ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

Austria's Annual Greenhouse Gas Inventory 1990—2014

Submission under Regulation (EU) No 525/2013

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VORWORT

Dieser Bericht

Der vorliegende Bericht präsentiert die neuesten Daten der Treibhausgas(THG)-Emissionen Österreichs. Diese Daten betreffen die Emissionen des Jahres 2014 sowie die aktualisierte Zeitreihe der Jahre 1990 bis 2013. Damit liefert der Bericht Daten für die ersten beiden Jahre der zweiten Kyoto-Verpflichtungsperiode sowie für die ersten zwei Jahre der Zielperiode 2013–2020 unter der „Effort Sharing-Entscheidung“ (2009/406/EG).

Der Bericht folgt in Format und Inhalt den Anforderungen des THG-Überwachungssystems (Monitoring Mechanism), in Umsetzung von Artikel 7 der Verordnung Nr. 525/2013/EG[1]. Dieses System umfasst die jährliche Übermittlung von aktualisierten THG-Emissionsdaten sowie zusätzlicher Informationen (z. B. SEF, Indikatoren) und einem dazugehörigen Kurzbericht („Short-NIR“) mit 15. Jänner an die Europäische Kommission (EK).

Eine detaillierte Darstellung der Daten im Common Reporting Format (CRF) wird der Europäischen Kommission in digitaler Form übermittelt. Auch die Berichtstabellen gemäß Durchführungsverordnung (EU) Nr. 749/2014 der Kommission über die Struktur, das Format, die Verfahren der Vorlage und die Überprüfung der von den Mitgliedstaaten gemäß der Verordnung (EU) Nr. 525/2013 gemeldeten Informationen sind nicht Bestandteil des vorliegenden Berichts, sondern werden der Europäischen Kommission separat übermittelt (EIONET/CDR).

Rechtlicher Hintergrund

Als Vertragsstaat der Klimarahmenkonvention (*Rahmenübereinkommen der Vereinten Nationen über Klimaänderungen* (UN Framework Convention on Climate Change – UNFCCC, BGBl. Nr. 414/1994[2]) ist Österreich verpflichtet, jährlich seine Emissionen und Senken bezüglich der direkten Treibhausgase CO_2, CH_4, N_2O, HFC, PFC, SF_6 und NF_3, sowie der indirekten Treibhausgase NO_x, NMVOC, CO und SO_2 zu erheben und zu berichten. Die dafür anzuwendende Methodik ist in einem umfassenden Regelwerk entsprechend den Beschlüssen der Vertragsstaatenkonferenz der UNFCCC festgelegt.

Auch die Europäische Union (EU) ist Vertragsstaat der Klimarahmenkonvention. Die EU Inventur wird aus der Summe der Mitgliedsstaaten-Inventuren errechnet. Deshalb hat die EU mit dem o. g. THG-Überwachungssystem die Anforderungen, die an die EU gestellt werden an die Mitgliedsstaaten weitergegeben und diese dazu verpflichtet, Daten und Informationen, die für die Erstellung der

[1] Verordnung (EU) Nr. 525/2013 des Europäischen Parlaments und des Rates vom 21. Mai 2013 über ein System für die Überwachung von Treibhausgasemissionen sowie für die Berichterstattung über diese Emissionen und über andere klimaschutzrelevante Informationen auf Ebene der Mitgliedstaaten und der Union und zur Aufhebung der Entscheidung Nr. 280/2004/EG. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:165:0013:0040:DE:PDF

[2] BGBl. Nr. 414/1994: Rahmenübereinkommen der Vereinten Nationen über Klimaänderungen samt Anlagen. Änderung durch BGBl. III Nr. 12/1999.
http://www.ris.bka.gv.at/Dokumente/BgblPdf/1994_414_0/1994_414_0.pdf
http://www.ris.bka.gv.at/Dokumente/BgblPdf/1999_12_3/1999_12_3.pdf

EU Inventur benötigt werden, rechtzeitig zur Verfügung zu stellen. Mit dem vorliegenden Bericht kommt Österreich dieser Berichtspflicht nach.

Die Erhebung der Daten berücksichtigt außerdem die Ergebnisse der jährlichen Überprüfung durch internationale FachexpertInnen im Rahmen der so genannten UNFCCC-Reviews. 2015 fand jedoch aufgrund der technischen Schwierigkeiten mit der Berichtssoftware (CRF-Reporter) diese Tiefenprüfung der Österreichischen Treibhausgas-Inventur nicht statt.

Darüber hinaus beteiligte sich Österreich an der Review der Treibhausgasinventur durch technische ExpertInnen, unter der Leitung der Europäischen Umweltagentur (‚ESD-Review'), welche aus den bereits angeführten Gründen jedoch nur als Trial Review stattfand.

Tabelle A: Jährlicher Prozess zur Erstellung und Überarbeitung der THG Inventur.

