



AUSTRIA'S NATIONAL AIR EMISSION INVENTORY 1980–2004

Submission under the Convention on Long-range
Transboundary Air Pollution

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ZUSAMMENFASSUNG

Der vorliegende Bericht präsentiert eine Zusammenfassung der Daten zur Erfüllung des UNECE-Übereinkommens über weiträumige grenzüberschreitende Luftverunreinigung (BGBl. Nr. 158/1983) für den Zeitraum 1990 bis 2004. Zur Ermittlung der Daten wurde das Handbuch von EMEP/CORINAIR angewandt. Die Darstellung erfolgt im NFR-Format der UNECE.

Dieser Bericht baut auf dem Umweltbundesamt Report REP-0005 zur Erfüllung der NEC-Richtlinie (2001/81/EG) vom 31. Dezember 2005 auf, in welchem die Emissionswerte von SO₂, NO₂, NH₃ und NMVOC im Hinblick auf die im Emissionshöchstmengengesetz-Luft (BGBl. I Nr. 34/2003) festgesetzten jährlichen Emissionshöchstmengen beschrieben werden und ergänzt diese um die Schadstoffgruppen Staub, Schwermetalle, POPs und CO.

Im Folgenden wird der von der Republik Österreich an die Wirtschaftskommission der Vereinten Nationen für Europa (UNECE) zu übermittelnde Emissionsbericht in englischer Sprache wiedergegeben. Es handelt sich hierbei um eine Zusammenfassung der wichtigsten Daten mit Anführung der wesentlichsten methodischen Änderungen.

Dieser Bericht enthält im Anhang Überblickstabellen für die Schadstoffe SO₂, NO₂, NH₃, NMVOC, CO und Staub sowie für Schwermetalle und persistente organische Verbindungen (POPs). Der vollständige Datensatz wird der UNECE in digitaler Form übermittelt.

Datengrundlage

Das Umweltbundesamt führt jährlich eine Inventur des Ausstoßes von Luftschadstoffen durch, die als Grundlage für die Erfüllung der nationalen und internationalen Berichtspflichten herangezogen wird. Diese Österreichische Luftschadstoff-Inventur (OLI) wird erforderlichenfalls auch für zurückliegende Jahre aktualisiert, um eine konsistente Zeitreihe zur Verfügung zu haben. Die in diesem Bericht dargestellten Emissionsdaten ersetzen somit die publizierten Daten vorhergehender Berichte.

Folgende Tabelle fasst den Stand der Daten und das Berichtsformat des vorliegenden Berichtes zusammen.

Inventur	Datenstand	Berichtsformat
OLI 2005	Februar 2006	NFR-Format der UNECE

*Tabelle:
Datengrundlage des
vorliegenden Berichts*

Der vorliegende Bericht wurde vom Umweltbundesamt auf Grundlage des Umweltkontrollgesetzes BGBl. Nr. 152/1998 erstellt. Der Umweltbundesamt GmbH wird in diesem Bundesgesetz in § 6 (2) Z.19 unter anderem die Aufgabe übertragen, an der Erfüllung der Berichtspflichten an die Europäische Kommission gemäß Richtlinien und Entscheidungen der EG mitzuwirken. In § 6 (2) Z. 20 werden die Entwicklung und Führung von Inventuren und Bilanzen zur Dokumentation des Zustandes und der Entwicklung der Umwelt sowie der Umweltbelastungen und ihrer Ursachen ausdrücklich als besondere Aufgaben des Umweltbundesamtes genannt.

Das Umweltbundesamt versteht den Bericht als Beitrag im Rahmen der Wahrnehmung seiner Funktion als Umweltschutzfachstelle des Bundes in Erfüllung der ihm im Umweltkontrollgesetz zugewiesenen Kompetenzen.



1 INTRODUCTION

This report presents a summary of the inventory data in fulfilment of Austria's annual reporting obligation under the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) and its Protocols. For this report the NFR-format of the UNECE was used. The inventory itself follows the EMEP/CORINAIR¹ Emission Inventory Guidebook.

The basis of this report is the Austrian air emission inventory 2005 (Österreichische Luftschadstoff-Inventur, OLI 2005) prepared by the Umweltbundesamt for the years 1980 to 2004.

In 2002 the Executive Body adopted new guidelines for estimating and reporting emission data to further improve transparency, consistency, comparability, completeness and accuracy of reported emissions. These guidelines define the format for reporting emission data (Nomenclature For Reporting/NFR) and offer guidance on how to provide supporting documentation. They specify minimum and additional reporting obligations.

Annex 1 of this report presents trend tables of SO_x, NO_x, NH₃ and NMVOC, CO, particulate matter, heavy metals and persistent organic pollutants for the main NFR sectors as reported to the UNECE Convention on Long-range Transboundary Air Pollution. The complete tables of the NFR Format are uploaded to the Central Data Repository of the EIONET in digital form (Excel files).

Contact name and address for this submission is given below:

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¹ EMEP/CORINAIR Emission Inventory Guidebook. Third edition. Prepared by the EMEP Task Force on Emission Inventories. October 2002 update. Internet site: <http://reports.eea.eu.int>



2 RELATION TO DATA REPORTED EARLIER

As a result of the continuous improvement of Austria's National Air Emission Inventory, emissions of some sources have been recalculated on the basis of updated data or revised methodologies, and thus emission data for 1990 to 2003 submitted this year differ from data reported previously.

The figures presented in this report replace data reported earlier by the Umweltbundesamt under the reporting framework of the UNECE/LRTAP Convention and NEC Directive of the European Union.

	Recalculation Difference [%]	
	1990	2003
SO ₂	-3%	-2%
NO _x	0%	0%
NMVOC	-1%	-4%
NH ₃	20%	19%
CO	-2%	-5%
Cd	1%	-1%
Hg	-1%	-2%
Pb	0%	-1%
PAH	-1%	-7%
Dioxin	-1%	-5%
HCB	-2%	-7%
TSP	24%	16%
PM10	3%	0%
PM2,5	6%	2%

*Table 1:
Recalculation
difference compared to
the previous submission*

The most important changes with respect to data submitted last year are the revision of Austrian N excretion values of the Austrian livestock as well as the recalculation of the NH₃ emission factor for housing and storage. Both have led to significantly higher NH₃ emissions from the Sector Agriculture for the whole time series.

The 4% decrease of NMVOC emissions for 2003 compared to the previous submission is mainly due to the revision of emission factors and a down-revised solid biomass consumption of residential space heating (category 1 A 4).

