

MSC-W Technical Report 1/07

"Inventory Review 2007; Emission Data reported to LRTAP Convention and NEC Directive"

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Inventory Review 2007

**Emission Data reported to
LRTAP Convention and NEC Directive**

Stage 1 and 2 review

Review of gridded data

and

**Review of PM inventories in
Belarus, Republic of Moldova, Russian Federation and Ukraine**

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ISSN 1504-6079 (print)
ISSN 1504-6206 (online)

Acknowledgements

The authors would like to thank all the Parties to the Convention on Long-Range Transboundary Air Pollution (LRTAP) and the European Union Member States for their enthusiastic participation in this annual review of inventory data and their submission of emission data under the NEC Directive and under the LRTAP Convention. Without them this report would not have been possible.

We have appreciated the guidance and assistance from the Expert Panel on Review (co-chairs Karin Kindbom and Martin Adams), and support from the Task Force on Emissions Inventories and Projections (chair person Kristin Rypdal).

The UNECE secretariat, Brinda Wachs, has supported the Stage 1 review, by acknowledging the receipt of each LRTAP submission and by encouraging Parties to submit complete and checked inventories in the required reporting format. We wish Brinda all the best in her new position, and welcome Tea Aulavuo to the secretariat of the Convention.

Zbigniew Klimont and Janusz Cofala, IIASA, have kindly provided emission data from the RAINS model for the evaluation of completeness of LRTAP data.

Heiko Klein and Per Helmer Skaali (MSC-W) have greatly assisted the review work with technical support. Svetlana Tsyo (MSC-W) has contributed both scientifically and socially during late nights at work in the Nordic vacation and midnight sun period.

Elisabeth Kampel, Michael Gager, and Bernd Gugel (UBA-V) provided technical support and performed certain tests for this report.

Our partners in the ETC/ACC team, Maria Pooley and Anne Wagner from AEA Energy and Environment, AEA Technology, greatly assisted in the final phase of the report production by proof reading and commenting upon the draft report.

This work has been supported through joint funding from EMEP and the European Environment Agency (EEA) through its European Topic Centre on Air and Climate Change (ETC-ACC). We are grateful for their interest in the continuous work of improving emission inventory quality.

EXECUTIVE SUMMARY

The summary of results from the third annual review of emissions data reported under the United Nations Economic Commission for Europe (UNECE) Convention on Long-Range Transboundary Air Pollution (LRTAP Convention) and the National Emissions Ceilings Directive (NEC Directive or NECD) is presented here. In addition, results from the review of gridded data, documentation of emission data replacements made by EMEP, and an in-depth review of PM data from selected Newly Independent States (NIS) countries are included within this report.

Timeliness

The number of submissions made in 2007 to the LRTAP Convention was 73% (37 Parties), 28 of which were received on time (Figure ES 1). This is the highest number of annual submissions recorded in the history of the Convention. Gridded sector data was reported by 18 Parties (12 Parties had reported gridded data up to 2006) for Main Pollutants, 17 (7) for PMs, 16 (10) for HMs and 12 (8) Parties for priority POPs.

Of the EU Member States (MS), only Luxembourg did not report data under the NECD. Italy reported data to NEC but not to LRTAP. This year more EU MS reported on time to LRTAP (19) than to the NEC Directive (16). This may be related to the later reporting date for LRTAP data (15 February compared to 31 December of the previous year for NECD data). Receipt of the late LRTAP submissions from nine Parties and eight NECD submissions from MS in 2007 hampers the inclusion of reviewed emission data in the EMEP database and NEC repository respectively, and hence also the subsequent assessments performed using the data.

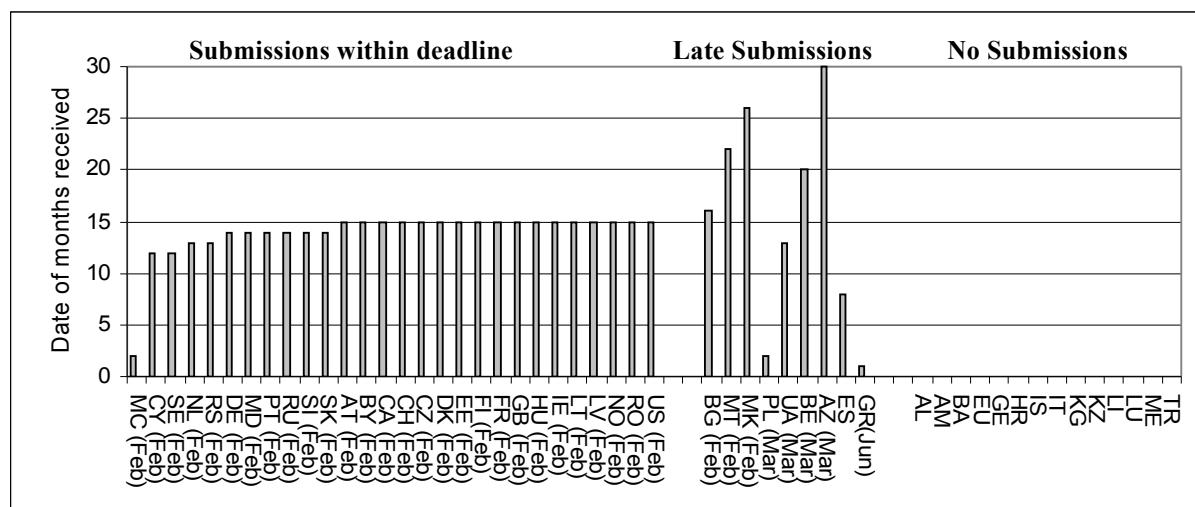


Figure ES 1: Status of official submissions to the LRTAP Convention in 2007

Format

Parties and most Member States (MS) do report in the requested NFR format, but about 50% alter the reporting templates. The reporting of information in non-standard formats greatly increases the difficulties associated with data processing and analysis, and manual editing might in addition introduce inadvertent errors. Countries are encouraged to use the initial quality control tool, REPDA, to check their emission data upon submission.

Transparency

Twenty Parties (54% of those reporting to LRTAP) submitted an Informative Inventory Report (IIR) in conjunction with their 2007 LRTAP submissions. This is three more than in the previous year. However, differences in content and structure amongst IIRs were significant, hence the review team welcome the proposal in the revised Guidelines of a standardised reporting template for IIRs.

Completeness

Overview tables documenting the completeness of the most recent reported LRTAP emission time series by pollutant, year, country and sector have been included for the first time in the review. Ten LRTAP Parties have reported emissions data for all years or a significant amount of data for 1980 onwards. Seventeen Parties reported full time series from 1990 onwards. Several Parties report rather fragmented emission data both with respect to emission years and source sectors, and some have never submitted regular information in the annual reporting rounds under the Convention. Reporting in the 1980s is around a factor two lower than from 1990 onwards. Efforts to improve the regularity of reporting need to be made particularly for the Eastern Europe, Caucasus and Central Asia (EECCA) countries. The current Guidelines on reporting under LRTAP make it difficult to give strong guidance on the completeness of inventory reporting. The review team welcomes the expected changes in the reporting Guidelines in 2008 which will tighten the definition of reporting completeness.

Submitted NECD inventories were not always complete either. Poland and Greece e.g. did not provide final 2004 emissions and also did not report NH₃ emissions; Hungary did not report NH₃ and VOC emissions for 2005.

Recalculations

The number of LRTAP Parties reporting data both in 2006 and in 2007 was 35 (70% of all Parties). More than half of these countries recalculated some of their data in 2007. The number of recalculations in the 1980s is only about half of recalculations for later years, indicating that the uncertainty in emissions may be higher for these years than for the following decades.

The recalculations were analysed using two groups of results a) the total number of recalculations and b) recalculations resulting in more than +/- 10% change. Analysing the total number of recalculations, the most frequently recalculated pollutant was NO_x, followed by CO, NMVOC, SO_x, and NH₃. Fewest recalculations were made for PM₁₀, DIOX, TSP and HCB. Where the recalculation differences exceeded 10%, PAHs had the largest number of significant recalculations, followed by Cd, Pb, NMVOC, and TSP. NO_x, NH₃ and SO_x had the fewest number of significant recalculations. These larger recalculations lead more often (by a factor of around 1.5) to decreases in the level of reported emissions rather than increases.

The magnitude of the reported recalculations varies between pollutants from 10% for NO_x, to more than 3000% for HCB (Figure ES 2). For NECD pollutants, the recalculations are largest for NMVOC (27%) followed by NH₃ (19%), SO₂ (13%) and NO_x (10%).

From this, it appears Parties prioritise their 1990 onwards inventories for Main Pollutants, and that they carry out frequent, and for all but NMVOC, small percentage recalculations. Hence the accuracy of these pollutants and years might be considered higher than for other pollutants and decades. However, when recalculations are performed for POPs, HMs and PMs, this leads

to relatively higher numbers of large recalculations, which supports a premise about emissions for these components having higher uncertainty levels relative to the Main Pollutants.

There is good evidence that few Parties appear to recalculate their emissions across the whole time series, even though this is essential for the evaluation of trends, and that it is clearly stated in the Reporting guidelines that Parties are requested to do so.

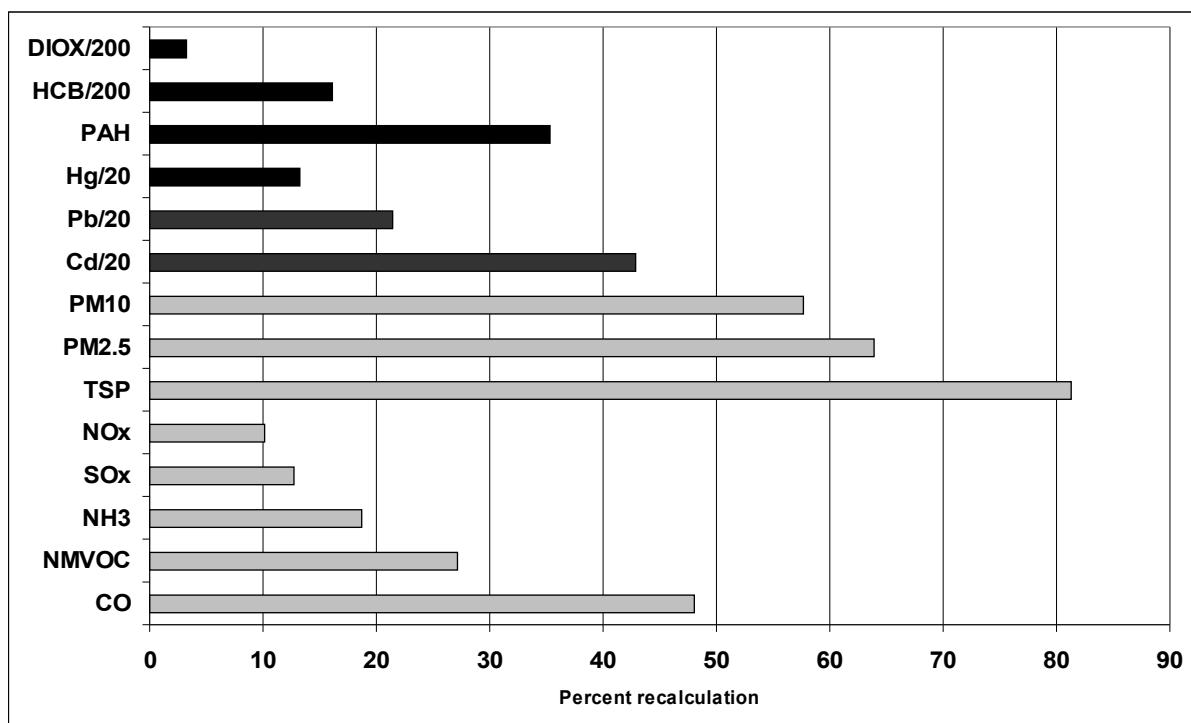


Figure ES 2: The size range of LRTAP recalculations made by Parties by pollutant (%) (/20 and /200 indicate division by 20 and 200 respectively for purposes of axis scaling).

The magnitude of recalculations of NECD also provided some indication of the general uncertainty of the emissions. As far as can be judged (not complete data), the magnitude of recalculations is probably in the range of 0.5- 2% of EU-25 total emissions per pollutant. Analysis of the NEC data also shows that the percentage recalculations are largest for NMVOC followed by NH₃, SO₂ and NO_x, but the size of the recalculations differs considerably for some countries. This needs to be further analysed in the next annual review.

Inventory comparison (Figure ES 3)

Differences larger than 0.1% between emission data submitted under the LRTAP Convention and under the NEC directive were found for 10 countries out of the EU-27 Member States. This is an increase by three from last year. Higher numbers of flagged values occurred between emissions reported under LRTAP and the EU Monitoring Mechanism (EU-MM) than between LRTAP and NEC, except for NH₃. Reasons for the differences noted between emissions reported under LRTAP/NEC and the EU are manifold and are mainly due to:

- a) different reporting deadlines between the various reporting obligations,
- b) different reporting requirements,
- c) different QA/QC requirements and,
- d) errors in reporting.

The highest number of differences identified occurred for NMVOC (18 of 27) and NO_x and CO (16 of 27), followed by SO_x (14 of 27). Differences in CO and NMVOC emissions are mainly due to differences in the reporting of memo items and the 1A3b Road Transport sector, and to errors made in reporting

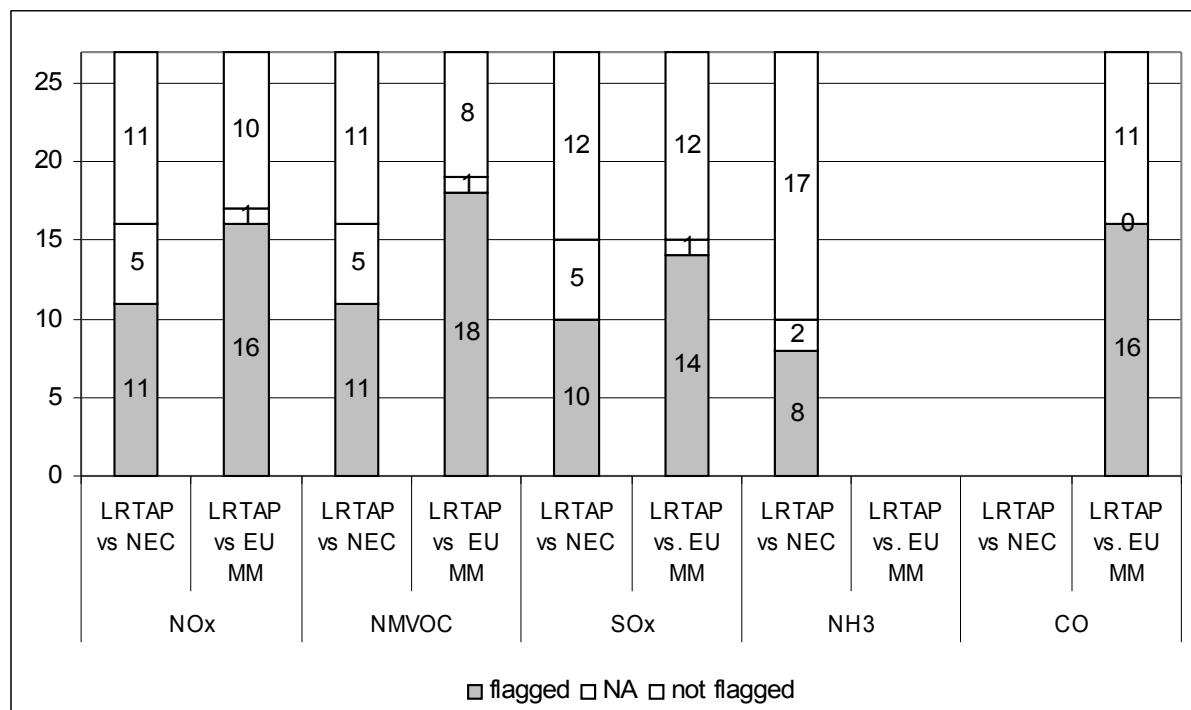


Figure ES 3: Overview of flagged values where reported differences between LRTAP, NECD and EU-MM inventories are >0.1% for the EU-27 Member States for 2005.

Cross pollutant ratios

A number of cross pollutant checks were performed in 2007 that aimed to check the comparability of pollutants emitted from the same sectors and activities. Following the May 2007 TFEIP meeting, the Expert Panels (EP) discussed the rationale and usefulness of the cross pollutant tests, and concluded that these tests do not provide significant added value over the Implied Emission Factor test (IEF). Hence these tests will be downgraded in the future. The checks performed in 2007 identified several instances where the pollutant ratios reported by Countries differed from a country-group average. In several instances reasons for this have already been provided by the countries concerned.

Implied emission factors

The objective of the implied emission factors (IEF) test was to identify significant changes of IEFs within time series and/or between countries. Implied emission factors were calculated for the sectors identified as key sources for Western and Eastern European countries for the year 2004 and for the main air pollutants.

Comparison of the test results between this year and last year indicates that the number of outliers in the EU-15 has generally decreased compared to the 2006 submissions. The number of outliers identified is generally low compared to the number of comparisons made. It must be noted that completeness of submissions differs amongst countries and fewer identified outliers in the national data does not automatically indicate better quality of inventories.

- More than two thirds of the outliers detected concern inconsistencies in times series (dips and or jumps) rather than outliers across countries (IEFs several times higher/lower than other countries), this applies both to LRTAP and NECD.
- It was observed that in Western Countries most outliers are to be found in CO IEFs, whereas in Eastern Countries slightly more outliers were found for SO_x than for other pollutants. The majority of outliers were detected in the transport sector (1A3), followed by ‘Manufacturing Industries and Construction’ (1A2), for both Western and Eastern countries.

Gridded data review

There was a need for corrections and clarifications from 14 of 18 Parties (94%) reporting gridded sector data according to the six tests performed. This is a very high number, and efforts should be made to formalize also the review of gridded data under the Convention in order to increase the quality of the spatial distribution reporting. Despite the improvements in both quantity and quality of gridded sector data for SO_x, NO_x, NMVOC and NH₃ this year, only data from 38% of Parties covering 32% of the EMEP domain is deemed by EMEP to be of sufficient quality to be presently included in the modelling performed.

Documentation of replacements to emissions data made by EMEP

Information regarding what implications the Stage 1, 2 and gridded data review results have upon emissions data which is used in modelling assessments by EMEP has been requested by Parties. The share of countries judged by EMEP/MSC-W (based on the Stage 1 and 2 reviews) to be submitting data of sufficient quality to be included in the EMEP inventory is the largest at 60% for SO_x and NO_x. The corresponding completeness values for NH₃, NMVOC, CO and PMs are 58%, 51%, 47% and 44% respectively. This is consistent with the results from the evaluation of recalculations and the indication given there on which pollutants carry the highest uncertainty. Replacements are mostly located in the Eastern Part of Europe, and lead in general to more than 30% higher emission totals. Emissions from agriculture are most frequently replaced. Emission estimation of road transport emissions by Parties is considered highly inconsistent for time series. The main source for replacement data is RAINS data, but also EDGAR and GEIA emissions are used. Large emitting countries like the Russian Federation and Belarus should clearly be given priority and if possible resources to further estimate emission trends more accurately.

Review of PM inventories in selected NIS countries

The NIS countries have long experience in carrying out TSP inventories, and it is encouraging that some NIS countries lately have improved their reporting to EMEP by also submiting PM emission data speciated by size. However not all significant sources of PM emissions are accounted for by statistics, and the experience in estimating PM₁₀ inventories is limited, hence TSP emission values should be considered as most reliable. Estimates of PM₁₀ should be considered on the whole as being preliminary estimates, taking into account their level of completeness, accuracy and consistency.

Independant PM estimates make a basis for validating official data submissions. These estimates are in general more complete and consistent, but also their accuracy needs to be assessed. PM national totals show better convergence between both official and so called expert data than at the sector level, and it is recommended that also expert sector emissions are compared with national emission statistics in order to detect significant divergences between the real economical and technological situation in countries and the emission estimates.

Official and expert PM emissions for the European part of Russia, contradicts the expectation that the national emissions are lower than the expert emissions due to incompleteness (Figure ES 4). The Energy sector is by officials estimated to contribute about 50% or 500 Gg TSP in 2004. This is likely an over estimation, because even though 85% of the Russian coal is burnt in the Energy sector, most coal are combusted in the Asian part and only 15-25% of total TSP emissions should be attributed to the European part more in line with the RAINS estimates (Figure ES 4). Moreover, it is likely that the official emission estimates also include other activities than those which should strictly be included in the Energy sector, like emissions from ferrous and non-ferrous industries. These emissions comprise approximately 9.5% of total TSP in 2003.

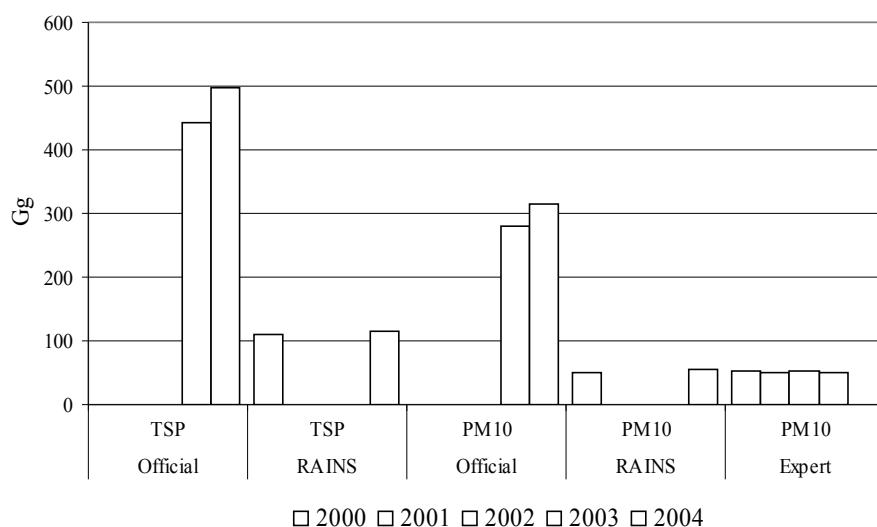


Figure ES4: PM emission from the Energy sector in the European part of Russia by different estimates

On the other hand, it is concluded that the much higher (than official emissions and than emissions in the Energy sector) RAINS emissions from the Residential sector are not supported by the structure of the fuel balance in the European part of Russia, as the combustion of coal should be much lower in the Residential than in the Energy sector.

In order to improve the completeness and accuracy of PM emission inventories in the NIS countries we recommend that reporting of TSP emission data should not be excluded in the revision of the Reporting Guidelines under the LRTAP Convention, because TSP emissions are currently the most reliable indicator of PM emissions for the NIS countries and can be used to validate speciated PM emissions. We propose further to organise regular intercomparisons of available PM emission models and estimates and to launch a pilot project on development of PM emission inventory improvement in the NIS for one of these countries. Experience obtained from such a project can then be disseminated among other countries.

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1 INTRODUCTION

This report presents the results from the third annual review of emissions data reported under the United Nations Economic Commission for Europe (UNECE) Convention on Long-Range Transboundary Air Pollution (LRTAP Convention) and the National Emissions Ceilings Directive (EC, 2001) (NEC Directive or NECD). The review is carried out by the Co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP) and the European Environment Agency (EEA) and is performed in accordance with the methods and procedures adopted by the EMEP Steering Body at its twenty-ninth session (EB.AIR/GE.1/2005/7, annex III). Since the first two trial reviews were performed in 2003 and 2004, the review process has been further developed according to requests received from the Parties and the Task Force on Emission Inventories and Projections (TFEIP). Today the review process is acknowledged by the Parties as a valuable input to the on-going task of national emission inventory improvement.

The formal review process currently consists of two stages: Stage 1 assesses compliance aspects such as the timeliness, format and completeness of submissions with respect to Protocol and NEC Directive obligations, while Stage 2 considers additional aspects of inventory ‘quality’ such as key source analysis, transparency, source and time series completeness, consistency and comparability of the data. It also evaluates the extent and scope of recalculations and inventory comparisons.

In 2006, a trial in-depth (Stage 3) review was performed (EMEP-EEA, 2006), which built on results from Stages 1 and 2 by performing a detailed assessment of additional aspects of inventory quality. Based on the experiences of this trial Stage 3 review, a proposal for an annual in-depth review process has been made by TFEIP in 2007 (ECE/EB.AIR/GE.1/2007/16), the aim of which is to further assist countries in raising the quality of their emission data.

As in previous years, Parties were requested in 2007 to report according to the criteria for reporting in the Guidelines, and were encouraged to check their submissions for correct formatting, internal consistency and completeness before transmitting them to the UNECE secretariat for stage 1 reviews. To facilitate this task, the latest update of the electronic data-checking tool, REPDA^b, including key source analysis and trend plots, was made available to Parties at: <http://webdab.emep.int/repdab.html>

The 2007 Stage 1 and 2 review assessed emissions data, (including gridded data), reported under the LRTAP Convention to the UNECE Secretariat by 19th April 2007, and emissions reported by EU Member States under the National Emission Ceilings Directive by 1st February / 15th April 2007 depending on the test concerned. Data officially reported under the LRTAP Convention as well as the complete and reviewed EMEP inventory, is available from the EMEP web database, WEBDAB (<http://webdab.emep.int/>). The data reported under the National Ceilings Directive is made available to the public through the EEA’s Dataservice website¹.

Additions to the review this year include:

- some slight methodological improvements made to the cross pollutant check;
- removal of the consistency check (since it is anticipated that this check should be performed by the countries themselves with the online QA/QC tool, REPDA^b); and

¹ EEA Dataservice: <http://dataservice.eea.europa.eu/dataservice/>

- inclusion of overview tables showing the internal consistency between gridded and non-gridded data.

Preliminary results from the 2007 review process were discussed at the TFEIP meeting in Dessau, Germany (23-25 May 2007). Based on these discussions, some of the tests will be revised, removed or substituted in the future.

The review team places emphasis on ensuring a high degree of communication occurs with Parties, both through bilateral communications (e.g. 22 of 38 national emission experts (or 58% of those reporting) had discussions with Meteorological Synthesizing Centre West (MSC-W) during the review) and through issuing country-specific review reports which summarise the results of the review tests performed. The review reports are normally issued to Parties by mid-May (i.e. three months after the LRTAP Convention submission deadline). However, as this year the review process has experienced delays for several reasons, country specific review reports were not issued until 9th of June 2007. The main implication of this delay is that Parties' responses to the questions raised in the country-specific reports could not be taken into account in this synthesis and assessment report as has been done in previous years. Key reasons for the delays encountered include:

- a higher number of submissions were received in 2007 than in previous years;
- the review was extended in scope to accommodate a review of the data reported five-yearly (the first time such data has been reviewed in the annual review process);
- unlike in previous years, very late submissions were included in the EMEP database (and review) this year to ensure completeness, since a transfer of responsibilities for the emission work under EMEP is foreseen from 2008;
- personnel changes within the expert review team.

The review process over the past years has also facilitated the identification of a number of inventory-related issues where improvements have subsequently been addressed i.e. through the 2007 proposed revision of the current Emission Reporting Guidelines (UNECE, 2003) (hereafter referred to as the Guidelines), the update of the EMEP/CORINAIR Guidebook, and the extension of the Nomenclature For Reporting (NFR) to accommodate more detailed reporting of Persistent Organic Pollutants (POPs), Heavy Metals (HMs), Particulate Matter (PMs), and Non-Methane Volatile Organic Compounds (NMVOCs).