15. Jänner *(Jahr n)*	Übermittlung der THG Inventur an EK (CRF für die Jahre 1990 bis zum Jahr n-2)
15. Jänner bis 28. Februar *(Jahr n)*	Überprüfung der Daten durch die EK
15. März *(Jahr n)*	Übermittlung des (endgültigen) nationalen Inventurberichtes (NIR) an die EK
15. Jänner bis 28. Februar *(Jahr n)*	Überprüfung der Daten (CRF) und des nationalen Inventurberichtes (NIR) durch die EEA im Rahmen der ‚initial QA/QC checks'
15. April *(Jahr n)*	Übermittlung der THG Inventur (CRF und NIR) an die UNFCCC
15. April bis 30. Juni	Überprüfung der THG-Inventur (CRF und NIR) durch die EEA im Rahmen des Reviews unter der Effort-Sharing-Decision (‚ESD-Review')
Juni *(Jahr n)* bis März *(Jahr n+1)*	Überprüfung der Daten durch die UNFCCC: ● Stufe 1: Initial Check ● Stufe 2: Synthesis and Assessment ● Stufe 3: Individual Review
bis 15. Januar *(Jahr n + 1)*	Berücksichtigung der Verbesserungsvorschläge der EK und der UNFCCC bei der Erstellung und Überarbeitung der THG Inventur

Zur Erfüllung der Anforderungen, die sich aus der Klimarahmenkonvention und vor allem aus dem Inkrafttreten des Kyoto-Protokolls[3] am 16. Februar 2005 ergeben haben, wurde entsprechend Artikel 5.1 des Kyoto-Protokolls ein Nationales System eingerichtet. Ziel ist es, die Qualität der Inventur sicherzustellen und kontinuierlich zu verbessern. Dazu wurde ein Gesamtkonzept für das Nationale Inventur System Austria (NISA) entwickelt, das auf der *Österreichischen Luftschadstoff-Inventur* (OLI) als zentralem Kern aufbaut. Ein umfassendes Inventurverbesserungsprogramm und ein Qualitätsmanagementsystem entsprechend ISO/IEC 17020 sind ein wesentlicher Teil des NISA[4].

Der vorliegende Bericht wurde vom Umweltbundesamt auf Grundlage des Umweltkontrollgesetzes BGBl. Nr. 152/1998[5] erstellt. Dem Umweltbundesamt wird in diesem Bundesgesetz in § 6 (2) Z.15 unter anderem die Aufgabe übertragen, fachliche Grundlagen zur Erfüllung des Rahmenübereinkommens der Vereinten Nationen über Klimaänderungen zu erstellen. In § 6 (2) Z.20 werden die Entwick-

[3] http://unfccc.int/kyoto_protocol/items/2830.php

[4] Umweltbundesamt (2005): NISA National Inventory System Austria, Implementation Report, REP-0004; Umweltbundesamt, Vienna.

[5] https://www.ris.bka.gv.at/Dokumente/BgblPdf/1998_152_1/1998_152_1.pdf

lung 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. Dieser Aufgabe wird mit der Erstellung sowie der jährlichen Aktualisierung der *Österreichischen Luftschadstoff-Inventur* (OLI) gemäß den in den relevanten internationalen Übereinkommen vereinbarten Richtlinien vom Umweltbundesamt nachgekommen. Die OLI deckt sowohl Treibhausgasemissionen, als auch Emissionen sonstiger Luftschadstoffe ab und ist damit u. a. die Datenbasis für die Erstellung des vorliegenden Berichts. Um eine vergleichbare Zeitreihe zur Verfügung zu haben wird die OLI erforderlichenfalls auch für zurückliegende Jahre aktualisiert. Die in diesem Bericht dargestellten Emissionsdaten ersetzen somit die publizierten Daten vorhergehender Berichte.

Inventur	**Datenstand**	**Berichtsformat**
OLI 2015	20. Jänner 2016	Common Reporting Format (CRF)

Tabelle B: Datengrundlage des vorliegenden Berichts.

ZUSAMMENFASSUNG

Die hier dargestellte Entwicklung der Treibhausgase in Österreich folgt in der Einteilung den Sektoren des Klimaschutzgesetzes. Die Sektoreinteilung des vorliegenden Berichts hingegen entspricht dem international festgelegten Format für die Berichterstattung unter der Klimarahmenkonvention (UNFCCC). Die in Folge angeführten sektoralen Emissionswerte weichen daher von jenen des Berichts ab.

Treibhausgas-Inventur 2014

Im Jahr 2014 wurden in Österreich rd. 76,3 Mio. Tonnen Treibhausgase (THG) emittiert. Gegenüber 2013 bedeutet das eine Abnahme um − 4,7 % bzw. − 3,7 Mio. Tonnen. Im Klimaschutzgesetz ist für das Jahr 2014 ein Zielwert von 52,1 Mio. Tonnen festgelegt, die tatsächlichen Emissionen (Nicht-Emissionshandelsbereich) betrugen 48,2 Mio. Tonnen CO_2-Äquivalent und lagen damit ca. 3,9 Mio. Tonnen unter dem Ziel. Im Vergleich zu 1990 sind die THG-Emissionen im Jahr 2014 um − 3,2 % niedriger (um − 2,5 Mio. Tonnen).