For the first time in the Sector Agriculture emissions from combine harvesting were considered, which has led to significantly higher TSP emissions.

A description of these recalculations by sector is given in Chapter 4.

3 SOURCES OF DATA

The following table presents the main data sources used for activity data as well as information on who carried out the actual calculations:

*Table 2:
Main data sources for
activity data and
emission values*

Sector	Data Sources for Activity Data	Emission Calculation
Energy	Energy Balance from Statistik Austria, Steam boiler database;	Umweltbundesamt, operator reports
Industry	National production statistics, import/export statistics, direct information from industry or associations of industry;	Umweltbundesamt, operator reports
Waste	Landfill database	Umweltbundesamt
LUCF	National forest inventory obtained from the Austrian Federal Office and Research Centre for Forests	Umweltbundesamt
Solvent	Import/ export statistics, production statistics, consumption statistics;	Umweltbundesamt based on a study by: Forschungsinstitut für Energie und Umweltplanung, Wirtschaft und Marktanalysen GmbH and Institut für industrielle Ökologie ²
Agriculture	National Studies, national agricultural statistics obtained from Statistik Austria;	Umweltbundesamt based on studies by: University of Natural Resources and Applied Life Sciences & Research Center Seibersdorf

The main sources for emission factors are:

- National studies for country-specific emission factors
- Plant-specific data reported by plant operators
- EMEP/CORINAIR Guidebook.

² Research Institute for Energy and Environmental Planning, Economy and Market Analysis Ltd./Institute for Industrial Ecology.

4 METHODOLOGICAL CHANGES WITH RESPECT TO THE PREVIOUS SUBMISSION

This chapter describes the methodological changes by sector made to the inventory since the previous submission.

4.1 Energy (1A)

Update of activity data:

Cross-sectoral:

Coke oven coke net calorific values from 1990 to 1992 and 1990 to 2003 are adjusted. Consumption of gasworks gas 1990 to 1995 is considered additionally in subcategories *1 A 2 f* and *1 A 4*.

1 A 1 a Public Electricity and Heat Production:

Natural gas consumption 1997 and biomass consumption 2003 increased due to changes of the national energy balance. Consumption of biomass and industrial waste decreased from 1992 to 2003 due to elimination of double counting.

1 A 1 b Petroleum Refining:

Liquid fuels consumption 1990 to 1992 increased due to changes of the national energy balance. From 1999 to 2001 liquid fuel consumption increased due to adaptation to plant-specific data.

1 A 1 c Manufacture of Solid Fuels and Other Energy Industries:

Transformation losses from gasworks for 1990 to 1995 are now considered in this category. Natural gas consumption of *Other Energy Industries* 1991 to 1995 has changed due to changes of the national energy balance.

1 A 2 a Iron and Steel:

Coke oven gas consumption (included in solid fuels) is adjusted to CO₂ emissions of integrated steel plants not considered elsewhere. Coke oven coke consumption for blast furnaces is updated for 2003.

1 A 2 b, c, d, e Manufacturing Industries and Construction:

The minor changes of each subcategory are due to changes of the energy balance, mainly due to shifts between categories. Final consumption of gasworks gas 1990 to 1995 which is not considered in the energy balance reported to EUROSTAT/IEA is considered additionally in the specific subcategories as specified in the "Austrian energy balance".

1 A 2 f Manufacturing Industries and Construction – Other:

Consumption of hard coal 1990 to 1993 has been moved from *1 A 4 Other Sectors* to "Non metallic Mineral Products Industry" according to cement industry emissions declarations.



1 A 3 b Transport – Road Transportation:

Update of the statistical data for light-duty and heavy-duty vehicles (new splitting by Statistics Austria) from 1990 to 2003.

1 A 3 e Other Transportation – pipeline compressors:

Update of 2003 natural gas consumption according to the updated national energy balance.

1 A 4 Stationary:

Natural gas consumption has been moved from or to other subcategories of *1 A Fuel Consumption* according to the updated energy balance. Consumption of gas works gas is considered additionally. Solid biomass consumption from 2000 to 2003 is adjusted, which follows the changes of the national energy balance.

Improvements of methodologies and emission factors:

Cross-sectoral:

PM emissions from coal storage and handling have been shifted from *1 A Fuel Combustion* to category *1 B 1 a Coal Mining and Handling*.

1 A 1 a Public Electricity and Heat Production:

For plants > 50 MW_{th} update of SO₂ and NO_x emissions for 2003 by means of the steam boiler database. For 1990, 1991 and 1999 gap filling of SO₂ and NO_x emissions declarations for plants > 50 MW_{th}. Heavy metals, POPs and PM emissions from waste incineration plants have been recalculated from 2001 onwards by means of most actual clean flue gas concentration measurements and activity data. PM emission factors for fuel oil combustion in plants < 50 MW_{th} have been adjusted according to most current flue gas concentration permits. PM emissions from combustion of biomass have been recalculated by means of boiler size statistics and boiler size dependent emissions factors.

1 A 1 b Petroleum Refining:

Update of 2003 emissions with plant-specific measurement data.

1 A 2 c Chemicals:

Update of SO₂ and NO_x emissions from combustion of hard coal, industrial waste and solid biomass and update of SO₂ emissions from combustion of black liquor by means of plant-specific data and a national study on NO_x emissions from industrial combustion.

1 A 2 d Pulp, Paper and Print:

Update of total SO₂ emissions for 2002 and 2003 according to emissions reported by the association of paper industry. Update of 2001 to 2003 NO_x emissions from solid biomass and black liquor. PM emissions are recalculated for the whole time series by means of a study funded by the national association of paper industry.



1 A 2 f Manufacturing Industry and Construction – Other:

Update of 2003 SO₂, NO_x and NMVOC, heavy metals and PM emissions from cement industry according to a new study based on plant-specific measurement data.

1 A 3 a Civil Aviation:

The splitting of the energy data into national and international aviation of 2003 and 2004 has been updated according to the energy balance. (Statistics Austria).

1 A 3 b Road Vehicle Tyre & Brake Wear, Road Surface Wear

Update of TSP, PM and Cd emission factors for Road Vehicle Tyre, Brake Wear and Road Surface Wear. These three sources are reported as one.

1 A 4 Other Sectors:

Consideration of 'new' pellets, wood chips, fuel wood, natural gas and gas-oil space heating technologies from 2001 onwards. This has led to lower NMVOC, POPs and PM emissions from the combustion of biomass and lower NO_x emissions from the combustion of oil and natural gas.

