03	SUBM04	SUBM05	SUBM06	SUBM06
Poland														PROG05	PROG06	SUBM06
Portugal	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Slovak Republic														SUBM05	SUBM06	SUBM06
Slovenia													SUBM05	SUBM05	SUBM06	SUBM06
Spain	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
Sweden	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06
United Kingdom											SUBM03	SUBM06	SUBM06	SUBM06	SUBM06	SUBM06

Note: SUBM06 = inventory submission with the reporting deadline on 31 December 2006; SUBM05 = submission with the reporting deadline on 31 December 2005; PROG06 = national programme with the reporting deadline on 31 December 2006; np = not provided (no communication).

Greece did not report its NH_3 emissions in 2005; Hungary reported only national totals for all pollutants and did not provide any data on the NH_3 and NMVOC emissions for the year 2005; Spain provided only the data on its total national emissions for the period from 1990 to 1999.

([10]) The 2004 and 2005 emissions data for 2004 and 2005 received from Poland on the 10 September 2007 are reflected in the status report trend tables shown in the status report, but could be not included in the EU-25 inventory because of their non-consistent format (Word file) and in view of the publishing timescales.

Trend tables also contain the emissions data submitted under the NECD in previous reporting years. Missing data have not been gap-filled with emission information that may have been reported to other bodies (e.g. the LRTAP Convention, EU Monitoring Mechanism/UNFCCC).

3.1.2 Projections

There are three different types of projections that Member States can provide (AEA Technology, 2007). These include 'without measures' (WOM) [in some reports referred to as 'business as usual' (BAU)], 'with measures' (WM) and 'with additional measures' (WAM) projections. Definitions for each of the above are provided in the box below and are taken directly from the CAFE WGI guidelines. Member States providing projections in the EMEP NFR file template Table 2a 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.

Box 1 Projection scenarios as defined in the CAFE WGI reporting guidelines

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

The above scenarios reflect the requirements of the directive to provide information on the adopted and envisaged policies and measures. The directive also requires quantified estimates of the effect of these policies and measures on emissions of the pollutants by 2010 (Article 6(2)). When choosing a name for their respective projection scenarios, the Member States have demonstrated a certain ambiguity of usage. For example, some Member States have used the term 'business as usual' (BAU) ([11]) to mean 'without measures', whereas some other Member States have used the term to mean 'with measures' (AEA Technology, 2007).

The Member States complying with their NECD target under the 'with measures' scenario are not obliged to make further predictions using the 'with additional measures' values.

Updated data on WM projections are available from 22 Member States. Hungary has submitted the WOM projections, and WM projections only for NMVOC. For Greece, projections used were those provided in the previous submissions. Luxembourg did not submit any of the projections required by the NECD. In the first instance, the information on projections was obtained from the Excel projection template files (Table 2a or Table 1a). Additional sources (such as the national plans and programmes reports, informative inventory reports or explanatory notes) were searched for information only in cases when the Member States did not provide such tables. Table 7 provides an overview of the sources of national projections data which were used in this status report.

The following sections of this chapter show, for each pollutant, a comparison between the emissions for 2005 and those for the years 2004 and 1990. This is done to illustrate the development of the emission trends within individual Member States and across the EU-25 as a whole. Figures 3 to 10 illustrate the relative difference between: a) emissions in 2005 and the emission ceilings; and b) projected emissions for 2010 and the respective ceilings. In cases where percentage values are positive, it indicates that: a) actual emissions are currently above the emission ceilings (see Figures 3, 5, 7 and 9); b) the ceiling target will not be achieved — according to the projections 'with measures' (WM) — by 2010 without respective countries taking additional measures in order to reduce emissions further (see Figures 4, 6, 8 and 10).

Note that the EU-15/10/25 'with measures' projections, provided in tables and graphs in this chapter, should be viewed as provisional. This is because the numbers do not include the data for Luxembourg; while for Hungary's emissions of NO_X, SO_2, and NH_3, the projections used were those 'without measures' (WOM), as no WM projections were provided.

Based on the 'with measures' scenarios provided by the Member States, it becomes clear that Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and

([11]) 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 WOM. Current legislation projections (CLP) are presented in the overview table as WM projections, and current reduction plans (CRP) are presented as WAM projections.

Table 7 Overview of Member States emission projections and data sources (status as of 18 June 2007)

Member State	NO_X	SO_2	NMVOC	NH_3	Source
Austria	WM	WM	WM	WM	Information on emission projections, December 2006
Belgium	WM, WaM	WM, WaM	WM, WaM	WM, WaM	NEC Reduction Programme 2006, September 2007
Cyprus	WOM, WM	WOM, WM	WOM, WM	WOM, WM	Programme, December 2006
Czech Republic	WM	WM	WM	WM	Programme, 27 February 2007
Denmark	WM	WM	WM	WM	Programme, December 2006
Estonia	WM	WM	WM	WM	NFR Table 1a
Finland	WM	WM	WM	WM	Report, December 2006
France	WOM, WM, WaM	WOM, WM, WaM	WOM, WM, WaM	WOM, WM, WaM	Programme, March 2007
Germany	WM, WaM	WM, WaM	WM, WaM	WM, WaM	NFR Table 2a
Greece	WM	WM	WM	WM	Word table provided August 2007 (not posted at CDR)
Hungary	WOM	WOM	WOM,WM	WOM	Programme, February 2007
Ireland	WM, WaM	WM	WM	WM	Programme, June 2007
Italy	WM	WM	WM	WM	NFR Sectoral Table
Latvia	WM	WM	WM	WM	NFR Table 1a
Lithuania	WM, WaM	WM, WaM	WM, WaM	WM, WaM	NFR Table 2a
Luxembourg	N/A	N/A	N/A	N/A	
Malta	WOM, WM, WaM	WOM, WM, WaM	WOM, WM, WaM	WOM, WM, WaM	Programme, December 2006
Netherlands	WM	WM	WM	WM	Programme, January 2007
Poland	WM	WM	WM	WM	Report, August 2007
Portugal	WOM, WM	WOM, WM	WOM, WM	WOM, WM	Programme, January 2007
Slovak Republic	WM	WM	WM	WM	NFR Table 2a
Slovenia	WM,WaM	WM,WaM	WM,WaM	WM,WaM	NFR Table 2a
Spain	WOM, WM	WOM, WM	WOM, WM	WOM, WM	Programme, April 2007
Sweden	WM, WaM	WM, WaM	WM, WaM	WM, WaM	NFR Table 2a
United Kingdom	WM	WM	WM	WM	Programme, October 2006

Note: WM = (projections) with measures; WAM = (projections) with additional measures; WOM = (projections) without measures;
N/A = not provided;
Programme 2006 = submission due by 31 December 2006;
France has noted that the WOM scenarios are only informative and should be not used for analyses.

the United Kingdom forecast that they will meet their ceilings for all pollutants. At the same time, projections made by the United Kingdom for the year 2010 are identical to their four NECD targets for NO_X, SO_2, NH_3 and NMVOC; while projections supplied by Greece with respect to their emissions of SO_2, NH_3 and NMVOC, and by Finland concerning their emissions of NMVOC and NH_3 are identical to their ceiling targets as well. Therefore, even small increases in the volume of emissions above their 'with measures' forecast would lead to them not meeting their ceilings for these pollutants.

Whilst the projections data reported by the Member States have been assessed against the NECD ceilings by referring to their WM projections, it is recognised that eight Member States (Belgium, France, Germany, Ireland, Lithuania, Malta, Slovenia, and Sweden) are considering implementing 'additional' measures in order to meet their ceilings. A more detailed analysis of polices and measures reported by the Member States in 2006 is presented in (AEA Technology, 2007).

3.2 NO_X

3.2.1 NO_X emissions

For the EU-15, total trends and numbers for NO_X can only be given without Luxembourg and only for the years 2001–2005, because not all Member States have reported the whole data time-series ([12]) (Table 8). In these five years NO_X emissions in the EU-15 decreased by 10 % overall, although over the whole period 1990–2005 Greece, Spain, Portugal, Malta and Cyprus all reported increased emissions.

The proximity of Member States to their respective emission ceilings is shown in Figure 3. It can be seen

([12]) 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 emission trends.