Die Ergebnisse im Detail

Energie und Industrie

Der Sektor Energie und Industrie ist im Jahr 2014 mit ca. 33,9 Mio. Tonnen CO_2-Äquivalent der größte Emittent an Treibhausgasen in Österreich. Gegenüber 2013 sind die Emissionen um − 6,4 % (ca. 2,3 Mio. Tonnen) gesunken.

2014 liegen die Emissionen aus diesem Sektor um − 7,2 % (−2,6 Mio. Tonnen) unter dem Niveau von 1990.

Emissionshandelsbereich

Die Emissionshandelsbetriebe verursachten im Jahr 2014 Treibhausgase im Ausmaß von 28,1 Mio. Tonnen (Energie: 8,1 Mio. Tonnen, Industrie: 19,9 Mio. Tonnen). Das ist um − 6,0 % (− 1,8 Mio. Tonnen) weniger als 2013.

Während die Emissionen der Industriebetriebe auf dem gleichen Niveau blieben, gingen die die Emissionen aus der Elektrizitätserzeugung um − 18,2 % (− 1,8 Mio. Tonnen) zurück. Wesentlich für diesen Rückgang ist die verringerte Stromproduktion aus Kohle und Erdgas sowie die auf Grund der warmen Witterung zurückgegangene Fernwärme-Erzeugung.

Trotz rückläufigem Stromverbrauch wurden ca. 13 % (ca. 9,3 TWh) des inländischen Stromverbrauchs importiert.

Nicht-Emissionshandelsbereich

Die Emissionen des Nicht-EH Bereichs sind im Jahr 2014 um insgesamt − 0,5 Mio. Tonnen CO_2-Äquivalent zurückgegangen – zurückzuführen auf den gesunkenen Erdgas- und Heizöleinsatz.

Verkehr

Der Sektor Verkehr weist im Jahr 2014 THG-Emissionen im Ausmaß von ca. 21,7 Mio. Tonnen auf. Im Vergleich zu 2013 sind die Emissionen aus diesem Sektor um − 2,4 % (−0,5 Mio. Tonnen) gesunken.

Grund für diesen Rückgang ist der geringere fossile Kraftstoffabsatz (− 2,3 %) bedingt durch den rückläufigen Kraftstoffexport, bei gleichzeitigem Anstieg des Absatzes von Biokraftstoffen. Insgesamt wurden 7,7 % (gemessen am Energieinhalt) des in Verkehr gebrachten Kraftstoffes durch Biokraftstoffe substituiert. Die Fahrleistung im Inland (Pkw- und Güterverkehr) ist von 2013 auf 2014 allerdings um 2,6 % gestiegen.

Seit 1990 verzeichnet der Sektor Verkehr eine Emissionszunahme von 58 %.

Gebäude

Auf den Sektor Gebäude entfallen im Jahr 2014 ca. 7,6 Mio. Tonnen an THG-Emissionen. Das entspricht einem Rückgang um − 12,0 % (− 1,0 Mio. Tonnen) gegenüber dem Jahr 2013. Hauptverantwortlich für diesen hohen Rückgang ist die außerordentlich milde Witterung im Jahr 2014 (Rückgang der Heizgradtage um − 19,2 % gegenüber 2013) mit dem damit verbundenen geringeren Einsatz der fossilen Energieträger Heizöl (− 9 %) und Erdgas (− 14 %).

Seit 1990 haben die Emissionen in diesem Sektor um − 42 % (− 5,5 Mio. Tonnen) abgenommen, hauptsächlich aufgrund des Ersatzes von Kohle und Heizöl durch Erdgas, Biomasse und Fernwärme.

Landwirtschaft

Im Vergleich zu 2013 sind die Treibhausgas-Emissionen aus der Landwirtschaft um 1,5 % (0,1 Mio. Tonnen) gestiegen und betragen 7,9 Mio. Tonnen im Jahr 2014. Ursachen dafür sind die gesteigerte pflanzliche Produktion und der höhere Mineraldüngereinsatz.

Seit 1990 sind die THG-Emissionen aus der Landwirtschaft um −15,6 % (−1,5 Mio. Tonnen) zurückgegangen.

Abfallwirtschaft

Im Jahr 2014 wurden vom Sektor Abfallwirtschaft 3,1 Mio. Tonnen CO_2-Äquivalent emittiert und damit geringfügig weniger (– 0,1 % bzw. 0,004 Mio. Tonnen) als 2013.

Der starke Rückgang der Sektor-Emissionen seit 1990 (− 27 %) ist hauptsächlich auf die sinkenden Emissionen aus Deponien zurückzuführen. Die Emissionen aus der Abfallverbrennung haben sich seit 1990 fast verzehnfacht und liegen 2014 bei 1,3 Mio. Tonnen CO_2-Äquivalent.

Fluorierte Gase

Im Jahr 2014 wurden in Österreich F-Gase im Ausmaß von 2,0 Mio. Tonnen CO_2-Äquivalent emittiert. Damit liegen die Emissionen um 2,2% bzw. 0,04 Mio. Tonnen CO_2-Äquivalent über dem Niveau von 2013.

Seit 1990 nahmen die F-Gas-Emissionen Österreichs um insgesamt 21 % zu (+ 0,4 Mio. Tonnen CO_2-Äquivalent).

