umweltbundesamt

AUSTRIA'S NATIONAL AIR EMISSION INVENTORY 1990 – 2003

Submission under Directive 2001/81/EC

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VORWORT

Der vorliegende Bericht präsentiert die neueste Entwicklung jener Luftschadstoffe, für es nationale Emissionshöchstgrenzen gibt. Er folgt in Format und Inhalt den verbindlichen Anforderungen der EU-Richtlinie 2001/81/EG des Europäischen Parlaments und des Rates vom 23. Oktober 2001 über nationale Emissionshöchstmengen für bestimmte Luftschadstoffe. Nach der englischen Bezeichnung "national emission ceilings" auch als "NEC-Richtlinie" bekannt. Sie legt für die einzelnen Mitgliedstaaten verbindliche nationale Emissionshöchstgrenzen für Schwefeldioxid (SO_2), Stickoxide (NO_x), flüchtige organische Verbindungen ohne Methan (NMVOC) und Ammoniak (NH_3) ab dem Jahr 2010 fest.

Alle vier dieser sogenannten NEC-Gase nehmen 2003 gegenüber dem Vorjahr zu. Den stärksten Anstieg verzeichnen die Stickoxide, in erster Line aufgrund der Zunahmen im Kraftwerks- und Verkehrsbereich. Dieser Schadstoff zeigt auch die größten Abweichungen zur erlaubten nationalen Emissionshöchstmenge ab dem Jahr 2010.

Tabelle1: Emissionstrends 1990-2003 und nationale Emissionshöchstmengen für 2010

	Emissionen in 1000 Tonnen						**Emissions-höchstmenge**
Schadstoff	**1990**	**1995**	**2000**	**2001**	**2002**	**2003**	**2010**
SO_2	76	48	33	34	33	34	39
NO_X	211	192	204	214	220	229	103
NH_3	57	59	55	55	54	54	66
NMVOC	286	221	181	185	182	182	159

Anhang III der Richtlinie sieht die Erstellung der Inventur unter Anwendung jener Verfahren vor, welche im Rahmen des Übereinkommens über weiträumige grenzüberschreitende Luftverunreinigung vereinbart wurden. Zur Ermittlung der Daten wurde das gemeinsame Handbuch von EMEP/CORINAIR[1] angewandt. Die Darstellung erfolgt im neuen NFR-Format[2] der UNECE.

Im Anschluss an dieses Vorwort wird der von der Republik Österreich an die Europäische Kommission 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 SO_2, NO_2, NH_3, und NMVOC. Der vollständige Datensatz wird der Europäischen Kommission in digitaler Form übermittelt. Im Oktober 2004 wird das UMWELTBUNDESAMT eine detaillierte Darstellung der (in der diesjährigen Inventur) angewandten Methodik in

[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] **N**omenclature **F**or **R**eporting

einem eigenen Bericht ("Informative Inventory Report 2004 – Submission under the UNECE/ CLRTAP Convention") veröffentlichen.

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 vorliegenden Bericht als Beitrag im Rahmen der Wahrnehmung seiner Funktion als Umweltschutzfachstelle des Bundes in Erfüllung der ihm im Umweltkontrollgesetz zugewiesenen Kompetenzen.

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.

Tabelle 2 fasst den Stand der Daten und das Berichtsformat des vorliegenden Berichtes zusammen.

Tabelle 2: Datengrundlage des vorliegenden Berichts

Inventur	Datenstand	Berichtsformat
OLI 2004	Dezember 2004	NFR-Format der UNECE

AUSTRIA'S NATIONAL AIR EMISSION INVENTORY 1990 - 2003

Submission under Directive 2001/81/EC
on national emission ceilings for certain atmospheric pollutants

Title of Inventory	Austria's National Air Emission Inventory 1990-2003 for acidifying and eutrophying emissions and ozone precursors
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Vienna, December 2004

Prepared by UMWELTBUNDESAMT

TABLE OF CONTENTS

1 INTRODUCTION

This report presents a summary of Austria's Annual National Air Emission Inventory 1990-2003 for acidifying and eutrophying emissions and ozone precursors. The inventory is submitted to the European Commission by the Austrian Federal Government in fulfilment of Austria's annual reporting obligation under Directive 2001/81/EC of the European Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants. In Table 1 Austria's National Emission Ceilings are listed:

Table 1: Austria's National Emission Ceilings 2010

	Emission Ceilings 2010 (Mg)
SO_2	39
NO_X	103
NH_3	66
NMVOC	159

Basis of this report is the Austrian Air Emission Inventory 2004 (Österreichische Luftschadstoff-Inventur, OLI 2004) prepared by the Umweltbundesamt for the years 1980 to 2003. According to Annex III of the Directive 2001/81/EC, the Member States shall establish emission inventories and projections using the methodologies agreed upon by the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP). Thus they are requested to use the joint EMEP/CORINAIR**3** guidebook in preparing these inventories and projections. Table 2 shows the summary of Austria's NEC-emissions:

Table 2: Summary of Austria's NEC-emissions 1990-2003 (Gg)

Emission	**1990**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
SO_2	76,18	48,21	46,27	42,13	37,25	36,08	33,06	34,22	33,01	34,14
NO_X	210,99	192,13	211,78	199,12	211,13	199,16	204,43	213,67	219,72	229,03
NH_3	57,15	59,42	57,67	58,15	58,32	56,59	54,93	55,04	53,83	54,49
NMVOC	286,02	221,31	216,47	203,72	190,96	180,15	181,01	185,26	181,69	182,30

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 of emission data (Nomenclature For Reporting / NFR) and offer guidance on how to provide supporting documentation. They specify minimum and additional reporting obligations.

[3] 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

Annex 1 of this report presents trend tables of SO_x, NO_x, NH_3 and NMVOC. The complete tables of the NFR-Format, including in particular sectoral reports and sectoral background tables are submitted to the European Commission separately in digital form only (excel files).

Following a recommendation of the guidelines mentioned above, this year the UMWELTBUNDESAMT has provided an "Informative Inventory Report 2004 – Submission under the UNECE/ LRTAP Convention". This report contains detailed and complete background information on the compilation of the 2003 emission inventory for NO_X, SO_2, NMVOC and NH_3. The "Informative Inventory Report 2005" will be published in October 2005.

2 RELATION WITH EARLIER REPORTED DATA

As a result of the continuous improvement of Austria's National Air Emission Inventory, emissions of some sources have been recalculated based on updated data or revised methodologies, thus emission data for the years 1990 to 2002 submitted this year differ from previously reported data.

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.

Table 3: Recalculation difference of Austria's NEC gas emissions compared to the previous submission

	1990	2002
	Recalculation Difference [%]	
SO_2	-4.8%	-8.2%
NO_x	-0.5%	+7.5%
NMVOC	-4.0%	-5.7%
NH_3	-0.5%	+1.6%

The most important revision with respect to data submitted last year is the update of emission factors for *1 A 3 b Road Transport* using the new handbook of emission factors (version 2.1). It resulted in lower emissions for NO_x and NMVOC in the base year, and higher emissions in 2002, respectively. Furthermore, the update resulted in higher NH_3 emissions for the whole time series.

Additionally, for NMVOC emissions a double counting of emissions from sector *2 A Mineral Products* with the solvents sector has been eliminated in this submission. Improved and corrected calculation of NH_3 emissions from *manure management* resulted in lower emissions from sector 4 B for the whole time series.

The main reasons for the decrease of reported SO_2 emissions are lower emissions from category *1 A 2 Manufacturing Industries and Construction* due to the availability of a more detailed energy balance concerning auto producers. This leads to a shift of emissions between subsectors of *1 A 2* and to an elimination of doublecounting SO_2 emissions from combustion of residual fuel oil and coal.

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 did the actual calculations:

Table 4: 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	Database on landfills	UMWELTBUNDESAMT
LUCF	National forest inventory obtained from the Austrian Federal Office and Research Centre for Forest	UMWELTBUNDESAMT
Solvent	Import/ export statistics, production statistics, consumption statistics;	Contractor: Forschungsinstitut für Energie und Umweltplanung, Wirtschaft und Marktanalysen GmbH and Institut für industrielle Ökologie[4]
Agriculture	National Studies, national agricultural statistics obtained from STATISTIK AUSTRIA;	Contractors: 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

A complete list of data sources for activity and emission data or emission factors used by sector will be given in the “Informative Inventory Report 2005” published in October 2005.