4.2 Fugitive Emissions (1 B)

Update of activity data:

1 B 2 a Oil refining:

Activity data for 2002 and 2003 have been updated with data from the national energy balance (NMVOC).

1 B 2 b Gas Extraction/First treatment:

During QC checks a transcription error for NMVOC emissions for 2003 was found; this error has been corrected.

Improvements of methodologies and emission factors:

1 B 2 b Gas Distribution:

The method to calculate NMVOC emissions has been changed to a country specific method similar to the Corinair detailed methodology. The relevant activity data are now the km of distribution mains. The EF is based on the mean IPCC default EF for CH₄ (0.615 Mg/km) with an average of 1.2% NMVOC in natural gas. This results in an EF of 7.38 kg NMVOC/km of distribution mains.

4.3 Industrial Processes (2)

Update of activity data:

2 A 3 Limestone and Dolomite Use

Activity data for TSP, PM10 and PM2.5 for 2001-2003 have been updated.

2 A 7 Other

Activity data for TSP, PM10 and PM2.5 for 2000-2003 have been updated.

2 D 1 Other Production – Pulp and Paper (chipboard production):

Activity data for 2003 have been updated.

2 D 2 Other Production – Food and Drink (Bread, Wine and Beer):

Activity data for 2003 have been updated.

2 D 2 Other Production – Food and Drink (Spirits):

Activity data for 1996 to 2003 have been updated.

Improvements of methodologies and emission factors:

2 B 5 Other

TSP emissions of Ammonium nitrate production have been included.

2 C Metal Production

2002-2003: TSP emissions have been updated with data submitted by Industry. PM10 and PM2.5 EF have been recalculated accordingly.

4.4 Solvent Use (3)

NMVOC, Hg and Pb emissions from solvent use from 2002 onwards have been updated by means of 2001 data and sector-specific technological and economic developments. This results in a slight decrease of total NMVOC, Hg and Pb emissions from solvent use in 2003 compared to the previous submission, where emission data were constantly extrapolated from 2002 onwards.

4.5 Agriculture (4)

Update of activity data:

4 D 1 Direct Soil Emissions – sewage sludge application:

Amounts of agriculturally applied sewage sludge from 2002 to 2004 have been updated with data from the National Austrian Waste Water Database.

Improvements of methodologies and emission factors:

4 A, 4 B, 4 D Enteric Fermentation, Manure Management, Agricultural Soils:

N excretion values of the Austrian livestock have been revised. Especially N excretion rates of dairy and mother cows are higher now, which results in higher NH₃ emissions from source category 4 B.

Estimates are based on following references:

- GRUBER, L. & POETSCH, E.M. (2005): Calculation of nitrogen excretion of dairy cows in Austria. Die Bodenkultur, in print.
- PÖTSCH, E.M., GRUBER, L. & STEINWIDDER, A. (2005): Answers and comments on the additional questions, following the meeting in Brussels. Internal statement, HBLFA Raumberg-Gumpenstein.
- STEINWIDDER, A. & GUGGENBERGER, T. (2003): Erhebungen zur Futtermittelaufnahme und Nährstoffversorgung von Milchkühen sowie Nährstoffbilanzierung auf Grünlandbetrieben in Österreich. Die Bodenkultur 54 (1), 49-66.
- UNTERARBEITSGRUPPE N-ADHOC (2004): Überprüfung und Überarbeitung der N-Anfallswerte für einzelne Tierkategorien. Unterlagen ausgearbeitet vom Fachbeirat für Bodenfruchtbarkeit und Bodenschutz des BMLFUW.
- ZENTRALE ARBEITSGEMEINSCHAFT ÖSTERREICHISCHER RINDERZÜCHTER (2004): Cattle Breeding in Austria, 148pp.

4 B Manure Management:

Calculations of NH₃ emissions from housing and storage following the Corinair detailed methodology have been revised.

4 D Agricultural Soils:

PM emissions from Soil Cultivation and Harvesting have been estimated on the basis of the following studies:

- HINZ, T. (2005): Particle Emissions from Arable Farming. Joint meeting of the Ammonia Expert Group and the TFEIP Agriculture and Nature Panel. UNECE Convention on Long-Range Transboundary Air Pollution. Segovia, Spain.
- HINZ, T. (2004): Agricultural PM₁₀ Emissions from Plant Production. PM Emission Inventories Workshop, UNECE Convention on Long-Range Transboundary Air Pollution. Lago Maggiore, Italy.

4 F On-field burning:

Specific emission factors for straw burning and wood burning were derived from:

- HÜBNER ET AL. (2001): Österreichische Emissionsinventur für die Schwermetalle Cadmium, Quecksilber und Blei 1995-2000. Wien, 2001.

4 G Other:

Particle Emissions from Animal Husbandry are now considered in this category. Calculations followed the Corinair method “First Estimate”. In the CORINAIR-Guidebook PM10, PM2.5 but no TSP emission factors are available. The TSP emission factor was derived using a conversion factor of 1.2 to transform amounts of PM10 yields into total dust concentrations (SEEDORF 2004)

References:

- EUROPEAN ENVIRONMENT AGENCY (2005): EMEP/CORINAIR Emission Inventory Guidebook – 2005. Technical Report No. 30, Chapter B1100. Fugitive PM sources (1010): Particle emissions from animal husbandry. Copenhagen, 2005,
http://reports.eea.eu.int/EMEP_CORINAIR4/en/page019.html
- SEEDORF, J. (2004): An emission inventory of livestock-related bioaerosols for Lower Saxony, Germany. Hannover, 2004. In: Atmospheric Environment 38 (2004), pp. 6577.

4.6 Waste (6)

6 A 1 Managed Waste Disposal:

Update of activity data:

The Activity data for Residual Waste and Non-residual Waste has been updated. According to the Landfill Ordinance the operators of landfill sites have to report their activity data annually. Because of reports received after the due date, there are minor changes of the activity data in this submission compared to the previous submission.

For those years where no data on non-residual wastes were available (before 1998), extrapolation according to the GDP has been carried out instead of assuming constant data.

Double counting of the amount of construction waste has been corrected.

Improvements of methodologies and emission factors:

The methodology to calculate the amount of landfill gas has been changed and thus NMVOC, CO and heavy metal emissions have changed as well.

5 METHOD OF REPORTING

The emission data presented in this report were compiled according to the guidelines for estimating and reporting emission data (EB.AIR/GE.1/2002/7) approved by the Executive Body for the UNECE/ LRTAP Convention at its 20th session.