Im Juni 2014 trat die EU VO Nr. 517/2014 in Kraft, die vorsieht, bis 2030 die Herstellung und den Import von F-Gasen mit einem hohen Treibhausgaspotenzial deutlich zu reduzieren. Dadurch sollte sich der Trend in den nächsten Jahren stark rückläufig zeigen.

1 INTRODUCTION

This report covers the Austrian greenhouse gas (GHG) inventory data for the years 1990 to 2014. It presents GHG data for the first two years under the second commitment period under the Kyoto-Protocol and the first and second year of the Effort-sharing decision target period 2013-2020.

The greenhouse gas inventory is submitted to the European Commission by the Austrian Federal Government in fulfilment of Austria's obligations under Article 7 of Regulation (EU) No 525/2013[6] ("*Monitoring Mechanism Regulation*"; MMR) repealing Decision No 280/2004/EC[7] ("*Monitoring Mechanism Decision*"; MMD) concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol. The purpose of this decision is to monitor all anthropogenic greenhouse gas emissions not controlled by the Montreal Protocol[8] and to evaluate the progress towards meeting the greenhouse gas reduction commitments under the UNFCCC and the Kyoto Protocol.

According to the above mentioned regulation and the reporting requirements, which are the same as under the United Nations Framework Convention on Climate Change (UNFCCC), Member States are obliged to determine their anthropogenic emissions by sources and removals by sinks applying with the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*[9], and submit information in accordance with the *Reporting Guidelines (Decision 24/CP.19)*[10] established by the Conference of the Parties to the UNFCCC and under the Kyoto Protocol.

The national greenhouse gas inventory has to be submitted to the European Commission (EC) every year no later than 15 January. Furthermore, Member States have to submit by 15 January elements of their National Inventory Reports (NIR) relevant for the preparation of the Union greenhouse gas inventory report (Article 7 (1) p of 525/2013/EC). A complete and up-to-date national inventory report is expected to be submitted by 15 March each year.

The elements of the so-called "Short-NIR" are based on Article 7 paragraph 1 of the MMR and Articles 3-16 of the *Commission Implementing Regulation (EU) No 749/2014* on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council (MMR IR). The overview table of reporting requirements according to the Commission Implementing Regulation (EU) No 749/2014 ('MMR-IR_Annex1_overview_AT_2016') as well as the completed MMR IR reporting templates are no part of this report but submitted separately by upload at EIONET/CDR.

[6] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:165:0013:0040:EN:PDF

[7] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:049:0001:0001:EN:PDF

[8] http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=2

[9] http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

[10] http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=2
http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf

The complete tables of the Common Reporting Format (CRF), including in particular Sectoral Reports, Sectoral Background Tables and the Reference Approach for CO_2 are submitted separately in digital form only[11].

Table 1: Status of the present report.

Reporting Obligation	Format	Inventory	Version
Mechanism for monitoring Community greenhouse gas emissions	Common Reporting Format (CRF)	OLI 2015	January 20th 2016

Geographical coverage is complete. There is no part of the Austrian territory that has not been covered by the inventory. Emissions from most sources specified in the CRF have been estimated. For information on sources not estimated ('NE') and emissions included with sources other than those stipulated in the CRF ('IE') please refer to Table 9 Completeness of the CRF.

[11] http://cdr.eionet.europa.eu/at/eu/AT%20GHG/coluq7lfw/envuq7obg

2 EMISSION TRENDS

In 2014 Austria's total greenhouse gas (GHG) emissions (without LULUCF) amounted to 76.3 Mt CO_2 equivalents (CO_2e). Compared to the base year[12] 1990 GHG emissions decreased by 3.2%, compared to 2013 GHG emissions decreased by 4.7%.

GHG emissions according to Article 2(1) of Decision No. 406/2009/EC amounted to 48.2 Mt CO_2 equivalents in 2014 (see 'MMR_IR_AnnexX_ESD_AT_2016'), which is 3.8% (1.9 Mt CO_2e) less than in 2013. Emissions were thus below the annual emission allocation (AEA), in 2014 (−3.9 Mt CO_2e) as well as in 2013 (−2.5 Mt CO_2e), the first year of the Effort-Sharing Decision Target period[13].