Table 8 NO_x emission trend in Gg for EU-25 Member States and change in emissions

NO_x (Gg)	1990	1995	2000	2001	2002	2003	2004	2005	Change 2004–2005	Change 1990–2005	Contribution to EU-25 in 2005
Austria	221	190	173	172	169	168	162	159	– 2 %	– 28 %	2 %
Belgium	382	372	329	316	300	298	299	293	– 2 %	– 23 %	3 %
Denmark	269	259	199	195	192	200	184	174	– 5 %	– 35 %	2 %
Finland	NE	NE	214	215	211	219	205	180	– 12 %	–	2 %
France	1 838	1 651	1 413	1 352	1 309	1 258	1 233	1 206	– 2 %	– 34 %	11 %
Germany	2 861	2 168	1 818	1 774	1 683	1 626	1 579	1 444	– 9 %	– 50 %	14 %
Greece	300	321	330	344	341	343	317	332	5 %	11 %	3 %
Ireland	NE	NE	NE	123	116	111	109	110	0 %	–	1 %
Italy	1 947	1 808	1 378	1 367	1 276	1 245	1 173	1 127	– 4 %	– 42 %	11 %
Luxembourg	NE	NE	NE	NE	NE	NE	NE	NE	–	–	–
Netherlands	NE	NE	NE	420	396	393	379	369	– 3 %	–	4 %
Portugal	243	274	284	285	293	271	271	275	2 %	13 %	3 %
Spain	1 177	1 260	1 354	1 335	1 391	1 383	1 414	1 406	– 1 %	19 %	13 %
Sweden	314	280	231	223	219	215	209	205	– 2 %	– 35 %	2 %
United Kingdom	NE	NE	1 512	1 828	1 721	1 728	1 664	1 627	– 2 %	–	15 %
EU-15	**NE**	**NE**	**NE**	**9 949**	**9 616**	**9 457**	**9 198**	**8 906**	**– 3 %**	**–**	**85 %**
Cyprus	14	18	22	21	22	21	18	17	– 6 %	19 %	0 %
Czech Republic	NE	NE	291	291	284	283	278	277	0 %	–	3 %
Estonia	74	38	35	38	40	39	37	32	– 13 %	– 56 %	0 %
Hungary	238	NE	186	NE	NE	180	185	205	11 %	– 14 %	2 %
Latvia	66	40	37	38	38	39	40	41	3 %	– 38 %	0 %
Lithuania	NE	NE	NE	NE	51	53	55	58	5 %	–	1 %
Malta	11	12	12	NE	NE	12	12	12	– 1 %	13 %	0 %
Poland	NE	NE	NE	NE	NE	808	804	811	1 %	–	8 %
Slovak Republic	NE	NE	NE	NE	NE	98	98	98	0 %	–	1 %
Slovenia	NE	NE	NE	NE	58	56	58	58	0 %	–	1 %
EU-10	**NE**	**NE**	**NE**	**NE**	**NE**	**1 589**	**1 585**	**1 609**	**2 %**		**15 %**
EU-25	**NE**	**NE**	**NE**	**NE**	**NE**	**11 046**	**10 782**	**10 515**	**– 2 %**	**–**	**100 %**

Note: NE = not estimated/provided; EU-15 and EU-25 emissions are without Luxembourg as emissions have not been reported.

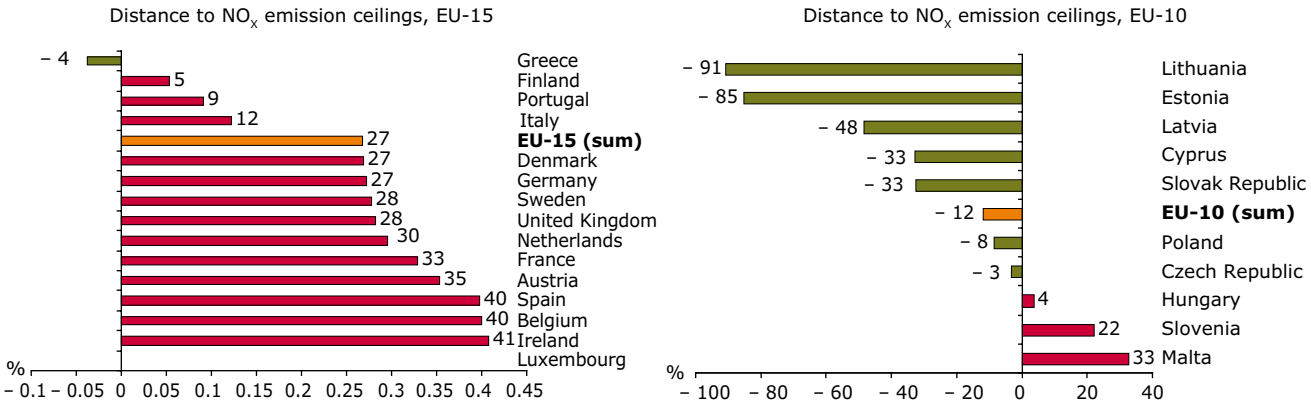
that, in spite of significant decreases of emissions since 1990 (e.g. Germany by 50 %, Italy by 42 %, Sweden by 35 %) within the EU-15, all the countries, with the exception of Greece, are actually above their ceilings. The EU-15 is presently 2 387 Gg above its ceiling (an 'aggregate' ceiling calculated from the sum of individual EU-15 Member States ceilings), which is equivalent to 27 % of the reported 2005 emissions. In contrast, the majority of the new EU-10 have already met their respective ceilings. Only Hungary, Slovenia and Malta presently have emissions that lie above their national ceilings for NO_X.

3.2.2 *NO_X projections*

Of the EU-15, only Portugal and Finland expect to be below their emission ceiling by 2010 (Figure 4). The United Kingdom and Greece report projections which meet their ceilings exactly. The EU-15 will be 11 % above its overall ceiling according to the reported projections. It also appears that, for the EU-10, only Slovenia and Malta estimate being above their emission ceiling by 2010 whilst projections from Lithuania and Hungary show them exactly reaching their ceilings. The new Member States as a whole will be 4 % below their aggregate ceiling (calculated as the sum of individual EU-10 Member States ceilings) according to the projections. The EU-25 projection indicate that it will be 8 % above the aggregate emission ceiling, calculated on the basis of the individual Member State ceilings defined in the NECD, and also 20 % above the Annex II target ([13]).

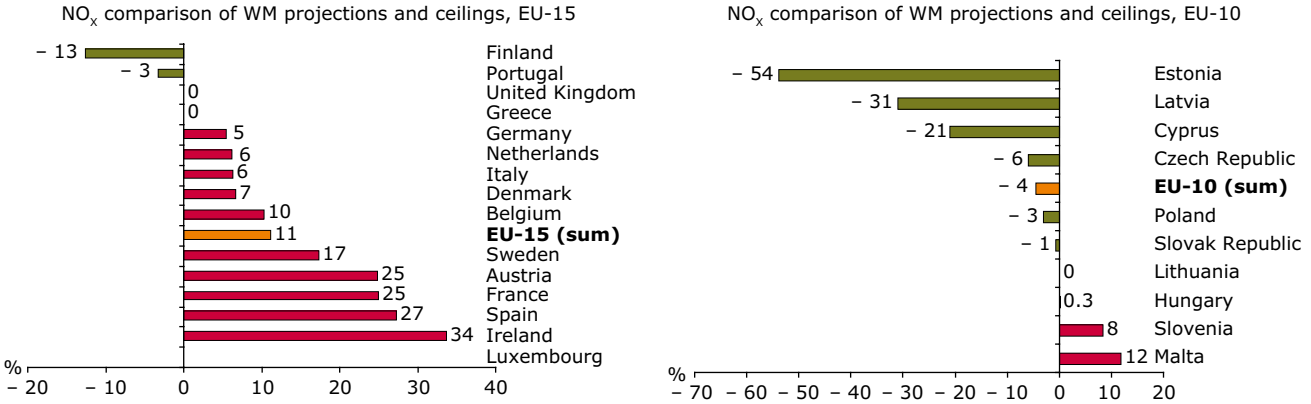
([13]) The emission ceilings for the European Community (EU-25) given in the Accession treaty replacing Annex II of NECD (European Commission, 2003) are designed with the aim of broadly meeting the interim environmental objectives set out in Article 5 of the NECD.