In Austria, emissions of air pollutants are included together with emissions of greenhouse gases in a database based on the CORINAIR nomenclature (CORe INventory AIR)/SNAP (Selected Nomenclature for sources of Air Pollution). This nomenclature was designed by the EEA to estimate emissions of all kinds of air pollutants. To comply with the reporting obligations under the UNECE/LRTAP Convention, emissions are transformed into the NFR (Nomenclature For Reporting) format.

The complete set of tables of the NFR Format, including in particular Sectoral Reports and Sectoral Background Tables are submitted separately in digital form only (excel files). The NFR Summary Tables are presented in the Annex of this report.

Treatment of fuel

In the 2002 Emission Reporting Guidelines, Parties are given the choice of whether to report emissions on the basis of fuel used or fuel sold to the final consumer. It is recommended that they should clearly state the basis of their calculations in their submissions.

In the reports to the UNECE Convention on Long-range Transboundary Air Pollution and the EEA, emissions of the Austrian road transport sector are reported on the basis of fuel sold. Emissions from 'tank tourism'³ are therefore included in the Austrian total.

The following table summarises the status of the present report:

Reporting Obligation	Format	Inventory	Version
UNECE/ LRTAP Convention	NFR Format	OLI 2005	February 2006

*Table 3:
Status of the present
report*

³ 'Tank tourism': In the early 1990s, fuel prices were lower in the neighbouring countries. Therefore the fuel was bought abroad and used in Austria. Meanwhile prices in Austria have become notably cheaper than in the neighbouring countries. Therefore drivers buy fuel in Austria and use it abroad, which means the emissions are released abroad. Most of that fuel is used by heavy-duty vehicles for long-distance traffic (inside and outside the EU). In 2004 about 28% of the reported NO_x emissions were caused by 'tank tourism' (LEBENS MINISTERIUM 2005).

LEBENS MINISTERIUM (2005): Abschätzung der Auswirkungen des Tanktourismus auf den Treibstoffverbrauch und die Entwicklung der CO₂-Emissionen in Österreich. Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien 2005.



6 ANNEX

The following Annex contains tables describing trends of SO_x, NO_x, NMVOC, CO, NH₃, particulate matter, heavy metals and persistent organic pollutants. The complete tables of the NFR Format, including in particular Sectoral Reports and Sectoral Background Tables, are submitted separately in digital form only (excel files).

In this report the following notation keys have been used for all tables:

- NE** (not estimated):for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated.
- IE** (included elsewhere): ...for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category.
- NO** (not occurring):for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/ sink category.
- NA** (not applicable):for activities in a given source/sink category that do not result in emissions or removals of a specific gas.
- C** (confidential):for emissions which could lead to the disclosure of confidential information if reported at the most disaggregated level. In this case a minimum of aggregation is required to protect business information.

Trend Table 1: SO₂ [Gg] 1980-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1980	330.27	327.71	2.56	13.14	NA	0.040	NE	0.41	NO	343.86	0.12
1981	287.92	286.03	1.89	13.02	NA	0.037	NE	0.41	NO	301.38	0.13
1982	273.70	271.96	1.75	12.89	NA	0.042	NE	0.41	NO	287.05	0.12
1983	198.96	197.37	1.59	12.77	NA	0.042	NE	0.41	NO	212.19	0.15
1984	181.82	180.16	1.67	12.65	NA	0.045	NE	0.41	NO	194.93	0.20
1985	166.33	164.80	1.53	12.07	NA	0.046	NE	0.41	NO	178.86	0.21
1986	147.78	146.32	1.46	11.28	NA	0.042	NE	0.41	NO	159.52	0.19
1987	126.88	125.36	1.52	10.28	NA	0.044	NE	0.41	NO	137.62	0.21
1988	98.88	97.23	1.65	3.92	NA	0.049	NE	0.22	NO	103.07	0.23
1989	89.03	87.30	1.73	3.31	NA	0.046	NE	0.14	NO	92.52	0.28
1990	71.94	69.94	2.00	2.22	NA	0.00	NE	0.07	NO	74.23	0.28
1991	69.38	68.08	1.30	1.90	NA	0.00	NE	0.06	NO	71.34	0.32
1992	53.22	51.22	2.00	1.67	NA	0.00	NE	0.04	NO	54.93	0.34
1993	51.87	49.77	2.10	1.42	NA	0.00	NE	0.04	NO	53.33	0.36
1994	46.10	44.82	1.28	1.42	NA	0.00	NE	0.05	NO	47.57	0.38
1995	45.40	43.87	1.53	1.37	NA	0.00	NE	0.05	NO	46.82	0.42
1996	43.32	42.12	1.20	1.29	NA	0.00	NE	0.05	NO	44.67	0.47
1997	39.02	38.95	0.07	1.27	NA	0.00	NE	0.05	NO	40.34	0.48
1998	34.30	34.26	0.04	1.18	NA	0.00	NE	0.05	NO	35.54	0.50
1999	32.39	32.25	0.14	1.12	NA	0.00	NE	0.06	NO	33.57	0.49
2000	30.36	30.21	0.15	1.09	NA	0.00	NE	0.06	NO	31.50	0.53
2001	31.59	31.43	0.16	1.21	NA	0.00	NE	0.06	NO	32.86	0.45
2002	31.56	31.42	0.14	1.21	NA	0.00	NE	0.06	NO	32.83	0.48
2003	32.11	31.96	0.15	1.21	NA	0.00	NE	0.06	NO	33.38	0.41
2004	27.62	27.47	0.14	1.22	NA	0.00	NE	0.06	NO	28.89	0.49