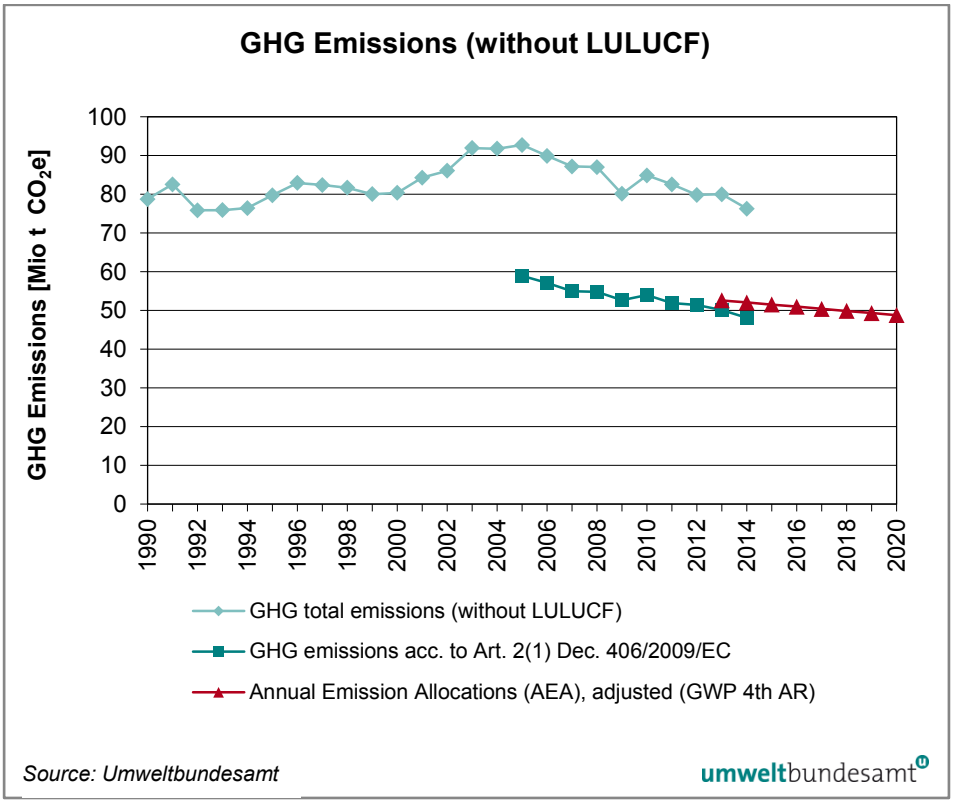


Figure 1: Trend in GHG emissions 1990–2014 without LULUCF.

[12] Austria's base year under the UNFCCC is 1990. Under the Kyoto Protocol the base year for CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 is 1990, for NF_3 it is 2000. Under the EU Effort Sharing Decision, the base year is 2005 (relates only to emissions not included in the EU Emissions Trading Scheme). Unless otherwise specified, references to the base year in this report refer always to 1990.

[13] Initial AEAs: Annex II of Commission Decision (No 2013/162/EU) of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D0162&from=EN) adjusted by Commission Implementing Decision (No 2013/634/EU) of 31 October 2013 on the adjustments to Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D0634&from=EN).

Trend 2013–2014

The key driver for the emissions decline between 2013 and 2014 was the decreasing GHG emissions (−3 830 kt CO_2e) from *Energy*. GHG emissions from *Energy (1)* decreased due to the lower electricity production by thermal coal and gas power plants as well as a lower district heat demand. A further reason was the lower heating demand of households due to significantly less (−19%) heating degree days. Also sector *transport (1.A.3)* showed decreasing GHG emissions (−640 kt CO_2e) compared to 2013, due to the decreasing amount of (fossil) fuel sold in Austria. The use of biofuels however increased 2013–2014.

Sector *Waste (5)* continues with the emission trend of recent decades and shows a further decline by 4.9% (−90 kt CO_2e) as a result of reduced landfilling of waste and lower carbon content in deposited waste.

Emissions from *Agriculture (3)* increased by 1.7% (+115 kt CO_2e). Emissions from *Industrial Processes and Other Product Use (2)* increased by 0.5% (+85 kt CO_2e) from 2013 to 2014, mainly due to an increased production volume in ammonia production.

Table 2: Summary of Austria's anthropogenic greenhouse gas emissions by sector

GHG source and sink categories	1. Energy	2. IPPU	3. Agriculture	4. LULUCF	5. Waste	6. Other
	CO_2 equivalents (kt)					
1990	52 917	13 663	8 052	-12 853	4 160	0
1995	54 447	13 610	7 911	-14 110	3 795	0
2000	55 312	14 642	7 377	-16 918	3 051	0
2001	59 544	14 524	7 322	-19 845	2 945	0
2002	60 773	15 166	7 209	-14 987	2 935	0
2003	66 670	15 308	7 064	-5 521	2 932	0
2004	66 897	14 864	7 041	-9 929	2 989	0
2005	67 336	15 607	6 973	-11 378	2 845	0
2006	64 021	16 252	6 944	-6 080	2 720	0
2007	60 688	16 941	6 981	-6 504	2 587	0
2008	60 233	17 274	7 079	-5 281	2 471	0
2009	56 777	13 947	7 100	-5 080	2 321	0
2010	59 833	15 924	6 952	-6 525	2 191	0
2011	57 434	16 083	6 992	-6 934	2 072	0
2012	55 266	15 695	6 922	-6 351	1 969	0
2013	55 248	15 980	6 915	-5 201	1 855	0
2014	51 418	16 065	7 030	-5 558	1 765	0

The most important GHG in Austria is carbon dioxide (CO_2) with a share of 84% in 2014. The CO_2 emissions primarily result from combustion activities. Methane (CH_4), which mainly arises from stock farming and waste disposal, contributes 8.6% to national total GHG emissions, and nitrous oxide (N_2O) with agricultural soils as the main source contributes another 4.5% in 2014. The remaining 2.6% are emissions of fluorinated compounds, which are mostly emitted from the use of these gases as substitutes for ozone depleting substances (ODS) in refrigeration equipment.