[4] 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 made to the inventory since the previous submission. Further background information and a complete description of the 2004 inventory will be given in the "Informative Inventory Report 2005" published in October 2004.

ENERGY (1A)

Update of activity data:

1 A 1 a Public Electricity and Heat Production: Decrease of liquid and solid fuel consumption due to harmonisation with the energy statistics. In the previous submission activity data from the steam boiler database was taken which was higher than energy statistics. For the years 1990 and 1991 plant specific data is updated according to a publication from the "Bundeslastverteiler". As point source emissions kept constant this even leads to slightly higher NO_X and SO_2 emissions from residuel fuel oil in plants < 50 MW_{th} for the relevant years.

1 A 1 b Petroleum Refining: Shift of liquid fuel consumption for electricity and heat autoproduction to category *1 A 1 a.* Increase of natural gas consumption due to shift of consumption for autoproduction from *1 A 2 f.*

1 A 1 c Manufacture of Solid Fuels and Other Energy Industries: Error correction of double counting emissions from liquid fuel transformation into gasworks gas. Increase of natural gas consumption due to shift of consumption for autoproduction from *1 A 2 f.* Correction of natural gas consumption for oil/gas extraction and storage for 2001 an 2002 which is based on improved energy statistics.

1 A 2 a Iron and Steel: Activity data is now fully taken from the energy balance which is consistent with plant operators information. In the previous submission information about activity data was partly taken from plant operator. Especially for the year 2002 coke oven coke consumption has been corrected and is now consistent with pig iron production.

1 A 2 b, c, d, e: Each subcategory includes consumption for electricity and heat autoproduction which was included in category *1 A 2 f Other* in the previous submission.

1 A 2 f Manufacturing Industries and Construction-Other-Stationary: Now includes consumption for electricity and heat autoproduction not allocated to subcategories *1 A 1 b, 1 A 1 c, 1 A 2 a to 1 A 2 e, 1 A 4 a and 1 a 4 c*.

1 A 3 e Other Transportation (Pipeline compressors): Natural gas consumption is corrected from 1999 on.

1 A 4 a Commercial/Institutional-Stationary

1 A 4 c Agriculture/Forestry/Fishing-Stationary: Both subcategories include consumption for electricity and heat autoproduction which was included in category *1 A 2 f Other* in the previous submission. Revision of final

energy consumption for space and warmwater heating based on new statistiacl surveys of STATISTIK AUSTRIA.

1 A 4 b Residential-Stationary: Revision of final energy consumption for space and warmwater heating.

1 A 2 f Manufacturing Industries and Construction-Other-Stationary: Update of activity data of off road machinery (mainly in construction sector)

1 A 4 c Agriculture/Forestry/Fishing-Mobile: Update of activity data of off road machinery (1990 mainly in forestry sector) due to a new study [Handler, Abschätzung des Dieselverbrauchs in der österreichischen Landwirtschaft, Bundesanstalt für Landtechnik, BLT-Wieselburg 2003]

Improvements of methodologies and emission factors:

1 A 1 a Public Electricity and Heat Production: For plants > 50 MW_{th} update of SO_2 and NO_X emissions for the year 2002 by means of the steam boiler database.

1 A 2 c Chemicals: Update of NO_X emission factor for coal combustion by means of emission declarations from the steam boiler database.

1 A 2 d Pulp, Paper and Print: Update of NO_X emission factors for combustion of coal and black liquor according to an internal study which is based on plant specific measurements.

1 A 3 a: Calculation for 2001 – 2003

The same emission factors and fuel allocation as in the year 2000 have been used. For the total fuel comsumption, new data reported by STATISTIK AUSTRIA have been used.

In difference to the last submission the splitting of the energy data into national and international aviation of 2001 and 2002 has been updated according to the energy balance.

The splitting of the energy data of 2003 into national and international aviation has been done according to the flight numbers of arrival and departure flights (STATISTIK AUSTRIA)

1 A 3 b: The emission factors used in the inventory for have been updated using the updated handbook of emission factors (version 2.1). The handbook is the result of new measurements. (UMWELTBUNDESAMT: Handbuch Emissionsfaktoren des Strassenverkehrs Version 2.1 / Feb. 2004; Wien, 02/2004; Diverse Publikationen, Band 107, ISBN: 3-85457-734-6)

FUGITIVE EMISSIONS (1 B)

Update of activity data:

1 B 2 a Refining/Storage: Activity data for the whole time series have been updated with data from the national energy balance.