Trend Table 2: NO_x [Gg] 1980-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1980	226.91	226.91	IE	13.98	NA	6.65	NE	0.25	NO	247.80	1.15
1981	213.39	213.39	IE	12.71	NA	6.62	NE	0.25	NO	232.98	1.25
1982	210.20	210.20	IE	11.45	NA	6.79	NE	0.25	NO	228.71	1.15
1983	213.56	213.56	IE	10.27	NA	6.90	NE	0.25	NO	230.98	1.44
1984	214.50	214.50	IE	9.07	NA	7.03	NE	0.25	NO	230.86	1.94
1985	219.95	219.95	IE	7.88	NA	7.06	NE	0.25	NO	235.14	2.11
1986	214.84	214.84	IE	6.68	NA	6.94	NE	0.25	NO	228.71	1.87
1987	212.94	212.94	IE	5.49	NA	7.18	NE	0.25	NO	225.87	2.07
1988	208.75	208.75	IE	5.27	NA	7.14	NE	0.17	NO	221.32	2.28
1989	203.65	203.65	IE	4.99	NA	6.91	NE	0.13	NO	215.69	2.79
1990	200.62	200.62	IE	4.80	NA	6.08	NE	0.10	NO	211.59	2.77
1991	212.00	212.00	IE	4.48	NA	6.31	NE	0.09	NO	222.88	3.12
1992	199.42	199.42	IE	4.55	NA	5.95	NE	0.06	NO	209.98	3.40
1993	195.11	195.11	IE	1.98	NA	5.71	NE	0.05	NO	202.85	3.61
1994	186.77	186.77	IE	1.92	NA	6.12	NE	0.04	NO	194.86	3.77
1995	184.89	184.89	IE	1.46	NA	6.18	NE	0.05	NO	192.58	4.23
1996	205.13	205.13	IE	1.42	NA	5.86	NE	0.05	NO	212.46	4.66
1997	192.10	192.10	IE	1.50	NA	5.93	NE	0.05	NO	199.57	4.85
1998	204.70	204.70	IE	1.46	NA	5.93	NE	0.05	NO	212.13	5.01
1999	191.71	191.71	IE	1.44	NA	5.77	NE	0.05	NO	198.98	4.92
2000	196.69	196.69	IE	1.54	NA	5.62	NE	0.05	NO	203.90	5.36
2001	205.97	205.97	IE	1.57	NA	5.58	NE	0.05	NO	213.18	4.51
2002	212.53	212.53	IE	1.63	NA	5.52	NE	0.05	NO	219.73	4.88
2003	223.19	223.19	IE	1.34	NA	5.42	NE	0.05	NO	230.01	4.17
2004	220.37	220.37	IE	1.22	NA	5.28	NE	0.05	NO	226.91	4.90



Trend Table 3: NMVOC [Gg] 1980-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1980	198.71	185.97	12.74	17.73	210.53	4.55	NE	0.16	NO	431.68	0.13
1981	198.88	186.64	12.24	17.12	187.39	4.48	NE	0.16	NO	408.03	0.14
1982	197.85	186.31	11.53	16.76	184.22	4.60	NE	0.16	NO	403.60	0.13
1983	200.06	188.71	11.35	16.24	181.11	4.51	NE	0.16	NO	402.09	0.16
1984	203.60	192.10	11.50	15.73	178.05	4.57	NE	0.16	NO	402.12	0.22
1985	203.00	191.48	11.52	15.21	172.82	4.61	NE	0.16	NO	395.80	0.24
1986	198.27	186.67	11.60	14.83	171.65	4.52	NE	0.16	NO	389.42	0.21
1987	196.85	185.09	11.76	14.36	170.50	4.54	NE	0.16	NO	386.41	0.23
1988	182.93	171.27	11.67	14.57	169.36	4.66	NE	0.16	NO	371.67	0.26
1989	171.89	159.98	11.91	14.54	148.42	4.61	NE	0.16	NO	339.63	0.32
1990	154.31	142.10	12.22	11.10	116.95	1.85	NE	0.16	NO	284.37	0.31
1991	156.92	143.76	13.16	12.58	100.08	1.84	NE	0.16	NO	271.58	0.35
1992	144.67	131.55	13.12	13.78	82.33	1.78	NE	0.15	NO	242.72	0.38
1993	138.85	126.00	12.86	15.05	82.43	1.75	NE	0.15	NO	238.24	0.41
1994	126.84	116.58	10.26	15.14	77.06	1.81	NE	0.14	NO	220.99	0.44
1995	121.89	113.06	8.83	15.08	81.75	1.82	NE	0.13	NO	220.66	0.48
1996	120.48	112.58	7.90	15.06	78.07	1.80	NE	0.12	NO	215.53	0.57
1997	102.60	95.23	7.37	15.32	82.93	1.88	NE	0.12	NO	202.84	0.63
1998	96.88	91.03	5.85	15.53	75.54	1.84	NE	0.11	NO	189.90	0.69
1999	91.41	86.27	5.13	15.41	69.96	1.88	NE	0.11	NO	178.76	0.67
2000	83.89	78.73	5.16	15.63	77.74	1.78	NE	0.10	NO	179.15	0.70
2001	82.05	78.74	3.31	15.41	82.63	1.86	NE	0.10	NO	182.04	0.59
2002	76.39	72.91	3.47	15.53	82.23	1.85	NE	0.10	NO	176.09	0.64
2003	76.38	72.94	3.44	15.32	81.83	1.76	NE	0.10	NO	175.38	0.54
2004	73.32	70.05	3.27	15.35	81.43	2.00	NE	0.10	NO	172.20	0.64



Trend Table 4: NH₃ [Gg] 1980-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1980	1.40	1.40	IE	0.31	NA	61.96	NE	0.01	NO	63.67	0.00
1981	1.31	1.31	IE	0.30	NA	62.75	NE	0.01	NO	64.37	0.00
1982	1.30	1.30	IE	0.29	NA	63.30	NE	0.01	NO	64.89	0.00
1983	1.27	1.27	IE	0.28	NA	64.72	NE	0.01	NO	66.28	0.00
1984	1.30	1.30	IE	0.29	NA	65.38	NE	0.01	NO	66.97	0.00
1985	1.34	1.34	IE	0.28	NA	65.01	NE	0.01	NO	66.63	0.00
1986	1.36	1.36	IE	0.26	NA	64.34	NE	0.01	NO	65.96	0.00
1987	1.36	1.36	IE	0.26	NA	64.63	NE	0.01	NO	66.26	0.00
1988	1.33	1.33	IE	0.28	NA	63.26	NE	0.01	NO	64.88	0.00
1989	1.35	1.35	IE	0.27	NA	63.41	NE	0.01	NO	65.03	0.00
1990	2.03	2.03	IE	0.27	NA	65.98	NE	0.38	NO	68.65	0.00
1991	2.49	2.49	IE	0.51	NA	66.65	NE	0.39	NO	70.03	0.00
1992	2.67	2.67	IE	0.37	NA	64.28	NE	0.45	NO	67.76	0.00
1993	2.94	2.94	IE	0.22	NA	64.23	NE	0.54	NO	67.93	0.00
1994	3.02	3.02	IE	0.17	NA	65.11	NE	0.62	NO	68.92	0.00
1995	3.06	3.06	IE	0.10	NA	66.64	NE	0.64	NO	70.43	0.00
1996	3.07	3.07	IE	0.10	NA	64.78	NE	0.67	NO	68.62	0.00
1997	2.98	2.98	IE	0.10	NA	64.96	NE	0.65	NO	68.69	0.00
1998	3.01	3.01	IE	0.10	NA	64.92	NE	0.67	NO	68.71	0.00
1999	2.89	2.89	IE	0.12	NA	63.59	NE	0.71	NO	67.31	0.00
2000	2.69	2.69	IE	0.10	NA	62.09	NE	0.70	NO	65.58	0.00
2001	2.74	2.74	IE	0.08	NA	61.82	NE	0.70	NO	65.34	0.00
2002	2.68	2.68	IE	0.06	NA	60.73	NE	0.70	NO	64.17	0.00
2003	2.74	2.74	IE	0.08	NA	61.26	NE	0.72	NO	64.80	0.00
2004	2.56	2.56	IE	0.06	NA	60.50	NE	0.72	NO	63.84	0.00