Figure 3 Proximity to NO_x emission ceilings (%) in 2005 for EU-15 (left) and EU-10 Member States (right)



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported.

Figure 4 Comparison of 2010 NO_x projections and ceilings to be attained by 2010 for the EU-25 Member States



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece, no updated projections were used, as these data were not reported in 2006. Projections submitted by Portugal are provisional.

Table 9 Indicative comparison of EU-25 emission ceilings with EU-25 projections, NO_x

NO_x	WM projections (Gg)	Emission ceilings (Gg)	Difference from WM (Gg)	Difference from WM (%)	EU-25 ceilings Annex II (Gg)	Difference from WM (Gg)	Difference from WM (%)
EU-15	7 342	6 519	823	11 %			
EU-10	1 723	1 800	– 77	– 4 %			
EU-25	9 064	8 319	745	8 %	7 558	761	20 %

Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece, non-updated projections were used, as these data were not reported for 2006. Projections submitted by Portugal are provisional.

3.3 NMVOC

3.3.1 NMVOC emissions

Total trends and values for NMVOC can only be given across the EU-15 for the years 2001–2004, because not all Member States have reported over the whole time-series (Table 10). Over these four years NMVOC emissions decreased by 11 %. Between 1990 and 2005 all Member States except Malta and Greece report a decrease in their emissions.

The proximity to their respective emission ceilings for the relevant Member States are shown in Figure 5. Within the EU-15 the United Kingdom, Sweden, Austria and Finland have already reached their ceiling; whilst all other countries have exceeded theirs. The EU-15 is 1 078 Gg above its aggregate ceiling (being the sum from individual EU-15 Member States' ceilings), which is equivalent to 14 % of 2005 emissions. For the new EU-10, (as was observed for NO_X) the majority of Member States are already at or below their ceilings — only Hungary, Slovenia and Poland remain above.

3.3.2 NMVOC projections

Amongst the EU-15 Member States, WM projected emissions from Spain, Portugal, France and Denmark suggest they will all be above their NMVOC emission ceilings by 2010 (Figure 6). The United Kingdom, Ireland and Finland are on track to meet their ceiling exactly. France plans to reach its ceiling using additional measures. The EU-15 will be less than 1 % below its aggregate ceiling according to Member States' WM projections.

Amongst the new EU-10, Lithuania and Hungary show projections that meet their ceiling exactly. According to the overall projections, the EU-10 will be 29 % below the aggregate ceiling (being the sum of individual EU-10 ceilings). Over the same period the EU-25 is estimated to be 5 % below the aggregated emission ceiling (calculated on the basis of the individual Member States ceilings from the NECD) by 2010 but still 11 % above Annex II target ([14]) (Table 11).

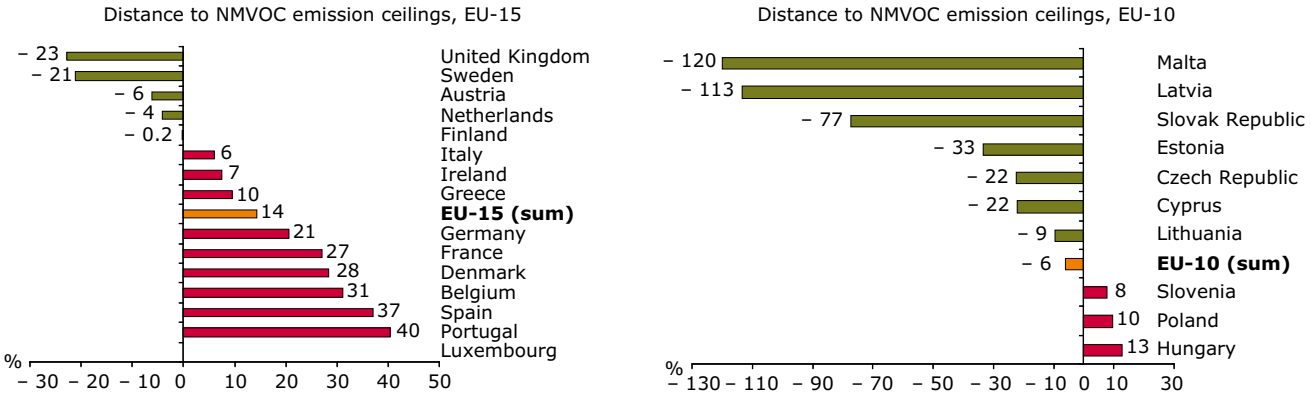
Table 10 NMVOC emission trends (Gg) and changes (%) for the EU-25 Member States

NMVOC (Gg)	1990	1995	2000	2001	2002	2003	2004	2005	Change 2004–2005	Change 1990–2005	Contribution to EU-25 in 2005
Austria	285	219	168	170	163	159	153	150	– 2 %	– 47 %	2 %
Belgium	359	311	245	250	237	231	205	202	– 2 %	– 44 %	2 %
Denmark	168	156	129	124	120	118	118	119	1 %	– 29 %	1 %
Finland	NE	NE	160	157	152	145	140	130	– 8 %	–	1 %
France	2 762	2 369	1 936	1 848	1 684	1 589	1 516	1 439	– 5 %	– 48 %	16 %
Germany	3 612	1 972	1 490	1 405	1 335	1 275	1 288	1 253	– 3 %	– 65 %	14 %
Greece	280	305	299	294	289	288	332	289	– 13 %	3 %	4 %
Ireland	NE	NE	NE	72	67	64	61	59	– 3 %	–	1 %
Italy	2 032	2 023	1 544	1 456	1 346	1 299	1 263	1 233	– 2 %	– 39 %	13 %
Luxembourg	NE	NE	NE	NE	NE	NE	NE	NE	–	–	–
Netherlands	NE	NE	NE	251	232	224	181	178	– 2 %	–	2 %
Portugal	304	311	297	298	300	301	301	302	0 %	– 1 %	3 %
Spain	1 133	1 073	1 119	1 092	1 077	1 082	1 077	1 053	– 2 %	– 7 %	11 %
Sweden	373	268	220	208	206	205	203	199	– 2 %	– 47 %	2 %
United Kingdom	NE	NE	1683	1237	1159	1064	1009	977	– 3 %	–	11 %
EU-15	**NE**	**NE**	**NE**	**8 863**	**8 369**	**8 043**	**7 848**	**7 583**	**– 3 %**	**–**	**83 %**
Cyprus	14	15	16	16	16	16	12	11	– 7 %	– 17 %	0 %
Czech Republic	NE	NE	213	204	197	193	184	180	– 2 %	–	2 %
Estonia	70	46	41	34	38	40	40	37	– 9 %	– 47 %	0 %
Hungary	205	NE	173	NE	NE	155	157	NE	–	– 23 %	2 %
Latvia	96	61	59	58	61	61	62	64	3 %	– 34 %	1 %
Lithuania	NE	NE	NE	NE	72	74	69	84	22 %	–	1 %
Malta	4	6	7	NE	NE	8	5	5	9 %	29 %	0 %
Poland	NE	NE	NE	NE	NE	585	896	885	– 1 %	–	10 %
Slovak Republic	NE	NE	NE	NE	NE	82	83	79	– 5 %	–	1 %
Slovenia	NE	NE	NE	NE	48	46	46	43	– 6 %	–	0 %
EU-10	**NE**	**NE**	**NE**	**NE**	**NE**	**1 260**	**1 554**	**NE**	**NE**		**17 %**
EU-25	**NE**	**NE**	**NE**	**NE**	**NE**	**9 303**	**9 402**	**NE**	**NE**	**–**	**100 %**

Note: NE = not estimated/provided; EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported.