This report has five main sections. Chapter 2 and 3 presents the synthesis of the Stage 1 and 2 review results, while the review of gridded data is summarized in Chapter 4. Following the conclusions from the 2007 annual review of NECD and LRTAP emissions inventories and the gridded data review (Chapter 5), a discussion of the instances where officially submitted Party data to LRTAP is replaced by the EMEP centres for their modelling purposes and a contribution in-kind made to EMEP from Belarus concerning review of PM inventories in Belarus, the Republic of Moldova, Russian Federation and Ukraine is included in Chapters 6 and 8, respectively.

2 STAGE 1 REVIEW

2.1 TIMELINESS OF SUBMISSIONS

Key messages- Timeliness

- *LRTAP: The number of Parties to the Convention rose from 49 to 51 this year, after the addition of Albania and the inclusion of Serbia and Montenegro as two individual parties. A total of 28 Parties (55%) reported emission data on time by the due date of 15 February 2007, an increase of one Party since 2006. Between 16 February and 1 June 2007, an additional nine Parties submitted data. This brought the number of submissions to 73% (37 Parties), an increase of two Parties compared to last year, and the highest number of submissions recorded in the history of the Convention.*
- *However, the overall timeliness of reporting is still not considered satisfactory due to late delivery from a number of Parties. This hampers the inclusion of reviewed emission data in the EMEP database and hence assessment work performed under the Convention.*
- *Gridded sector data was reported by 18 Parties (12 Parties had reported up to 2006) for Main Pollutants, 17 (7) for PMs, 16 (10) for HMs and 12 (8) Parties for priority POPs.*
- *NECD: The timeliness of MS reporting has improved compared to the previous reporting cycle. To date 24 of 25 MS have provided inventories (21 MS in 2006); only Luxembourg has not submitted any data. Sixteen MS provided inventories by the required reporting deadline of 31 December 2006, compared to eleven MS submissions in the previous cycle.*

2.1.1 LRTAP

The number of Parties to the Convention has risen from 49 to 51 (after the inclusion of Albania (AL), and Serbia and Montenegro as two individual Parties, Serbia (RS) and Montenegro (ME)). The review team welcomes these new Parties, and hopes they will actively take part in the review process. Country specific review reports have already been made available to these new Parties.

A total of 28 Parties (55%) reported emission data by the due date of 15 February 2007 – an increase of one Party over 2006. Between 16 February and 1 June 2007, an additional nine Parties submitted data. This brought the number of submissions to 73% (37 Parties), an increase of two Parties compared with last year, and the highest number of submissions recorded in the history of the Convention (Figure 1, Appendix 1A). However, the overall timeliness of reporting is still not considered satisfactory due to late delivery from a number of Parties. This hampers the inclusion of reviewed emission data in the EMEP database and hence assessment work performed under the Convention. Further, the late submissions leave the review team and the EMEP Centres with only limited time for the analysis of the emission data and model results for the annual reporting to the EMEP Steering Body which meets in early September.

36 Parties were included in the 2007 review. Of these Parties, 36 reported emissions of Main Pollutants (CO, NH₃, NMVOC, NO_x and SO_x). The corresponding number for particulate

matter (PMs i.e. PM_{2.5}, PM₁₀ and TSP) was 31 (Malta reported only PM_{2.5}, Romania only PM₁₀), Priority HMs (Pb, Cd and Hg) was 32 and POPs (PAH, DIOX and HCB) was 28. Reporting of PMs and HMs increased by one Party compared to last year, while the reporting of POPs remained the same.

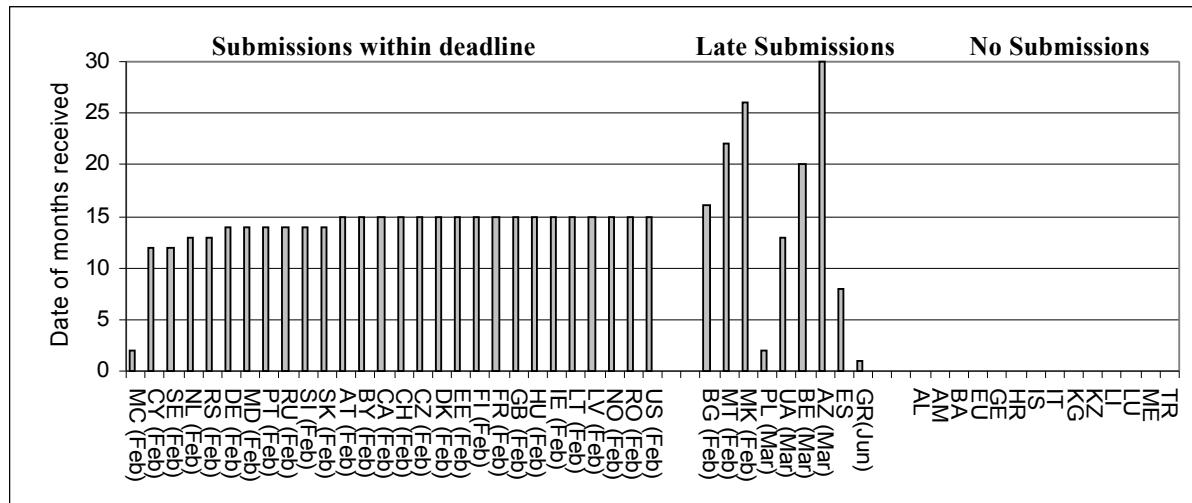


Figure 1: Status of official submissions to the LRTAP Convention in 2007

Like last year, only 15 European Parties (29%) reported complete time series of Main Pollutants in the NFR format for 1990–2005, the period relevant for the revision of the Gothenburg Protocol. Reporting of PM is formally requested from 2000, and 19 Parties reported the full time series 2000-2005. Of these, 11 Parties also reported from 1990.

The availability of gridded sector data (2005 emissions) improved considerably compared to last year. Gridded sector data was reported by 18 Parties (12 up to 2006) for Main Pollutants, 17 (7) for PMs, 16 (10) for HMs and 12 (8) Parties for priority POPs (Figure 2). It is particularly encouraging that the reporting of gridded emissions of particulate matter (PM₁₀ and PM_{2.5}) has now increased to the same general level of the Main Pollutants, indicating that the Convention focus on improving knowledge about the European PM emission levels (for reasons related to its significant health impacts), has successfully been adopted by the Parties. The gridded reporting of POPs in particular still requires improvement.

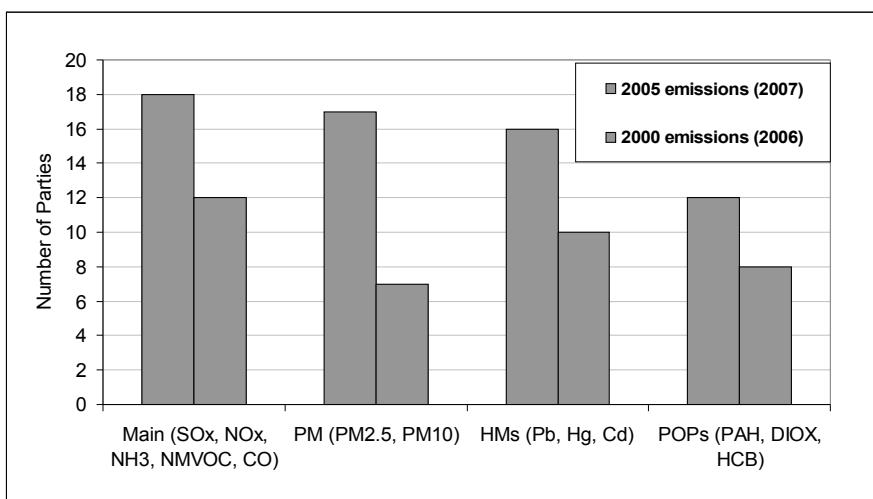
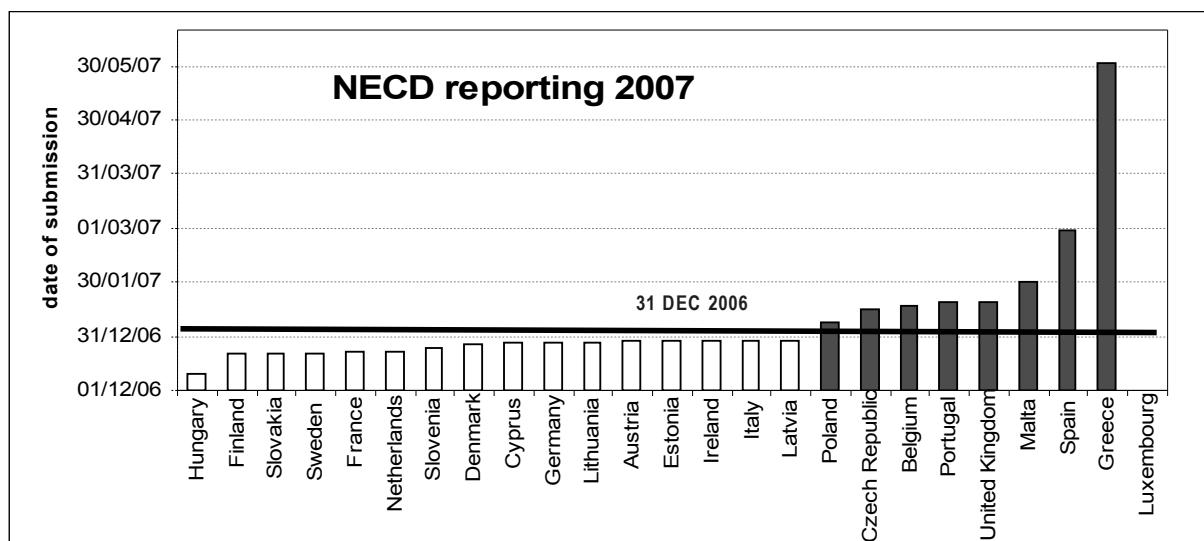


Figure 2: Reporting of gridded sector data to LRTAP in 2007.

2.1.2 NECD

Information in this section is based on Member States' (MS) submissions to the European Commission and the European Environment Agency (EEA), and explanatory information provided by MS to the European Topic Centre on Air and Climate Change (ETC-ACC) before 18 June 2007. An overview of the status of reporting under the NECD Directive is given in Appendix 1B.

Sixteen out of 25 Member States submitted national inventories of SO₂, NO_x, VOCs and NH₃ to the EEA's EIONET Reportnet Central Data Repository (CDR) or to the European Commission on or before the 31st December 2006. The Czech Republic, Poland, Belgium, Portugal, United Kingdom, and Malta delivered inventories between 1 January – 31 January 2007, Spain by 31 March 2007 and Greece by 1 June 2007. Luxembourg did not submit any information up to 18 June 2007 (Figure 3).



Member States submitting inventories within deadline are displayed to the left (full), the others to the right (dashed).

Figure 3: Status of reporting – date of NECD inventory provision to the CDR or European Commission

This year more EU MS reported on time to LRTAP (19) than to the NECD Directive (16). This may be related to the later reporting date for LRTAP data (15 February compared to 31 December of the previous year for NECD data). One MS, Italy, provided data under NECD but not to LRTAP.

2.2 FORMAT OF SUBMISSIONS

Key messages – Format

- *LRTAP: All parties reported both gridded and non-gridded emissions using the requested NFR formats, however approximately 50% of Parties altered the reporting of templates, requiring additional manual editing of submissions. All parties using the correct reporting templates used REPDBA – hence it is recommended that all Parties use this initial quality control tool.*
- *NEC: Twelve MS submitted inventories in non-consistent formats (e.g. using modified templates). Hungary provided only a word file with national totals in. This approach creates problems during consistency and completeness checks and when compiling the EU inventory. One Member State (AT) submitted one NFR for NECD and LRTAP reporting obligations and mentioned in an attached document that the NECD inventory should not include fuel tourism. Consequently when compiling the EC inventory, emissions from fuel tourism had to be subtracted manually for the NECD inventory, which was time-consuming and a potential source of errors.*

2.2.1 LRTAP

Parties reported both their gridded and non-gridded emissions in the requested NFR formats, but about 50% of the Parties altered the reporting templates, hence manual editing of submissions was required before loading of data to the database. This work is resource demanding and has the potential to introduce errors in the reported data. All the Parties that reported in the correct reporting templates used REPDBA. It is recommended that all Parties take advantage of this easy and rapid way of initial quality control of their emission data upon submission.

2.2.2 NECD

Twelve Member States (Austria, Belgium, Cyprus, Denmark, France, Greece, Ireland, Portugal, Slovakia, Slovenia, Spain, and Sweden) provided emissions in a comparable and consistent (NFR) format, using the standard excel template.

Emission inventories from the remaining 12 MS were submitted in modified Excel tables or even a Word file (Hungary). Germany submitted trend tables not consistent with standard NFR template. The reporting of information in non-standard formats greatly increases the difficulties associated with data processing and analysis. For these 12 countries, automated consistency and completeness tests could be performed only after ETC-ACC transferred these submissions into NFR standard tables.

Austria submitted one common NFR inventory to NECD and under the LRTAP reporting obligation and mentioned in an accompanying document that the NECD inventory does not include fuel tourism. Ireland submitted 2 versions of inventories, one calculated on the basis of fuel sold, and the other adjusted for fuel tourism. But for most of the MS it is not clear how emissions from combustion of fossil fuels are estimated². (e.g. if road transport estimates are based on fuel used or fuel sold).

² Member States have flexibility in selecting whether to report on the basis of fuel used/fuel sold.

2.3 TRANSPARENCY

Key messages – Transparency

- *LRTAP: 20 Parties (54% of those reporting) submitted an Informative Inventory Report (IIR) in conjunction with their 2007 LRTAP submissions. This is three more than in the previous year.*
- *However, differences in content and structure amongst IIRs were significant, hence the review team welcome the proposal in the revised Guidelines of a reporting template for IIRs.*

The number of Informative Inventory Reports (IIRs) submitted by Parties increased from last year by three Parties to 20 (54% of those reporting) in 2007. The increase in the number of IIR submissions is much appreciated. One point to note is that the reports differ substantially in structure and content, which makes it time consuming to find the information necessary for review purposes. The review team welcome the proposal in the revised Guidelines to include also a template for the reporting of IIRs, and highlight it is essential that Parties structure their report according the template.

3 STAGE 2 REVIEW

3.1 KEY SOURCE ANALYSIS

Key messages – key source analysis

- *A key source analysis was carried out for both the LRTAP and NEC inventories, and included in the country specific review reports made available to all Parties and MS in July.*
- *The review team also attempted to carry out a key source analysis specifically for the Western Europe and Eastern Europe country groups. However, this was not possible due to unresolved problems with the completeness and consistency of emission data, which the team had already identified and communicated to the relevant Parties.*

A key source analysis was carried out both for the LRTAP and the NECD inventories, and included in the country specific review reports that were made available to Parties and MS in July. In addition, we attempted to make an analysis for the Western Europe and Eastern Europe country groups. The results showed that due to unresolved problems identified by the review team concerning some of the emission data, such an analysis could not be undertaken. Hence a summary of the regional key source analyses is not included this year. It must be understood that, in order to get meaningful results from a key source analysis (and not only pinpoint errors in the emissions); the analysis should only be carried out on fully reviewed datasets, and include details on which countries are included for each pollutant and year. Unfortunately, we did not have such data available in the EMEP database at the time of writing. Parties are requested to check their individual key source analysis carefully in order to detect errors in their emissions data.

In discussions concerning the preliminary results from this test (TFEIP – Dessau May 2007) improvements proposed for this test were mainly with respect to improving the readability by including NFR category names in the key source analysis tables. It was also mentioned that the review team should aim to ensure that over 90% of the sources were covered by the sectors listed. The review team acknowledge the proposal, and would like to mention that this is already the case for most countries and pollutants. We think it is a more serious problem that some Parties report emission data so inconsistent that the sum of the key sources exceeds one hundred percent of the officially-reported national total.

3.2 COMPLETENESS

Key messages – completeness

- LRTAP: 10 Parties reported emissions data for all years or a significant amount of data for 1980 onwards (AT, FR, GB, SE, IT, DK, NO, CA, DE, CY). Seventeen parties reported full time series from 1990 onwards (the additional parties being CH, EE, IE, LV, NL, MC, and PT).
- Several Parties have never submitted regular information in the annual reporting rounds under the Convention. Efforts to improve the regularity of reporting needs to be made by AL (new party), BA, AZ, GE, IS, KZ, KG, and ME (new party).
- Reporting in the 1980s is much lower than from 1990 onwards. For the Main Pollutants reported in NFR sectors this difference is around a factor of 2.
- The current Guidelines on reporting under LRTAP make it difficult to give strong guidance on the completeness of inventory reporting. The review team welcomes the expected changes in the reporting Guidelines which will amend this.
- NECD: Submitted inventories were not always complete. (e.g. Poland and Greece did not provide final 2004 emissions and also did not report NH₃ emissions; Hungary did not report NH₃ and VOC emissions for 2005). Inventories cannot be compared if

3.2.1 LRTAP

This section discusses the completeness per Party, year and pollutant of the latest updated emissions reported under the LRTAP Convention. The Emission Reporting Guidelines under the Convention asks Parties to submit emissions for 1980-latest year (2005) for Main Pollutants, 1990-latest year for HMs and POPs and for 2000-latest year for PMs. However the requirements reflected in the pollutant specific LRTAP Protocols only request reporting from countries which have ratified the Protocol for the Protocol base year, and for the year after the entry into force of that Protocol and onwards.

The different interpretations of completeness hamper the task of giving the Parties firm messages on whether their inventory is complete or not. The intention in the draft revised reporting Guidelines are to provide a clear definition of completeness against which inventories may be reviewed. As for now, the completeness test is checking if all cells are filled in with values or notation keys other than zero for priority pollutants. Emission experts in the TFEIP in Dessau found that this test would have higher value as a notational maximum for percent of cells for which values were provided, so that the countries could rank themselves in comparison to other countries.

An overview of completeness per country, emission year, pollutant and sector from 1980-2005, 2010, 2020, 2030, for Main Pollutants and particulate matter (PM_{2.5} and PM₁₀) is presented in Appendix 2A. There is one table per pollutant and all the 51 Parties ISO2 codes to the Convention are listed on the vertical axis (a file translating the ISO2 codes to country names can be found on the EMEP web site: http://www.emep.int/grid/country_numbers.txt). In addition Serbia and Montenegro (CS) is listed together with Serbia (RS) and Montenegro (ME), which implies then 52 countries all together. On the horizontal axis of the tables are the emission years from 1980-2005, as well as projections for 2020, 2015, 2020. Analysis of the completeness of projections is out of the scope of this evaluation, however one should note that previously reported projected values do show up as emissions for 2005, if no data is reported this year e.g. for Luxembourg.

Along with the countries' ISO2 codes are listed the sectors which EMEP has emissions data available from. The NFR source categories in the present Guidelines for reporting have 102 sectors, hence for analysis purposes we have aggregated those to the SNAP 1-10 categories (these sectors are marked Sxy c, (c for converted)). Please note that officially reported data is never deleted from the EMEP database, but if Parties provide emission figures and/or notation keys of a later vintage than any other data they have submitted, tables 1 through to 7 in Appendix 2A will only show data from the most recent report.

Analysis of the sector columns shows that, for example, Macedonia (MK) and Lithuania (LT) report SO_x SNAP data, and data in the NFR categories NFR01, preceding the current NFRs. This immediately illustrates some of the challenges in working on EMEP sector data, as it is not always evident if older vintages of SNAP and NFR01 sectors are fully consistent and/or comparable to the NFR 02. We therefore concentrated our analysis on the NFR02 data (displayed as Sxy c), and only mention SNAP reporting whenever relevant. On the far right of each table there is a list of the total number of years reported for each sector. The maximum between 1980 and 2005 is 26 (i.e. 26 years), and two out of 51 Parties, Sweden and the United Kingdom, have reported all their emission data, including PMs for the years 1980-2005. Within the tables there are cells in which reporting occurs, highlighted in grey. A black line separates the reporting in the 1980s from the 1990s onwards.

When scanning quickly through the tables, it is apparent that there are large gaps in the emission data coverage, and that reporting in the 1980s is much lower than from 1990 onwards. For the Main Pollutants in NFR sectors the difference is around a factor of 2, as ten Parties reported all years (AT, FR, GB, SE) or a fair amount of data (IT, DK, NO, CA, DE, CY) in the 1980s, while an additional seven countries (CH, EE, IE, LV, NL, MC, PT) report full time series from 1990 onwards. It is interesting to note how the reporting by Party varies. Take two Parties outside Europe as an example. While Canada report the most detailed emission data in the requested format annually since 1985, the US's most recent data constitute mostly national totals.

Several Parties have never submitted regular information in the annual reporting rounds under the Convention. Efforts to improve the regularity of reporting needs to be made by Albania (new party), Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Kazakhstan, Kyrgyzstan, and Montenegro (new party), even though these Parties are only Parties to the Convention and not to any of the pollutant specific Protocols, except Iceland which has ratified the POPs Protocol.

3.2.2 NECD

Under the requirements of the NECD, Member States shall by 31 December each year, report final emissions data for the previous year but one and provisional emissions for the previous year. In the 2006 reporting cycle, 22 MS provided the obligatory 2004 final emissions (except Poland, Luxembourg, and Greece) and 24 MS (except Luxembourg) submitted 2005 preliminary emission data. Greece did not report 2005 NH₃ emissions; Hungary did not report VOC and NH₃ 2005 emissions. An overview of NECD emission inventory data (status 18 Jun 2007) is given in Appendix 1B and Appendix 2B. A more detailed description of the data submitted under the 2006 NECD reporting round is contained in the NECD Status report 2007³.

³ EEA 2007. European Community NEC Directive Status Report 2006. EEA Technical report (*In preparation*). European Environment Agency, Copenhagen.

3.3 COMPARABILITY – RECALCULATIONS

Key messages – Recalculations

The aim of this test is to identify differences between national totals reported by Parties this year compared to data reported last year. Differences larger than 10% in recalculations are flagged.

- LRTAP: The number of countries reporting data both in 2006 and in 2007 was 35 (70% of all Parties). More than half of these countries (18) recalculated some of their data in 2007, but only a third recalculated 1980s emissions (AT, DK, FR, UK, NO, SE).
- Analysing the total number of recalculations, the most frequently recalculated pollutant was NO_x , followed by CO , NMVOC, SO_x , and NH_3 . Fewest recalculations were made for PM_{10} , DIOX, TSP and HCB.
- Where the recalculation differences exceeded 10%, PAHs had the largest number of significant recalculations, followed by Cd, Pb, NMVOC, and TSP. NO_x , NH_3 and SO_x had the fewest number of significant recalculations.
- The magnitude of the reported recalculations varies between pollutants from 10% for NO_x , to more than 3000% for HCB. For NECD pollutants, the recalculations are largest NMVOC (27%) followed by NH_3 (19%), SO_2 (13%) and NO_x (10%).
- From this we can conclude that Parties appear to prioritise their inventories for Main Pollutants, by carrying out frequent, and for all but NMVOC, small percentage recalculations. Hence the accuracy of these pollutants might be considered higher than for other pollutants. However, when recalculations are performed for POPs, HMs and PMs, this leads to relatively higher numbers of large recalculations, which supports a premise about with emissions for these components having higher uncertainty levels relative to the Main Pollutants.
- There is evidence that few Parties appear to recalculate their emissions across the whole time series, even though this is essential for the evaluation of trends undertaken in EMEP, and that it is clearly stated in the Reporting guidelines that Parties are requested to do so.
- NECD: The magnitude of recalculations also provides some indication of the general uncertainty of the emissions. As far as can be judged (not complete data), the magnitude of recalculations is probably in the range of 0.5- 2% of EU-25 total emissions per pollutant.
- The results from the evaluation of LRTAP recalculations differs considerably from the one under NECD and this should be further analysed in the next annual review of emission data.

3.3.1 LRTAP

In this test, differences between national totals reported by Parties to LRTAP Convention in 2007 and 2006 are detected, and differences larger than $\pm 10\%$ are flagged. The formula used to determine the magnitude of recalculations is $(100 * [(X_{2007} - X_{2006}) / X_{2006}])$.

The recalculation analysis performed in 2006 was not as comprehensive as the one performed this year. An overview of all recalculations of official LRTAP submissions for the priority pollutants is presented in Table A3 1 in Appendix 3. Pollutants are listed on the x-axis, while countries (ISO2 codes), emission year and status of the reporting are listed on the y-axis. A

negative value indicates a decrease in emissions in 2007 relative to 2006. All countries have been provided with the results in their country specific review reports.

Table A3 1 shows the total numbers of countries that reported data both in 2006 (including late submissions) and in 2007 was 35. This is broadly the same level as in previous reviews. More than half of these countries (18) recalculated some of their data in 2007, but only a third recalculated 1980s emissions (Austria, Denmark, France, United Kingdom, Norway and Sweden). The number of recalculations made in the 1980s is around twice as low as for later years, and indicate that the uncertainty in emissions may be higher for these years than for data reported for the following decades.

The number of negative (decreases) and positive (increases) recalculations per component for *all recalculations* presented in Table A3 1 are shown in Figure 4. NO_x is the most often recalculated pollutant, followed by the other Main Pollutants, CO, NMVOC, SO_x and NH₃. These are followed by Cd, Hg, PAH, Pb, PM_{2.5}, PM₁₀, DIOX, TSP, and HCB. Altogether, there are about the same number of positive and negative recalculations. However, if we look at recalculations per component, we see that for e.g. Pb and PAH, there are quite large differences in the number of negative and positive recalculations.

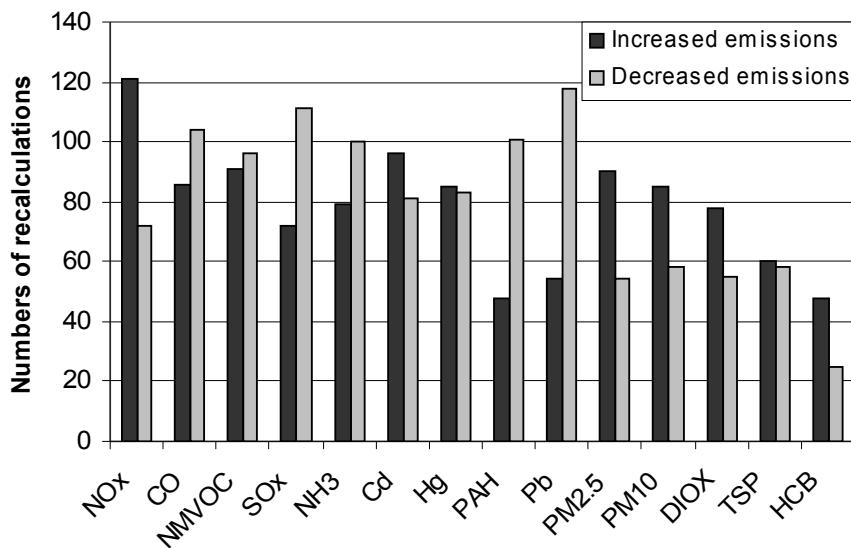


Figure 4: Number of recalculations in 2007 per component and emission decrease/increase for recalculations for all recalculations.

Focussing on the number of *recalculations larger than $\pm 10\%$* (highlighted cells in Table A3 1), we find that 77% of countries that reported data provided some relatively large recalculations. These larger recalculations more often lead to decreases in emission estimates. The number of recalculations leading to reduced emission estimates is larger by a factor of around 1.5 than the number of recalculations that led to increases. One reason for the decreases may be that countries have applied updated emission factors that reflect new knowledge on the abatement levels used within the country and no longer apply e.g. default emission factors. Two countries recalculated only the latest year (2004), possibly due to updating of their activity data by more firm statistics.