Trend Table 5: CO [Gg] 1980-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1980	1688.56	1688.56	IE	52.80	NA	31.13	NE	10.74	NO	1783.23	0.35
1981	1647.59	1647.59	IE	50.65	NA	28.61	NE	10.75	NO	1737.61	0.38
1982	1623.67	1623.67	IE	48.26	NA	32.93	NE	10.80	NO	1715.67	0.35
1983	1602.84	1602.84	IE	47.85	NA	32.76	NE	10.76	NO	1694.22	0.44
1984	1649.13	1649.13	IE	48.06	NA	35.06	NE	10.76	NO	1743.01	0.59
1985	1618.42	1618.42	IE	46.71	NA	36.28	NE	10.74	NO	1712.14	0.64
1986	1556.68	1556.68	IE	44.69	NA	33.23	NE	10.62	NO	1645.21	0.57
1987	1487.91	1487.91	IE	44.95	NA	34.17	NE	10.63	NO	1577.66	0.63
1988	1380.68	1380.68	IE	45.92	NA	38.16	NE	10.88	NO	1475.64	0.69
1989	1327.31	1327.31	IE	46.27	NA	36.40	NE	11.26	NO	1421.25	0.85
1990	1162.91	1162.91	IE	46.37	NA	1.20	NE	11.37	NO	1221.85	0.85
1991	1187.69	1187.69	IE	41.67	NA	1.19	NE	11.34	NO	1241.89	0.93
1992	1140.48	1140.48	IE	44.97	NA	1.13	NE	11.01	NO	1197.59	1.01
1993	1095.47	1095.47	IE	47.15	NA	1.12	NE	10.85	NO	1154.59	1.08
1994	1042.25	1042.25	IE	48.65	NA	1.17	NE	10.26	NO	1102.34	1.14
1995	954.23	954.23	IE	45.08	NA	1.18	NE	9.70	NO	1010.19	1.26
1996	971.06	971.06	IE	39.44	NA	1.16	NE	9.18	NO	1020.84	1.41
1997	905.78	905.78	IE	38.30	NA	1.24	NE	8.74	NO	954.07	1.52
1998	870.22	870.22	IE	34.86	NA	1.20	NE	8.42	NO	914.71	1.62
1999	823.03	823.03	IE	30.58	NA	1.24	NE	8.07	NO	862.92	1.59
2000	761.25	761.25	IE	27.38	NA	1.15	NE	7.73	NO	797.50	1.65
2001	748.93	748.93	IE	24.20	NA	1.22	NE	7.41	NO	781.76	1.39
2002	705.37	705.37	IE	23.87	NA	1.22	NE	7.28	NO	737.74	1.51
2003	729.51	729.51	IE	23.59	NA	1.12	NE	7.36	NO	761.59	1.29
2004	709.16	709.16	IE	23.82	NA	1.74	NE	7.45	NO	742.17	1.51



Trend Table 6: Cd [Mg] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	2.01	2.01	NE	0.84	0.00	0.04	NE	0.14	NO	3.03	0.00
1986	1.78	1.78	NE	0.71	0.00	0.04	NE	0.12	NO	2.65	0.00
1987	1.37	1.37	NE	0.65	0.00	0.04	NE	0.10	NO	2.17	0.00
1988	1.16	1.16	NE	0.62	0.00	0.05	NE	0.08	NO	1.90	0.00
1989	1.02	1.02	NE	0.58	0.00	0.04	NE	0.06	NO	1.71	0.00
1990	1.01	1.01	NE	0.46	0.00	0.00	NE	0.06	NO	1.53	0.00
1991	1.04	1.04	NE	0.38	0.00	0.00	NE	0.05	NO	1.47	0.00
1992	0.95	0.95	NE	0.26	0.00	0.00	NE	0.01	NO	1.22	0.00
1993	0.91	0.91	NE	0.22	0.00	0.00	NE	0.00	NO	1.14	0.00
1994	0.85	0.85	NE	0.18	0.00	0.00	NE	0.00	NO	1.04	0.00
1995	0.77	0.77	NE	0.16	0.00	0.00	NE	0.00	NO	0.94	0.00
1996	0.81	0.81	NE	0.15	0.00	0.00	NE	0.00	NO	0.96	0.00
1997	0.79	0.79	NE	0.16	0.00	0.00	NE	0.00	NO	0.95	0.00
1998	0.72	0.72	NE	0.16	0.00	0.00	NE	0.00	NO	0.89	0.00
1999	0.78	0.78	NE	0.17	0.00	0.00	NE	0.00	NO	0.95	0.00
2000	0.73	0.73	NE	0.18	0.00	0.00	NE	0.00	NO	0.91	0.00
2001	0.77	0.77	NE	0.18	0.00	0.00	NE	0.00	NO	0.95	0.00
2002	0.76	0.76	NE	0.19	0.00	0.00	NE	0.00	NO	0.96	0.00
2003	0.83	0.83	NE	0.19	0.00	0.00	NE	0.00	NO	1.02	0.00
2004	0.85	0.85	NE	0.20	0.00	0.00	NE	0.00	NO	1.05	0.00