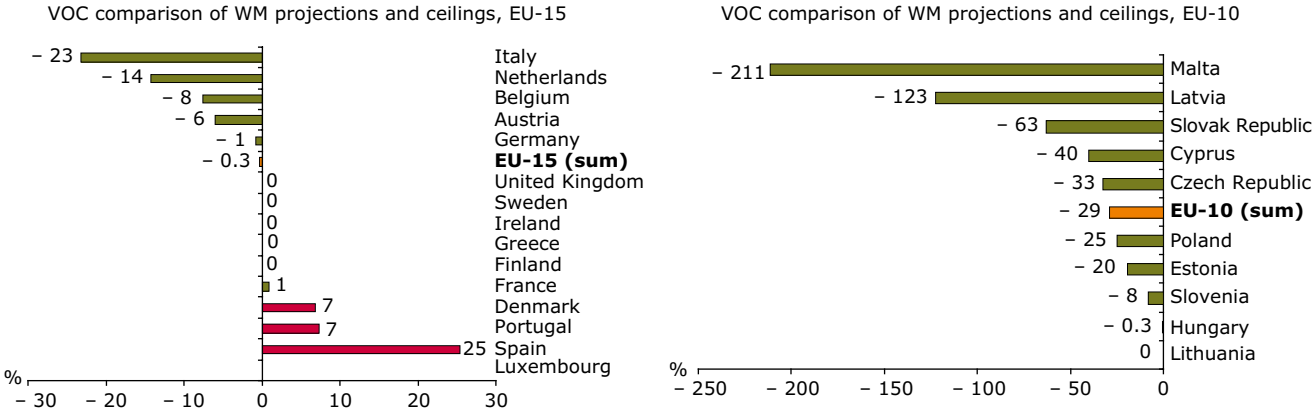
([14]) The emission ceilings for the European Community given in the Accession treaty replacing Annex II of NECD (EC, 2003) are designed with the aim of broadly meeting the interim environmental objectives set out in Article 5 of the NECD.

Figure 5 Proximity to NMVOC emission ceilings (%) in 2005 for EU-15 (left) and EU-10 Member States (right)



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. For Hungary the emissions reported for 2004 were used for comparison with ceilings as 2005 emissions have not been reported.

Figure 6 Comparison of projected NMVOC emissions and ceilings set for 2010 for the EU-25 Member States



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. For Greece non-updated projections have been used, since these data were not reported in 2006. Projections submitted by Portugal are provisional.

Table 11 Indicative comparison of EU-25 emission ceilings with EU-25 projections, NMVOC

NMVOC	WM projections (Gg)	Emission ceilings (Gg)	Difference from WM (Gg)	Difference from WM (%)	EU-25 ceilings Annex II (Gg)	Difference from WM (Gg)	Difference from WM (%)
EU-15	6 488	6 510	– 22	– 0.3 %			
EU-10	1 273	1 640	– 367	– 29 %			
EU-25	7 762	8 150	– 388	– 5 %	6 980	1 170	11 %

Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece non-updated projections were used, as these data were not reported in 2006. Projections submitted by Portugal are provisional.

3.4 SO_2

3.4.1 SO_2 emissions

Total trends and numbers for SO_2 can only be given for the EU-15 for the years 2001–2005, because not all Member States have reported over the whole time-series (Table 12). Over these five years SO_2 emissions in the EU-15 decreased by 21 %. Between 1990 and 2005 all Member States except Greece and Cyprus report a decrease in emissions. Reductions greater than 75 % are reported by Germany (90 %), Denmark (88 %), Italy (72 %), Latvia (96 %) and Hungary (84 %).

Figure 7 shows the current position with respect to emission ceilings for the EU-25. It can be seen for the EU-15 Member States that Sweden, Italy, Finland, Denmark and Austria have already attained their ceilings, whilst all the other EU-15 Member States presently exceed them. The EU-15 is 734 Gg above its aggregate ceiling (being the sum of individual EU-15 ceilings), which is equivalent to 16 % of 2005 emissions. For the EU-10, the aggregate ceiling is already attained, although three countries (Slovenia, Malta and Cyprus) have reported 2005 emissions that lie above their 2010 ceilings.

3.4.2 SO_2 projections

For the EU-15, only the Netherlands show WM projections above their emission ceiling by 2010. The United Kingdom and Sweden expect to meet their ceiling exactly. The EU-15 will be 28 % below its aggregate ceiling (being the sum of individual EU-15 ceilings) according to the projections. Of the new EU-10 Member States, only Malta anticipates being above its emission ceiling in 2010. The EU-10 will be 59 % below while the EU-25 will be 39 % below their respective aggregate ceilings (calculated from the sum of individual Member State ceilings) and 24 % below the Annex II target ([15]) (Table 13).

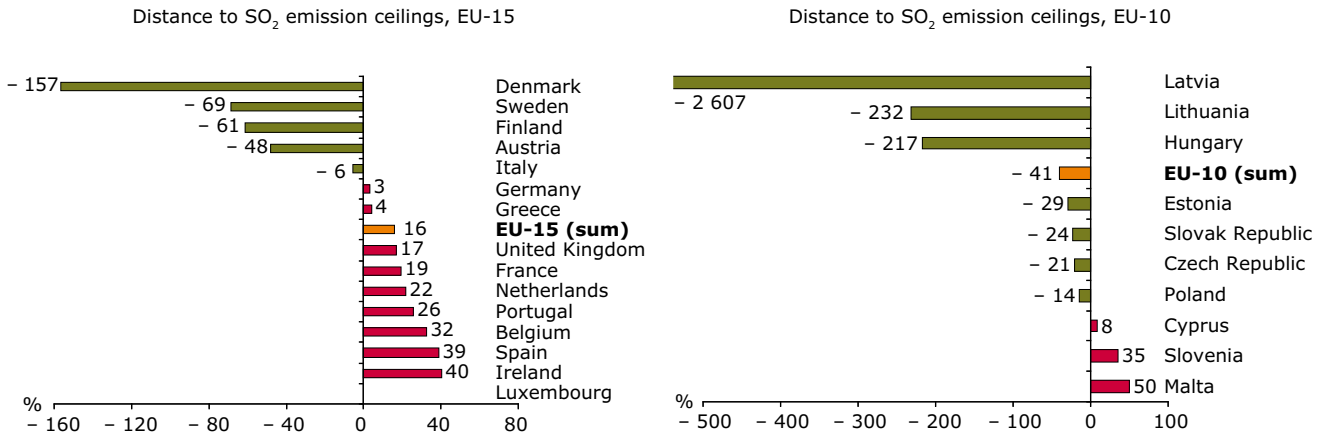
Table 12 SO_2 emission trends (Gg) and changes (%) for the EU-25 Member States, 1990–2005

SO_x (Gg)	1990	1995	2000	2001	2002	2003	2004	2005	Change 2004–2005	Change 1990–2005	Contribution to EU-25 in 2005
Austria	75	47	31	32	31	32	27	26	– 3 %	– 65 %	0 %
Belgium	363	262	172	169	158	154	157	147	– 7 %	– 60 %	2 %
Denmark	178	136	29	27	26	32	25	21	– 15 %	– 88 %	0 %
Finland	NE	NE	76	85	83	99	84	68	– 18 %	–	1 %
France	1 332	968	618	553	520	505	488	465	– 5 %	– 65 %	7 %
Germany	5 350	1 727	619	622	585	595	570	538	– 6 %	– 90 %	8 %
Greece	487	536	493	502	513	545	529	545	3 %	12 %	8 %
Ireland	NE	NE	NE	129	99	78	72	70	– 2 %	–	1 %
Italy	1 795	1 320	753	708	632	528	496	450	– 9 %	– 75 %	7 %
Luxembourg	NE	NE	NE	NE	NE	NE	NE	NE	–	–	–
Netherlands	NE	NE	NE	89	67	65	65	64	– 2 %	–	1 %
Portugal	317	332	304	293	294	201	203	215	6 %	– 32 %	3 %
Spain	2 091	1 734	1 415	1 389	1493	1 225	1 269	1 225	– 3 %	– 41 %	19 %
Sweden	109	71	46	45	45	46	41	40	– 4 %	– 63 %	1 %
United Kingdom	NE	NE	1 165	1 119	1 002	991	836	706	– 15 %	–	11 %
EU-15	**NE**	**NE**	**NE**	**5 764**	**5 547**	**5 095**	**4 862**	**4 580**	**– 6 %**	**–**	**71 %**
Cyprus	37	44	52	50	51	45	45	42	– 6 %	16 %	1 %
Czech Republic	NE	NE	291	291	284	283	227	220	– 3 %	–	3 %
Estonia	273	117	96	91	88	101	89	77	– 13 %	– 72 %	1 %
Hungary	1 010	NE	487	NE	NE	347	248	158	– 36 %	– 84 %	2 %
Latvia	99	47	9	8	6	5	4	4	– 6 %	– 96 %	0 %
Lithuania	NE	NE	NE	NE	43	43	42	44	3 %	–	1 %
Malta	19	30	34	NE	NE	33	18	18	2 %	– 5 %	0 %
Poland	NE	NE	NE	NE	NE	1 375	1 241	1 222	– 2 %	–	19 %
Slovak Republic	NE	NE	NE	NE	NE	106	97	89	– 8 %	–	1 %
Slovenia	NE	NE	NE	NE	71	66	54	42	– 23 %	–	1 %
EU-10	**NE**	**NE**	**NE**	**NE**	**NE**	**2 403**	**2 065**	**1 915**	**– 7 %**		**29 %**
EU-25	**NE**	**NE**	**NE**	**NE**	**NE**	**7 499**	**6 927**	**6 495**	**– 6 %**	**–**	**100 %**

Note: NE = not estimated/provided; EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported.