INDUSTRIAL PROCESSES (2)

Update of activity data:

2 C 1: Activity data for 2002 has been updated.

Improvements of methodologies and emission factors:

2 C 1: For electric arc furnaces new plant-specific emission factors (from one Austrian plant) became available, these were applied to total production in Austria.

2 B 5: The time series for SO_2 emission from *Chemical Industries* has been updated and revised using more detailed data.

NO_x emissions for 1993 and 1994 and NH_3 emissions for 1990-1994 from fertilizer production have been revised using data reported from industry (previously emissions were calculated using the IEF from the year after).

Activity data for ammonia nitrate production from 1990 to 1994 have been revised using data reported from industry.

2 D 1, 2 D 2: Activity data for 2002 for *Pulp and Paper* (chipboard production) and *Food Production* have been updated.

2 A 5, 2 A 6: Emissions from *Asphalt Roofing* and *Road Paving with Asphalt* are now reported as "IE", as emissions are already included in the Solvents Sector.

AGRICULTURE (4)

Update of activity data:

Animal Category *Other*

In Austria animals of category *Other* which mainly is deer (but not wild living animals) have been counted from 1993 on. To round off the time series, in this inventory for the years 1990 to 1992 the animal number of 1993 was used.

Animal Category *Soliped*

In the last submissions the number of soliped of the years 2000 to 2002 was based on expert judgement. For transparency reasons in this inventory the 1999 value was held constant until 2002. In the current inventory a new 2003 value of animal category *soliped* is available.

Improvements of methodologies and emission factors:

Synthetic fertilizer use

The previous submissions showed high inter-annual variations in NH_3 emissions of sector 4 D synthetic fertilizer use. These variations are caused by effects of storage as well as the difference between the calendar year and the agricultural economic year: the amounts of synthetic fertilizers over the years reflect the amounts sold in one calendar year. However, the economic year for the farmer does not correspondend to the calendar year. Not the whole amount purchased is applied in the year of purchase.

Considering these effects, in this submission the arithmetic average of each two years was used as fertilizer application data.

4 B, 4 D: An error regarding activity data of non-dairy cattle for the year 1993 was identified and corrected.

4 B: In the last submissions, the Nex and VSex values from 1999 to 2003 were extrapolated on the basis of the published Nex and VSex data with a correspondending milk yield of 5000 kg. In this year's calculations also the correspondending Nex and VSex values of a milk yield of 6000 kg published in [GRUBER & STEINWIDDER, 1996] were considered. The values were calculated via interpolation.

Corrected excel-links in the calculation of N-losses from housing, grazing and storage led to smaller emissions from animal category *other cattle, sheep, goats, horses* and *other animals.*

4 F Field burning (Cereals):

Activity data were updated and the Corinair detailed methodology was used.

WASTE (6)

Update of activity data:

6 A 1 Managed Waste Disposal:

The Activity data for Residual Waste and Non Residual Waste was updated. According to the Landfill Ordinance the operators of landfill sites have to report their activity data annually. Due to reports after the duedate there are minor changes of the activity data in this submission compared to previous submission.

6 D Compost production:

The activity data was updated and interpolated for years where no data was available.

Improvements of methodologies and emission factors:

6 A 1 Managed Waste Disposal

An error in the calculation of the formation potential of landfill gas was identified and corrected

5 METHOD OF REPORTING AND DATA BASIS

Emission data presented in this report was 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 estimated together with emissions of greenhouse gases in a data base based on the CORINAIR (CORe INventory AIR)/ SNAP (Selected Nomenclature for sources of Air Pollution) systematic. This nomenclature was designed by the EEA to estimate emissions of all kind 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). In this report the NFR-Summary Tables are presented in Annex 1.