Trend Table 7: Hg [Mg] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	2.98	2.98	NE	0.67	NA	0.01	NE	0.09	NO	3.74	0.00
1986	2.60	2.60	NE	0.63	NA	0.01	NE	0.08	NO	3.32	0.00
1987	2.16	2.16	NE	0.61	NA	0.01	NE	0.07	NO	2.84	0.00
1988	1.78	1.78	NE	0.59	NA	0.01	NE	0.06	NO	2.45	0.00
1989	1.59	1.59	NE	0.58	NA	0.01	NE	0.06	NO	2.24	0.00
1990	1.56	1.56	NE	0.53	NA	0.00	NE	0.05	NO	2.14	0.00
1991	1.50	1.50	NE	0.49	NA	0.00	NE	0.05	NO	2.04	0.00
1992	1.18	1.18	NE	0.44	NA	0.00	NE	0.02	NO	1.64	0.00
1993	0.95	0.95	NE	0.41	NA	0.00	NE	0.02	NO	1.39	0.00
1994	0.76	0.76	NE	0.40	NA	0.00	NE	0.02	NO	1.18	0.00
1995	0.71	0.71	NE	0.47	NA	0.00	NE	0.02	NO	1.20	0.00
1996	0.71	0.71	NE	0.43	NA	0.00	NE	0.02	NO	1.16	0.00
1997	0.69	0.69	NE	0.43	NA	0.00	NE	0.02	NO	1.14	0.00
1998	0.60	0.60	NE	0.33	NA	0.00	NE	0.01	NO	0.95	0.00
1999	0.64	0.64	NE	0.28	NA	0.00	NE	0.01	NO	0.93	0.00
2000	0.64	0.64	NE	0.24	NA	0.00	NE	0.01	NO	0.89	0.00
2001	0.70	0.70	NE	0.24	NA	0.00	NE	0.01	NO	0.95	0.00
2002	0.66	0.66	NE	0.26	NA	0.00	NE	0.01	NO	0.93	0.00
2003	0.70	0.70	NE	0.26	NA	0.00	NE	0.01	NO	0.97	0.00
2004	0.66	0.66	NE	0.27	NA	0.00	NE	0.01	NO	0.94	0.00



Trend Table 8: Pb [Mg] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	258.11	258.11	NE	62.45	0.06	0.23	NE	5.85	NO	326.70	0.00
1986	255.02	255.02	NE	52.38	0.06	0.21	NE	5.27	NO	312.94	0.00
1987	249.22	249.22	NE	47.85	0.06	0.22	NE	4.69	NO	302.05	0.00
1988	224.18	224.18	NE	45.16	0.07	0.24	NE	2.59	NO	272.23	0.00
1989	195.69	195.69	NE	41.74	0.07	0.23	NE	1.64	NO	239.36	0.00
1990	173.63	173.63	NE	32.09	0.07	0.01	NE	1.02	NO	206.82	0.00
1991	143.21	143.21	NE	27.09	0.06	0.01	NE	0.78	NO	171.15	0.00
1992	100.12	100.12	NE	18.61	0.06	0.01	NE	0.49	NO	119.29	0.00
1993	70.17	70.17	NE	15.15	0.05	0.01	NE	0.38	NO	85.76	0.00
1994	47.04	47.04	NE	12.03	0.05	0.01	NE	0.27	NO	59.39	0.00
1995	11.33	11.33	NE	4.68	0.04	0.01	NE	0.01	NO	16.08	0.00
1996	11.18	11.18	NE	4.25	0.04	0.01	NE	0.01	NO	15.50	0.00
1997	9.70	9.70	NE	4.79	0.04	0.01	NE	0.01	NO	14.55	0.00
1998	8.22	8.22	NE	4.71	0.04	0.01	NE	0.01	NO	12.99	0.00
1999	7.57	7.57	NE	4.91	0.04	0.01	NE	0.01	NO	12.54	0.00
2000	6.40	6.40	NE	5.47	0.04	0.01	NE	0.01	NO	11.93	0.00
2001	6.67	6.67	NE	5.34	0.04	0.01	NE	0.01	NO	12.07	0.00
2002	6.58	6.58	NE	5.65	0.04	0.01	NE	0.01	NO	12.30	0.00
2003	7.14	7.14	NE	5.69	0.04	0.01	NE	0.01	NO	12.88	0.00
2004	7.08	7.08	NE	5.89	0.04	0.02	NE	0.01	NO	13.03	0.00



Trend Table 9: PAH [Mg] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	11.93	11.93	NE	7.88	0.15	7.07	NE	0.00	NO	27.04	NE
1986	11.27	11.27	NE	7.82	0.15	7.06	NE	0.00	NO	26.30	NE
1987	11.08	11.08	NE	7.91	0.15	7.06	NE	0.00	NO	26.20	NE
1988	9.93	9.93	NE	7.46	0.15	7.06	NE	0.00	NO	24.61	NE
1989	9.45	9.45	NE	7.57	0.15	7.06	NE	0.00	NO	24.23	NE
1990	9.42	9.42	NE	7.44	0.15	0.24	NE	0.00	NO	17.25	NE
1991	10.27	10.27	NE	7.18	0.15	0.24	NE	0.00	NO	17.84	NE
1992	9.34	9.34	NE	3.59	0.11	0.24	NE	0.00	NO	13.28	NE
1993	9.24	9.24	NE	0.52	0.07	0.24	NE	0.00	NO	10.08	NE
1994	8.36	8.36	NE	0.59	0.06	0.24	NE	0.00	NO	9.25	NE
1995	8.81	8.81	NE	0.49	0.04	0.24	NE	0.00	NO	9.58	NE
1996	9.53	9.53	NE	0.90	0.02	0.24	NE	0.00	NO	10.68	NE
1997	8.56	8.56	NE	0.47	0.01	0.23	NE	0.00	NO	9.27	NE
1998	8.20	8.20	NE	0.41	NA	0.23	NE	0.00	NO	8.84	NE
1999	8.05	8.05	NE	0.25	NA	0.23	NE	0.00	NO	8.53	NE
2000	7.37	7.37	NE	0.19	NA	0.23	NE	0.00	NO	7.80	NE
2001	8.14	8.14	NE	0.18	NA	0.23	NE	0.00	NO	8.56	NE
2002	7.54	7.54	NE	0.19	NA	0.23	NE	0.00	NO	7.97	NE
2003	8.12	8.12	NE	0.19	NA	0.23	NE	0.00	NO	8.55	NE
2004	8.25	8.25	NE	0.20	NA	0.30	NE	0.00	NO	8.74	NE