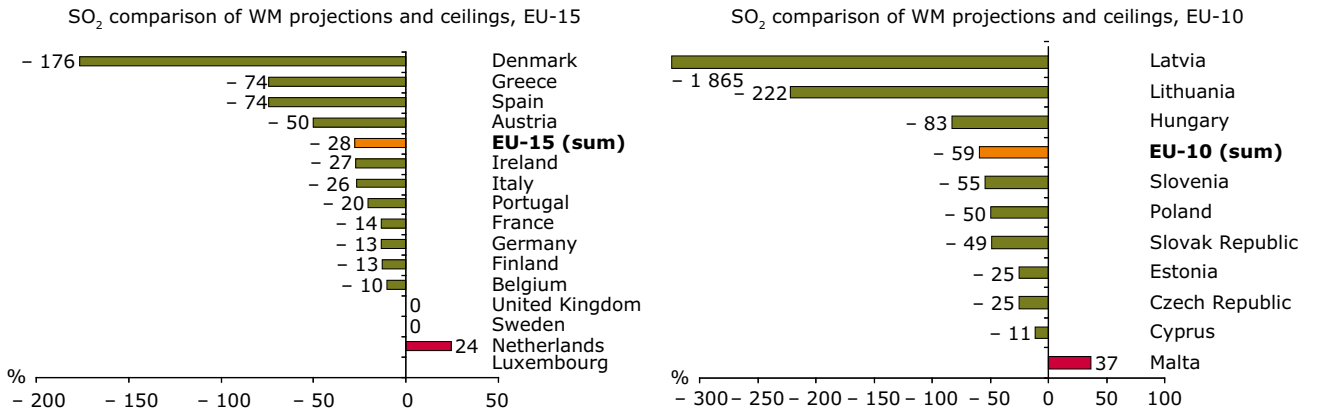
([15]) The emission ceilings for the European Community given in the Accession treaty replacing Annex II of NECD (EC, 2003) are designed with the aim of broadly meeting the interim environmental objectives set out in Article 5 of the NECD.

Figure 7 Proximity to SO_2 emission ceilings (%) in 2005 for EU-15 (left) and EU-10 (right)



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported.

Figure 8 Comparison of projected SO_2 emissions for 2010 in relation to their 2010 ceilings for the EU-25 Member States



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. Projections submitted by Portugal are provisional. For Greece non-updated projections were used, as these data were not reported in 2006.

Table 13 Indicative comparison of EU-25 emission ceilings with EU-25 projections, SO_2

SO_2	WM projections (Gg)	Emission ceilings (Gg)	Difference from WM (Gg)	Difference from WM (%)	EU-25 ceilings Annex II (Gg)	Difference from WM (Gg)	Difference from WM (%)
EU-15	3 010	3 850	– 840	– 28 %			
EU-10	1 689	2 693	– 1 004	– 59 %			
EU-25	4 699	6 543	– 1 844	– 39 %	6 176	367	– 24 %

Note: EU-15 and EU-25 projections are without data from Luxembourg as emissions have not been reported; EU WM projections are based on the Member States WM projections; Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece non-updated projections were used, as these data were not reported for 2006.

3.5 NH_3

3.5.1 *NH_3 emissions*

Total trends and values for NH_3 can only be given at the EU-15 level for the years 2001 and 2002, and for EU-10 only 2003 can be presented because not all Member States have reported mandatory data for 2004 and 2005 (Table 14). In these two years in the EU-15 NH_3 emissions decreased by 1 %. Amongst the 14 Member States which provided emission estimates for years 1990 and 2005, Italy, Portugal, Spain and Cyprus report increased emissions whilst all other Member States have reported decreases. Greece has subsequently informed the European Commission that NH_3 emissions were stabilised after year 1998.

The proximity to respective emission ceilings amongst the EU-25 is shown in Figure 9. It can be seen that nine Member States within the EU-15 have already attained their ceiling, while the United Kingdom, Spain, the Netherlands, Germany, Finland and Denmark presently have emissions above their respective ceilings. The EU-15 is 77 Gg away from its aggregated ceiling (calculated from the sum of individual EU-15 Member States ceilings), which is equivalent to 2 % ([16]) of 2005 emissions. All new EU-10 Member States are below their respective ceilings, Latvia and Estonia both reported emissions more than 200 % lower than their respective ceilings.

3.5.2 *NH_3 projections*

Of the EU-15 Member States, Germany and Spain anticipate exceeding their emission ceilings by 2010 (Figure 10). Germany also provided WAM projections which exactly coincide with their NH_3 ceiling. This is also the case for the United Kingdom, Finland and Greece.

Table 14 NH_3 emission trend in Gg for EU-25 Member States and change in emissions

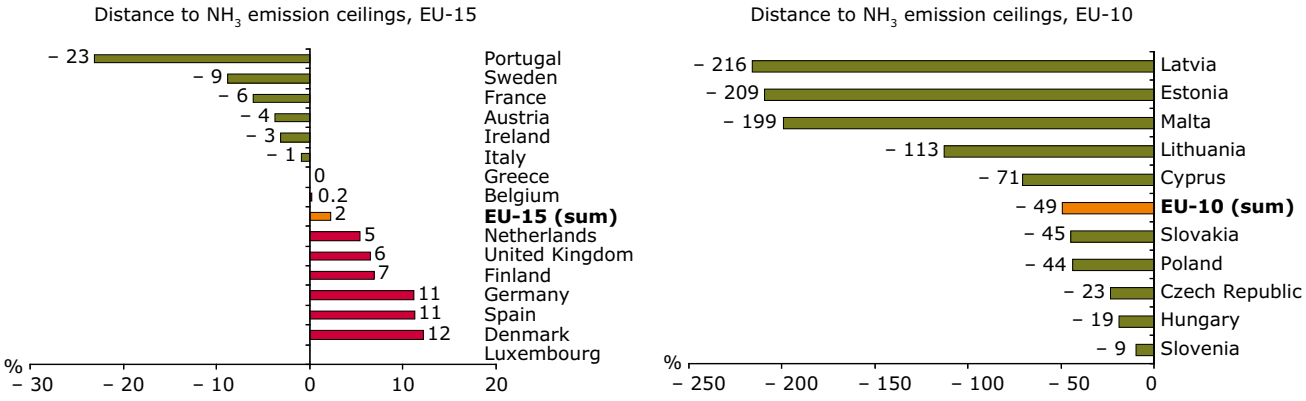
NH_3 (Gg)	1990	1995	2000	2001	2002	2003	2004	2005	Change 2004–2005	Change 1990–2005	Contribution to EU-25 in 2005
Austria	69	71	66	66	65	65	64	64	0 %	– 8 %	
Belgium	112	103	79	84	82	79	76	74	– 2 %	– 34 %	
Denmark	108	94	89	88	86	82	84	79	– 6 %	– 27 %	
Finland	NE	NE	33	33	33	33	33	33	0 %	–	
France	787	772	789	775	777	750	743	735	– 1 %	– 7 %	
Germany	738	631	627	639	627	632	625	619	– 1 %	– 16 %	
Greece	79	85	74	74	73	NE	NE	NE	–	–	
Ireland	NE	NE	NE	117	115	113	113	112	0 %	–	
Italy	405	417	425	434	435	433	426	415	– 2 %	2 %	
Luxembourg	NE	NE	NE	NE	NE	NE	NE	NE	–	–	
Netherlands	NE	NE	NE	142	136	130	134	135	1 %	–	
Portugal	65	73	77	76	76	71	72	73	2 %	13 %	
Spain	337	335	405	405	403	415	412	398	– 3 %	18 %	
Sweden	54	62	56	54	54	53	53	52	– 1 %	– 3 %	
United Kingdom	NE	NE	297	337	326	313	318	318	0 %	–	
EU-15	**NE**	**NE**	**NE**	**3 323**	**3 288**	**NE**	**NE**	**NE**	**–**	**–**	
Cyprus	5	5	5	6	6	6	6	5	– 4 %	17 %	
Czech Republic	NE	NE	74	67	65	74	70	65	– 7 %	–	
Estonia	26	12	10	10	10	10	10	9	– 3 %	– 64 %	
Hungary	124	NE	84	NE	NE	67	76	NE	–	– 39 %	
Latvia	47	15	12	14	13	14	13	14	6 %	– 70 %	
Lithuania	NE	NE	NE	NE	51	34	33	39	18 %	–	
Malta	NE	NE	1	NE	NE	1	1	1	– 1 %	–	
Poland	NE	NE	NE	NE	NE	323	317	326	3 %	–	
Slovak Republic	NE	NE	NE	NE	NE	29	27	27	– 1 %	–	
Slovenia	NE	NE	NE	NE	19	19	17	18	6 %	–	
EU-10	**NE**	**NE**	**NE**	**NE**	**NE**	**576**	**569**	**NE**			
EU-25	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**–**	**–**	