The following table summarises the status of the present report:

Table 5: Status of the present report

Reporting Obligation	Format	Inventory	Version
NEC-Directive	NFR-Format (UNECE)	OLI 2004	December 2004

6 ANNEX I

In Annex 1 trend tables of SO_x, NO_x, NH_3 and NMVOC are presented. 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 are 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: SO_X [Gg]

	NFR sectors	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
1	Energy	73,89	46,79	44,93	40,81	36,02	34,91	31,92	32,95	31,74	32,87
1 A	Fuel combustion activities	71,89	45,26	43,73	40,75	35,98	34,76	31,77	32,80	31,61	32,72
1 B	Fugitive emissions from	2,00	1,53	1,20	0,07	0,04	0,14	0,15	0,16	0,14	0,15
2	Industrial processes	2,22	1,37	1,29	1,27	1,18	1,12	1,09	1,21	1,21	1,21
3	Solvent & other product use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	Agriculture	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
5	Land use change and forestry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	Waste	0,06	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
7	Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	National total	**76,18**	**48,21**	**46,27**	**42,13**	**37,25**	**36,08**	**33,06**	**34,22**	**33,01**	**34,14**
	International Bunkers	0,28	0,42	0,47	0,48	0,50	0,49	0,53	0,52	0,48	0,46

Trend Table 2: NO_X [Gg]

	NFR sectors	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
1	Energy	200,75	185,09	205,14	192,28	204,32	192,62	197,87	207,02	213,17	222,58
1 A	Fuel combustion activities	200,75	185,09	205,14	192,28	204,32	192,62	197,87	207,02	213,17	222,58
1 B	Fugitive emissions from	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
2	Industrial processes	4,80	1,46	1,42	1,50	1,46	1,44	1,54	1,57	1,63	1,66
3	Solvent & other product use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	Agriculture	5,41	5,56	5,19	5,32	5,33	5,07	4,98	5,05	4,90	4,76
5	Land use change and forestry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	Waste	0,04	0,02	0,02	0,03	0,03	0,03	0,03	0,03	0,03	0,03
7	Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	National total	**210,99**	**192,13**	**211,78**	**199,12**	**211,13**	**199,16**	**204,43**	**213,67**	**219,72**	**229,03**
	International Bunkers	2,77	4,23	4,66	4,85	5,01	4,92	5,36	5,27	4,88	4,64

Trend Table 3: NH_3 [Gg]

	NFR sectors	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
1	Energy	2,04	3,09	3,14	3,04	3,05	2,93	2,73	2,75	2,69	2,74
1 A	Fuel combustion activities	2,04	3,09	3,14	3,04	3,05	2,93	2,73	2,75	2,69	2,74
1 B	Fugitive emissions from	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
2	Industrial processes	0,27	0,10	0,10	0,10	0,10	0,12	0,10	0,08	0,06	0,08
3	Solvent & other product use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	Agriculture	54,47	55,59	53,77	54,36	54,49	52,83	51,40	51,51	50,38	50,95
5	Land use change and forestry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	Waste	0,38	0,64	0,67	0,65	0,67	0,71	0,70	0,70	0,70	0,72
7	Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	National total	**57,15**	**59,42**	**57,67**	**58,15**	**58,32**	**56,59**	**54,93**	**55,04**	**53,83**	**54,49**
	International Bunkers	0,002	0,003	0,003	0,003	0,003	0,003	0,004	0,004	0,003	0,003

Trend Table 4: NMVOC [Gg]

	NFR sectors	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
1	Energy	155,93	122,50	121,39	103,57	98,00	92,75	85,81	85,03	81,37	82,08
1 A	Fuel combustion activities	143,70	113,70	113,50	96,24	92,18	87,66	80,71	81,78	77,97	78,63
1 B	Fugitive emissions from	12,22	8,81	7,89	7,34	5,81	5,09	5,10	3,26	3,40	3,45
2	Industrial processes	11,10	15,08	15,06	15,18	15,43	15,42	15,54	15,60	15,71	15,71
3	Solvent & other product use	116,95	81,75	78,07	82,93	75,54	69,96	77,74	82,63	82,63	82,63
4	Agriculture	1,85	1,82	1,80	1,88	1,84	1,88	1,78	1,86	1,85	1,76
5	Land use change and forestry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	Waste	0,19	0,16	0,16	0,15	0,15	0,14	0,14	0,13	0,13	0,13
7	Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	National total	**286,02**	**221,31**	**216,47**	**203,72**	**190,96**	**180,15**	**181,01**	**185,26**	**181,69**	**182,30**
	International Bunkers	0,31	0.48	0.57	0.63	0.69	0.67	0.70	0.69	0.64	0.61