From Table A3 1 we can find the number of countries that recalculated emissions by more than 10%. One country recalculated SO_x and NO_x by more than 10%, two countries

recalculated NH₃, three countries recalculated CO, five countries recalculated HCB, six countries recalculated NMVOC, seven countries recalculated TSP, PM_{2.5} and DIOX, and eight countries recalculated PM₁₀, HMs, and PAH by more than 10%. Except for SO_x, NO_x and NH₃, this is a marked increase from the magnitude of the recalculations noted in the 2006 review (EMEP-EEA, 2006).

The numbers of recalculations larger or smaller than 10% made in 2007 for each pollutant are presented in Figure 5. For these large recalculations, PAH is the most often recalculated pollutant, followed by Cd, Pb, and NMVOC. Compared with the review results from 2006, we find that both the order of pollutants has changed considerably and the number of large recalculations exceeds those found in 2006. No significant recalculations leading to increased emissions were found for SO_x and CO, while NO_x has no large recalculations resulting in decreased reported emissions.

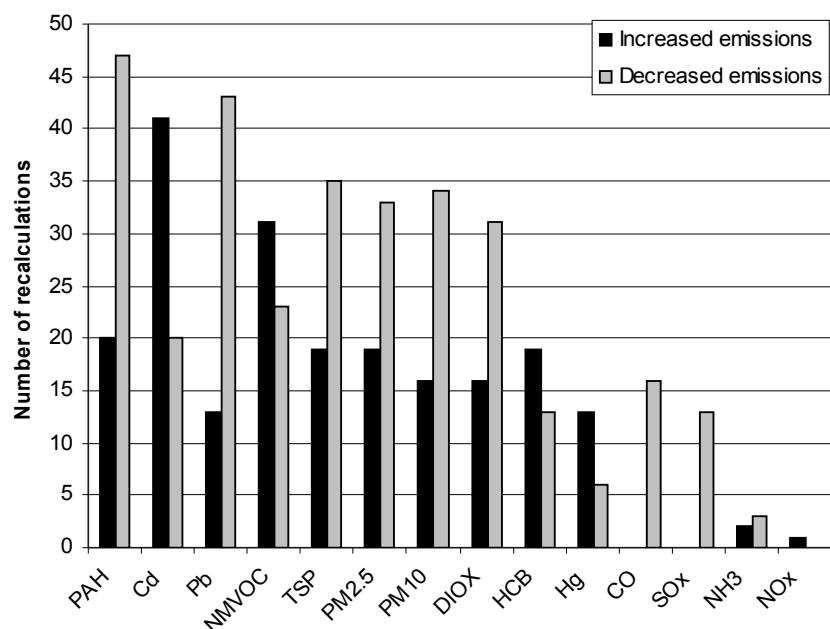


Figure 5: Number of recalculations in 2007 per component and emission decrease/increase for recalculations larger than 10% or smaller than – 10%.

From this we can conclude that Parties appear to prioritise their inventories for Main Pollutants, by carrying out frequent, and for all but NMVOC, small percentage recalculations. Hence the accuracy of these pollutants might be considered higher than for other pollutants. However, when recalculations are performed for POPS, HMS and PMs, this leads to relatively higher numbers of large recalculations, which supports a premise about emissions for these components having higher uncertainty levels relative to the Main Pollutants.

The size range of recalculations is shown in Figure 6, sorted by pollutant and pollutant groups. Recalculation close to zero is the lower boundary for all pollutants. Please note that the size of the recalculations of HMs are divided by 20 and the recalculations for DIOX and HCB are divided by 200, reflecting the much larger size of the recalculations for these pollutants. As Germany reported extremely high PAH recalculations (amounting to 30143%), for the purposes of the chart we chose to replace the German figures in Figure 6 with the average of the recalculations larger than ±10% (35%). Figure 6 shows that the magnitude of

the reported recalculations varies between pollutants from 10% for NO_x, to more than 3000% for HCB. As noted earlier, the magnitude of recalculations performed for the Main Pollutants is in general the lowest, followed by PAH, PMs, HMs, DIOX and HCB.

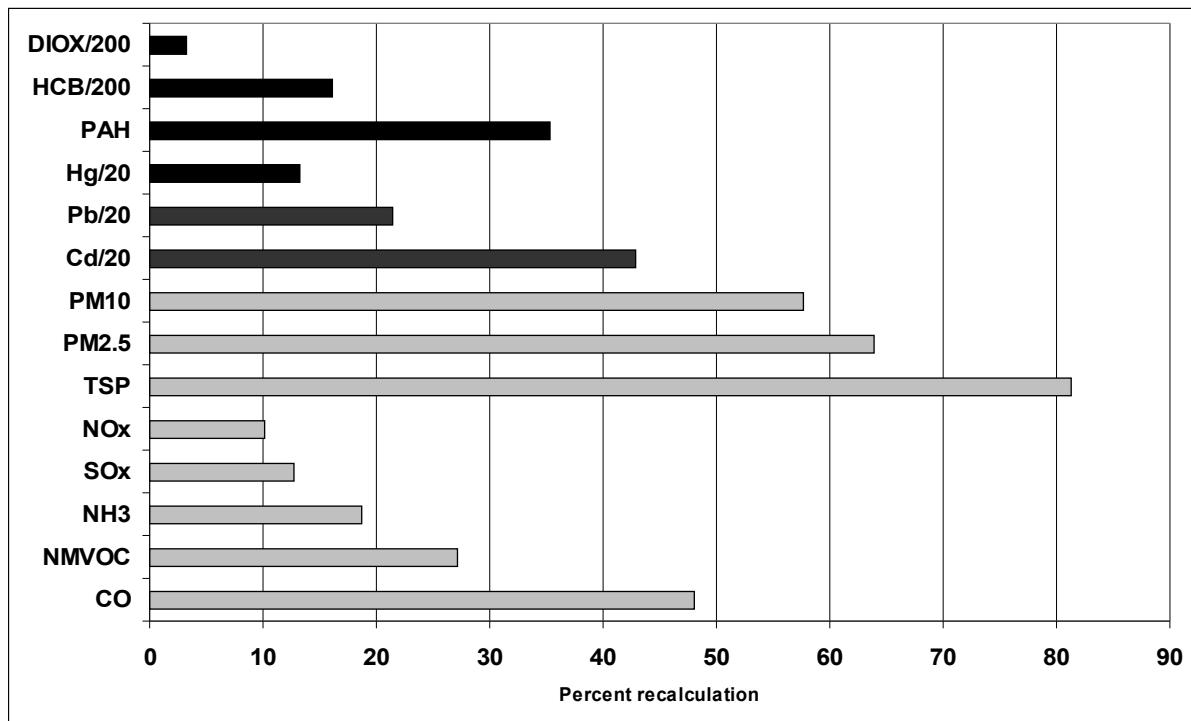


Figure 6: The size range of recalculations by pollutant (%) (/20 and /200 indicate division by 20 and 200 respectively for purposes of axis scaling).

Compared to the analyses of LRTAP recalculations performed earlier (EMEP-EEA, 2005), it should be highlighted that NO_x has replaced SO_x in having the lowest magnitude of reported recalculations. Further, NMVOC in 2007 has considerably larger recalculations than PMs, Hg and DIOX, which was not the case before. The TFEIP and the review team have focussed on highlighting the difficulties in NMVOC emission estimations, and this has seemingly resulted not only in more, but also in larger recalculations being made by Parties. The other pollutants have more or less retained their position in the ranking of recalculation size.

The *size of the recalculations varies* considerably over the time series in countries such as Germany (DE), Denmark (DK), France (FR), Latvia (LV), the Netherlands (NL), Portugal (PT) and Sweden (SE). We acknowledge that errors detected for a specific year may be the reason for some of the big jumps in the size of the recalculations shown, and that the variation seen e.g. in NMVOC emission recalculations for France, is due to recalculating emissions only for the years requested in the NMVOC Protocol (namely that emissions shall be reported for the Protocol base year and onwards). However, the main reason is that even though countries do recalculate their time series, they do not perform the recalculations in a consistent way for the whole time series as requested in the Reporting Guidelines (UNECE, 2003), but only back to 1990 or even only for the 2000s in the case of the Netherlands. In conclusion, few Parties recalculate their emissions for the whole time series, even though this is essential for the important evaluation of trends undertaken in EMEP, and that it is clearly stated in the Reporting guidelines that Parties are requested to do so.

3.3.2 NECD

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). From a country perspective, it is considered good practice to recalculate the whole times series when new information (i.e. activity or emissions 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 MS are not presently formally required to provide any explanatory information as to why recalculations have occurred, it is often not clear why MS have reported different numbers. However, it is noted that in some instances (as encouraged by the European Commission), MS have submitted an Informative Inventory Report together with their emission inventory data. The IIRs can be used to explain the details of recalculations performed.

Major NO_x recalculations in the NECD inventories occurred in France, Germany and the United Kingdom. The total effect in 2003⁴ was 175 Gg, which amounts to about 2% of total EU-25 emissions. Major VOC recalculations occurred in France, Germany and Sweden. The total effect in 2003 was 235 Gg, which almost amounts to 3% of total EU-25 emissions. Major SO₂ recalculations occurred in Germany and Spain. The total effect in 2003 was minus 32 Gg, which amounts to around 0.5% of total EU-25 emissions. Major NH₃ recalculations occurred in Denmark and Germany. The total effect in 2003 was minus 39 Gg, which amounts to less than 1% of total EU-25 emissions. The recalculation tables are included in Appendix 3B, and present the difference between data reported in 2006 and data reported in 2005.

3.4 TIME SERIES CONSISTENCY

Key messages – Time series consistency

- *This test identifies trends and sudden changes in time series data reported by countries.*
- *Time series with standard deviation greater than 0.2 were flagged, as were individual values within time series if the respective residual value (regression forecast value - reported value) was greater than 2.5 standard deviations from the mean of all residuals within the time series.*

The aim of this test was to identify instances of dips, jumps, and sudden trends in time series data reported by countries. Only data in new NFR reporting format was analysed, and data for which at least three years was reported. Flagged data are presented in country reports. Dips and jumps in the inventories were flagged for all countries providing sufficient amount of data to be analysed. Parties suggested during the TFEIP in May 2007 to improve the user friendliness of this test by providing the results in excel format.

Reported time series data were log 10-transformed prior to analysis to reduce intra-series variability and improve general time series linearity. A linear regression was applied to the log-transformed values for each time series. Time series with a large sigma (standard

⁴ EU-25 emissions in 2004 could be not estimated while complete MS submissions are not available

deviation > 0.2) have been flagged generally. An individual value within the time series was identified as a dip/jump if the residual value (regression forecast value - reported value) was greater than 2.5 standard deviations from the mean of all residuals within the time series. Only time series responsible for a significant fraction (>3%) of the national total are included.

Identified dips and jumps have been flagged at both a detailed and aggregated sector level (due to inconsistencies that occur in some cases between the reported sub sectors and aggregated sectors). A summary of the findings is not provided here, but country responses to the flagged values will be evaluated and presented during the next joint TFEIP/EIONET meeting planned for October 2007.

3.5 COMPARABILITY – INVENTORY COMPARISONS

Key messages – Inventory comparisons

- *The aim of this test is to assess comparability by comparing national totals reported under the NECD, LRTAP and the EU Monitoring Mechanism (EU-MM).*
- ***NECD vs LRTAP:***
Differences larger than 0.1% between emission data submitted under the Convention on LRTAP and under the NEC directive were found for 10 countries out of the EU-27 Member States. This is an increase by three from last year.
- ***LRTAP/NECD vs. EU Monitoring Mechanism:***
Reasons for differences between emissions reported under LRTAP/NEC and the EU Monitoring Mechanism⁵ are manifold and are mainly due to:
 - a) different reporting deadlines between the various reporting obligations,
 - b) different reporting requirements,
 - c) different QA/QC requirements and,
 - d) errors in reporting.
- *The highest number of differences identified occurred for NMVOC (18 of 27) and NO_x and CO (16 of 27), followed by SO_x (14 of 27). Differences in CO and NMVOC emissions are mainly due to differences in the memo items, and 1A3b, Transport and to errors made in reporting.*

The aim of this test is to compare national totals reported to NECD, LRTAP and the EU Monitoring Mechanism for greenhouse gases (EC, 2004) (EU-MM – under which emissions of the indirect GHGs CO, NO_x, NMVOCs and SO₂ occurs) received by 15 March (LRTAP & EU-MM), and by 1 June (NECD). Results showing the EU-27⁵ comparison performed between officially reported data to NECD-LRTAP and EU-MM for the most recent reporting year (2005) are given in Appendix 4. Differences are expressed as percentages (%). Flagged values indicate differences of greater than 0.1 % between the respective national totals.

⁵ Luxembourg and Italy did not communicate 2005 data for the LRTAP Convention, Greece submitted it too late to be included in the testing. Luxembourg did not submit NEC data in 2006.

Figure 7 shows the number of flagged values (i.e. differences >0.1 %) by pollutant and by reporting obligation. As not all emissions were reported by all countries, some differences could not be calculated (NA-not applicable). In general the number of flagged values for the comparison between LRTAP and EU-MM was higher than for the comparison between NECD and LRTAP. The lowest differences can be seen for NH₃, a pollutant that is only reported under the LRTAP Convention and the NEC Directive.

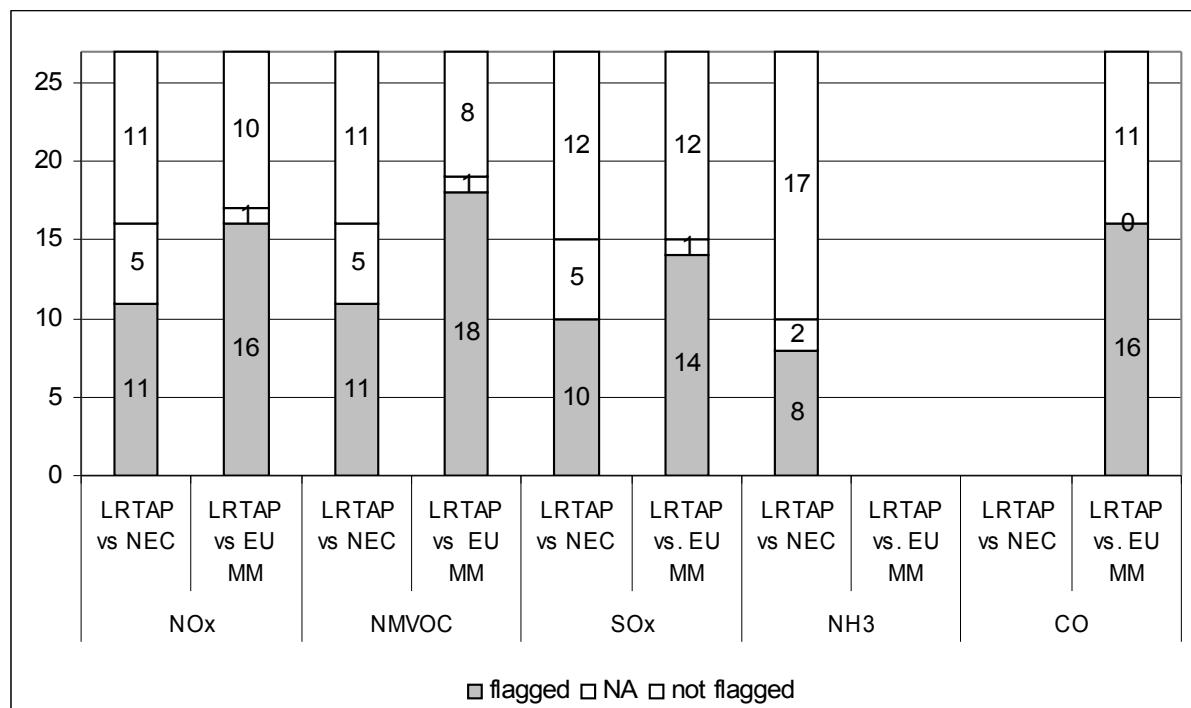


Figure 7: Overview of flagged values where reported differences between LRTAP, NECD and EU-MM inventories are >0.1% for the EU-27 Member States for 2005.

3.5.1 NECD vs. LRTAP - Comparisons of 2005 inventories

Differences larger than 0.1 % between 2005 emissions data submitted under the Convention on LRTAP and under the NEC Directive were found for 11 countries out of the twenty five EU⁶ Member States, this is four more than last year. Inventories of Greece, Luxembourg, Hungary and Italy could be not included in the test because of late or no submissions made to one or other of the reporting obligations. An overview of all inventory comparisons is given in Appendix 4. Differences occurred most frequently for NMVOC, followed by NO_x, SO_x and NH₃. Between 11 (NMVOC) and 17 (NH₃) EU-27 Member States showed comparisons of LRTAP and NECD resulted in differences smaller than 0.1% (not flagged).

3.5.2 LRTAP vs. EU Monitoring Mechanism - Comparisons of 2005 inventories

Differences larger than 0.1 % between emissions data submitted under the LRTAP Convention and under the EU-MM in the respective 2005 inventories were found for 18 of the EU-27 Member States. Inventories for Malta⁷, Luxembourg, Italy and Greece could be not compared because of a late response or no submission. Differences occurred most frequently for NMVOC, followed by NO_x, CO, and SO_x. Only 5 countries had no flagged values (Austria, Denmark, Greece, Sweden, and Slovenia.).

⁶ The new EU MS Bulgaria and Romania were not obliged to report under NECD in 2006.

⁷ Not submitted CRF tables 2005

3.5.3 LRTAP vs. EU Monitoring Mechanism - Comparison of time series

This test compared the updated national totals submitted under LRTAP with national totals submitted under EU-MM. Only inventories available in NFR tables could be included in comparisons. Detailed tables are provided in Appendix . Table 3-1 and Table 3-2 provide an overview of findings. Highlighted cells indicate where differences in the reported national totals were higher than 1 % (in one or more years) between the reporting obligations. Only four countries had differences <1% for all compared inventories.

Table 3-1. Overview of differences between the LRTAP inventories and inventories submitted under EU-MM, period 1990-2005.

LRTAP-EU-MM; difference in intervals [%]						
	Years	NO _x	SO _x	NM VOC	CO	Comment
Austria	1990-2005	0	0	0	0	
Belgium	1990-95, 2000-05	<5, 9>	2; 22	9; 42	1; 4	
Bulgaria	2001-04	31; 41	38; 46	48; 52	-16;-7	
Cyprus	1990-2004	-51,-8	-9 ,+29	-9; +2	-22; +7.2	CRF 2005 missing
Czech R.	2001-05	-19; -0.1	-17; -3	-8; +0.1	-4; +0.4	
Denmark	1990-2005	0	0	0	0	
Estonia	1990-2005	-44; -9	-27; +18	28; 54	-96; -17	
Finland	2001-05	-0.4; + 0.99	0.7; 4.7	-3; -5	-9.9; 0.8	
France	1990-2005	-0.5; +0.9	-5; -9	-44; -83	-18; -67	
Germany	1990-2005	2.4; 2.6	0.2>	-0.4; +0.2	-15, -3.7	
Greece	NA	NA	NA	NA	NA	data for comparisons NA
Hungary	2002-05	-17.3,+ 0.01	-0.1; +7.5	-9; +0.9	-15; -0.1	
Ireland	90-2005	1.5; 2.5	1.1; 2.3	3.4; 6	-0.1; 0.2	
Italy	1990-2005	-1.6; -0.1	0.1>	-8; -12	0.4>	
Latvia	1990-2004	0.1>	0.1>	0.1>	0	
Lithuania	2000-05	3.3 ;7.9	0.6; 2.7	-2.6; +16	3.3; 11	
Luxembourg	NA	NA	NA	NA	NA	data for comparisons NA
Netherlands	1990-2005	-0.2; +16	-0.4; +9	-0.4; +4	-4.4; +21	
Malta	NA	NA	NA	NA	NA	data for comparisons NA
Poland	2001-05	-1.6; +50	0.3; +70	-0.8; +37	-0.1; -25	
Portugal	1990-05	-3.8; 4.9	-31; -0.8	-1074; +36	-0.1; 0.3	
Romania	NA	NA	NA	NA	NA	data for comparisons NA
Slovakia	2000-2005	0	0	-4.49	0	only in 2002
Slovenia	2000-2005	-1.8	0.1>	0	3.5>	
Spain	NA	NA	NA	NA	NA	not submitted inventories
Sweden	1990-2005	-0.1>	0	0	0	
UK	90-2005	0.2>	0.5>	0.1>	0	

3.5.4 NECD vs. EU Monitoring Mechanism - Comparison of time series

In this test we compared updated national totals submitted under NECD with national totals submitted under EU-MM. For known reasons, the emissions reported under the NECD and the EU-MM for Austria, Ireland, France, Portugal, and Spain should be not the same. Austria and Ireland report NECD emissions excluding fuel tourism, and for France, Portugal and Spain the geographical coverage under the NECD and LRTAP is not the same as under the EU-MM. Cells are highlighted where estimated differences were higher than 1 % (for one or more years). Only two countries had differences <1% for all compared inventories.

Table 3-2. Overview of differences between the NECD inventories and inventories submitted under the EU-MM, period 1990-2005

NECD:EU-MM; difference in intervals [%]					
	Years	NO _x	NMVOC	SO ₂	Comment
Austria	1990-2005	-41.4 ; +4.4	-2.8 ; +0.1	-2.4 ; +0.8	NECD without fuel tourism
Belgium	1990-95, 2000-05	5.4; 8.8	10.5; 42	1.4 ; 13.7	
Bulgaria	NA	NA	NA	NA	no NECD reporting obligation for 2006
Cyprus	1990-2004	-33 ; -0.7	-9.8 ; +1.9	-22.9 ; +7.14	differences in NO _x and NMVOC are gradually decreasing
Czech R.	2000-2005	-36.1 ; -0.6	-14.62; -0.9	17.9; -0.3	differences in NO _x and NMVOC are gradually decreasing
Denmark	1990-2005	-1.8 ; -7.0	0.2 ; -2	-2.8 ; +0.6	
Estonia	1990-2005	-43 ; -9.5	+30 ; +50	-91 ; -8.8	differences in NO _x and NMVOC are gradually decreasing
Finland	2001-05	0.75 ; 2.1	-5 ; -2.8	-9.6 ; +0.1	
France	1990-2005	-0.59 ; +0.7	-44 ; -83	-1.89 ; -6.8	differences in NMVOC are gradually increasing
Germany	1990-2005	-0.08 ; -2.56	-0.44 ; +0.14	-4.3 ; +2.7	NO _x - larger differences in period 90-97
Greece	1990-2004	+6.1 ; +7.4	-0.02 ; -19.9	-3.57 ; +3.1	2005 no CRF tables
Hungary	2003-2005	-17 ; +1.2	-9.4 ; -0.4	-0.1 ; +28.8	
Ireland	2001-2005	-7.7 ; -6.0	4.7; 5.8	-0.56, 0.05	NECD without fuel tourism
Italy	1990-2005	-1.6 ; +1.36	-5.6 ; -12.9	-0.3 ; +7.22	
Latvia	1990-2004	-0.8 ; +2.1	+1.1; +2.9	-3.78; +4.1	
Lithuania	2000-05	+3.3 ; +8	+0.03 ; +16	+3.4; +11	
Luxembourg	n	n	n	n	
Netherlands	2001-2005	- 3.8; +4.6	-16.1 ; +0.71	-2.2 ;+17.6	
Malta	n	n	n	n	CRF tables not submitted
Poland	2003 ;2005	53.2 ; 0	5.06 ; 0	25.9; 0	
Portugal	1990-2005	-3.8 ; +3.8	-134 ;+ 143	-1.53 ; +0.34	
Romania	NA	NA	NA	NA	no NECD reporting obligation for 2006
Slovakia	2003-2005	0		0	
Slovenia	2000-2005	-0.6 ; +0.4	0 ; 10.7	-0.2; 0	
Spain	1990-2005	0	0	0	
Sweden	1990-2005	0	0	0	
UK	2001-2005	-25.4 ; 0.62	20.57 ; 0.14	-4.31 ; 0	the large difference only in 2005

3.5.5 Data comparison conclusions

Performing a comparison of national totals from different inventory submissions is relatively simple and immediately shows potential inconsistencies between inventories.

The reasons for differences between emissions reported under LRTAP/NECD and the EU Monitoring Mechanism are manifold and are mainly due to differences in a) deadlines, b) reporting requirements, c) QA/QC requirements and d) errors.

a) Deadlines

One reason for the observed differences may lie in the respective submission dates. NECD data has to be submitted earlier than LRTAP or EU-MM data, and hence LRTAP data is probably more complete and more extensively checked.

b) Different reporting requirements

The three reporting obligations differ mainly in the geographical coverage of countries (e.g. for France, Spain, Portugal), and in the emissions that are included within the national total of one reporting obligation, but not the other. This relates mainly to e.g. the inclusion or exclusion of domestic and international aviation and navigation in the national total, but also to differences in the Land Use, Land Use Change and Forestry (LULUCF) sector. Additionally, emissions from road transport reported under the EU Monitoring Mechanism have to be calculated based on the amount of fuel sold, whereas emissions reported under LRTAP/NECD may be calculated based on the amount of fuel either sold or used. The major differences in reporting obligations are summarised in Table 3-3.

Table 3-3. Major differences between the reporting obligations under LRTAP, NECD and the EU Monitoring Mechanism.

	LRTAP (NFR)	NECD	EU-MM (CRF)
Domestic aviation (LTO)	Included in national total	Included in national total	Included in national total
Domestic aviation (Cruise)	Included in national total	Not included in national total	Included in national total
International aviation (LTO)	Not included in national total	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 navigation on rivers	Not included in national total	Included in national total	Not included in national total
International marine	Not included in national total	Not included in national total	Not included in national total
Road transport	Calculations based on fuel sold or used	Calculations based on fuel sold or used	Calculations based on fuel sold

c) Different QA/QC requirements

The reporting of NO_x, SO₂, NMVOC and CO under UNFCCC is a “should” requirement for countries. Parties have confirmed that the quality checks of these emissions are often not as extensive as those performed on data reported to LRTAP.

d) Errors

Another reason might be errors occurring during transfer of data to the different types of tables required under different reporting requirements.

To assist MS in increasing the consistency of reporting, and limit the burden on national experts, reporting formats (LRTAP NFR tables) could be slightly modified (by adding a row) to enable provision of national totals for NECD side by side with national totals for LRTAP emission totals.

Possibilities for further streamlining and harmonisation of emission reporting, especially with the UNFCCC and the European Community greenhouse gas monitoring mechanism should also be explored.

3.6 COMPARABILITY – CROSS POLLUTANT TESTS

Key messages – Cross pollutant tests

The aim of this test is check the comparability of pollutants emitted from the same sectors and activities. Countries were grouped in five groups (EU-15, EU-12, non-EU West, non-EU East and North America/Canada) in order to present the synthesis of this test.

- **EU-15:** The Swedish ratios for fuel combustion for PM_{10}/Pb , PM_{10}/Cd and PM_{10}/Hg are considerably higher than the average ratios for EU-15. Sweden speculates that one contributing factor could be their high emission factors for particulate matter for small-scale combustion of biomass, and that those probably should be revised downwards. The ratios comparing particulate matter emissions agree very well except for Belgium, where the TSP to $PM_{2.5}$ and PM_{10} are much higher than for all the other EU countries. Results show that there is a lack of reporting of NMVOC and NH_3 from Landfills
- **Non-EU West:** The ratios calculated are comparable to the EU-15 except for the very high PM_{10}/HMs ratios for Norway.
- **EU-12:** Latvia report very low HM emissions from fuel combustion compared to the other Balkan countries. Three countries are flagged as either having potentially too high (Estonia) or too low (Cyprus and Hungary) ratios for Transport NH_3/N_2O .
- **Non-EU East:** The Transport NO_x to NMVOC and CO are lower than for EU-12 countries. The test suggest that Ukraine, Moldova and Russia have incomplete and/or inconsistent PM inventories.
- **Canada:** All ratios are considerably lower (factor 2-5) than for the EU 15, except for the TSP to PM_{10} or $PM_{2.5}$ ratios, which are a factor 2-6 higher.