Trend Table 10: Dioxin [g] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	109.48	109.48	NE	51.30	5.19	5.05	NE	15.90	NO	186.92	NE
1986	107.61	107.61	NE	51.02	6.20	5.05	NE	15.89	NO	185.77	NE
1987	115.60	115.60	NE	50.81	0.24	5.05	NE	15.89	NO	187.59	NE
1988	109.58	109.58	NE	41.60	1.06	5.05	NE	15.48	NO	172.76	NE
1989	101.44	101.44	NE	41.13	1.06	5.05	NE	15.29	NO	163.97	NE
1990	101.42	101.42	NE	39.00	1.06	0.18	NE	18.19	NO	159.85	NE
1991	80.51	80.51	NE	35.15	1.04	0.18	NE	17.75	NO	134.63	NE
1992	53.41	53.41	NE	21.88	0.02	0.18	NE	0.53	NO	76.02	NE
1993	49.03	49.03	NE	17.01	0.02	0.18	NE	0.22	NO	66.46	NE
1994	44.30	44.30	NE	11.26	NA	0.18	NE	0.08	NO	55.82	NE
1995	45.54	45.54	NE	12.22	NA	0.18	NE	0.08	NO	58.02	NE
1996	48.04	48.04	NE	11.17	NA	0.18	NE	0.08	NO	59.46	NE
1997	47.00	47.00	NE	12.15	NA	0.17	NE	0.08	NO	59.40	NE
1998	43.97	43.97	NE	11.45	NA	0.17	NE	0.08	NO	55.67	NE
1999	39.55	39.55	NE	12.60	NA	0.17	NE	0.08	NO	52.40	NE
2000	35.72	35.72	NE	14.05	NA	0.17	NE	0.08	NO	50.02	NE
2001	38.49	38.49	NE	13.55	NA	0.17	NE	0.08	NO	52.28	NE
2002	35.05	35.05	NE	3.24	NA	0.17	NE	0.08	NO	38.53	NE
2003	37.27	37.27	NE	2.98	NA	0.17	NE	0.08	NO	40.50	NE
2004	37.14	37.14	NE	3.30	NA	0.22	NE	0.08	NO	40.74	NE



Trend Table 11: HCB [kg] 1985-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1985	83.08	83.08	NE	13.27	7.71	1.01	NE	1.11	NO	106.18	NE
1986	80.12	80.12	NE	13.21	8.12	1.01	NE	1.11	NO	103.57	NE
1987	82.88	82.88	NE	13.18	8.11	1.01	NE	1.11	NO	106.29	NE
1988	76.51	76.51	NE	11.16	8.22	1.01	NE	0.70	NO	97.61	NE
1989	72.54	72.54	NE	11.06	9.34	1.01	NE	0.52	NO	94.48	NE
1990	72.20	72.20	NE	9.71	9.05	0.04	NE	0.39	NO	91.40	NE
1991	69.40	69.40	NE	8.03	6.39	0.04	NE	0.28	NO	84.13	NE
1992	56.52	56.52	NE	4.94	7.49	0.04	NE	0.11	NO	69.10	NE
1993	53.30	53.30	NE	3.70	6.47	0.04	NE	0.04	NO	63.56	NE
1994	47.85	47.85	NE	2.45	1.25	0.04	NE	0.02	NO	51.61	NE
1995	49.98	49.98	NE	2.67	0.00	0.04	NE	0.02	NO	52.70	NE
1996	52.99	52.99	NE	2.44	0.00	0.04	NE	0.02	NO	55.48	NE
1997	48.96	48.96	NE	2.65	0.00	0.03	NE	0.02	NO	51.67	NE
1998	45.91	45.91	NE	2.50	0.00	0.03	NE	0.02	NO	48.47	NE
1999	43.23	43.23	NE	2.76	0.00	0.03	NE	0.02	NO	46.04	NE
2000	38.92	38.92	NE	3.07	0.00	0.03	NE	0.02	NO	42.04	NE
2001	42.51	42.51	NE	2.98	0.00	0.03	NE	0.02	NO	45.54	NE
2002	37.79	37.79	NE	3.17	NA	0.03	NE	0.02	NO	41.01	NE
2003	40.35	40.35	NE	3.18	NA	0.03	NE	0.02	NO	43.58	NE
2004	40.80	40.80	NE	3.30	NA	0.04	NE	0.02	NO	44.16	NE



Trend Table 12: TSP [Mg] 1990-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1990	32632	31985	647	23897	NA	33117	NE	168	NO	89814	307
1995	32552	32006	545	25090	NA	28696	NE	184	NO	86522	456
1999	32479	31979	500	28357	NA	31293	NE	75	NO	92203	530
2000	31460	30904	556	27461	NA	28560	NE	115	NO	87596	576
2001	32662	32075	587	27021	NA	30548	NE	108	NO	90339	484
2002	32158	31560	598	28765	NA	30035	NE	125	NO	91082	524
2003	33064	32418	647	28303	NA	27758	NE	143	NO	89268	448
2004	32630	32033	596	28340	NA	33394	NE	149	NO	94513	526

Trend Table 13: PM 10 [Mg] 1990-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1990	24224	23919	305	13188	NA	9220	NE	80	NO	46712	307
1995	23576	23319	257	12893	NA	8442	NE	87	NO	44999	456
1999	23046	22810	236	14428	NA	9401	NE	36	NO	46910	530
2000	22004	21742	263	14016	NA	8191	NE	54	NO	44265	576
2001	23022	22745	277	13816	NA	8703	NE	51	NO	45592	484
2002	22435	22152	282	14658	NA	8559	NE	59	NO	45711	524
2003	23161	22856	305	14434	NA	8364	NE	68	NO	46026	448
2004	22737	22456	281	14423	NA	9488	NE	71	NO	46719	526



Trend Table 14: PM 2.5 [Mg] 1990-2004

	NFR-Sectors									NATIONAL TOTAL	International Bunkers
	1	1 A	1 B	2	3	4	5	6	7		
	Energy	Fuel combustion activities	Fugitive emissions from fuels	Industrial processes	Solvent and other product use	Agriculture	Land use change and forestry	Waste	Other		
1990	21136	21041	95	5067	NA	2239	NE	26	NO	28467	307
1995	20609	20529	80	4463	NA	2011	NE	27	NO	27111	456
1999	20043	19970	74	4935	NA	2166	NE	11	NO	27156	530
2000	19085	19003	82	4811	NA	1968	NE	17	NO	25881	576
2001	19977	19891	87	4754	NA	2073	NE	16	NO	26820	484
2002	19439	19351	88	5000	NA	2036	NE	19	NO	26493	524
2003	20052	19956	95	4932	NA	1942	NE	21	NO	26946	448
2004	19670	19582	88	4922	NA	2228	NE	22	NO	26842	526