Greenhouse gas emissions	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3
	CO_2 equivalents (kt)						
1990	62 297	10 549	4 291	2	1 183	471	0
1995	64 202	9 627	4 386	358	83	1 100	6
2000	66 275	8 422	4 299	714	87	575	11
2001	70 299	8 241	4 175	863	116	629	11
2002	72 127	8 092	4 172	969	102	613	11
2003	78 024	8 019	4 161	1 072	126	549	22
2004	78 389	8 007	3 569	1 158	158	484	27
2005	79 588	7 768	3 579	1 146	158	494	28
2006	76 935	7 626	3 565	1 152	172	453	33
2007	74 268	7 502	3 575	1 196	230	367	59
2008	74 066	7 358	3 749	1 249	208	373	53
2009	67 683	7 252	3 521	1 307	36	342	5
2010	72 532	7 141	3 327	1 482	78	336	4
2011	70 327	6 935	3 400	1 534	74	307	4
2012	67 699	6 814	3 357	1 610	51	312	9
2013	67 957	6 716	3 359	1 602	49	305	10
2014	64 262	6 582	3 425	1 632	53	313	11

Table 3: Austria's anthropogenic greenhouse gas emissions by gas

Total emissions without emissions from sector LULUCF

The dominant sector regarding GHG emissions in Austria is *Energy*, causing 67% of total national GHG emissions in 2014 (67% in 1990), followed by the sectors *Industrial Processes and Other Product Use* (21% in 2014) and *Agriculture* (9.2% in 2014).

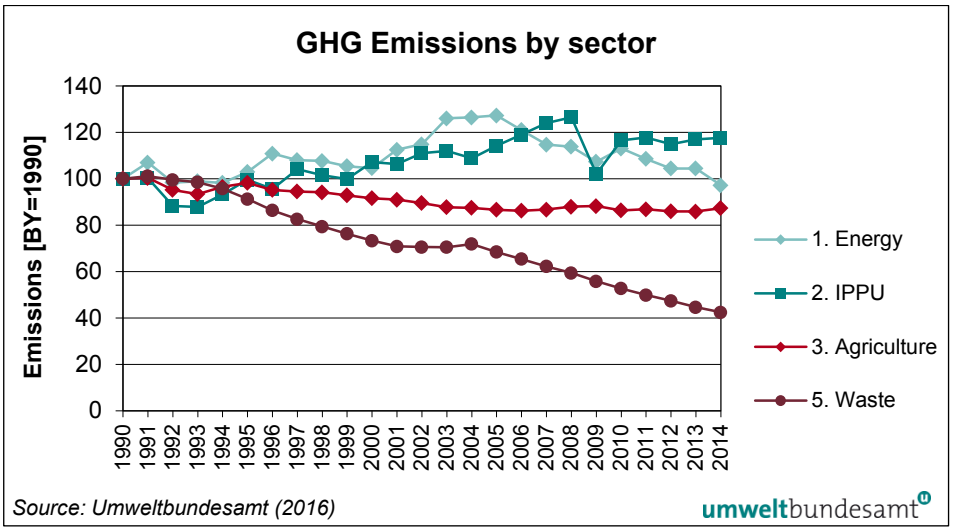
GHG	1990	2014	Trend 1990–2014	1990	2014
	Emissions [kt CO_2e]			Share [%]	
Total	78 792	76 278	**−3.2%**	**100.0%**	**100.0%**
Energy	52 917	51 418	−2.8%	67.2%	67.4%
IPPU	13 663	16 065	17.6%	17.3%	21.1%
Agriculture	8 052	7 030	−12.7%	10.2%	9.2%
LULUCF	−12 853	−5 558	−56.8%	–	–
Waste	4 160	1 765	−57.6%	5.3%	2.3%

Table 4: Austria's greenhouse gas emissions by sector (without LULUCF) 1990 and 2014 as well as their share and trend.

Total emissions without emissions from sector LULUCF

In 2014 emissions from *Industrial Processes and Other Product Use* were 17.6% higher than in 1990. The other sectors show decreasing GHG emissions. The most significant decrease occurred in sector *Waste*.

Figure 2: Trend in emissions 1990–2014 by sector (without LULUCF) in index form (1990 = 100).



A more detailed description and interpretation of emissions trends per sector is given in the following sub-chapters.

2.1 Energy

In 2014, greenhouse gas emissions from sector *Energy* amounted to 51 418 kt CO_2 equivalents which correspond to 67.4% of the total national emissions. 99.0% of the emissions from this sector originate from fossil fuel combustion (1.A), fugitive emissions from fuels (1.B) are of minor importance.

The most important **sub-category** is *transport* with a share of 43.1% in 2014, followed by *manufacturing industries and construction* (20.5%), *energy industries* (18.8%) and the sub-category *other sectors* (16.5%). The most important **greenhouse gas** is CO_2, contributing 97.9% to the total sectoral GHG emissions, followed by N_2O (1.1%) and CH_4 (1.0%).