The cross pollutant check was designed to check the comparability of pollutants emitted from the same sectors and activities. The rationale behind the tests are described in Table 3-4.

Table 3-4. Overview of reasons for the selection of pollutant ratios

Sector	Ratio	Background
National totals	TSP : PM2.5, PM10	
Fuel combustion	TSP : PM2.5, PM10	
Pollutant ratios	were calculated for the following sectors: Fuel combustion (sum of all NFR PM10 : Pb, Cd, Hg)	
Fuel combustion	HM are part of PM10	
Transport (A-sectors), Transport (B/C/D), Transport (A3bii)	NO _x :NMVOC, NO _x :CO, PM2.5: NO _x , NH ₃ :N ₂ O, A3biv	Passenger cars, A3bii Constant ratio in exhaust gas heavy duty vehicles, A3biv mopeds and motorcycles, A3biv
Transport	NH ₃ :N ₂ O, A3biv	Constant ratio due to catalyst
Agriculture (sum of NO _x , NH ₃ , CO ₂)	NO _x :NH ₃ , NO _x :CO ₂	Microbial activity
Agriculture	(B and D), Landfills	and for National Totals.
Landfills	NMVOC, NH ₃ , CO	Constant ratio in landfill gas

The results from the cross pollutant test are presented in Tables A5 1-A5 5 in [Appendix 5](#). The countries are grouped in five groups (EU-15, EU-12, non-EU West, non-EU East and North America/Canada/EU) depending on their location and status with respect to the European Union. An average pollutant ratio was subsequently calculated for each country group, and individual country pollutant ratios flagged if they exceeded the average pollutant ratio for the respective country region by a factor of more than 5 or by a factor of less than 0.2. The highest value per group and ratio type is also flagged for EU-15, and EU-12. For the other groups, the number of ratios which could be compared was too low.

Results for the *EU-15 countries* are shown in Table A5 1. In the *Transport sector*, the ratios calculated for NO_x/NMVOC and NO_x/CO do not show very large variation, hence there are no outliers identified. Both ratios are highest for Austria, and they responded to the review last year that NO_x/NMVOC and NO_x/CO ratios are comparatively high because NO_x emissions from heavy duty vehicles are estimated to be higher compared to estimates from other countries. Further, their estimates are based on measurements in real driving situations which have shown to result in higher NO_x emissions than on the test bench.

Due to a computational error, the NO_x to PM_{2.5} emissions were calculated based on total transport emissions, and not only those which stem from exhaust emissions, and as Germany noted in their response to the review, the comparison of NO_x and the PM fraction in an aggregated sector does not make sense due to the different emission factors and the different methods to estimate these emission factors (combustion vs. brake abrasion).

No outliers were identified for either the *Transport* or *Agriculture* NH₃/N₂O ratios in the EU-15. The Swedish ratios for fuel combustion for PM₁₀/Pb, PM₁₀/Cd and PM₁₀/Hg are considerably higher than the average ratios for EU-15. Sweden speculates that one contributing factor could be their high emission factors for particulate matter for small-scale combustion of biomass, and that those probably should be revised downwards.

The ratios comparing *particulate matter* emissions agree very well except for Belgium, where the TSP to PM_{2.5} and PM₁₀ are much higher than for all the other EU countries. We compared their PM emission inventory with the inventory from the Netherlands, and found that while the Belgian PM_{2.5} and PM₁₀ are comparable to the emissions in the Netherlands, the TSP emissions are a factor of 2 higher. Hence we recommend that Belgium revisit their TSP inventory to find areas for quality improvement.

Results show that only five countries report sufficient amount of data to calculate the NMVOC/NH₃ test for *Landfills*, hence the flagging of high and low ratios cannot really be applied. Sector 6A is not a key source for any of these pollutants, and most countries report that they have not estimated (NE) either NMVOC or NH₃ from this sector. Belgium, the

Czech Republic, Estonia, Finland, the Netherlands, Slovakia, Spain and the Ukraine report only NMVOC, while Belarus, Hungary and Malta only report NH₃. The ratios are the same as last year for the countries for which the test could be performed. Emissions reported are generally low, but we can conclude that there is an under reporting of emissions from this sector. Austria's response to the review last year could perhaps encourage other countries with sufficient resource to consider (re)calculating their emission estimates in this sector, even though the parameters used by Austria are based on local conditions. Austria replied that Landfill gas formation was calculated using the IPCC Tier 2 methodology, landfill gas composition is taken from a national study: NMVOC=300 mg/Nm³ and NH₃=10 mg/Nm³.

The variability in emission ratios for the *EU-12 countries* (Table A5 2) is apparently larger than for the EU-15, since so many of the PM to HM ratios are flagged. This is due to a factor 10-100 higher PM/HM ratios in Latvia in the fuel combustion sector. Latvia report very low HM emissions from fuel combustion compared to the other Balkan countries, and we recommend that they re-evaluate their estimation of priority HM emissions in particular, as they indicated themselves in their reply to the 2006 Stage 2 review.

Three EU-12 countries are flagged as either having potentially too high (Estonia) or too low (Cyprus and Hungary) ratios for *Transport* NH₃/N₂O. Estonia has a ratio more than 20 times higher than most other EU-12 countries (which consequently makes the EU-12 average three times higher than for the EU-15). Likewise a 5 times higher ratio for Transport NO_x/PM_{2.5} in Cyprus, increases the EU-12 average to a factor 1.5 higher than the EU-15 average. For other sectors and pollutants, the ratios between EU-12 and EU-15 are comparable.

For the other groups of countries (non-EU West, non-EU East, and North America) the number of countries is too low, either due to lack of reporting emissions values or because there are too few countries in the group to allow flagging of ratios. However a few conclusions can still be drawn.

The ratios calculated for the *non-EU West* countries (Table A5 3), are comparable to the EU-15 except for the very high PM₁₀/HMs ratios for Norway. These high values are explained by the more extensive use of older stoves for heating (burning of wood), than most other countries. The *Transport* NO_x to NMVOC and CO are lower than for EU-12 for most *non-EU East* countries (Table A5 4). The high ratio in the Transport NO_x/PM_{2.5} for Ukraine and unrealistic values for other ratios including PMs, are due to an incomplete PM inventory in Ukraine. Moldova and Russia also seem to have potentially incomplete and/or inconsistent PM inventories. The challenges of establishing high quality PM inventories in the Eastern Europe, Caucasus and Central Asia (EECCA) countries are long acknowledged. Belarusian emission experts have contributed to this report with an in-depth evaluation of PM inventories in the EECCA countries (Chapter 7).

In the last country group including *Canada, North America and EU* (Table A5 5), only Canada reported emissions to allow cross pollutant testing. All ratios are considerably lower (factor 2-5) than for the EU-15, except for the TSP to PM₁₀ or PM_{2.5} ratios, which are a factor 2-6 higher. We did not find a good explanation for this other than differences in pollution legislation.

During the discussions at the TFEIP meeting in Dessau (May 2007), the Expert Panels (EP) discussed the rationale and usefulness of the cross pollutant test, and concluded that these tests do not provide added value over the Implied Emission Factor test (IEF). In addition, the scientific rationale behind the selection of ratios would be difficult to provide. It was

recommended to consider using emission ratios for other pollutants instead of the current emission ratio tests, and also to include CO₂, population, GDP, energy balance, etc. as indicators. More specifically, CO₂ could be included as an indicator within the Combustion in energy and transformation sector and emissions of NO_x/CO₂, NO_x/CO₂ and VOC/CO emission ratios for the Non-industrial combustion plants, VOC/Population for Solvent use, and VOC/Population and VOC/Gasoline consumption in sector Extraction and distribution of fossil fuels.

It was also highlighted that many countries use COPERT so the test should not necessary in those instances. However, more important is that countries include in their IIR the methods used to calculate transport emissions, because the input parameters may vary from COPERT. It was noted that if the test was performed for EU15 and EU12, this could perhaps tell something about the differing ages of the vehicles.

The review team acknowledges the advice from the EPs, and will look for other ways of reviewing the LRTAP and NECD inventories' comparability, in particular strengthening of the IEF test to be applied to all LRTAP countries. On the other hand, our analysis indicates that some sort of cross pollutant checking of emissions can be a powerful tool in flagging potential inventory problems, such as incompleteness and errors. It is however understood that the test cannot directly pinpoint if the emission factors are reasonable or not.

3.7 CONSISTENCY – IMPLIED EMISSION FACTORS

Key messages – Consistency: Implied emission factors

The objective of the implied emission factors (IEF) test was to identify significant changes of IEFs within timeseries and/or between countries. Implied emission factors were calculated for the sectors identified as key sources for Western and Eastern European countries for the year 2004 and for the main air pollutants;

- Within the EU-15, 338 Implied Emission Factors (IEFs) were checked for CLRTAP and 394 IEFs for NECD inventories, which led to the identification of 28 and 23 outliers respectively. Within the EU-12, 156 and 249 IEFs were checked and 36 and 50 outliers flagged respectively. Comparison of test results between this year and last year indicates that the number of outliers in the EU-15 has generally decreased compared to the 2006 submissions. It must be noted that completeness of submissions differs amongst countries and fewer identified outliers in the national data does not automatically indicate better quality of inventories.
- The detected outliers were classed into two different types of outliers: ‘Time Series’ refers to unusual dips and jumps within the time series of one country. ‘Comparability’ refers to outliers across countries, e.g. the IEF of one country is several times higher than the IEF of the other countries. More than two thirds of the outliers detected concerned inconsistencies in times series, for both LRTAP and NECD.
- In the EU-15 the number of outliers identified in 2007 was lower compared to the previous year for all countries except Belgium. The opposite is true for the EU-12 where the number of detected outliers increased in 2007. However, this is probably due to the increased reporting of data
- Not all parties which submitted CLRTAP inventories could be included in the testing, because CRF tables with the required data (activity data) were available only for EU Member states. From a technical viewpoint, in the future all countries with completed UNFCCC CRF tables could be tested, but that would require additional resources to be allocated for this task.
- From the feedback received during the TFEIP meeting in Dessau (May 2007) it can be concluded that the 2007 IEF test outcomes are useful for national experts and assist countries in improving their national inventories.

Implied emission factor (IEF) tests were calculated from submissions under LRTAP and under the NEC Directive for the sectors identified as key sources for Western and Eastern European Countries in 2004⁸. The pollutants examined are NH₃, NMVOC, NO_x and SO_x for NECD tests, and NO_x, CO, NMVOC and SO_x for LRTAP tests.

IEF values were derived from:

- a) emission data reported by Parties to the LRTAP convention and/or under NECD and

⁸ The Key sources change minimally over time. Using the same key sources in tests enables comparisons to be made across different reporting years.

b) sectoral activity data reported to the European Commission under the EU-MM.

Only inventories submitted by EU Member States could be tested due to the use of EU-MM activity data⁹. The IEFs were analysed with the UNFCCC outlier tool. We apologize that despite extensive reporting of activity data under the LRTAP Convention this year, we have not been able to perform the Implied Emission Factor test using reported 2005 LRTAP activity data. When the new Guidelines for Estimating and Reporting Emission data have been endorsed, the scope is clearly to use the activity data submitted under the LRTAP Convention.

The outlier tool flags the values that show a change of more than 10% compared with the previous and following years and also flags obvious outliers across countries. However at this point these seem to be rather sensitive criteria, as many points are flagged. The results of the outlier tool were therefore evaluated manually. Dips and jumps of more than 40% were listed and sent to the countries for consideration.

It should be clearly recognised that flagged IEF values are not necessarily themselves indicative of any underlying inconsistency in an inventory: dips and jumps within time series might simply be due to industries having closed or to changes in the fuel splits in a single year etc. Differences across countries might similarly be due to different types of activity data used for calculation, use of different abatement equipment, different fuel splits etc.

Examples of IEFs that have been flagged are shown in Figure 8 for outliers within the IEF time series. In this example whereas the left figure might indicate a real change in the IEF value occurring, the outlier on the right example is initially considered potentially suspect.

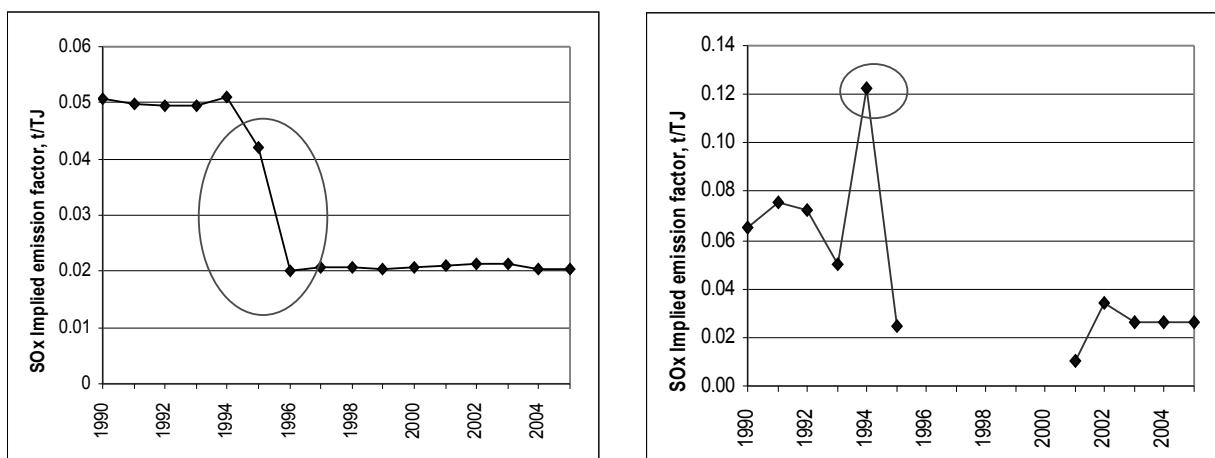


Figure 8: Example of IEF analysis showing data points that would be flagged as an outlier in the time series 1990-2005 (SO_x, 1A3d Navigation and 1A2c Chemicals)

Figure 9 flags outliers across countries. Whereas in the left hand chart only one number in the country is out of the average range which most likely indicates an error, the other chart shows that EF in the whole time series are out of the range which might either be an error or be correct, indicating that country used other methods or activity data.

⁹ In the future all countries which provide inventories in CRF format could be included in this test, but more resources will have to be allocated to this task.

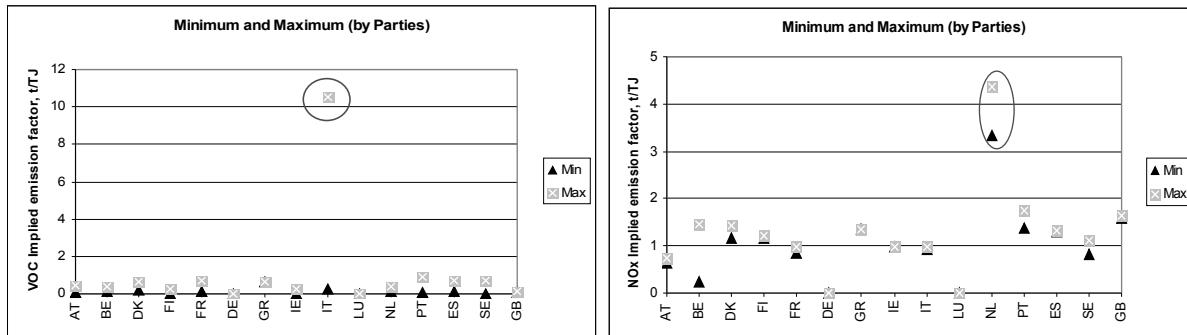
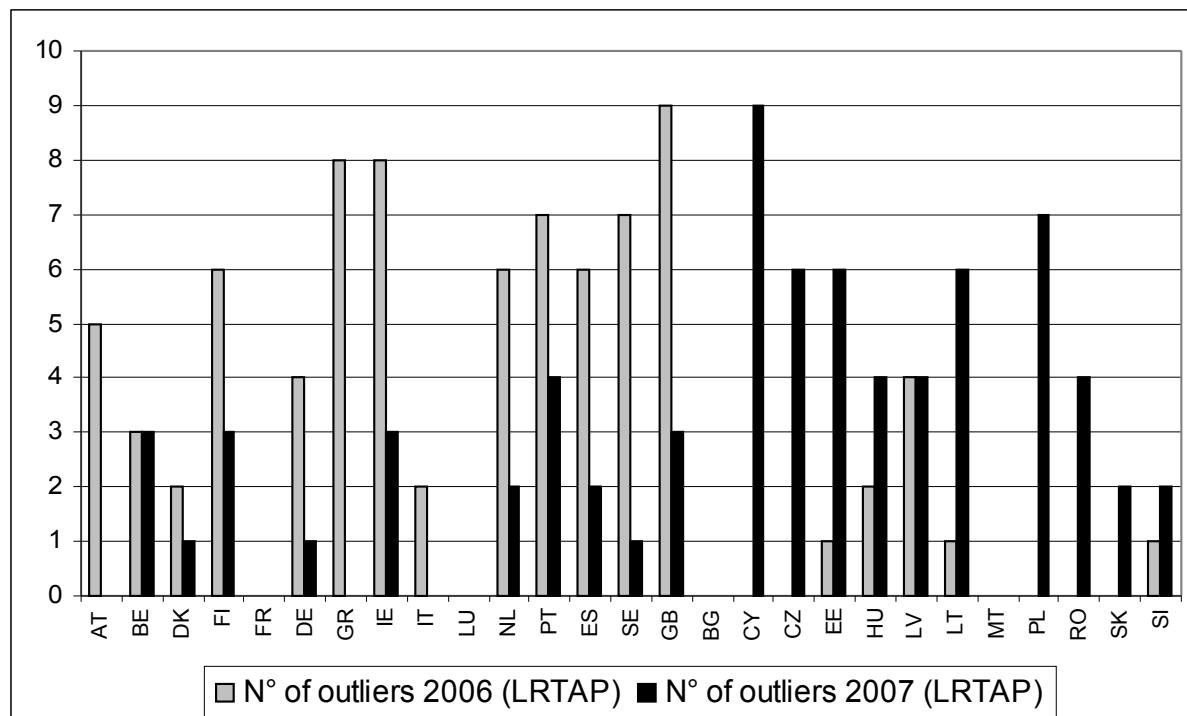


Figure 9: Examples of IEF analysis showing data points that would be flagged as outliers. The figure presents the highest and lowest IEF 1990- 2005 for each country 1990-2005 (VOC, 1A3b Road transportation) and (SO_x 1A3d Navigation)

In the EU-15 the number of outliers identified in 2007 was lower compared to the previous year for all countries except Belgium. The opposite is true for the EU-12 where the number of detected outliers increased in 2007. However, this is probably due to the increased reporting of data (Figure 10).



Note: Luxembourg did not submit LRTAP or NECD inventories

Figure 10: comparison of Number of Outliers identified during 2006 and 2007 review

The detected outliers were allocated to two different categories: ‘Time Series’ refers to unusual dips and jumps within the time series of one country; ‘Comparability’ refers to outliers across countries e.g. the IEF of one country is several times higher than the IEF of other countries. The following graphs show that more than two thirds of outliers detected concern inconsistencies in times series, this applies to LRTAP and NECD.

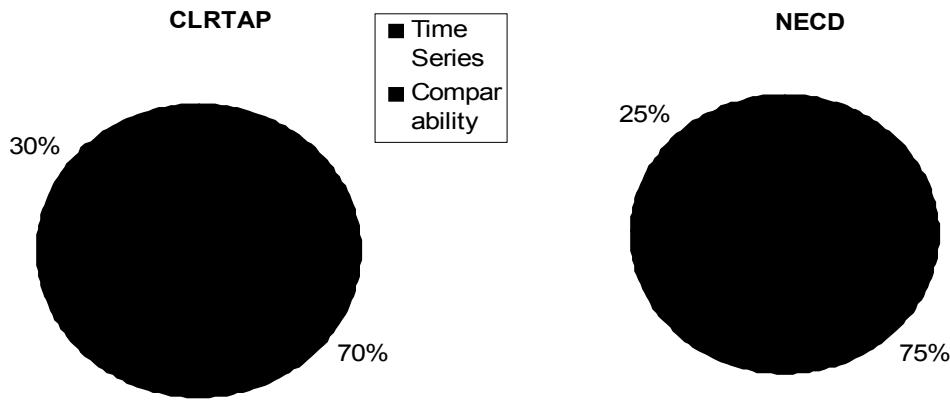
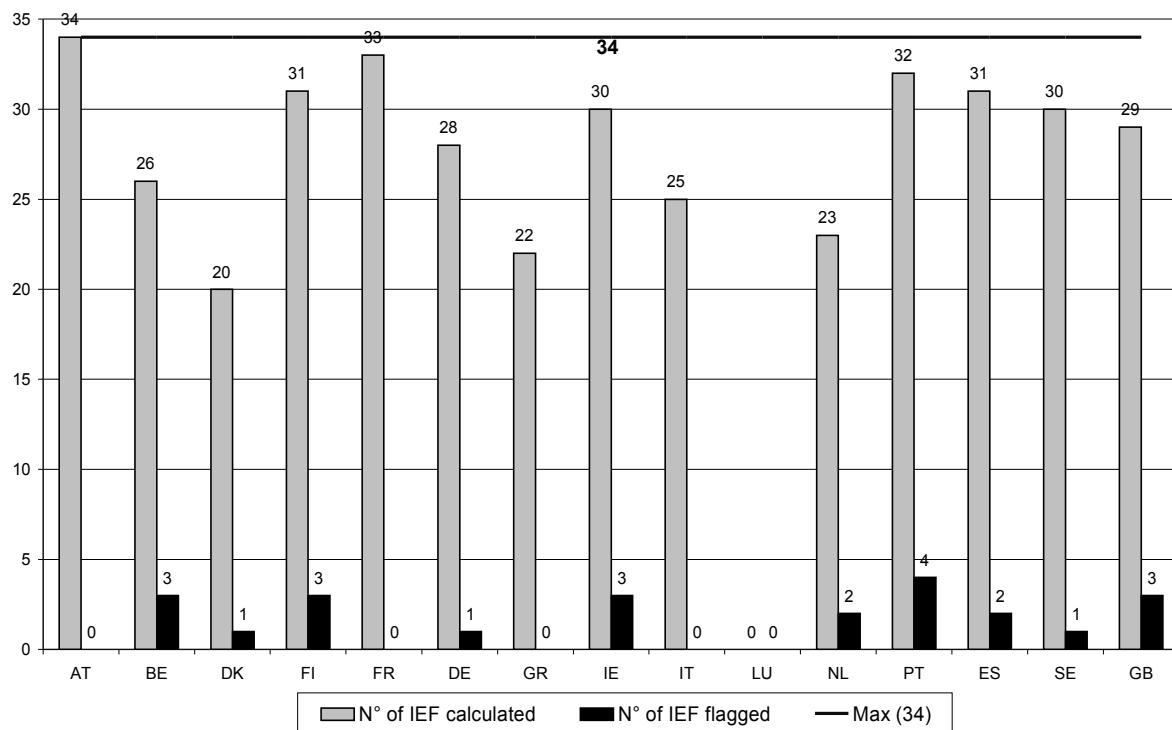


Figure 11: Flagged IEF concerning Time Series Consistency or Comparability for LRTAP and NECD

LRTAP

The following figures show the number of IEF tests undertaken for each country and how many of these resulted in the identification of an outlier. A maximum of 34 for EU-15 and 32 for EU-12 tests could have been undertaken if emission data and activity data were available at least for one year. For many countries only several years of emission data is available and not the whole time series from 1990-2005. For all EU-15 Member States except Luxembourg more than 20 tests provided usable results and made the identification of outliers possible. As can be seen from Figure 12, the number of outliers identified is very low and ranges between 0 and 4. For Austria, France, Greece and Italy no outliers were detected.



Note: Luxembourg did not submit LRTAP and NECD inventories

Figure 12: Number of IEF analysis undertaken for LRTAP inventory and number of flagged IEFs identified per EU-15 MS

Figure 13 shows the same analysis performed for the EU-12 Member States. It can be seen that the number of tests undertaken are at about the same level as for the EU-15, although the number of outliers detected is somewhat higher and ranges between 2 and 9. It was not possible to calculate IEFs for Bulgaria and Malta due to lack of data.

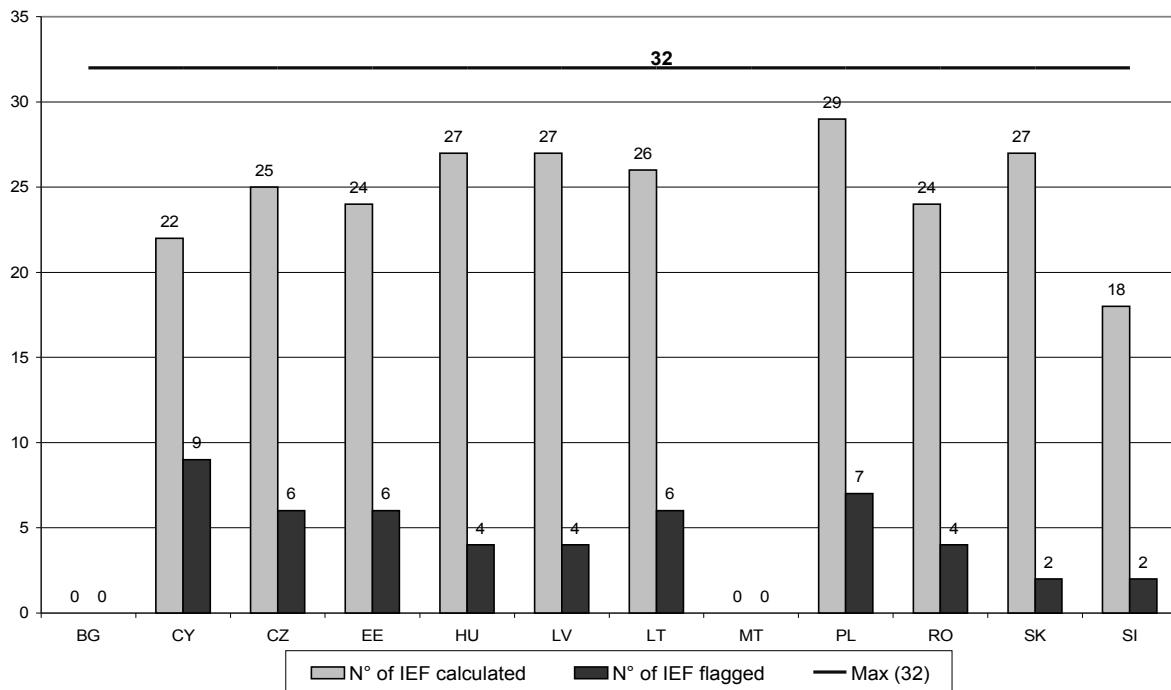


Figure 13: Number of IEF analysis undertaken for LRTAP and number of flagged IEFs identified per EU-12 MS

The following table (Table 3-5) shows that most outliers are found within the Energy Sector. Fewer outliers occurred in the Agriculture, Waste and Solvents sectors, but it must be taken into account that for these sectors the number of tests undertaken is much lower. It can be seen that in Western Countries most outliers are to be found in CO IEFs, whereas in Eastern Countries this is not the case. The other difference between Western and Eastern Countries are the categories where outliers were found.