Note: NE = not estimated/provided; EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported.

([16]) The number is provisional while Greece and Luxembourg did not report 2005 emissions. For Greece, 2002 emissions were used for analyses.

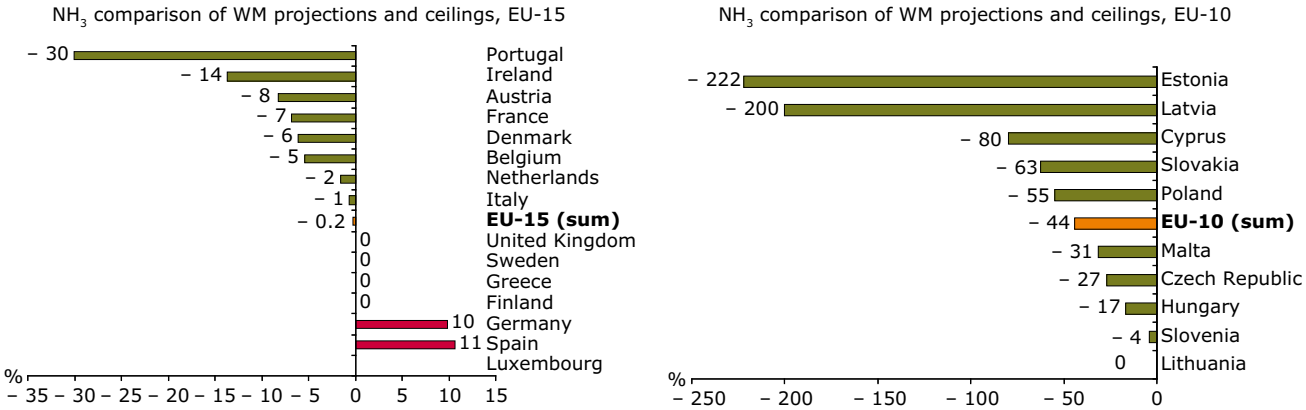
According to the projections, the EU-25 will be 7 % below and EU-15 will be less than 1 % below their respective aggregated ceilings (calculated as the sum from all individual Member States' ceilings) (Table 15). All new EU-10 Member States expect to be below their emission ceilings by 2010. Lithuania anticipates meeting its ceiling exactly. The EU-10 will be 44 % below its aggregate ceiling (calculated as the sum from all individual Member States) according to the projections.

Figure 9 Proximity to NH_3 Emission Ceilings in 2005 for EU-15 (left) and EU-10 Member States (right) (%)



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. For Greece 2002, and for Hungary 2004, emissions were used for comparisons with ceilings as 2005 data were not reported by these countries.

Figure 10 Comparison of projected NH_3 emissions for 2010 and ceilings to be attained by 2010 for the EU-25 Member States



Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions were not reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece non-updated projections were used, as these data were not reported in 2006. Projections submitted by Portugal are provisional.

Table 15 Indicative comparison of EU-25 emission ceilings with EU-25 projections, NH_3

NH_3	WM projections (Gg)	Emission ceilings (Gg)	Difference from WM (Gg)	Difference from WM (%)	EU–25 ceilings Annex II (Gg)	Difference from WM (Gg)	Difference from WM (%)
EU– 15	3 103	3 110	– 7	– 0.2 %			
EU-10	600	866	– 266	– 44 %			
EU-25	3 703	3 976	– 273	– 7 %	N/A	N/A	N/A

Note: EU-15 and EU-25 emissions are without data from Luxembourg as emissions have not been reported. Hungary did not provide WM projections therefore the WOM projection was used for comparison. For Greece non-updated projections were used, as these data were not reported in 2006. Projections submitted by Portugal are provisional.

4 Recalculations

The difference between data reported by Member States in 2006 and the data reported under the NECD in 2005 are shown in the tables below. Empty fields indicate that one of the two submissions did not contain any data and '0' indicates that no recalculations were undertaken.

It is important and necessary to identify inventory recalculations and to understand their origin in order to correctly evaluate the officially reported emission data. This is especially the case when emission ceiling targets are expressed in absolute terms (as in the NECD), and not as percentage reduction targets (as in the Kyoto Protocol for greenhouse gases). At a country level, it is considered good practice to recalculate the whole time-series when new information (i.e. activity or emission factor data) becomes available in order to provide comparable and consistent data. The magnitude of recalculations also provides some indication of the general uncertainty of the emissions. However, as Member States are not at present formally required to provide any explanatory information as to why recalculations have occurred, it is often not clear why Member States have reported different numbers. However, it is noted that in some instances (as encouraged by the European Commission), Member States have submitted an informative inventory report together with their emission inventory data. Details of recalculations performed should be explained within these inventory reports.

In the following tables, a negative number indicates that the emissions reported for the respective year in the 2006 reporting round are lower than those previously reported. Conversely a positive number indicates the recalculation has led to an increase in the reported emissions.

Table 16 Member States NO_x recalculations (Gg) for 1990–2004

NO_x (Gg)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0	0	0	0	0	0	0	0	0	1	1	0	0	– 1	– 2
Belgium	0	–	–	–	–	0	–	–	–	–	0	0	0	0	1
Denmark	– 4	– 4	– 4	– 4	– 4	– 3	– 2	– 2	– 1	0	1	1	2	2	2
Finland	–	–	–	–	–	–	–	–	–	–	0	0	0	0	1
France	11	11	11	11	11	11	11	12	12	11	25	19	28	16	16
Germany	– 16	– 15	– 16	– 16	– 11	37	5	5	– 5	– 4	– 37	12	9	21	24
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands	–	–	–	–	–	–	–	–	–	–	–	0	0	0	– 5
Portugal	0	0	0	0	0	0	0	1	0	– 1	– 1	– 1	– 1	0	0
Spain	27	27	18	16	18	18	14	11	10	6	7	2	– 1	3	– 8
Sweden	8	22	14	6	13	10	11	11	11	12	14	12	13	13	12
United Kingdom	–	–	–	–	–	–	–	–	–	–	0	29	28	43	43
EU-15	**26**	**41**	**23**	**13**	**27**	**72**	**38**	**38**	**26**	**24**	**9**	**75**	**79**	**97**	**83**
Cyprus	–	–	–	–	–	–	–	–	–	–	0	0	0	– 1	0
Czech Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Estonia	–	–	–	–	–	–	–	–	–	–	–	–	–	0	– 1
Hungary	–	–	–	–	–	–	–	–	–	–	–	–	–	0	– 1
Latvia	– 4	4	4	– 1	1	– 1	– 3	– 2	1	2	2	0	1	0	1
Lithuania	–	–	–	–	–	–	–	–	–	–	–	–	0	0	6
Malta	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Poland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Slovak Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Slovenia	–	–	–	–	–	–	–	–	–	–	–	–	0	0	1
EU-10	**– 4**	**4**	**4**	**– 1**	**1**	**– 1**	**– 3**	**– 2**	**1**	**2**	**2**	**0**	**1**	**– 1**	**6**
EU-25	**22**	**45**	**27**	**12**	**28**	**71**	**35**	**36**	**27**	**26**	**11**	**74**	**80**	**96**	**89**

4.1 NO_X recalculations

Inspection of Table 16 indicates major recalculations occurred in France, Germany and the United Kingdom. The recalculation undertaken by the Member States had an increasing effect on EU-25 NO_X emissions.