From 2013 to 2014, emissions from this sector decreased by 6.9%. Main drivers for the decrease in emissions from *energy industries* are the lower electricity production by thermal coal and gas power plants as well as a lower district heat demand. The main driver for decreasing emissions of *other sectors* was the lower heating demand of households due to significantly less (−19%) heating degree days. The main driver for decreasing emissions in the transport sector was the lower diesel consumption of heavy duty trucks. The decrease in emissions of *manufacturing industries* was mainly due to lower natural gas and fuel oil consumption of the Non-ETS sector while installations covered by the ETS showed quite constant emissions.

The **overall trend** in GHG emissions from the sector *Energy* shows decreasing emissions with a minus of 2.8% from 1990 to 2014. However, emissions from road transport showed a strong increase of emissions (+59.1%) from 1990 to 2014. The dips and jumps from year to year are mainly due to:

- the weather circumstances in the corresponding years (in particular cold or mild winters, and/or dry or wet summers) which affect the heating demand, and the availability of electricity from hydro and wind power plants
- the economic situation as reflected in the gross domestic product (GDP)

Trend 1990–2014 by sub-category

In 2014 emissions from sub-category ***energy industries*** were 30.2% below the level in 1990. Emissions from power plants are quite continuously decreasing since 2005, mainly because of the growing contribution of renewable energy sources, the substitution of solid and liquid fuels by natural gas and biomass as well as improvements in efficiency. The share of biomass used as a fuel in this sector increased from 0.9% (1990) to 28% (2014), the contribution of hydro and wind power plants to total public electricity production increased from 69% (1990) to 84% (2014). Electricity consumption increased by 45% since 1990 but since 2002 the increase is mainly covered by electricity imports.

Energy related GHG emissions from ***manufacturing industries and construction*** increased by 6.6% from 1990 to 2014, mainly in the chemical and other industries. Fuel consumption increased by 41% in that period, mainly due to increased use of natural gas and biomass. As natural gas has a lower carbon content, and CO_2 emissions from biomass combustion are not accounted for under the UNFCCC reporting framework, the increase in GHG emissions is significantly smaller (only +6%) compared to the increase in fuel combustion.

Transport showed a strong increase in GHG emissions since 1990 (+58.7%) mainly due to an increase of road performance (kilometres driven) in passenger and freight transport. In addition to the increase of road performance within Austria, the amount of fuel sold in Austria but used elsewhere – an effect mainly caused by higher fuel prices in neighbouring countries compared to Austria – has increased considerably since 1990. However, from 2005 onwards GHG are decreasing due to the decreasing trend of total fuel sold together with the increased use of biofuels and the gradual replacement of vehicles by newer, less consuming cars (with less specific fuel consumption). In 2014 however, fuel sales have nearly reached again the level of 2006.

The variation in demand for heating and hot water generation due to climatic circumstances and the shift in the fuel mix are the most important drivers for emissions from sub-category ***other sectors***. Emissions in 2014 were 41.3% lower than in 1990. This reduction is mainly attributable to the declining consumption of heating oil and solid fuels and the increase in the consumption of biomass and natural gas as well as the growing importance of district heating. Total fuel consumption of this sub-category decreased by 21% since 1990.

Fugitive emissions decreased by 30.1% since 1990 due to the closure of coal mines until 2006.

2.2 Industrial Processes and Other Product Use

In 2014, greenhouse gas emissions from *Industrial Processes and Other Product Use* amounted to 16 065 kt CO_2 equivalents, which correspond to 21% of total national emissions.

The most important **sub-categories** of this sector are the *metal industry* and the *mineral industry*, generating 63.5% and 16.9% of total sectoral emissions (2014). The most important **greenhouse gas** of this sector is CO_2 with a contri-

bution of 86.1% to total sectoral emissions (2014), followed by HFCs with 10.2%, SF_6 with 1.9%, N_2O with 1.1%, PFCs and CH_4 with 0.3% each. NF_3 contributes 0.1% to total emissions from this sector.

From 2013 to 2014, overall emissions from this sector increased by 0.5%, mainly due to an increased production volume in ammonia production. The subcategory *metal industry* shows the largest decrease in emissions between 2013 and 2014 (−0.6%), primarily in iron and steel production.

The **overall trend** in GHG emissions from *Industrial Processes and Other Product Use* shows increasing emissions of 17.6% from 1990 to 2014. Within this period, emissions fluctuated, showing a minimum in 1993. **Main drivers** for the trend in emissions from this sector were (i) the termination of primary aluminium production in 1993, (ii) the introduction of N_2O abatement technologies in the chemical industry in 2004 and in 2009 (which became fully operational in 2010), (iii) increasing metal production resulting in 24.7% higher GHG emissions in 2014 compared to 1990 and (iv) a strong increase of HFC emissions in the period 1992 to 2014 from 5.6 to 1 632 kt CO_2 equivalents.

Trend 1990–2014 by sub-category

The largest increase in GHG emissions between 1990 and 2014 can be observed in the *metal industry* due to increased emissions from iron and steel production (+53.6%). The sub-categories *mineral industry* and the *chemical industry* however show declining emissions by 12% and 48% in that period. Emissions of *fluorinated gases* increased by 21% since 1990, mainly due to the strongly increasing emissions of HFCs (+370% since 1995) used as cooling agents that replaced Ozone Depleting Substances. Emissions from *solvent use* dropped by 48%, due to legal measures controlling solvent content of products and their use.