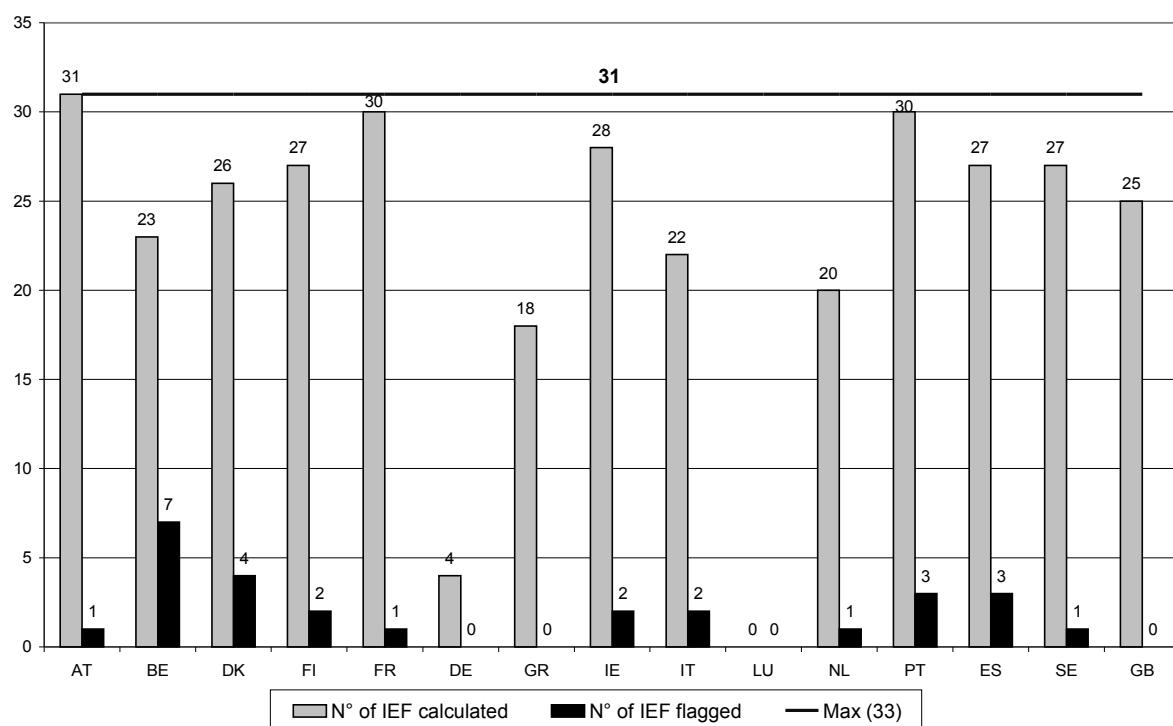
Table 3-5. List of LRTAP source categories where most outliers were identified

EU-15			EU-12		
Source category	Pollutant	Nº of outliers	Source category	Pollutant	Nº of outliers
6C Waste Incineration	CO	4	1A3b Road Transportation	SO _x	4
1A1a Public Electricity and Heat Production	CO	3	1A2 Manufacturing Industries and Construction	VOC	3
1A2a Iron and Steel	SO _x	3	3B Degreasing and Dry Cleaning	VOC	3
1A2a Iron and Steel	CO	2	1A4c Agriculture/Forestry/Fishing	NO _x	3
			1A1c manufacture of Solid Fuels and Other Energy Industries	SO _x	3
			1A3c Railways	NO _x	3

3.7.1 NECD

The following figures show the number of IEF tests which have been undertaken for each country and how many of them resulted in the identification of an outlier. A maximum of 31 tests could have been undertaken if emission data and activity data was available at least for one year. For many countries only several years of emission data is available and not the whole time series from 1990-2005.

For all EU-15 Member States except Germany and Luxembourg more than half of the tests provided usable results and made the identification of outliers possible. As can be seen from the chart (Figure 12), the number of outliers identified ranges between 0 and 7, which is rather low as a fraction of the total number of comparisons able to be performed.



Note: Luxembourg did not submit LRTAP and NECD inventories.

Figure 14: Number of IEF analysis undertaken for NECD and number of flagged IEFs identified per EU-15 MS

Figure 15 shows the same analysis but for the EU-12. It can be seen that number of tests undertaken is generally lower (around 20) and the number of outliers identified ranges from 2 to 8.

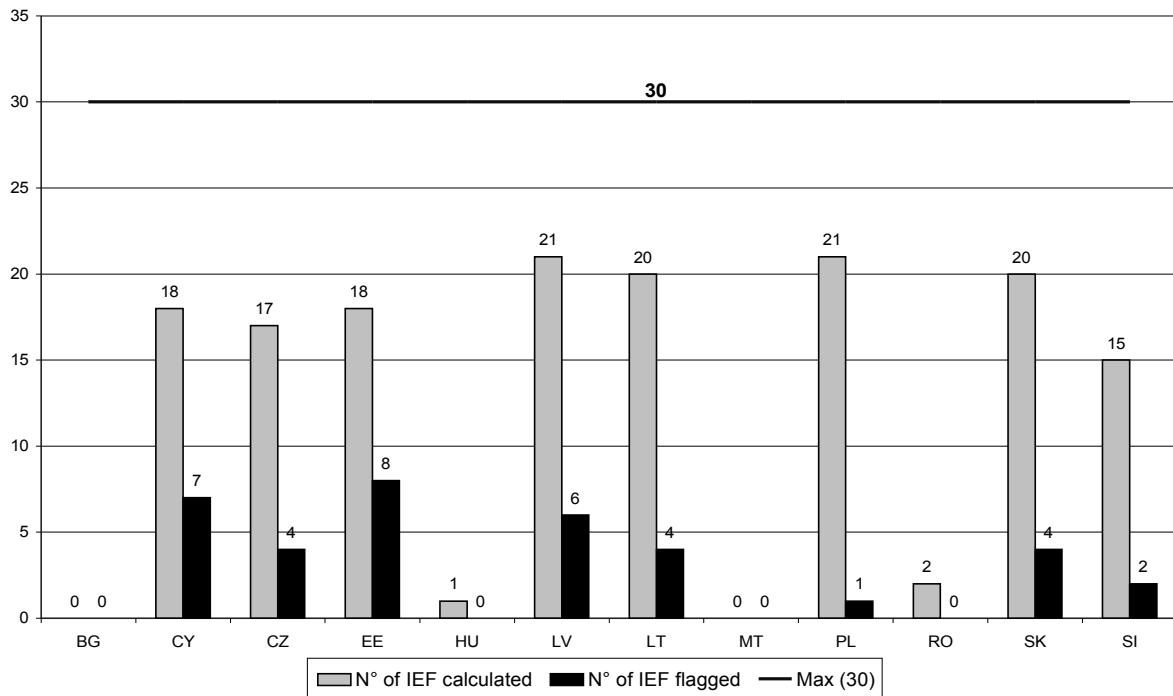


Figure 15: Number of IEF analysis undertaken for NECD inventory and number of flagged IEFs identified per EU-12

The following table (Table 3-6) shows that most outliers are found in the Energy Sector; in Agriculture, Waste and Solvents sectors fewer outliers occurred, but it has to be taken into consideration that for these sectors the number of key sources (tests undertaken) is much lower. The majority of outliers were detected in the transport sector (1A3), followed by ‘Manufacturing Industries and Construction’ (1A2), for both Western and Eastern countries.

Table 3-6. List of NECD source categories where most outliers were identified

EU-15			EU-12		
Source category	pollutant	N° of outliers	Source category	pollutant	N° of outliers
1A2f Other	SO _x	4	1A3b Road Transportation	SO ₂	5
1A3b Road Transportation	VOC	4	1A2 Manufacturing Industries and Construction	VOC	4
1A3d Navigation	SO ₂	3	1A2 Manufacturing Industries and Construction	SO ₂	4
1A2c Chemicals	SO ₂	3	1A1b Petroleum refining	SO ₂	3
1A2a Public Electricity and Heat Production	SO ₂	3	1A1c Manufacture of Solid fuels and Energy Industries	SO ₂	3
			1A2 Manufacturing Industries and Construction	NO _x	3

4 REVIEW OF GRIDDED DATA

The review of gridded data submitted under the Convention is not formalised to the same degree as the review of non-gridded data. Nevertheless, MSC-W must also review the gridded data in order to assure that the spatial distribution of emissions (which are used in subsequent EMEP modelling tasks) is as accurate as possible. Seven gridded data specific review tests have so far been developed to check:

1. Format
2. Internal consistency
3. Boundaries
4. Completeness
5. $PM_{coarse} = PM_{10} - PM_{2.5} > 0$
6. Cross-pollutant
7. Large Point Source(LPS) emissions vs LPS definition in the Reporting Guidelines.

Test 6 is carried out on emissions reported by Parties aggregated to SNAP sectors (as the EMEP Unified model still runs in SNAP and not NFR sectors). In addition changes in the reporting Guidelines with respect to the aggregated NFR sectors used for gridding are foreseen, and we did not want to change the gridded sectors too frequently. The other tests use NFR sectors as reported from the Parties.

The *Format* of gridded data is checked in REPDA, and this checking should be performed by Parties upon submission. This was only done by approximately 50% of the Parties submitting gridded information in the 2007 reporting round, hence reformatting of the data had to be done in order to load them to the EMEP database, with the risk of introducing errors that such semi manual work entails.

The second test is a check on the *consistency* of the national total between gridded and non-gridded data. The findings from this test were communicated to Parties in the country specific review reports. Germany has already responded that they detected errors in the transcription between the gridded totals and sector data and unit errors based on this test, and have resubmitted corrected data to EMEP. Hence this simple test seems useful, and should be considered for inclusion as a standard option in REPDA. 50% of Parties failed to pass this test.

The third *Boundary test* simply checks that the spatially distributed emissions occur within the territory of the country in question. About a third of countries mistakenly allocate emissions in other countries, and they should use REPDA to ensure this does not occur. EMEP acknowledges however, that the grid mask used by REPDA to check country borders does not always correspond to the GIS national boundaries the countries themselves use. Small adjustments to the EMEP unofficial country borders have been undertaken based on both communication with Parties during this reporting round and based on the review replies in 2004. There is clearly a need to include a better definition of country borders in EMEP, as even subtle differences between a Party and EMEP borders is frustrating for the Parties.

Boundary checks performed on Large Point Source (LPS) data reported in 2007 also detected large LPS facilities in the middle of other countries hundred of miles away from where the LPS actually should have been placed.

The *Completeness test* ensures that there is a spatial distribution for all pollutants and SNAP sectors within the final country grid. Default distributions per pollutant and sector are created if there is a gap in the reported data. This is not because it is wrong, according to emissions reported from the country, that no emissions occur in a particular sector, but EMEP also uses spatially distributed data for emission inventories other than the officially-reported data (see Chapter 6). For example, the data used by EMEP includes many scenario runs for IIASA, and they may have calculated emissions from a sector that a Party has not considered. If there are zeros in the base grid used for distributing the scenario emissions, clearly the base cannot be correctly scaled. This is particularly relevant to the sectors *Extraction and distribution of fossil fuels and geothermal energy (S5)* and *Solvent and other product use (S6)*.

The *check that the PM₁₀ is not smaller than the PM_{2.5}* for any grid cell also proved useful. MSC-W communicated findings from this test to Denmark, France, Ireland, Norway, Portugal, Ukraine and the United Kingdom. Denmark, France, Ireland and Norway have already corrected and re-submitted data, while Portugal and the UK responded that they would like to have more time to look into these review results. We have not heard back from Ukraine as yet.

The *cross pollutant test* carried out per sectors and pollutants is identical to the test for non-gridded data (see Section 3.6). This is a visual test, where we look at maps to find potential problems with the comparability between pollutants. Gridded data from one country, the Ukraine, was replaced by MSC-W estimates based on this test.

Two countries (Bulgaria and Cyprus) failed the *LPS test* in which we check that their emissions are really LPS according to the definition in the Guidelines. The thresholds for LPS reporting to EPER are lower for most pollutants; these are proposed to be harmonised in the revised LRTAP Guidelines.

Gridded sector data is requested in five-yearly intervals from 1990 onwards, but only twelve Parties to the LRTAP Convention had reported gridded sector data of any vintage in the 50x50km² EMEP grid by 2006 (<http://www.emep.int/grid>). These countries represented 25% of the area covered by the Parties. This year, officially gridded sector data has been included in the spatial distribution for twenty countries (Austria, Belarus, Germany, Denmark, Estonia, Finland, France (2000 emissions), Hungary, Ireland, Italy (2000 emissions), Lithuania, Latvia, Netherlands (2000 emissions), Norway, Portugal (2004 emissions), Sweden, Slovenia, Spain, Switzerland and United Kingdom (2004 emissions)) which cover 32% of the area covered by Parties within the EMEP domain. The increase in reporting of gridded sector data is appreciated, but EMEP is still required to account for the spatial distribution of emissions for more than 50% of Europe by deriving its own methods.

In conclusion, there was a need for corrections and clarifications from 14 of 18 Parties (94%) reporting gridded sector data. This is a very high number and efforts should also be made to formalize the review of gridded data under the Conventions, in order to increase the quality of the spatial distribution reporting. Despite the improvements in both quantity and quality of gridded sector data for SO_x, NO_x, NMVOC and NH₃, only data from 38% of Parties is deemed of sufficient quality to be presently included in the modelling performed by EMEP for the forthcoming revision of the Gothenburg Protocol (see Chapter 6).

5 CONCLUSIONS OF STAGE 1 AND 2 AND GRIDDED DATA REVIEW

The key conclusions from the Stage 1, 2 and gridded data reviews conducted in 2007 are:

- Improvements with respect to timeliness of submissions are recorded compared to 2006 for both NEC (64% of MS reporting on time) and LRTAP (55%). The number of submitted Informative Inventory Reports continues to increase (54% of reporting Parties). Reporting of gridded sector data particularly for PM increased considerably (by 10 Parties).
- Further effort should be made by Parties to report by the due date and to not modify the reporting templates. This facilitates the subsequent review and evaluations of submitted data.
- Reporting of emissions is around a factor two lower in the 1980s than in preceding years. 15 European Parties have reported full time series in NFR source sectors since 1990. Reporting by many Parties are fragmentary and for some Parties completely missing. Many Parties report only the emissions strictly required according to pollutant specific Protocols, and not according to the Reporting Guidelines.
- Recalculations are submitted by 50% of countries. It appears Parties prioritise recalculations of Main Pollutants and do not necessarily recalculate their whole time series whenever updates are made to the most recent emission calculations. Except for NMVOC, these recalculations are generally subtle, and more often (by a factor of 1.5) result in emission decreases. However, when recalculations are performed for POPs, HMs and PMs, these lead to relatively higher numbers of significant recalculations (larger than +/-10%), which supports a premise about emissions for these components having higher uncertainty levels relative to the Main Pollutants. The number of recalculations in the 1980s are only half of those in later decades. The magnitude of recalculations ranges from 10% for NO_x to several thousand percent for HCB.
- Ten out of 27 EU MS reported differences larger than 0.1% between emission data submitted to LRTAP and NECD. Higher number of flagged values occurred between emissions reported under LRTAP and the EU Monitoring Mechanism than between LRTAP and NEC, except for NH₃. NMVOC had the largest number of flagged values. Reasons for differences between emissions reported under LRTAP/NEC and the EU are manifold and are mainly due to reporting deadlines and requirements, different QA/QC procedures and errors.
- The cross pollutant test highlighted potential problems in PM inventories from Belgium, Norway and Sweden together with three of the EECCA countries. Following feedback from the TFEIP Expert Panels earlier in 2007, the emphasis on these tests will be reduced in future years.
- The number of flagged implied emission factors has decreased between 2006 and 2007. Outliers identified were mostly (75%) due to dips and jumps occurring in the time series of IEFS within a country rather than being outliers across countries.
- It is recommended to formalize also the review of gridded data, as the ad-hoc review performed this year discovered a need for clarifications from 94% of Parties submitting gridded sector data. Only 32% of the EMEP domain is covered by reported

spatially distributed sector data. The review team welcomes the proposal in the draft revised Reporting Guidelines to clearly define the concept of completeness in order to be able to better assess this review parameter. Introduction of a standardised template for IIRs is also welcomed, as at present it is often very difficult to find potential answers to the questions posed by the Stage 1 and 2 reviews due to the differences in IIR formats used by Countries.

6 REPLACEMENT OF REPORTED EMISSIONS DATA FOR EMEP MODELLING PURPOSES

There is a high priority in EMEP to include as much of the Party-reported data as possible in the assessments of e.g. critical loads undertaken within EMEP. Hence EMEP/MSC-W has actively taken part in the development of the emission inventory improvement programme carried out in co-operation with the TFEIP. The ideal situation for an emission centre like MSC-W would be to have access to a complete set of high quality data covering the whole of Europe. The situation is however that for all or many Parties to the Convention:

1. Official emission data has not been submitted by the time emission data for assessments under the Convention is prepared (beginning of May).
2. Official emission data (emission figures or notation keys) has been reported in time, but potential problems with this reported data have been noted during the Stage 1 and 2 review process.

In the first case, the preferred option is to complete the EMEP inventory by extrapolation and interpolation of officially reported and reviewed data from the EMEP database. In the second case, inclusion of data from other available independent sources is necessary. The latter are referred to as MSC-W replacements. The causes and sources of replacements per pollutant and sector will be elaborated upon further in a forthcoming EMEP report¹⁰. One objective of this chapter is to give more general feedback regarding what implications the Stage 1 and 2 review results have on the emission data which is be used within modelling assessments in and outside EMEP.

6.1 USE OF INDEPENDENT DATA SOURCES

The main source of information for the independent estimates is emission data from the RAINS (Regional Air Pollution INformation and Simulation) model (Cofala et al., 2000; Schöpp et al., 1999; Amann et al., 1999, kindly provided by staff members from the International Institute for Applied Systems Analysis (IIASA). RAINS data is the preferred option to complete the EMEP inventory with, since the datasets have been thoroughly reviewed by national experts through the Clean Air For Europe (CAFÉ) programme and proved to be largely consistent and comparable with officially reported data. The methodology used to derive the RAINS emission estimates is well documented (<http://www.iiasa.ac.at/rains/cafe.html>).

If no data has been submitted under the LRTAP Convention, and RAINS data is not available, EDGAR emission data (<http://www.mnp.nl/edgar/>) or in a few cases GEIA (<http://www.geiacenter.org/>) has been used instead. In some cases, when sector data for a particular year and a particular country is missing, but data for other years are available from the country, interpolation of the values is used instead. Extrapolation of country trends is seldom required, and mostly used for the latest year when a Party has failed to submit data in time.

¹⁰ Tarrasón, L (ed.), 2007, EMEP/MSC-W Report 1 (*In preparation*).

6.2 POTENTIALLY INCONSISTENT DATA IDENTIFIED IN THE REVIEW PROCESS

The officially reported data might be identified as potentially inconsistent during the review for several reasons, but the most common one is the detection of incompleteness and inconsistencies in the time series. It should be understood that even though good quality, complete and consistent emissions have often been reported for the latest year(s), in most cases it is impossible to include these emissions for evaluation of trends, due to lack of emissions from this same source for most of the other years, or because data for earlier years is largely inconsistent with the most recent (better quality) data. In most cases it is not possible to replace only parts of, or one pollutant, in the reported inventory by MSC-W replacements. This is because such a solution will introduce e.g. cross pollutant inconsistencies.

Table 6-7 details the replacements by country and sector for the 2005 EMEP inventory non-gridded sector data. The sectors in the official submissions which have been replaced are shown in the table (“All” meaning that no reported data could be used).

Table 6-7. Overview of replacements of officially reported data per country and sector in the EMEP 2005 inventory

Country/ Component	CO	NH3	NMVOC	NOX	SO2	PM2.5	PM10
AZ	All		All	All	All		
BY	S2, S5, S7, S9		All	S1, S5, S10	S7	All	All
CZ			S3, S4, S5, S9, S10				
FI	S6						
GR	S7						
HR						All	All
HU						S10	S10
IE						S10	S10
LT			S8			All	All
MD	S8, S9, S10	S10	S8			All	All
MK	All but S2, S8		All		All but S1		
RO	All	All	All	All			
RS				All			
RU	All	All	All	All	All	All	All
SI	S9	S9					
SK	S9, S10	S9	S10			S10	S10
UA	All	All	All	All	S7		

Most replacements are found for CO, followed by NMVOC and PMs. This is consistent with the results from the evaluation of recalculations and the indication given there on which pollutants carry the highest uncertainty. It follows that with few exceptions, replacements for Main Pollutants and PMs are mainly located in Eastern Europe. The main problems encountered in these countries are the lack of consistent time series particularly from the *agriculture* sector. Several countries do not report emissions from this sector, particularly of PMs. Official PM emissions from Ireland and Hungary suggested that agriculture PM emissions were Not Applicable in Ireland, and Not Occurring in Hungary, contradicting other sources of emission data (e.g. RAINS data). Estimation of *road transport* emissions are also a problem because recalculations of official emissions are not always performed when new methodologies are introduced, hence causing inconsistencies in the time series (See also Section 3.3 on Comparability – recalculations).

The geographical distribution and magnitude of replacements are shown in Figure 16, and show that the replacements most often lead to higher emissions. For SO_x and NMVOC the emissions in the Russian Federation have decreased over large parts. This is because the sector distributions of emissions are very different between the official and the RAINS data which is used for replacements. While Russia does not report emissions for NO_x from the *Non-industrial combustion plants (S2)*, and *production processes (S4)* sectors, RAINS data suggests quite large emissions in these sectors. The spatial distribution of emissions changes dramatically, as it is closely linked to the different SNAP sectors (Tarrasón et al., 2004). For NMVOC, the different distribution of total sector emissions causes large differences in the spatial distribution, this time because RAINS allocates emissions to S4, while comparable emissions are recorded for the *Combustion in manufacturing industry (S3)* in the official Russian data. However the difference between replaced and reported national totals is relatively small: 9% for NO_x and 4% for NMVOC. For other countries in Eastern Europe, the replacements result in increases of national total emissions in the order of 30%.

6.3 CONCLUSIONS

- Data of sufficient quality to be included in the EMEP inventory is the largest at 60% for SO_x and NO_x. The corresponding completeness values for NH₃, NMVOC, CO and PMs are 58%, 51%, 47% and 44% respectively.
- Replacements are mostly located in the Eastern Part of Europe.
- Replacements lead in general to more than 30% higher emission totals.
- Emissions from *agriculture* are more frequently replaced. Estimation of *road transport* emissions is inconsistent for time series
- Large emitter countries like Russian Federation and Belarus should clearly be given priority and if possible resources to estimate emission trends more accurately.

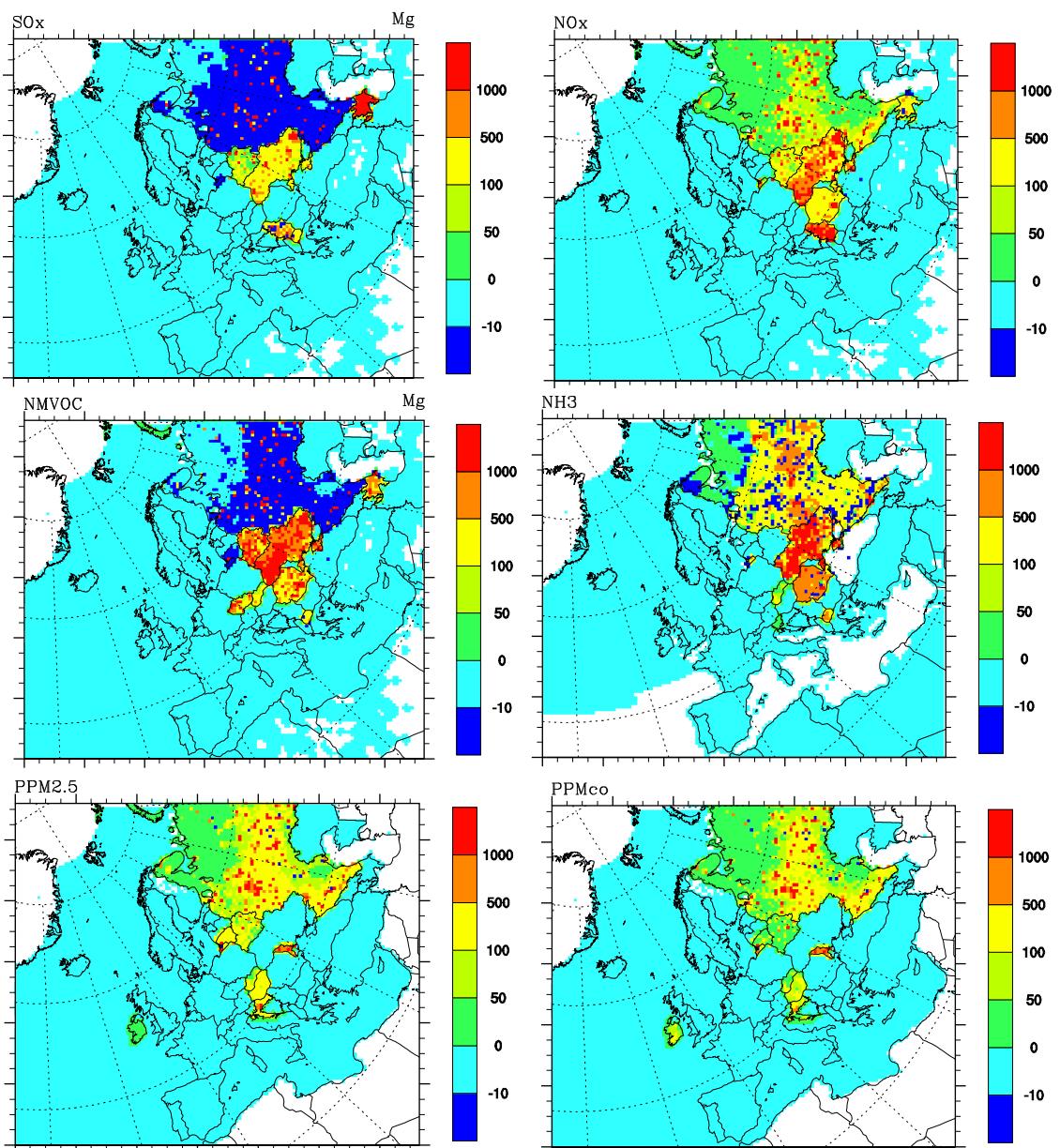


Figure 16: Differences between replacements and reported national total emissions (Unit: Mg)

7 REVIEW OF PM INVENTORIES IN BELARUS, REPUBLIC OF MOLDOVA, RUSSIAN FEDERATION AND UKRAINE

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Following on from the EMEP Steering Body (SB) decisions, the Task Force on Emission Inventories and Projections (TFEIP) has led an emission inventory improvement programme under which analysis of the quality of national emission data reported by countries to EMEP was undertaken (UNECE, 2003). Some tests have been elaborated by the team of expert reviewers to analyse key sources, completeness, consistency and comparability of emission data, and dips and jumps in the time series. Results of this analysis are regularly included in the EMEP/EEA joint review reports to the EMEP SB (e.g. Vestreng et al., 2006). This work has proved its effectiveness and allows an assessment of the completeness and consistency of emission data. However, the applied procedures only allow to a lesser extent the evaluation of the *accuracy* of data officially reported by the Parties to the Convention on Long-Range Transboundary Air Pollution (LRTAP).

Assessment of emission data accuracy and its verification is a difficult task for which there are currently no standard procedures. Amongst the available methods for testing the accuracy of reported emission data is by comparison with independent estimates (IPCC, 2000). The Stage 1 and 2 review process includes analysis of emission data officially submitted to the LRTAP Convention, but the independent emission estimates available for countries are not taken into account.