4.2 NMVOC recalculations

Major recalculations were undertaken by France, Germany and Sweden (Table 17). The recalculations undertaken by Member States had the effect of increasing EU-25 NMVOC emission estimates.

4.3 SO_2 recalculations

Major recalculations occurred in Germany, Spain and Sweden (Table 18). The recalculations undertaken by the Member States had the effect of decreasing EU-25 SO_2 emission estimates.

4.4 NH_3 recalculations

Major recalculations occurred in Denmark, Germany, Portugal and Spain (Table 19). The recalculations undertaken by the Member States had the effect of decreasing EU-25 emission estimates.

Table 17 Member States' NMVOC recalculations (Gg) for 1990–2004

NMVOC (Gg)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0	0	0	1	– 1	– 2	– 4	– 5	– 7	– 8	– 10	– 10	– 10	– 13	– 15
Belgium	0	–	–	–	–	0	–	–	–	–	0	0	0	0	– 16
Denmark	2	2	1	1	1	3	1	0	0	0	2	1	3	1	1
Finland	–	–	–	–	–	–	–	–	–	–	0	0	0	0	1
France	347	420	399	398	339	337	363	301	313	295	278	260	208	178	148
Germany	28	25	24	39	– 161	– 128	– 92	– 66	– 34	– 56	– 79	– 71	– 46	3	21
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands	–	–	–	–	–	–	–	–	–	–	–	0	0	0	– 37
Portugal	31	34	31	28	25	23	22	20	19	18	16	14	14	14	15
Spain	1	1	1	1	1	2	2	2	2	2	3	3	3	4	5
Sweden	– 70	– 101	– 104	– 107	– 93	– 93	– 88	– 80	– 66	– 64	– 62	– 62	– 58	– 60	– 53
United Kingdom	–	–	–	–	–	–	–	–	–	–	0	– 15	– 16	– 10	– 15
EU-15	**340**	**382**	**352**	**360**	**112**	**142**	**204**	**171**	**226**	**187**	**147**	**122**	**99**	**118**	**57**
Cyprus	–	–	–	–	–	–	–	–	–	–	0	0	0	0	0
Czech Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Estonia	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Hungary	–	–	–	–	–	–	–	–	–	–	–	–	–	0	3
Latvia	– 7	– 15	– 13	0	– 6	– 4	– 4	– 3	– 2	– 1	0	– 1	0	– 1	– 4
Lithuania	–	–	–	–	–	–	–	–	–	–	–	–	0	0	28
Malta	–	–	–	–	–	–	–	–	–	–	–	–	–	0	– 1
Poland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Slovak Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	0	– 2
Slovenia	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0
EU-10	**– 7**	**– 15**	**– 13**	**0**	**– 6**	**– 4**	**– 4**	**– 3**	**– 2**	**– 1**	**0**	**– 1**	**0**	**– 2**	**23**
EU-25	**333**	**367**	**339**	**360**	**105**	**138**	**200**	**168**	**223**	**185**	**147**	**121**	**99**	**116**	**80**

Table 18 Member States SO_2 recalculations (Gg) for 1990–2004

SO_2 (Gg)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0	0	0	0	0	0	0	0	0	0	0	0	– 1	– 1	– 1
Belgium	0	–	–	–	–	0	–	–	–	–	0	0	0	0	– 4
Denmark	0	1	1	0	0	0	0	0	0	0	1	1	1	1	1
Finland	–	–	–	–	–	–	–	–	–	–	0	0	0	0	2
France	0	0	0	0	0	0	0	1	2	2	6	5	11	1	5
Germany	61	13	– 10	6	– 2	19	28	19	14	17	– 10	– 6	– 3	0	11
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	–	–	–	–	–	–	–	–	–	–	–	3	3	1	1
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands	–	–	–	–	–	–	–	–	–	–	–	0	0	0	– 3
Portugal	0	0	0	0	0	0	0	– 1	0	0	– 1	0	0	1	– 1
Spain	– 14	– 5	– 16	– 17	– 21	– 26	– 27	– 30	– 32	– 35	– 34	– 37	– 39	– 31	– 60
Sweden	– 9	– 10	– 12	– 10	– 10	– 8	– 8	– 9	– 8	– 6	– 6	– 6	– 6	– 6	– 6
United Kingdom	–	–	–	–	–	–	–	–	–	–	0	9	8	18	3
EU-15	**39**	**– 2**	**– 38**	**– 21**	**– 33**	**– 14**	**– 7**	**– 19**	**– 24**	**– 21**	**– 45**	**– 33**	**– 28**	**– 16**	**– 52**
Cyprus	–	–	–	–	–	–	–	–	–	–	– 1	–	–	0	0
Czech Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Estonia	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Hungary	–	–	–	–	–	–	–	–	–	–	–	–	–	0	– 2
Latvia	2	1	3	2	1	0	0	0	1	0	– 1	0	0	0	0
Lithuania	–	–	–	–	–	–	–	–	–	–	–	–	0	0	5
Malta	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Poland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Slovak Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Slovenia	–	–	–	–	–	–	–	–	–	–	–	–	0	0	– 2
EU-10	**2**	**1**	**3**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**– 2**	**0**	**0**	**0**	**2**
EU-25	**41**	**– 1**	**– 35**	**– 19**	**– 31**	**– 14**	**– 7**	**– 19**	**– 24**	**– 21**	**– 47**	**– 33**	**– 27**	**– 16**	**– 51**

Table 19 Member States NH_3 recalculations (Gg) for 1990–2004

NH_3 (Gg)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0
Belgium	0	–	–	–	–	0	–	–	–	–	0	0	0	0	1
Denmark	– 26	– 24	– 23	– 22	– 22	– 20	– 19	– 19	– 18	– 16	– 16	– 16	– 15	– 16	– 14
Finland	–	–	–	–	–	–	–	–	–	–	0	0	0	0	1
France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Germany	– 20	– 19	– 18	– 18	– 11	– 11	– 13	– 11	– 13	– 16	– 19	– 21	– 22	– 16	– 15
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	–	–
Ireland	–	–	–	–	–	–	–	–	–	–	–	0	0	– 1	– 1
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0
Portugal	10	10	10	10	10	10	12	10	10	11	13	10	12	7	8
Spain	– 8	– 6	– 5	– 5	– 5	– 6	– 7	– 9	– 9	– 10	– 13	– 14	– 17	– 15	– 21
Sweden	– 1	– 1	– 2	– 2	– 2	– 2	– 2	– 2	– 2	– 3	– 3	– 3	– 3	– 3	– 3
United Kingdom	–	–	–	–	–	–	–	–	–	–	0	7	6	5	– 18
EU-15	**– 45**	**– 40**	**– 38**	**– 35**	**– 30**	**– 29**	**– 28**	**– 31**	**– 32**	**– 33**	**– 37**	**– 36**	**– 39**	**– 39**	**– 60**
Cyprus	–	–	–	–	–	–	–	–	–	–	– 1	– 2	– 1	0	0
Czech Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Estonia	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Hungary	–	–	–	–	–	–	–	–	–	–	–	–	–	0	9
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0
Malta	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
Poland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Slovak Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	0	1
Slovenia	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0
EU-10	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**– 1**	**– 2**	**– 1**	**0**	**10**
EU-25	**– 45**	**– 40**	**– 38**	**– 36**	**– 30**	**– 29**	**– 28**	**– 31**	**– 32**	**– 33**	**– 38**	**– 37**	**– 40**	**– 39**	**– 49**

5 Conclusions

This chapter provides a summary of the overall emission trends in Member States, highlights problems encountered in the inventory submissions, and makes suggestions for improvements. The recommendations are directed towards improving the quality of national inventories and projections reported under the NECD. They also aim at ensuring better harmonisation between submitted NECD national plans and inventories. The objectives are to achieve:

- Higher quality emission inventories and projections enabling earlier and more accurate definition of any further emission reduction policies and measures, thus facilitating potentially lower cost compliance solutions;
- Greater harmonisation of reporting requirements, thereby reducing the administrative burden and facilitating greater consistency in assumptions and relevant parameters enabling the Commission and Member States to learn from each other.