In accordance with the work-plan for the Belarusian in-kind contribution to EMEP for 2006, an in-depth analysis of PM emission data available for four Newly Independent States (NIS) countries (Belarus, Moldova, Russian Federation (the European part) and the Ukraine) was carried out. The emission data set for PM in these countries are the most complete amongst all NIS countries. A comparison was carried out between emissions data reported to EMEP by these countries and the available expert emission estimates. Additionally production statistics have been analysed as they may give an indication of the accuracy of emission values.

7.1 METHODOLOGY

The main method of analysis was a comparison of different available estimates with the account of activity levels by sectors. Total Suspended Particulate emissions (TSP) and PM₁₀ data was analysed. PM_{2.5} data was beyond the scope of the analysis at this stage, with priority being given to analysis of TSP and PM₁₀ data.

The following data sets were considered:

1. Official emission data reported by countries to EMEP as accessible from the EMEP database (<http://webdab.emep.int/>) in October 2006 (WEBDAB 6th release);

2. Statistical data on PM emission available from different papers and electronic publications, statistical and ecological essays, state-of-the-environment reports etc. (e.g. Annual Report of Pollutants..., 1998, 2004; National Report..., 2002, 2003, 2005; State of the Environment in the Ukraine..., 2001-2003, 2005; Pollutants Emissions..., 2005; State of Environment..., 2006; Report on Pollutants..., 2006). It should be stressed that in the former Soviet Union countries statistical data includes emission from stationary sources; however other sources such as the majority of agricultural activities, open fires etc. are not accounted for.
3. Expert estimates of PM_{2.5} and PM coarse (PM₁₀ minus PM_{2.5}) in SNAP sectors by MSC-West (WEBDAB 5th release, as the expert emissions in 6th release only became available in late November). This dataset is not reviewed with respect to trends, as it is from the preceding WEBDAB releases;
4. PM and PM₁₀ emission estimates by RAINS model for these 4 countries (<http://www.iiasa.ac.ac/~rains>) version 8 (totals and in sector splits).

Other estimates, like data from the Co-ordinated European Programme on Particulate Matter Emission Inventories, Projections and Guidance (CEPMEIP) (<http://www.air.sk/tno/cepmeip/>) were also considered but not compared against others because they are only available for 1995.

- 'Statistical' – data from national statistical and ecological editions;
- 'Official' – data on emission officially reported to EMEP by countries
- 'Expert' – expert estimates available from the EMEP emission database;
- 'RAINS' – estimates of emission by RAINS model.

7.2 ANALYSIS OF NATIONAL TOTAL PM₁₀ AND TSP EMISSIONS

Official TSP and PM₁₀ emission data is available for Moldova for the whole period. For other countries, PM data is available for 1-3 years. Statistical data on the total TSP emission is available for the whole period for most countries (for Russia mainly for the whole territory, see explanations below). There is no statistical data on PM₁₀ emissions for any country. Expert estimates of PM₁₀ are available for 2000-2003. RAINS estimates of TSP and PM₁₀ are available for 2000 and 2005; it was assumed that emissions in 2004 are equal to 2005 emissions.

Available data on total PM emission for Belarus is shown in Table 7-8.

Table 7-8– PM data available for Belarus, Gg

PM fraction	Source of data	2000	2001	2002	2003	2004
TSP	Statistical	37.96	44.90	43.77	42.29	41.91
TSP	Official			91.01	82.04	121.2
TSP	RAINS	122.3				128.0
PM ₁₀	Official					48.03
PM ₁₀	Expert	51.13	51.13	56.02	51.12	
PM ₁₀	RAINS	73.6				81.3

Generally official estimates exceed statistical estimates by a factor of 2 or 3; this is explained by the fact that the data reported to EMEP is more complete than statistical data. Expert estimates of PM₁₀ emission are close to the official estimates. PM₁₀ emissions for 2004 in RAINS are 1.7 times higher than official emissions estimates. RAINS TSP estimates are very close to official ones but PM₁₀ is rather different.

It can be stated that the different estimates of PM emissions for Belarus do not contradict each other, and that significant differences between them are explainable. Hence official PM data is significantly higher than statistical data due to it including more sources. Differences in official data from year to year are mainly due to improvements in emission estimation methodology.

Available data on total PM emission for the Republic of Moldova is shown in Table 7-9.

Table 7-9– PM data available for Republic of Moldova, Gg

PM fraction	Source of data	2000	2001	2002	2003	2004
TSP	Statistical	2.8	3.3	3.9	4.2	4.4
TSP	Official	14.85	11.34	17.68	18.79	17.52
TSP	RAINS	56.5				58.4
PM ₁₀	Official	4.51	3.44	5.38	5.72	10.89
PM ₁₀	Expert	38.99	38.99	5.00	5.72	
PM ₁₀	RAINS	31.9				33.0

Large differences in PM estimates for Moldova are evident even though this country is not a large PM emission source. Differences between TSP official and statistical estimates are different by a factor of 3.4-5.3.

There are significant differences between official and expert PM₁₀ estimates for 2000 and 2001, while those for 2002 and 2003 are close. There are unaccountable jumps and dips in the emission values for both official and expert estimates: thus expert PM₁₀ emissions for 2002 are 7.8 times higher than for 2001. RAINS emission estimates exceed the official estimates by a factor of 3.3-7.1. We can conclude that a special analysis of PM data for Moldova is necessary since available data is contradictory.

Official and statistical TSP emission data for the Ukraine is available for 3 years (Table 7-10), and are broadly comparable. PM₁₀ official data is available for 2 years. Taking into account the 40-times difference between PM₁₀ official data for 2002 and 2004 and noting the differences between TSP and PM₁₀ emissions (see below) these PM₁₀ data should be treated as preliminary. Expert emission values for PM₁₀ of 2000, 2001 and 2003 are equal; values for 2002 are slightly different (due to additional accounting of agricultural emissions).

Table 7-10 – PM data available for the Ukraine, Gg

PM fraction	Source of data	2000	2001	2002	2003	2004
TSP	Statistical	729.6	763.9			624.4
TSP	Official			825.95	796.38	723.43
TSP	RAINS	931.8				858.4
PM ₁₀	Official			2.92		118.51

PM ₁₀	Expert	499.00	499.00	518.00	499.00	
PM ₁₀	RAINS	502.4				470.8

Expert and RAINS estimates significantly exceed the official PM₁₀ estimates data. It can be concluded that the TSP estimates by different assessments do not contradict each other. But differences in PM₁₀ estimates are less likely to be accidental, official data is probably incomplete, and expert estimates are the same for most years.

The Russian Federation is the largest NIS country with the highest level of PM emissions and largest set of PM sources. The analysis of PM data for Russia is complicated by the fact that only part of the country is inside the EMEP domain, while emissions estimates data are generally available for Russia as a whole. According to official data, TSP emissions within the EMEP domain last year accounted for about 1 Tg (1030 Gg in 2004) and PM₁₀ emissions for about 650 Gg (646.7 Gg in 2004). PM statistical data for the European part is available for 2003 only. It accounts for 32% of the total TSP emissions in the Russian Federation and amounts to 830.8 Gg (from stationary sources). In general official PM emissions data are close to the statistical estimates and the same basis of reporting can perhaps be supposed.

Table 7-11 – PM data available for the Russian Federation (the European part), Gg

PM fraction	Source of data	2000	2001	2002	2003	2004
TSP	Statistical	980.8	981.2	951.3	952.6	
TSP	Official			0.937	916.7	1030
TSP	RAINS	2105.1				2101.0
PM ₁₀	Official			0.561	575.6	646.7
PM ₁₀	Expert	1351.9	1351.9	1382.0	1351.9	
PM ₁₀	RAINS	1280.1				1296.8

The large differences of TSP and PM₁₀ official emissions between 2002 and 2003 can be explained by likely errors in units for 2002. PM₁₀ emissions by expert estimates are the same for 2000-2003 and close to 1.4 Tg. They are 2 times higher than official data. RAINS estimates are also about 2 times higher than official estimates. On the whole significant differences between Expert/RAINS and official data require special sector-by-sector analysis for their explanation.

7.3 ANALYSIS OF PM EMISSIONS BY AGGREGATED SECTORS

Key sources are defined in the Good Practice Guidance included in the EMEP/CORINAIR Emission Inventory Guidebook (<http://reports.eea.europa.eu/EMEPCORINAIR4/en>) as the sources making up 95% of the national totals. However PM emission data for the NIS countries was analysed using the following key aggregated sectors (UNECE, 2003, Table IIIA and IIIB):

- **NFR01**, *Combustion in Power Plants and Industry*, for the most part equivalent to SNAP (Selected Nomenclature for Air Pollutants) sectors S1, *Combustion in energy and transformation industries* and S3, *Combustion in manufacturing industry*;
- **NFR03**, *Commercial, Residential and other Stationary Combustion* (mainly equivalent to SNAP S2, *Non-industrial combustion plants*) and
- **NFR05**, *Industrial Processes* (mainly equivalent to SNAP S4, *Production processes*)

Statistical, official, expert and RAINS data as well as available activity data for these sectors was collected (Statistical Yearbook of Russia..., 1998; Fuel Balance..., 2004; Fuel-energy Resources..., 1998; Commonwealth of Independent ..., 1999; Statistical Yearbook..., 2006 etc.).

In the process of analysis, difficulties arose due to gaps in the data and differences between classification schemes used in the NIS countries statistics on one side, and SNAP/NFR on the other.

7.3.1 Combustion in Power Plants and Industry (NFR01, S1+S3)

The contribution of the Energy sector towards total TSP and PM₁₀ emissions for Belarus and Moldova is significantly higher according to expert estimates and RAINS estimates than according to statistical and official data (Figure 17 and Figure 18). In Belarus 2003, TSP emissions from this sector only amounted to 0.06 Gg according to statistics due to the dominance of gaseous fuel in this sector, while PM₁₀ emissions by expert estimates in this sector were 7.7 Gg. These differences are also due to the fact that expert estimates (and also to some extent official estimates) include within NFR01 emissions from combustion, while national statistics include mainly emissions from plants producing heat and electricity.

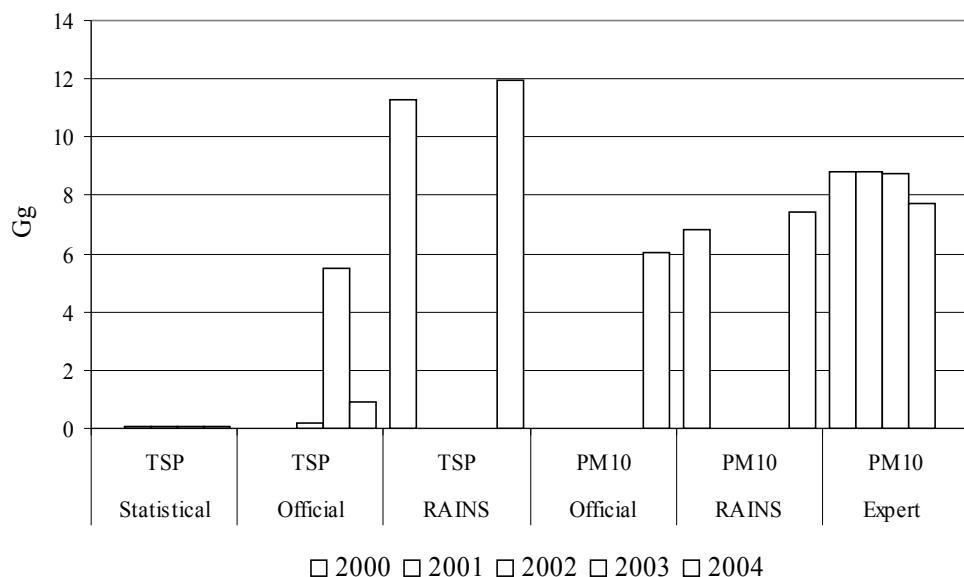


Figure 17 – PM emissions from NFR01 in Belarus by different estimates

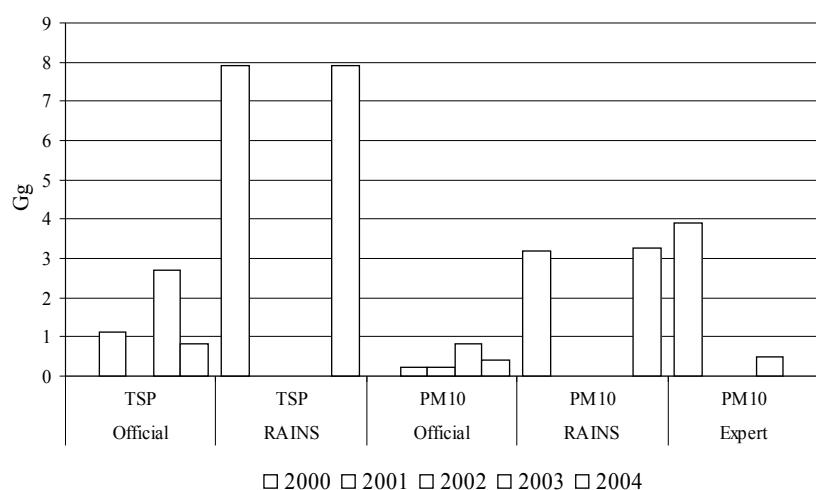


Figure 18 – PM emissions from NFR01 in the Republic of Moldova by different estimates

For the European part of Russian Federation and for the Ukraine, expert estimates show a low fraction for this sector compared to statistical and official estimates (Figure 19 and Figure 20). According to the statistical estimates, in the Ukraine the Energy sector and the Fuel Industry are responsible for approximately 50% of total TSP emissions (47.9% in 2004). This is reasonable because this sector accounts for approximately 80% of hard coal combustion (hard coal is the main energy fuel in the Ukraine, and about 80 Tg of coal are mined in the Ukraine annually). According to expert estimates, in the Ukraine the contribution of NFR01 sector is about 24% (as for 2002).

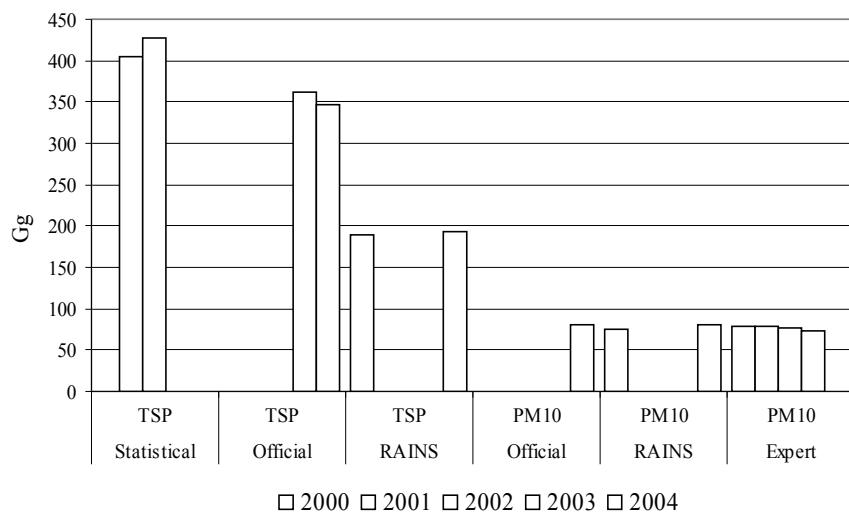


Figure 19 – PM emission from NFR01 in the Ukraine by different estimates

In the European part of Russian Federation TSP and PM_{10} emissions from NFR01 by *official* data are responsible for approximately 50% of total emissions (1 Tg TSP), hence about 500 Gg TSP in 2004 (Figure 20). The Energy sector segment of the total is lower (35%) for all of Russia according to the statistical estimates (34.7% in 2003). According to the activity data statistics, about 85% of Russia's coal consumption is within the Energy sector (in Russian Federation about 270-280 Tg of coal are mined annually). The main part of the coal is combusted in the Asian part of Russia, hence outside the EMEP domain. Hence we anticipate that the contribution of the Energy sector to the European part of Russia is only about 150-250 Gg TSP in 2004 (or 15-25 % of the total TSP emissions), and more in line with the RAINS data (Figure 20). It would appear that the official estimates include within NFR01 also include other activities related to fuel combustion, as the ferrous and non-ferrous industry. The European part of Russia comprises 9.5% (128.4 TSP Gg) of total TSP emissions in 2003. Approximately the same values can be extracted from the RAINS data.

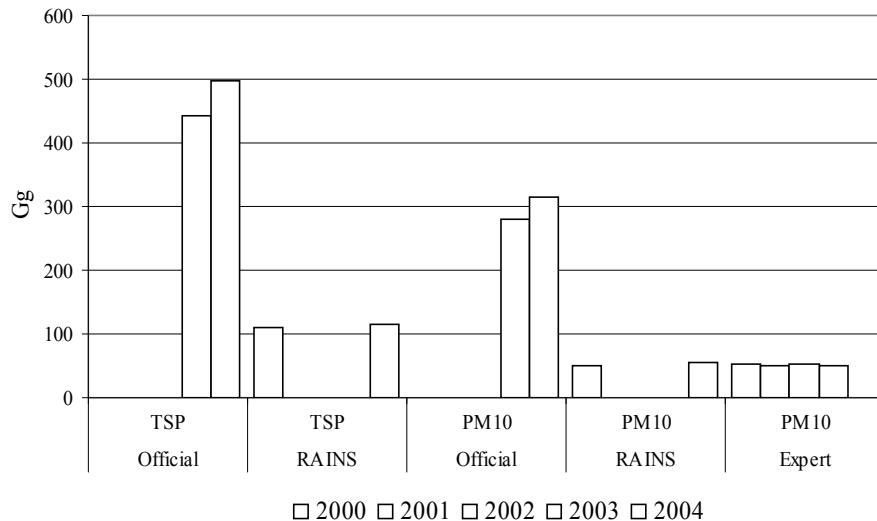


Figure 20 – PM emission from NFR01 in the European part of Russia by different estimates

7.3.2 Commercial, Residential and other Stationary Combustion (NFR03, S2)

In Belarus, the contribution of the NFR01 sector to total emissions is significant according to both statistical and official data. Expert estimates show a lower share (Figure 21). Expert values for 2000, 2001 and 2003 are similar. RAINS estimates are higher than expert and lower than official estimates.

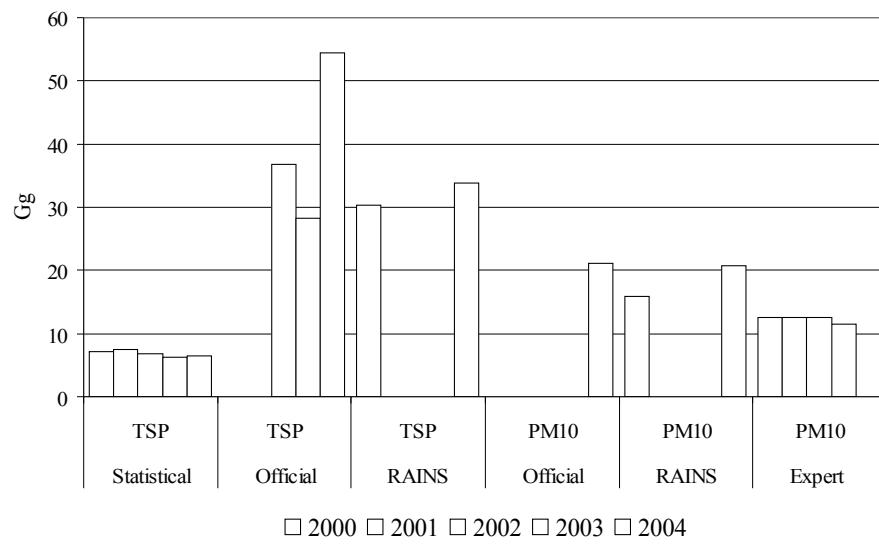


Figure 21 – PM emission from NFR03 in Belarus by different estimates

In the Republic of Moldova TSP and PM₁₀ emissions comprise a significant part of the national total - more than 50% in 2004. This however is not confirmed by statistical data (Figure 22). It should be taken into account that according to the statistical data in total only about 100 Gg of solid fuels (in coal equivalent) are combusted in Moldova annually. Experts also estimate the contribution of the NFR03 sector to national totals at rather high values (22-26%), but between 2001 and 2002 significant inconsistencies in the estimates are evident.

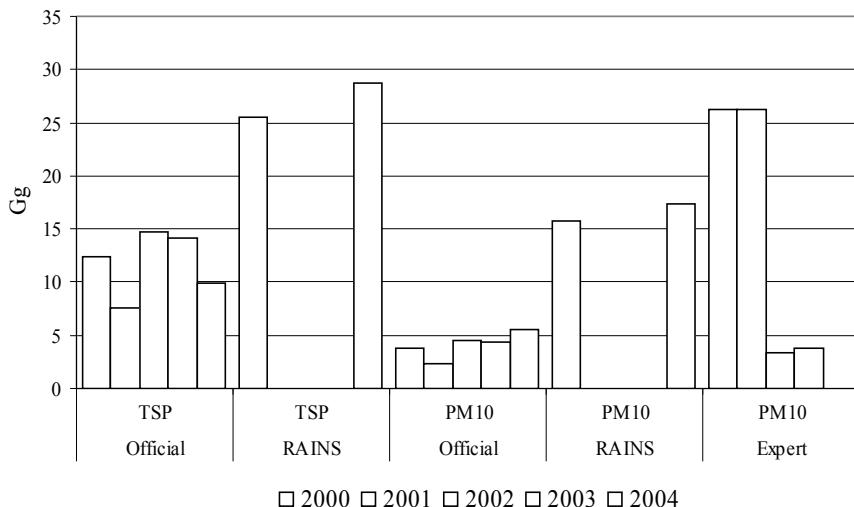


Figure 22 – PM emission from NFR03 in the Republic of Moldova by different estimates

The contribution of the NFR03 sector to the total TSP emissions for the Ukraine is about 15% (14.8%). But input from NFR03 towards total PM_{10} emissions according to official data is only 3.5% (4.2 Gg) (Figure 23). The statistical data for 2001 for TSP emissions from the S2 sector (similar to NFR03) amounts (together with some other minor sectors) to 21.4 Gg or 2.8% of TSP totals. This is reasonable taking into account the structure of fuel consumption in the Ukraine, where solid fuels are combusted mainly in the Energy sector.

According to the expert data, the share of the NFR03 sector in the total PM_{10} emissions in the Ukraine is comparable with the share of the Energy sector 108.3 Gg or 21.7% totals) in 2003, which seems very high taking into account the structure of the solid fuels balance.

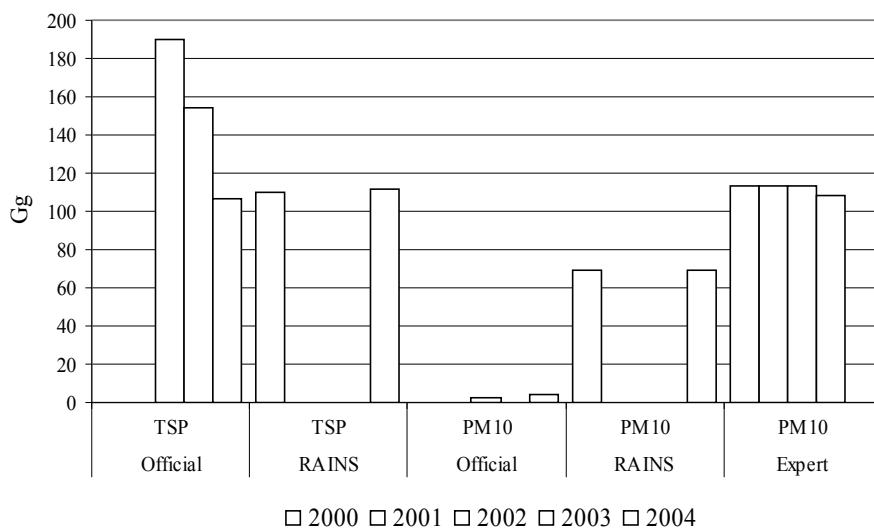


Figure 23 – PM emission from NFR03 in the Ukraine by different estimates

The contribution of the NFR03 sector emissions to the European part of Russia is about 15% (104 Gg of TSP and 61.8 Gg of PM_{10} were accounted for 2004). The TSP emissions for the Communal-Residential sector in Russia according to statistics for 2003 make up 331.5 Gg. Taking into account the distribution of hard coal (the main solid fuel) combustion by regions in Russia, TSP emissions from this sector in the European part of Russia may amount to 100-120 Gg. A certain amount particulates in Russia are emitted by the domestic sector and

some other minor sources not accounted for by the statistics but on the whole the official PM emission data for this sector appears reasonable. Emissions from this sector are much lower than for the Energy sector.

The expert estimates contradict the official estimates, by indicating that the NFR03 sector contributes the largest proportion of PM₁₀ to national totals (42.7% or 577.2 Gg in 2003). RAINS emission estimates for 2004 are closer to the expert estimates (Figure 24).

We can conclude that such a high proportion of PM emissions from NFR03 as those given by expert and RAINS estimates are not supported by the structure of the fuel balance in the European part of Russia.

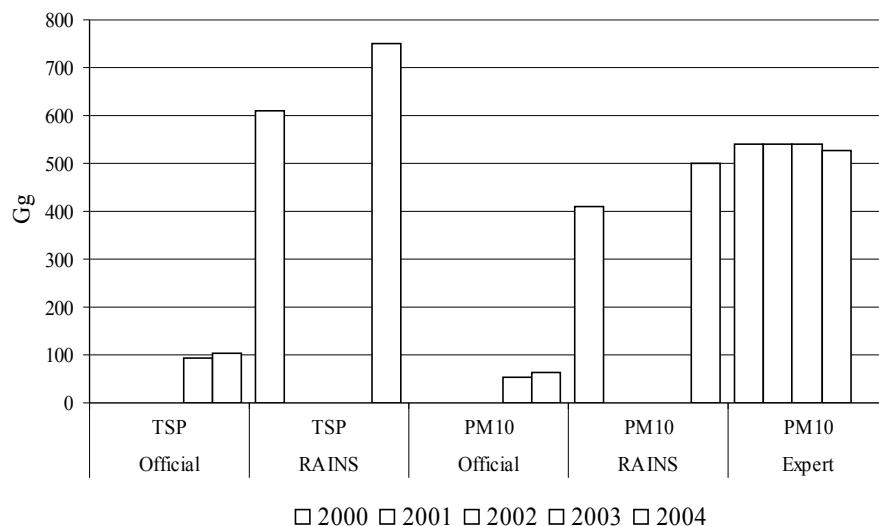


Figure 24 – PM emission from NFR03 in the European part of Russia by different estimates

7.3.3 Industrial processes (NFR 05, S4)

Due to the complexity of industrial processes, and the different options available for aggregating data (emissions in most sectors of Ferrous and Non-Ferrous Industry, Building Materials Industry etc. should be divided between NFR01 and NFR05 sectors), we have only carried out a very brief analysis of data for this sector. According to official data, TSP emissions from NFR05 in the Ukraine in 2004 amounted to 186.3 Gg (15.6% of the total) Gg. According to expert estimates for PM₁₀, the contribution of NFR05 sector was 32.2% (160.7 Gg). According to the statistical estimates, the input of the processing industries within the Ukraine into total emissions from stationary sources in 2001 was 211.5 Gg (27.7%). But the main part of the industrial emissions was due to emissions from the Ferrous Industry and Cement Industry - these sectors' emission should be divided between NFR01 and NFR05. All other industry sectors contribute no more than 10% towards PM national totals. Expert and RAINS estimates of PM₁₀ emissions for this sector are close to TSP values according to official data and statistical estimates. But it should be noted that in general the PM₁₀ share in TSP from this sector is rather low (36% according to year 2000 RAINS estimates for the Ukraine).

Official PM₁₀ emissions from NFR03 in 2004 within the European territory of Russia were 99.9 Gg. The statistics show that the largest emitters of solid particles in the industry were the

Ferrous (10.6% of totals in 2004), Non-Ferrous (7.9%) and Building Materials (7.9%) industries. These sub-sectors together emit annually about 200-250 Gg of TSP from the territory of the European part of Russia; as mentioned above these emissions should be distributed between NFR01 and NFR05 sectors. Other industrial sectors have significantly lower TSP emissions: the Wood-Processing, Pulp and Paper Industry contributes 2.7%; Machine-Building and Metal-Working Industry 2.0%; Chemical and Petrochemical Industry 1.4% of the whole Russian Federation TSP emissions). Expert estimates for 2003 PM₁₀ emissions make up 389.3 Gg (28.8% of the total PM₁₀ emissions) in the European Part of Russian Federation. RAINS gives for 2000 and 2005 PM₁₀ emissions from S4 576.3 Gg (45% of the total) and 456.9 Gg (35% of the total) respectively. Both estimates appear too high compared to official and statistical ones.

7.4 CONCLUSIONS

The analysis of PM emissions data available for four NIS countries (Belarus, Republic of Moldova, the Ukraine and the European part of the Russian Federation) makes it possible do draw the following conclusions:

a) State of PM emission inventory preparation in the NIS countries.

The Former Soviet Union countries have more than 30 years tradition in carrying out an inventory of PM emissions and there were no significant changes in the emission inventory methodology. However not all significant sources of PM emission are accounted for by statistics, and there is little experience of estimating PM emissions speciated (distributed) by particle size.

b) State of official emission estimates

Official estimates of PM emission speciated by size from NIS countries have become available. It is encouraging that NIS countries have increased their reporting to EMEP. For the NIS countries, TSP emission values should be considered as most reliable and in most cases the methodology for emissions estimation and issues of incompleteness in terms of missing sectors are known. Estimates of PM₁₀ should be considered on the whole as being preliminary estimates, taking into account their level of completeness, accuracy and consistency.

c) MSC-W Expert and RAINS estimates

- Expert/RAINS and other ‘expert’ estimates like CEPMEIP make a basis for verification assessment of official data submissions;
- Expert/RAINS estimates are in general more complete and consistent in comparison with official data, but their accuracy needs to be assessed;
- PM national totals show better convergence between both official and expert data than at the sector level;
- Sector-specific expert/RAINS estimates should be compared with national emission statistics in order to detect significant divergences between the real economical and technological situation in countries;
- Expert/RAINS estimates are most useful for completing an inventory by accounting for emissions from the sources not taken into account by statistical estimates, and also as a starting point for building national emission inventories on a modern methodological basis;

- Expert/RAINS estimates can be improved by updating and verification of activity data in their databases.

In order to improve the completeness and accuracy of PM emission inventories in the NIS countries we would like to make the following recommendations:

- Do not exclude TSP from official national emission reporting to EMEP, and continue to save this data in the EMEP database, because TSP emissions are currently the most reliable indicator of PM emissions for the NIS countries and can be used to validate speciated PM emissions;
- Organise regular inter-comparisons of available PM emission assessment models and estimates;
- Launch a pilot project on development of PM emission inventory improvement in the NIS for one of these countries. Experience obtained from such a project can then be disseminated among other countries.

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9 APPENDICES

- Appendix 1A: Status of reporting under the LRTAP Convention
- Appendix 1B: Status of reporting under the NECD
- Appendix 2A: Completeness of LRTAP emission data
- Appendix 3A: Overview of recalculation of LRTAP emission data
- Appendix 3B: Overview of EU MS recalculations - NECD Inventory
- Appendix 4: Overview of inventory comparisons
- Appendix 5: Overview of cross pollutant ratios by country groups

APPENDIX 1A: STATUS OF REPORTING UNDER THE LRTAP CONVENTION

PARTY	Date Rec'd Due date 15/02/07	Main (SOx NOx VOC CO NH3)	PM	Cd	Hg	Pb	POPs (PAH Diox HCB)	Projections (2010 / 2015 / 2020)	Activity data (A/D)	Gridded data	Informative Inventory Report (IIR) Due date 01/05/07
Albania											
Armenia											
Austria	15/02/07	X	X	X	X	X	X	X	X	X	X
Azerbaijan	30/03/07										
Belarus	15/02/07	X	X	X	X	X	X	-	-		X
Belgium	20/03/07	X	X	X	X	X	X	-	-	X	-
Bosnia Herzegovina											
Bulgaria	16/02/07	X	X	X	X	X	X	X	X	X	X
Canada	15/02/07	X	X	X	X	X	X	X	-		-
Croatia											
Cyprus	12/02/06	X	X	X	X	X	X	X	X		X
Czech Republic	15/02/07	X	X	X	X	X	X	X	X		X
Denmark	15/02/07	X	X	X	X	X	X	X	X	X	X
Estonia	15/02/07	X	X	X	X	X	X	-	X		-
Finland	15/02/07	X	X	X	X	X	X	X	X	X	X
France	15/02/07	X	X	X	X	X	X	X	X		X
Georgia											
Germany	14/02/07	X	X	X	X	X	X	X	X	X	-
Greece	01/06/07										
Hungary	15/02/07	X	X	X	X	X	X	-	-	X	X
Iceland											
Ireland	15/02/07	X	X	X	X	X	X	-	-	-	-
Italy											
Kazakhstan											
Kyrgyzstan											
Latvia	15/02/07	X	X	X	X	X	X	X	X	X	X
Liechtenstein											
Lithuania	15/02/07	X	X	X	X	X	X	X	X	X	X
Luxembourg											
Malta	22/02/07	X	X	X	X	X	-	-	-	-	-
Moldova	14/02/07	X	X	X	X	X	X	X	X	X	-
Monaco	02/02/07	X	X	X	X	X	X	X	X		X
Montenegro											
Netherlands	13/02/07	X	X	X	X	X	X	-	X		-
Norway	15/02/07	X	X	X	X	X	X	X	X	X	X (15/06/07)
Poland	02/03/07	X	X	X	X	X	X	X	X	X	X
Portugal	14/02/07	X	X	X	X	X	-	-	X		-
Romania	15/02/07	X	X	X	X	X	X	-	X	X	X
Russian Fed	13/02/07	X	X	X	X	X	-	X	X		-
Serbia	13/02/07	X	-	-	-	-	-	-	-	X	-
Slovakia	14/02/07	X	X	X	X	X	X	X			X
Slovenia	14/02/07	X	X	X	X	X	X	X	X	X	X
Spain	08/05/07	X	X	X	X	X	X	X	X	X	X (25/06/07)
Sweden	12/02/07	X	X	X	X	X	X	X	-	X	X
Switzerland	15/02/07	X	X	X	X	X	X	X	X	X	-
TFYROM	26/02/07	X	X	-	-	-	-	X	X	X	-
Turkey											
Ukraine	23/03/07	X	X	X	X	X	X	X	-	-	-
UK	15/02/07	X	X	X	X	X	X	X	X	X	-
US	15/02/07	X	X	X	-	X	-	-	-		X
EC											
Total No. 37	28										20

APPENDIX 1B: STATUS OF REPORTING UNDER THE NECD

Member State	Submission		Resubmissions	Years covered	Format	SO ₂ , NO _x , NH ₃ , NMVOC	
	Uploaded to CDR	to the EC				2004 final	2005 prelimin
Austria	29-Dec-06			1990-2005	NFR	x	x
Belgium	17-Jan-07			1991-94, 2004-2005	NFR	x	x
Cyprus	28-Dec-06		19-Jan-07	1990-2005	excel tables	x	x
Czech r.	15-Jan-07		01-Mar-07	2004-2005	modified NFR2004	x	x
Denmark	27-Dec-06		8-Jan-07, 12-Jan-07	1982-2005	NFR 2002v	x	x
Estonia	29-Dec-06			1990-2005	modified NFR2004	x	x
Finland	21-Dec-06			2004, 2005	modified NFR2004	x	x
France	22-Dec-06	-	28-Mar-07	1980-2005	NFR 2002v	x	x
Germany	28-Dec-06			1990-2005	excel file CRF trend tables	x	x
Greece	01-Jun-07	-		2005	modified NFR2004	np	x
Hungary	26-Jan-07	10- Dec-06	14-Feb-07	2004-2005	word,nat.totals only	x	x
Ireland	21-Dec-06			2001-2005	NFR	x	x
Italy	19. Jan 2007	29- Dec-07		2004-2005	2000 - 2005, only nat tot	x	x
Latvia	29-Dec-07			1990-2005	NFR 2002v	x	x
Lithuania	28-Dec-06		08-Jan-07	2004-2005	modified NFR2004	x	x
Luxemb	np			np	np	np	np
Malta	30-Jan-07		15-Feb-07	2004-2005	NFR v2002 modified	x	x
Netherlands	22-Dec-06		29-Jan-07	2004-2005	NFR v2002 modified	x	x
Poland	08-Jan-07			2005	NFR not consistent	np	x
Portugal	19-Jan-07	16-Jan-07		1990-2005	NFR 2002v	x	x
Slovakia	21-Dec-06			2004, 2005	NFR	x	x
Slovenia	24-Dec-06		05-Jan-07	2004, 2005	NFR	x	x
Spain	28-Feb-07			2000-2005	NFR 2002v	x	x
Sweden	21-Dec-06			1980-2005	NFR	x	x
United Kingdom	19-Jan-07			2001-2005	NFR v2002 modified	x	x

np – not provided, x – provided;

NFR – nomenclature for reporting – sectoral classification system developed by UNECE/EMEP for the reporting of air emissions

APPENDIX 2A: COMPLETENESS OF LRTAP EMISSION DATA

Table A2.1 Overview of completeness of officially reported data to LRTAP per country, year and sector for CO emissions

Table A2 1 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for CO emissions

Table A2 1 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for CO emissions

A2.2 Overview of completeness of officially reported data to LRTAP per country, year and sector for NH₃ emissions

ISO2	SECTOR	Year																			
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total
AL	SNAP NATIONAL																				
AM	S04	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
	S10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	SNAP NATIONAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
AT	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
AZ	SNAP NATIONAL																				
BA	SNAP NATIONAL																				
BE	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	N01 01																				4
	N01 02																				4
	N01 03																				4
	N01 04																				4
	N01 05																				4
	N01 06																				4
	N01 07																				4
	N01 08																				4
	N01 09																				4
	N01 10																				4
	N01 NATIONAL																				4
	N01 PROTOCOL TOTAL																				4
	SNAP NATIONAL																				4
BG	S01 c																				1
	S04 c																				1
	S05 c																				1
	S06 c																				1
	S07 c																				1
	S08 c																				1
	S09 c																				1
	S10 c																				1
	SNAP c Total																				1
	M02 NATIONAL TOTAL																				1
	S04																				10
	S07																				6
	S08																				6
	S09																				10
	S10																				10
	SNAP NATIONAL																				10
BY	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S05 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	N01 01																				3
	N01 02																				3
	N01 03																				3
	N01 04																				3
	N01 05																				3
	N01 06																				3
	N01 07																				3
	N01 09																				3
	N01 10																				3
	N01 NATIONAL																				3
	N01 PROTOCOL TOTAL																				3
	SNAP NATIONAL																				3
CA	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S05 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S02	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S04	1	1	1	1</td																

Table A2.2 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for NH₃ emissions

A2 3

Overview of completeness of officially reported data to LRTAP per country, year and sector for NMVOC emissions

Table A2 3 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for NMVOC emissions

Table A2 3 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for NMVOC emissions

A2 4

Overview of completeness of officially reported data to LRTAP per country, year and sector for NO_x emissions

Table A2.4 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for NO_x emissions

Table A2 4 Cont. Overview of completeness of officially reported data to LRTAP in country, year and sector for NO_x emissions

SECTOR	1980												2020														
	S01 c	S02 c	S03 c	S04 c	S05 c	S06 c	S07 c	S08 c	S09 c	S10 c	S11 c	SNAP c Total	N02 NATIONAL TOTAL	SNAP NATIONAL	S01 c	S02 c	S03 c	S04 c	S05 c	S06 c	S07 c	S08 c	S09 c	S10 c	S11 c	SNAP c Total	N02 NATIONAL TOTAL
PT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
RO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
RS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
RU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SK	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
TR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
US	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

A2 5

Overview of completeness of officially reported data to LRTAP per country, year and sector for SO_x emissions

Table A2.5 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for SO_x emissions

Table A2.5 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for SO_x emissions

A2 6

Overview of completeness of officially reported data to LRTAP per country, year and sector for PM_{2.5} emissions

Table A2 6 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for PM_{2.5} emissions

A2 7

Overview of completeness of officially reported data to LRTAP per country, year and sector for PM₁₀ emissions

Table A2 7 Cont. Overview of completeness of officially reported data to LRTAP per country, year and sector for PM₁₀ emissions

ISO2	SECTOR	Year															Total
		95	96	97	98	99	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
IE	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
IS	SNAP NATIONAL																
IT	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S05 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
KG	SNAP NATIONAL																
KZ	SNAP NATIONAL																
LI	S02 c																1
	S03 c																1
	S04 c																1
	S06 c																1
	S07 c																1
	S08 c																1
	S09 c																1
	SNAP c Total																1
	N02 NATIONAL TOTAL																1
	N011	1															3
	N0110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N012	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N013	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N014	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N016	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N018	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N019	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N01 NATIONAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	N01 PROTOCOL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
LT	S01 c																2
	S02 c																2
	S03 c																2
	S07 c																2
	S08 c																2
	SNAP c Total																2
	N02 NATIONAL TOTAL																2
	N018																1
	N018D																1
	N01 NATIONAL																1
	N01 PROTOCOL TOTAL																1
LV	SNAP NATIONAL																
LV	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
	S06 c																1
	S07 c																1
	S08 c																1
	S10 c																1
	SNAP c Total																9
	N02 NATIONAL TOTAL																9
MC	SNAP NATIONAL																
MD	S01 c	1															7
	S02 c	1															7
	S03 c	1															7
	S04 c	1															7
	S07 c	1															7
	S08 c	1															7
	S10 c	1															7
	SNAP c Total	1															7
	N02 NATIONAL TOTAL	1															7
ME	SNAP NATIONAL																
MK	SNAP NATIONAL																
MT	SNAP NATIONAL																
NL	S01 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S02 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S03 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S04 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S05 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S06 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S07 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S08 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S09 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	S10 c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	SNAP c Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
	N02 NATIONAL TOTAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16

APPENDIX 2B: COMPLETENESS OF NECD EMISSION DATA

Overview of NECD emission inventory data (status 18 June 2007)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	INV07															
Belgium	INV06	INV07	INV07	INV07	INV07	INV06					INV05	INV06	INV06	INV06	INV07	INV07
Cyprus	INV07															
Czech Rep.															INV07	INV07
Denmark	INV07															
Estonia	INV07															
Finland											INV04	INV04	INV04	INV06	INV07	INV07
France	INV07															
Germany	INV07															
Greece	INV05	INV06	INV06	INV07												
Hungary	PRO06										PRO07			INV06	PRO07	PRO07
Ireland												INV07	INV07	INV07	INV07	INV07
Italy	INV06	INV07														
Latvia	INV06	INV07	INV07													
Lithuania														INV05	INV05	INV07
Luxembourg													INV05	INV05	INV05	na
Malta	PRO07													INV06	INV07	INV07
Netherlands													INV04	INV05	INV06	INV07
Poland																INV07
Portugal	INV07															
Slovakia														INV06	INV07	INV07
Slovenia														INV06	INV06	INV07
Spain	INV07															
Sweden	INV07															
United Kingdom													INV04	INV07	INV07	INV07

Notes: INV07=actual inventory submission, INV06=submission 2006, PRO07= Program 2007,

na = no communication

Greece did not report NH₃ in 2005, Hungary reported only national totals and for the year 2005 NH₃ and NMVOC are not provided; Spain sent for the years 1990-99 only national totals

APPENDIX 3A: OVERVIEW OF RECALCULATION OF LRTAP EMISSION DATA

Table A3 1 Recalculations of official LRTAP submissions of priority pollutants in 2007 (Unit: %)

The aim of this test is to identify differences between **national totals** reported by Parties to the Convention in 2007 and 2006 ($100 * [(X_{2007} - X_{2006}) / X_{2006}]$).

Differences larger than $\pm 10\%$ are flagged.

>+10%	<-10%
-------	-------

Key: Blank cell: Data for one or both of the reporting years are missing,
Zero (no decimals): Data (value or notation key) for the two years are identical,
Value: Percentage difference between 2007 and 2006 reporting.

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02	-4.02	
CY	2003													-0.26	
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

ISO2	Year	SO _x	NO _x	NH ₃	NMVOC	CO	TSP	PM ₁₀	PM _{2.5}	Pb	Hg	Cd	DIOX	PAH	HCB
AL	no reporting														
AM	no reporting														
AT	1980	0	0	0.21	0	0									
AT	1981	0	-0.01	0.21	0	0									
AT	1982	0	0	0.21	0	0									
AT	1983	0	0	0.21	0	0									
AT	1984	0	0.01	0.21	0	0									
AT	1985	0	0	0.21	0	0				0	0	2.43	0.03	0.01	0
AT	1986	0	-0.01	0.21	0	0				0	0	1.79	0.03	0.01	0
AT	1987	0	0	0.21	0	0				0	0	1.78	0.04	0.01	0
AT	1988	-0.42	0.01	0.22	0	0				0	0	1.85	0.05	0.01	0
AT	1989	-0.38	0.01	0.22	0	0				0	0	1.89	0.03	0.01	0
AT	1990	-0.02	-0.25	0.23	0.13	-0.09	1.96	1.88	0.49	0.01	0	2.96	0.08	0.11	0.12
AT	1991	0.01	-0.24	0.22	0.15	-0.07				0.01	0	3.43	0.1	0.11	0.14
AT	1992	-0.04	-0.26	0.21	0.2	-0.05				0.01	0	1.9	0.17	0.15	0.18
AT	1993	-0.03	-0.26	0.19	0.23	-0.04				0.01	0	1.8	0.19	0.2	0.19
AT	1994	-0.02	-0.26	0.26	-0.44	-0.06				0.01	0	1.8	0.15	0.1	0.08
AT	1995	-0.02	-0.26	0.35	-1.12	-0.01	2.44	2.87	1.68	0	0.01	3.19	0.25	0.23	0.27
AT	1996	-0.02	-0.17	0.47	-1.87	0.03				-0.01	0.01	2.72	0.26	0.23	0.28
AT	1997	0.03	-0.12	0.59	-2.7	0.06				-0.01	0.01	2.05	0.26	0.25	0.32
AT	1998	0.07	-0.07	0.72	-3.79	0.02				0.02	-0.01	0.83	0.81	0.98	1.07
AT	1999	0.51	0.43	0.89	-4.64	0.35	2.23	2.67	1.39	0.84	0.89	3.3	2.79	3.14	3.6
AT	2000	-0.28	0.45	1	-5.34	0.6	2.31	2.84	1.53	-0.16	0.14	2.1	3.15	4.59	4.39
AT	2001	0.48	0.28	1.14	-5.29	0.97	2.28	2.8	1.48	2.2	1.09	3.46	4.89	4.33	5.38
AT	2002	-2.77	0.08	1.2	-5.35	2.45	0.58	0.77	0.72	2.07	1.32	4.43	9.82	7.93	10.24
AT	2003	-2.24	-0.32	0.15	-7.23	-0.1	0.04	-0.22	-0.79	-0.77	-0.89	0.56	4.32	2.36	3.87
AT	2004	-5.65	-1.01	0.5	-8.63	-0.65	0.11	-0.3	-1.04	0.83	0.28	-2.18	1.47	-1.02	-1.29
AZ	no national														
BA	no reporting														
BE	2004	-2.74	0.35	1.78	-3.64	-7.29	-64.73	-27.46	1.35	-2.61	2.52	10.92	2.78	1.56	-34.76
BG	no														
BY	no														
CA	no														
CH	1990	-1.15	1.77	-0.78	7.61	3.53	6.11	3.46	6.39	-2.71	-2.14	-6.06	-93.31	-62.22	
CH	1995	-3.52	2.37	-0.7	5.64	3.7	7.5	4.42	7.2	-3.34	-0.11	-4.03	-92.82		
CH	2000	-6.23	2.1	-2.98	4.9	2.82	9.1	5.15	7.1	-7.21	0.78	0.87	-94.11		
CH	2004	-3.35	3.45	-5.47	6.3	2.56	11.41	6.76	8.76	0.39	1.57	7.41	-97.61	-54.9	
CY	1990												-0.02		-4.02
CY	2003														-0.26
CY	2004	0	-0.05	0.18	-0.08	0	0	0	-2.17	0	0	0	0	0	
CZ	no														
DE	1990	1.15	-0.56	-2.62	0.78	0.21	8.5	-1.74	0.58	8.99	266.11	856.83	-91.19	30142.76	
DE	1991	0.34	-0.56	-2.82	0.82	-0.03	71.1	-57.69	-63.94	6.92	3.46	22	655.7	24529.66	
DE	1992	-0.32	-0.64	-2.79	0.85	0.11	81.34	-41.5	-49.26	10.02	3.27	38.26	523.02	19885.85	
DE	1993	0.23	-0.67	-2.78	1.57	0.09	70.8	-25.18	-33.15	13.4	6.32	87.27	538.89	20041.47	
DE	1994	-0.08	-0.49	-1.78	-7.17	-0.17	39.7	-10.33	-16.25	21.68	11.93	302.19	-78.47	670.15	
DE	1995	1.14	1.8	-1.7	-6.09	2.04	26.87	11.42	11.1	27.58	-2.08	205.78	-69.77	17846.17	
DE	1996	1.95	0.31	-1.94	-4.65	1.04	26.79	10.28	9.74	48.88	1.09	195.36	423	17681.24	
DE	1997	1.55	0.34	-1.77	-3.43	-0.14	1.38	2.35	6.2	341.97	2.76	190.36	416.52	19467.53	
DE	1998	1.47	-0.16	-1.95	-1.87	-0.18	6.22	3.45	5.75	414.41	2.51	172.3	368.02	17094.57	
DE	1999	2.24	-0.11	-2.51	-3.3	-0.2	21.44	9.26	6.97	428.59	1.94	229.59	349.46	16541.86	
DF	2000	1.72	-2.02	-2.93	-5.1	0.35	24.16	9.04	5.42	305.7	0.11	-18.43	-97.87	16096.98	

APPENDIX 3B: OVERVIEW OF EU MS RECALCULATIONS - NECD INVENTORY

The following tables represent the difference between data reported by MS in 2006 and the data reported in 2005. Empty fields indicate that one of the two submissions did not contain any data and “0” indicates that no recalculations were undertaken.

Table A3B 1: Member States contribution to NO_x recalculations (Gg) for 1990-2004

NOx [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	0	1
Denmark	-4	-4	-4	-4	-4	-3	-2	-2	-1	0	1	1	2	2	2
Finland	-	-	-	-	-	-	-	-	-	0	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	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
Netherlands	-	-	-	-	-	-	-	-	-	-	0	0	0	-5	-
Portugal	0	0	0	0	0	0	0	1	0	-1	-1	-1	0	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	12	14	12	13	13	12	-
United Kingdom	-	-	-	-	-	-	-	-	-	0	29	28	43	43	-
EU-15	-	-	-	-	-	-	-	-	-	-	63	69	88	74	-
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	0	6	-
Malta	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	1
EU-25 (net change)	22	45	27	12	28	71	35	36	27	26	11	137	150	184	163

Table A3B 2: Member States contribution to NO_x recalculations (%) for 1990-2004

NOx [%]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2	-0,1	0,4	0,4	0,3	0,0	-0,5	-1,3
Belgium	0,0	-	-	-	-	0,0	-	-	-	0,0	0,0	0,0	0,0	0,0	0,3
Denmark	-1,6	-1,2	-1,3	-1,3	-1,3	-1,1	-0,6	-0,6	-0,3	-0,1	0,3	0,5	0,9	0,9	1,2
Finland	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0	0,5
France	0,6	0,6	0,6	0,6	0,7	0,7	0,7	0,7	0,8	0,7	1,8	1,4	2,2	1,2	1,3
Germany	-0,6	-0,6	-0,6	-0,7	-0,5	1,7	0,2	0,3	-0,2	-0,2	-2,0	0,7	0,5	1,3	1,5
Greece	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Ireland	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0
Italy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0
Netherlands	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	-1,4	-
Portugal	0,0	0,0	0,0	0,0	0,0	0,0	-0,2	0,2	-0,1	-0,4	-0,3	-0,3	-0,3	-0,1	0,0
Spain	2,3	2,2	1,4	1,3	1,4	1,4	1,1	0,9	0,8	0,4	0,5	0,2	-0,1	0,2	-0,6
Sweden	2,6	6,8	4,4	2,1	4,4	3,4	3,9	4,2	4,3	4,9	5,9	5,5	6,0	5,9	5,6
United Kingdom	-	-	-	-	-	-	-	-	-	0,0	1,6	1,6	2,5	2,6	-
EU15	-	-	-	-	-	-	-	-	-	-	0,6	0,7	0,9	0,8	-
Cyprus	-	-	-	-	-	-	-	-	-	0,0	0,1	0,1	-4,8	-0,1	-
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-1,8	-
Hungary	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-0,8	-
Latvia	-5,3	6,3	8,7	-1,6	1,3	-3,1	-7,3	-4,1	1,4	4,4	5,9	-1,2	2,7	1,2	1,9
Lithuania	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	11,8	-
Malta	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-2,3	-
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	-
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	1,3

Table A3B 3: Member States contribution to NMVOC recalculations (Gg) for 1990-2004

VOCs [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	0	-16
Denmark	2	2	1	1	1	3	1	0	0	0	2	1	3	1	1
Finland	-	-	-	-	-	-	-	-	-	0	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	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
Netherlands	-	-	-	-	-	-	-	-	-	-	0	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	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	-	-	-	-	-	-	-	-	-	-	-	116	95	115	54
Cyprus	-	-	-	-	-	-	-	-	-	0	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	0	28
Malta	-	-	-	-	-	-	-	-	-	-	-	-	0	-1	-
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-2
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
EU-25 (net change)	333	367	339	360	105	138	200	168	223	185	147	237	193	231	134

Table A3B 4: Member States contribution to NMVOC recalculations (%) for 1990-2004

VOCs [%]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0,1	0,1	0,2	0,2	-0,4	-1,1	-1,9	-2,7	-4,0	-4,9	-5,7	-5,7	-5,8	-8,1	-9,8
Belgium	0,0	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0	-7,6
Denmark	1,0	1,0	0,8	0,8	0,6	2,2	0,6	-0,1	-0,3	0,2	1,2	1,2	2,1	1,3	1,2
Finland	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0	1,0
France	12,6	14,9	14,6	15,1	13,8	14,2	15,7	13,8	14,7	14,5	14,3	14,1	12,4	11,2	9,8
Germany	0,8	0,8	0,8	1,5	-7,7	-6,5	-4,9	-3,6	-1,9	-3,4	-5,3	-5,0	-3,5	0,3	1,6
Greece	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Ireland	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0
Italy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0
Netherlands	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	-20,2
Portugal	10,3	11,0	9,8	9,0	8,0	7,5	6,9	6,4	6,0	6,0	5,2	4,7	4,6	4,7	4,9
Spain	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,1	0,2	0,2	0,2	0,3	0,3	0,4	0,4
Sweden	-18,7	-30,8	-33,4	-37,3	-33,0	-34,7	-33,8	-32,0	-27,7	-27,9	-28,0	-29,5	-28,1	-29,4	-26,0
United Kingdom	-	-	-	-	-	-	-	-	-	0,0	-1,2	-1,4	-0,9	-1,4	-
EU15	-	-	-	-	-	-	-	-	-	-	1,3	1,1	1,4	0,7	-
Cyprus	-	-	-	-	-	-	-	-	-	-0,2	-0,1	0,1	-2,1	-0,1	-0,1
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-1,1	-
Hungary	-	-	-	-	-	-	-	-	-	-	-	-	0,0	1,9	-
Latvia	-7,2	-22,1	-20,8	-0,8	-10,2	-6,1	-6,2	-4,4	-3,8	-2,1	-0,5	-1,7	0,0	-2,4	-6,1
Lithuania	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	40,3	-
Malta	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	-27,2	-
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-2,7	-
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	-0,3