5.1 Emission trends and projections

A detailed presentation of long-term emission trends in the EU-25 is not possible when a number of countries continue to submit incomplete inventories for both the present and previous reporting cycles (see Table 6).

Trend tables (Tables 8, 10, 12 and 14) presented in the report indicate that emissions of the NECD pollutants in most EU Member States have decreased. A number of countries have already succeeded in reducing emissions in line with the requirements of the NECD, or are projected to do so before 2010 (see projections in Figures 4, 6, 8, and 10).

- Reaching the NO_X emission ceiling seems to be the most difficult. Projected emissions for the EU-25 are 8 % above the aggregated ceiling as calculated from the sum of the individual Member States' ceilings (and being 19 % above EU-25 IEO target ([17])), such that only 12 Member States presently estimate that they will reach their emission ceiling by 2010;
- Progress in reducing NMVOC emissions seems to have been more successful. Even if five Member States, according to their submitted projections, do not meet the ceilings in 2010, NMVOC projections for the EU-25 are 5 % below the aggregated target, but 11 % above the IEO target;
- Only two Member States (Malta and the Netherlands) do not expect to meet SO_2 ceilings in 2010. The EU-25 as a whole is projected to be 29 % below the aggregated ceiling. The IEO ceiling for SO_2 should also be reached (projected emissions are 18 % below the IEO target);
- The NH_3 projections for the EU-25 are 6 % under the aggregated emission target. Seventeen Member States have already reduced ammonia emissions under the ceilings and the remaining Member States (except Germany and Spain) anticipate reaching their targets by 2010.

5.2 Summary of findings

5.2.1 Timeliness

The timeliness of Member States' reporting has improved compared to the previous NECD reporting cycle. Twenty-four of twenty-five Member States provided inventories (compared with 21 Member States in 2006) with only Luxembourg not providing any data in 2006. Sixteen Member States provided inventories by the required deadline, compared to eleven in the previous cycle.

5.2.2 Completeness

Submitted inventories were not always complete (e.g. Poland and Greece did not provide final 2004 emissions; Greece did not report NH_3 emissions;

([17]) EU-25 IEO = Interim environmental objective target Annex II of NECD as updated by Accession treaty (Table 2).

Hungary did not report NH_3 and NMVOC emissions for 2005). EU-25 inventories should be compiled and emission trends evaluated to review the progress in reaching emission targets, but there are at present no agreed procedures on how to proceed when data is missing. Without having such procedures, a complete EU-25 inventory can be not compiled if Member States provide incomplete and/or inconsistent data.

5.2.3 Consistency/comparability

Twelve Member States submitted inventories in a comparable and consistent (NFR) format, using a standard Excel template. The remaining 12 Member States submitted data using a variety of non standard formats (e.g. modified templates). Hungary provided only national totals in word file. Such approaches create processing problems when compiling the EU inventory and during consistency and completeness checks. Austria submitted one NFR template file for both the NECD and LRTAP Convention reporting obligations and mentioned in the accompanying documentation that the NECD inventory should not include emissions arising from fuel tourism. During compilation of the European Community inventory, emissions caused by fuel tourism have then to be subtracted manually for the NEC inventory, which takes time and is a potential source of errors.

From the submitted inventories it is also not always clear how other Member States estimated emissions from combustion of fossil fuels ([18]) (e.g. if road transport estimates are based on fuel used or fuel sold). This information cannot be determinded from data tables alone and instead need to be documented within an informative inventory report.

5.2.4 Recalculations

Major NO_X recalculations occurred in France, Germany and United Kingdom. The total effect in 2004 was an 89 Gg increase, which amounts to about 0.8 % of total EU-25 emissions. Major NMVOC recalculations occurred in France, Germany and Sweden. The total effect in 2004 was an 80 Gg increase, which amounts to almost 1 % of total EU-25 emissions. Major SO_2 recalculations occurred in Germany, Spain and Sweden. The total effect in 2004 was minus 52 Gg, which amounts to around 0.7 % of total EU-25 emissions. Major NH_3 recalculations were carried out in Denmark, Germany, Portugal and Spain. The total effect in 2004 was minus 60 Gg, which amounts to less than 1.3 % of total ([19]) EU-25 emissions.

5.3 Suggested future improvements

To help improve transparency of the reported NECD data, part of the inventory reporting by Member States in the future could involve submission of a short informative report. Explanatory information concerning the reported inventory should be included within such a report, for example:

- whether countries report on a fuel used/sold basis (to prevent double-counting or omissions when compiling the EU-25 inventory);
- all countries should clearly describe how the NECD national totals are reflecting the requirements of Article 4 related to maritime traffic and aircraft emissions (LTO cycle/cruise);
- Member States such as Portugal, Spain and France should confirm which territory is covered in their submitted inventory ([20]);
- an overview of recalculations could be made (with regard to the previous year's submission) including quantitative information and brief explanations for the recalculations.

The importance of providing inventories in standardised formats has to be repeatedly stressed when the European Commission and EEA communicate with the Member States (e.g. through Eionet). Although the transfer of reported data into standardised formats for analysis is possible and is already performed by ETC/ACC for some of the submitted data formats, the process is time-consuming and is a potential source of errors. The NECD itself does not presently define a required reporting format for national inventories. A definition of inventory reporting formats should be considered for inclusion into the revised NECD.

([18]) Member States have flexibility in selecting whether transport emissions are based on fuel used or fuel sold. See table 2 with summary of reporting obligations.
([19]) Total NH_3 emissions in 2004 have been assessed as 3 795 Gg (without Luxembourg and assuming 73 Gg NH_3 emission in Greece).
([20]) In the 2006 reporting cycle, France provided an additional table with national totals excluding oversees areas, Portugal sent an explanatory note saying that Madeira and Azores Islands are included, Spain provided information that Ceuta and Melilla are included along with the Peninsula and Balearic Islands while the Canary Islands are excluded in accordance with Article 2 c.

To assist Member States to increase the consistency of reporting, and limit burdens on national experts, the present standard reporting template (i.e. EMEP NFR tables) could be slightly modified (e.g. through addition of an extra row) to enable reporting of the national total for NECD side by side with that required for the LRTAP Convention.

Introduction of inventory gap-filling procedures should be considered when countries do not provide the mandatory inventory information. However, before starting with gap-filling for generating an EU-25 inventory, any such procedure will have to be formalised. The same general principle and methods could be applied as are used in the European Community Greenhouse Gas Reporting Mechanism (Decision 280/2004/EC) when compiling the EU GHG inventory and accompanying inventory report.

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Units and abbreviations

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)
Tg	1 teragram = 10^{12} g = 1 megatonne (Mt)
TJ	1 terajoule
BaU	(projections) business as usual
Cd	cadmium
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
LRTAP Convention	Convention on Long-range Transboundary Air Pollution
CRF	Common reporting format
EEA	European Environment Agency
Eionet	European environmental information and observation network of the EEA
EMEP	European monitoring evaluation programme
ETC/ACC	European Topic Centre on Air and Climate Change
EU	European Union
HFCs	hydrofluorocarbons
HM	heavy metals
IEO	interim environmental objective
IIR	informative inventory report
LTO	landing and take off cycle
NECD	national emission ceilings directive
NFR	nomenclature for reporting
NH_3	ammonia
NMVOC	non-methane volatile organic compounds
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
N_2O	nitrous oxide
PFCs	perfluorocarbons
PM	particulate matter
POPs	persistent organic pollutants
QA/QC	quality assurance/quality control
SF_6	sulphur hexafluoride
SO_2	sulphur dioxide
SO_X	sulphur oxides
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
NMVOC	volatile organic compounds (non-methane)
WM	(projections) with measures
WAM	(projections) with additional measures

European Environment Agency

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