Table A3B 5: Member States contribution to SO₂ recalculations (Gg) for 1990-2004

SOx [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	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	
Luxembourg	-	-	-	-	-	-	-	-	-	-	0	0	0	0	
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	-	-	-	-	-	-	-	-	-	-	-	-32	-27	-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-2
EU-25 (net change)	41	-1	-35	-19	-31	-14	-7	-19	-24	-21	-47	-65	-54	-31	-102

Table A3B 6: Member States contribution to SO₂ recalculations (%) for 1990-2004

SOx [%]	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	0,0	0,0	0,1	0,5	-0,3	0,4	-2,9	-2,4	-3,8
Belgium	0,0	-	-	-	-	0,0	-	-	-	0,0	0,0	0,0	0,0	-2,8	
Denmark	0,3	0,2	0,4	0,3	0,3	0,1	0,1	0,4	0,5	0,9	1,9	2,1	2,3	1,6	3,1
Finland	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	2,4
France	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,2	0,3	1,0	0,8	2,2	0,2	1,0
Germany	1,1	0,3	-0,3	0,2	-0,1	1,1	1,9	1,5	1,4	2,2	-1,7	-0,9	-0,5	0,0	2,0
Greece	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Ireland	-	-	-	-	-	-	-	-	-	-	-	2,3	2,9	1,2	1,4
Italy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0
Netherlands	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	-4,0	
Portugal	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-0,3	0,0	-0,1	-0,5	-0,1	-0,1	0,5	-0,3
Spain	-0,7	-0,3	-0,8	-0,9	-1,1	-1,5	-1,8	-1,7	-2,1	-2,2	-2,4	-2,7	-2,6	-2,5	-4,7
Sweden	-8,2	-9,7	-12,4	-12,0	-12,1	-11,5	-11,9	-13,8	-14,4	-11,7	-12,6	-13,5	-14,5	-13,7	-14,5
United Kingdom	-	-	-	-	-	-	-	-	-	-	0,0	0,8	0,8	1,8	0,3
EU15	-	-	-	-	-	-	-	-	-	-	-	-0,6	-0,5	-0,3	-1,1
Cyprus	-	-	-	-	-	-	-	-	-	-	-1,0	-	-	-0,2	0,0
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0
Hungary	-	-	-	-	-	-	-	-	-	-	-	-	0,0	-0,7	
Latvia	2,0	1,3	4,9	2,5	2,1	0,9	0,2	-1,1	1,7	-1,3	-12,3	-3,4	1,9	-1,3	0,9
Lithuania	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	12,2
Malta	-	-	-	-	-	-	-	-	-	-	-	-	2,0	2,8	
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	
Slovenia	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	-4,2	

Table A3B 7: Member States contribution to NH₃ recalculations (Gg) for 1990-2004

NH3 [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	0	1
Denmark	-26	-24	-23	-22	-22	-20	-19	-19	-18	-16	-16	-16	-15	-16	-14
Finland	-	-	-	-	-	-	-	-	-	0	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	0	-
Ireland	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-1
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
Netherlands	-	-	-	-	-	-	-	-	-	-	0	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	-	-	-	-	-	-	-	-	-	-	-	-35	-39	-	-
Cyprus	-	-	-	-	-	-	-	-	-	-1	-2	-1	0	0	0
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Hungary	-	-	-	-	-	-	-	-	-	-	-	-	0	0	9
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
Malta	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	1
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
EU-25 (net change)	-45	-40	-38	-36	-30	-29	-28	-31	-32	-33	-38	-72	-79	-39	-49

Table A3B 8: Member States contribution to NH₃ recalculations (%) for 1990-2004

NH3 [%]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	0,2	0,2	0,2	0,2	0,3	0,4	0,5	0,6	0,7	0,9	1,0	1,1	1,2	0,1	0,5
Belgium	0,0	-	-	-	-	0,0	-	-	-	0,0	0,0	0,0	0,0	0,0	1,7
Denmark	-24,3	-22,9	-22,5	-20,7	-22,2	-21,2	-20,4	-20,7	-19,7	-17,4	-18,2	-18,1	-17,8	-19,0	-16,5
Finland	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	2,7
France	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,2
Germany	-2,7	-2,9	-2,9	-2,9	-1,8	-1,7	-2,0	-1,8	-2,0	-2,6	-3,0	-3,3	-3,6	-2,6	-2,3
Greece	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-	-
Ireland	-	-	-	-	-	-	-	-	-	-	-0,2	-0,2	-0,5	-1,2	-
Italy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Luxembourg	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,0
Netherlands	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0	0,3
Portugal	15,6	14,5	14,3	14,7	14,2	13,8	16,2	13,7	13,3	14,6	16,6	13,6	15,3	9,5	11,3
Spain	-2,3	-1,7	-1,4	-1,5	-1,6	-1,9	-2,0	-2,5	-2,4	-2,6	-3,1	-3,4	-4,3	-3,6	-5,0
Sweden	-1,9	-2,6	-2,8	-2,5	-2,9	-2,9	-3,4	-3,5	-3,9	-4,5	-4,7	-5,2	-5,7	-6,1	-6,2
United Kingdom	-	-	-	-	-	-	-	-	-	-	0,0	2,1	2,0	1,5	-5,8
EU15	-	-	-	-	-	-	-	-	-	-	-	-1,1	-1,2	-	-
Cyprus	-	-	-	-	-	-	-	-	-	-22,0	-27,8	-18,0	0,0	0,0	0,0
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,7	-
Hungary	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	12,5
Latvia	-0,4	-0,4	-0,2	-0,4	-0,4	-0,6	-0,7	-0,8	-0,7	-0,8	-0,6	-0,8	-0,9	-0,7	-0,3
Lithuania	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0	0,0
Malta	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	13,4	-
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	2,5	-
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0,0	0,0	0,0

APPENDIX 4: OVERVIEW OF INVENTORY COMPARISONS

Note: Comparisons could be performed only for countries which submitted inventories under more than one reporting obligation. 0 indicates that there was no difference between emissions; an empty cell indicates that one (or both) of the inventories were not submitted; NH₃ is not reported under the EU-MM.

Table A4 1: Comparison of NECD, LRTAP and EU-MM 2005 NO_x inventories.

NO _x	1990					2005						
	LRTAP		NEC		EU-MM		LRTAP		NEC		EU-MM	
	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP	Gg	Difference to LRTAP
Austria	211	221	4.6%	211	0.0%	225	159	-29.3%	225	0.0%		
Belgium	382	382	0.1%	352	-7.7%	293	293	0.0%	267	-8.8%		
Denmark	274	269	-1.8%	274	0.0%	186	174	-6.5%	186	0.0%		
Finland	294			294	0.0%	177	180	1.2%	176	-0.9%		
France	1841	1841	0.0%	1826	-0.8%	1207	1208	0.1%	1213	0.5%		
Germany	2861	2861	0.0%	2792	-2.4%	1443	1444	0.0%	1443	0.0%		
Greece	300			280	-6.5%	332	332	NA	332	0.0%		
Ireland	122			122	0.0%	119	110	-7.9%	117	-2.1%		
Italy	1943	1947	0.2%	1943	0.0%	1127	1127	0.0%	1115	-1.1%		
Luxembourg	14			14	0.0%	8		NA	8	0.0%		
Netherlands	558			559	0.2%	344	369	7.2%	329	-4.5%		
Portugal	243	243	0.0%	251	3.1%	275	275	0.0%	262	-4.6%		
Spain	1244			1229	-1.2%	1522	1406	-7.6%	1511	-0.7%		
Sweden	314	314	0.0%	314	0.0%	205	205	0.0%	205	0.0%		
United Kingdom	2966			2966	0.0%	1627	1627	0.0%	1627	0.0%		
EU-15	13569			13428	-1.0%	9090		NA	9015	-0.8%		
Bulgaria	242			242	0.0%	233		NA	150	-35.9%		
Cyprus	14	14	0.0%	19	34.0%	17	17	0.0%	18	1.6%		
Czech Republic	742	0		742	0.0%	278	286	2.8%	279	0.3%		
Estonia	74	74	0.0%	93	26.9%	32	32	0.9%	46	44.5%		
Hungary	8			8	0.0%	203		NA	203	0.0%		
Latvia	67	66	-0.8%	67	0.0%	41	41	-0.8%	41	-0.8%		
Lithuania	136			136	0.0%	58	58	0.0%	53	-8.0%		
Malta	10			10	0.0%	12	12	0.3%	0	NA		
Poland	1280			1280	0.0%	811	825	1.7%	825	1.7%		
Romania	484			484	0.0%	303		NA	352	16.1%		
Slovakia	226			226	0.0%	98	98	0.0%	98	0.0%		
Slovenia	NE			NE		58	58	0.0%	58	0.0%		
EU-12	NE			NE		2145		NA		NA		

Table A4 2: Comparison of NECD, LRTAP and EU-MM 2005 NMVOC inventories.

NMVOC	1990					2005				
	LRTAP		NEC		EU-MM	LRTAP		NEC		EU-MM
	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP
Austria	285	285	0.1%	285	0.0%	154	150	-2.8%	154	0.0%
Belgium	354	359	1.3%	321	-9.4%	202	202	0.0%	117	-42.2%
Denmark	170	168	-1.3%	170	0.0%	118	119	0.2%	118	0.0%
Finland	229			229	0.0%	131	130	-1.3%	136	3.6%
France	2761	2761	0.0%	3978	44.1%	1439	1439	0.0%	2635	83.1%
Germany	3612	3612	0.0%	3612	0.0%	1253	1253	0.0%	1259	0.4%
Greece	280			308	9.7%	289	289	NA	289	0.0%
Ireland	103			103	0.0%	62	62	0.0%	58	-5.8%
Italy	1986	2032	2.3%	2150	8.3%	1233	1233	0.0%	1373	11.3%
Luxembourg	8			8	0.0%	6		NA	6	0.0%
Netherlands	465			466	0.1%	176	178	0.9%	170	-3.6%
Portugal	304	304	0.0%	713	134.2%	302	302	0.0%	728	141.1%
Spain	1171			1171	0.0%	1102	1053	-4.5%	1100	-0.2%
Sweden	373	373	0.0%	373	0.0%	199	199	0.0%	199	0.0%
United Kingdom	2386			2384	-0.1%	977	977	0.0%	976	-0.2%
EU-15	14489			16271	12.3%	7645		NA	9318	21.9%
Bulgaria	117			117	0.0%	147		NA	103	-30.1%
Cyprus	14	14	0.0%	14	2.6%	11	11	0.0%	13	10.3%
Czech Republic	311			311	0.0%	182	185	1.7%	182	-0.1%
Estonia	70	70	0.0%	35	-50.0%	36	37	1.4%	20	-44.9%
Hungary	62			62	0.0%	177		NA	176	-0.7%
Latvia	94	96	1.7%	94	0.0%	63	64	1.1%	63	0.0%
Lithuania	89			89	0.0%	84	84	0.0%	79	-5.7%
Malta	5			5	0.0%	5	5	0.7%	0	NA
Poland	831			831	0.0%	885	881	-0.5%	881	-0.5%
Romania	339			339	0.0%	320		NA	330	3.4%
Slovakia	137			137	0.0%	79	79	0.0%	79	0.0%
Slovenia	NE			NA/NE/NO		43	43	-0.3%	43	-0.3%
EU-12	NE					2034		NA		NA

Table A4 3: Comparison of NECD, LRTAP and EU-MM 2005 SO_x inventories.

SO _x	1990					2005						
	LRTAP		NEC		EU-MM		LRTAP		NEC		EU-MM	
	Gg	Gg	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP
Austria	74	75	0.7%		74	0.0%		26	26	-0.2%	26	0.0%
Belgium	361	363	0.5%		313	-13.2%		147	147	0.0%	144	-1.5%
Denmark	178	178	0.4%		178	0.0%		22	21	-2.0%	22	0.0%
Finland	249				249	0.0%		69	68	-1.4%	68	-1.1%
France	1333	1333	0.0%		1357	1.8%		465	466	0.0%	497	6.7%
Germany	5350	5350	0.0%		5203	-2.7%		560	538	-4.0%	561	0.1%
Greece	487				472	-3.1%		545	545	NA	545	0.0%
Ireland	183				183	0.0%		70	70	0.0%	71	0.6%
Italy	1795	1795	0.0%		1795	0.0%		450	450	0.0%	417	-7.2%
Luxembourg	14				14	0.0%		3		NA	3	0.0%
Netherlands	190				190	0.1%		62	64	2.4%	65	4.7%
Portugal	317	317	0.0%		317	0.0%		215	215	0.0%	218	1.5%
Spain	2166				2166	0.0%		1254	1225	-2.3%	1254	0.0%
Sweden	109	109	0.0%		109	0.0%		40	40	0.0%	40	0.0%
United Kingdom	3687				3687	0.0%		706	706	0.0%	706	0.0%
EU-15	16492				16308	-1.1%		4635		NA	4638	0.1%
Bulgaria	1517				1517	0.0%		900		NA	957	6.3%
Cyprus	37	37	0.0%		45	22.9%		42	42	0.0%	42	0.0%
Czech Republic	1876				1876	0.0%		219	220	0.4%	219	0.0%
Estonia	273	273	0.0%		321	17.6%		77	77	0.1%	148	91.4%
Hungary	10				10	0.0%		129		NA	147	13.5%
Latvia	100	99	-0.6%		100	0.0%		4	4	4.3%	4	0.0%
Lithuania	214				214	0.0%		44	44	0.0%	42	-4.1%
Malta	NE				19			18	18	-0.7%	0	NA
Poland	3210				3210	0.0%		1222	1232	0.9%	1232	0.9%
Romania	1152				1152	0.0%		727		NA	516	-29.0%
Slovakia	526				526	0.0%		89	89	0.0%	89	0.0%
Slovenia	NE				NA/NE/NO			42	42	0.0%	42	0.0%
EU-12	NE							3513		NA		NA

Table A4 4: Comparison of NECD, LRTAP and EU-MM 2005 NH₃ inventories.

NH ₃	1990					2005				
	LRTAP		NEC		EU-MM	LRTAP		NEC		EU-MM
	Gg	Gg	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP
Austria	74	75	0.7%		74	0.0%		26	26	-0.2%
Belgium	361	363	0.5%		313	-13.2%		147	147	0.0%
Denmark	178	178	0.4%		178	0.0%		22	21	-2.0%
Finland	249				249	0.0%		69	68	-1.4%
France	1333	1333	0.0%		1357	1.8%		465	466	0.0%
Germany	5350	5350	0.0%		5203	-2.7%		560	538	-4.0%
Greece	487				472	-3.1%		545	545	NA
Ireland	183				183	0.0%		70	70	0.0%
Italy	1795	1795	0.0%		1795	0.0%		450	450	0.0%
Luxembourg	14				14	0.0%		3	NA	3
Netherlands	190				190	0.1%		62	64	2.4%
Portugal	317	317	0.0%		317	0.0%		215	215	0.0%
Spain	2166				2166	0.0%		1254	1225	-2.3%
Sweden	109	109	0.0%		109	0.0%		40	40	0.0%
United Kingdom	3687				3687	0.0%		706	706	0.0%
EU-15	16492				16308	-1.1%		4635	NA	4638
Bulgaria	1517				1517	0.0%		900	NA	957
Cyprus	37	37	0.0%		45	22.9%		42	42	0.0%
Czech Republic	1876				1876	0.0%		219	220	0.4%
Estonia	273	273	0.0%		321	17.6%		77	77	0.1%
Hungary	10				10	0.0%		129	NA	148
Latvia	100	99	-0.6%		100	0.0%		4	4	4.3%
Lithuania	214				214	0.0%		44	44	0.0%
Malta	NE				19			18	18	-0.7%
Poland	3210				3210	0.0%		1222	1232	0.9%
Romania	1152				1152	0.0%		727	NA	516
Slovakia	526				526	0.0%		89	89	0.0%
Slovenia	NE				NA/NE/NO			42	42	0.0%
EU-12	NE							3513	NA	NA

Table A4 5: Comparison of NECD, LRTAP and EU-MM 2005 CO inventories.

CO	1990					2005				
	LRTAP		NEC		EU-MM	LRTAP		NEC		EU-MM
	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP	Gg	Gg	Difference to LRTAP	Gg	Difference to LRTAP
Austria	1221	NA		1221	0.0%	720	NA		720	0.0%
Belgium	1379	NA		1339	-3.0%	876	NA		682	-22.1%
Denmark	771	NA		771	0.0%	611	NA		611	0.0%
Finland	711	NA		711	0.0%	522	NA		511	-2.1%
France	11390	NA		12061	5.9%	5677	NA		6205	9.3%
Germany	12145	NA		12118	-0.2%	4035	NA		4035	0.0%
Greece	1302	NA		1295	-0.5%	1075	NA		1075	0.0%
Ireland	406	NA		406	0.0%	226	NA		221	-2.3%
Italy	7183	NA		7183	0.0%	3832	NA		3832	0.0%
Luxembourg	132	NA		132	0.0%	15	NA		15	0.0%
Netherlands	1136	NA		1137	0.1%	599	NA		546	-8.9%
Portugal	880	NA		944	7.3%	652	NA		718	10.1%
Spain	3701	NA		3701	0.0%	2336	NA		2329	-0.3%
Sweden	968	NA		968	0.0%	602	NA		602	0.0%
United Kingdom	8229	NA		8216	-0.2%	2417	NA		2406	-0.5%
EU-15	51553	NA		52203	1.3%	24194	NA		24507	1.3%
Bulgaria	790	NA		790	0.0%	740	NA		646	-12.7%
Cyprus	88	NA		71	-18.8%	41	NA		45	10.5%
Czech Republic	1049	NA		1049	0.0%	511	NA		536	5.0%
Estonia	313	NA		265	-15.4%	158	NA		201	27.4%
Hungary	167	NA		167	0.0%	587	NA		585	-0.3%
Latvia	382	NA		382	0.0%	337	NA		336	0.0%
Lithuania	499	NA		499	0.0%	190	NA		189	-0.7%
Malta	24	NA		24	0.0%	NE	NA		0	
Poland	7406	NA		7406	0.0%	3333	NA		3321	-0.4%
Romania	846	NA		846	0.0%	1405	NA		1506	7.2%
Slovakia	512	NA		512	0.0%	299	NA		299	0.0%
Slovenia	NE	NA		NA	NE	83	NA		83	0.0%
EU-12	NE	NA		NE	NA	NE	NA		NA	NA

APPENDIX 5: OVERVIEW OF CROSS POLLUTANT RATIOS BY COUNTRY GROUPS

The aim of this test is to check the consistency between reported pollutants and the comparability of pollutant ratios between countries grouped in four groups depending on their status with respect to the European Union. Pollutant ratios have been calculated for the transport (The sum of: 1 A 3 b i R.T., Passenger cars, 1 A 3 b ii R.T., Light duty vehicles, 1 A 3 b iii R.T., Heavy duty vehicles, 1 A 3 b iv R.T., Mopeds & Motorcycles, 1 A 3 b v R.T., Gasoline evaporation), for fuel combustion (sum of all 1A sectors), for landfills (6A), for agriculture (4B+4D1) and for national totals. For transport and agriculture, additionally NH₃/N₂O ratios have been calculated with N₂O data reported to the UNFCCC.

IR: Insufficient reporting e.g. of detailed sector data and or pollutant in order to perform the test.

NR: No reporting.

Grey shading: Individual country pollutant ratios are flagged if they exceeded the average pollutant ratio for the respective country region by more than a factor of 5 or by less than a factor of 0.2.

Largest value per ratio

Table A5 1: EU-15 cross pollutant ratios

	NOx/NMVOC	NOx/CO	NOx/PM2.5	NH ₃ /N ₂ O	NH ₃ /N ₂ O	NOx/NH ₃	PM10/Pb	PM10/Cd	PM10/Hg	TSP/PM2.5	TSP/PM2.5	TSP/PM10	National totals	National totals	NMVOC/NH ₃
ISO2	Transport	Transport	Transport	Agriculture	Agriculture	Fuel combustion	Fuel combustion	Fuel combustion	Fuel combustion	National totals	Fuel combustion	Fuel combustion	Landfills	Landfills	
AT	6.26	0.77	18.04	1.37	5.06	0.67	3170	26414	33882	1.64	3.52	1.43	2.02	30.00	
BE	2.99	0.41	16.64	0.82	4.43	IR	1213	35845	5642	13.32	9.43	5.90	4.59	IR	
DE	4.34	0.43	22.16	2.67	4.48	0.17	1801	13103	4693	1.54	2.10	1.31	1.17	IR	
DK	IR	IR	IR	IR	IR	IR	822	9106	4524	1.26	1.89	1.15	1.39	IR	
ES	2.60	0.48	15.29	0.90	5.41	0.06	845	13675	8332	1.51	2.15	1.19	1.45	IR	
FI	1.66	0.23	14.30	1.36	2.65	IR	2032	42128	90578	1.84	2.08	1.32	1.41	IR	
FR	1.94	0.30	12.61	0.95	4.02	0.45	1560	40465	36480	1.63	4.60	1.35	2.80	IR	
GB	4.13	0.44	20.88	0.58	3.33	IR	1037	23103	25296	IR	IR	IR	IR	1.61	
GR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
IE	2.03	0.26	14.39	1.81	4.75	IR	2041	26604	45778	2.08	2.11	1.54	1.55	IR	
IT	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
LU	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
NL	2.00	0.46	14.68	1.67	3.63	IR	3966	67833	81639	1.23	1.99	1.10	1.18	IR	
PT	2.18	0.35	13.85	0.83	4.81	IR	93	11530	21107	2.14	3.17	1.99	2.50	2.61	
SE	2.23	0.28	17.35	3.13	2.71	IR	4336	147560	121139	1.89	1.92	1.28	1.30	IR	
Average	2.94	0.40	16.38	1.46	4.12	0.23	1910	38114	39924	2.51	2.91	1.63	1.78	11.41	

Table A5 2: EU-12 cross pollutant ratios

	ISO2	Transport	NOx/NMVOC	NOx/CO	NOx/PM2.5	NH3/N2O	NH3/N2O	NOx/NH3	Fuel combustion	PM10/Pb	PM10/Cd	PM10/Hg	TSP/PM2.5	TSP/PM2.5	TSP/PM10	TSP/PM10	NMVOC/NH3	Landfills
BG	2.37	0.40	IR	IR	IR	IR	IR	IR	Fuel combustion	IR	IR	IR	IR	IR	IR	IR	IR	
CY	1.47	0.19	104.25	0.15	4.52	IR	50.96	307.7	307.7	2.41	3.52	1.51	2.00	IR	IR	IR	IR	
CZ	2.05	0.41	18.95	1.05	IR	IR	553.0	14804	9434	2.82	2.16	2.23	1.60	IR	IR	IR	IR	
EE	2.04	0.26	19.60	22.70	2.25	IR	756.3	48703	52796	2.01	2.16	1.54	1.61	IR	IR	IR	IR	
HU	1.88	0.25	10.50	0.01	2.88	IR	1496	17652	19958	2.95	3.31	1.72	1.91	IR	IR	IR	IR	
LT	2.88	0.51	20.58	0.93	4.59	IR	2107	29040	33929	1.68	1.75	1.37	1.43	IR	IR	IR	IR	
LV	1.96	0.22	IR	1.45	3.33	IR	128561	268246	606489	1.19	1.42	1.10	1.15	IR	IR	IR	IR	
MT	2.13	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	
PL	2.04	0.37	15.28	IR	4.36	IR	492.0	5677	11054	2.78	3.37	1.41	1.62	IR	IR	IR	IR	
RO	IR	IR	IR	6.41	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	
SI	2.71	0.66	14.16	1.48	5.99	IR	3228.55	6457	13671	2.09	3.05	1.82	2.27	IR	IR	IR	IR	
SK	1.50	0.33	12.81	1.40	2.93	IR	429.9	5588	15210	1.87	1.87	1.44	1.44	IR	IR	IR	IR	
Average	2.09	0.36	27.02	3.95	3.86	IR	15297	44053	84761	2.20	2.51	1.57	1.67	IR	IR	IR	IR	

Table A5 3: Non-EU West cross pollutant ratios

	ISO2	Transport	Transport	Transport	Transport	Agriculture	NH3/N2O	NOx/NH3	PM10/Pb	Fuel combustion	PM10/Cd	PM10/Hg	TSP/PM2.5	TSP/PM2.5	TSP/PM10	TSP/PM10	NMVO/C	NMVO/C
CH	2.22	0.22	24.54	IR	IR	0.10	990.9	4991	9053	2.23	2.24	1.15	1.04	0.01				
IS	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
LI	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
MC	0.48	0.13	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	
NO	1.33	0.20	16.09	IR	IR	IR	8962	111448	150823	1.18	1.40	1.14	1.26				IR	
Average	1.34	0.18	20.32	I/IR	I/IR	0.10	4976	58219	79938	1.71	1.82	1.15	1.15	0.01			Landfills	

Table A5 4: Non-EU East cross pollutant ratios

ISO2	Transport	Transport	Transport	Transport	Agriculture	Agriculture	Fuel combustion	Fuel combustion	Fuel combustion	Fuel combustion	National totals	Fuel combustion	TSP/PM10	NMVOC/NH3
AL	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
AM	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
AZ	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
BA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
BY	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	3.50	IR	2.46	IR
GE	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
HR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
KG	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
KZ	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MD	1.21	0.18	11.10	IR	IR	IR	7539	140500	43291	4.44	3.02	1.87	1.56	IR
ME	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MK	1.04	0.22	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR
RS	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR
RU	0.67	0.12	49.22	IR	IR	IR	2628	13709	45043	2.69	2.69	1.59	1.59	IR
TR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
UA	0.49	0.08	779.3	IR	IR	IR	898.0	60088	14712	52.97	49.69	5.97	6.10	IR
Average	0.85	0.15	279.87	I/IR	I/IR	I/IR	3688	71432	34349	20.03	14.73	3.14	2.93	I/IR

Table A5 5: North America and EU cross pollutant ratios

ISO2		Transport	Transport	Transport	Transport	Agriculture	NH3/N2O	NOx/NMVOC	NOx/CO	NOx/PM2.5	NH3/N2O	NH3/N2O	NOx/NH3	NOx/PM10/Pb	Fuel combustion	Fuel combustion	Fuel combustion	Fuel combustion	National totals	National totals	Landfills	NMVOC/NH3
CA	1.84	0.12	1.10	IR	IR	IR	861.0	7375	46825	14.49	18.16	3.34	3.22	IR								
US	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	
EU	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Average	1.84	0.12	1.10	I/IR	I/IR	I/IR	861.0	7375	46825	14.49	18.16	3.34	3.22	I/IR	TSP/PM10	Fuel combustion	Fuel combustion	Fuel combustion	Fuel combustion	National totals	National totals	