2.3 Agriculture

In 2014, greenhouse gas emissions from *Agriculture* amounted to 7 030 kt CO_2 equivalent, which correspond to 9.2% of total national emissions.

The **most important sub-categories** of this sector are *enteric fermentation* (59%) and *agricultural soils* (28%). In the Austrian **greenhouse gas** inventory the sector agriculture is the largest source for both N_2O and CH_4 emissions: In 2014 70% (8.1 kt) of total N_2O emissions and 69% (181 kt) of total CH_4 emissions in Austria originated from this sector. 64% of GHG emissions from the sector are CH_4, 34% are N_2O and 1.6% are CO_2 emissions.

From 2013 to 2014 emissions increased by 1.7%, mainly due to higher GHG emissions from mineral fertilizer and crop residues. In 2014 crop production could be increased significantly compared to the year before in which unfavourable weather conditions resulted in harvest shortfalls.

The **overall trend** in GHG emissions from *Agriculture* is decreasing, with a decrease of 13% from 1990 to 2014. The **main drivers** for this trend are decreasing livestock numbers and lower amounts of N-fertilizers applied on agricultural soils. Fluctuations, which can be seen in particular in the first half of the 1990s, result from the variation of the sales of mineral fertilizer due to volatility in prices.

2.4 LULUCF

In 2014, net removals from the category LULUCF amounted to −5 558 kt CO_2 equivalents, which corresponds to 7.3% of the national total GHG emissions (without LULUCF) in 2014 compared to 16% in the base year.

With regard to the **overall trend** of net removals from LULUCF, the removals decreased by 57% over the observed period. The **main driver** for this trend is the biomass carbon stock change in forest land. Fluctuations are due to weather conditions which affect the growth rates on the one hand (e.g. very low increment in 2003) and wind throws on the other, as well as timber demand and prices (e.g. very high harvest rates in 2007 and 2008).

The **most important sub-category is** *forest land (4.A)* with net removals of −4 356 kt CO_2 equivalents in 2014. *Harvested Wood Products (4.G)* is the second largest sink category and contributed −1 487 kt CO_2 equivalents. In 2014, CH_4 and N_2O emissions amounted to 18 kt CO_2 equivalents. Total net emissions arising from the other non-forest sub-sectors amounted to 284 kt CO_2 equivalents in 2014.

Regarding **LULUCF activities pursuant to Decision No 529/2013/EU**, Austria decided to account of greenhouse gas emissions and removals from af-/reforestation, deforestation and forest management activities only.

The activity which contributes most to GHG removals is forest management which amounts to −2 298 kt CO_2 equivalents in 2014. Afforestation/reforestation contribute to emission removals as well (−2 055 kt CO_2 equivalents), whereas emissions from deforestation activity amount to 522 kt CO_2 in 2014.

According to **Article 3 2.(b) of Decision No 529/2013/EU** Austria is required to report non-binding annual estimates of emissions/removals from Cropland Management and Grazing Land Management. In 2014 removals from Cropland Management amount to −277 kt CO_2 equivalents, whereas Grazing Land Management contributes to lower emission removals (−84 kt CO_2 equivalents).

Emission/removal tables for the years 1990, 2013 and 2014 are submitted by a separate upload at EIONET/CDR (‘KP-LULUCF-EU-AT-2016-1990’, ‘KP-LULUCF-EU-AT-2016-2013’, KP-LULUCF-EU-AT-2016-2014’’)

2.5 Waste

In 2014, greenhouse gas emissions from *Waste* amounted to 1 765 kt CO_2 equivalent, which correspond to 2.3% of total national emissions.

The **most important sub-category** of the waste sector is *solid waste disposal*, which caused 80% of the emissions from this sector in 2013, followed by *waste water treatment and discharge* (11%) and *biological treatment of solid waste* (10%). The most important **greenhouse gas** is CH_4 with a share of 85% in emissions from *waste* (2014), followed by N_2O with 14% and CO_2 with 0.1%.

From 2013 to 2014 GHG emissions continued to decrease (−4.9%) as a result of reduced waste volumes as well as decreased carbon content in deposited waste.

The **overall trend** in GHG emissions from *waste* is decreasing, with a decrease of 58% from 1990 to 2014. The **main driver** for this trend is the implementation of waste management policies: Waste separation, reuse and recycling activities have increased since 1990 and the amount of disposed waste has decreased correspondingly especially since 2004 when pre-treatment of waste became obligatory (although some exceptions were granted to some Austrian provinces). Furthermore, methane recovery has improved. The legal basis for the reduced disposal of waste as well as the landfill gas recovery is the Landfill Ordinance. Since 2009 all waste with high organic content has to be pre-treated before deposition (without exceptions).

3 RECALCULATIONS

This chapter describes the changes made since the last submission to the UNFCCC and supplements the tabular format on recalculations as set out in Annex III to the Commission Implementing Regulation (EU) No 749/2014 ('MMR-IRArticle8_Recalculations_AT_2016').

3.1 Background

The Austrian greenhouse gas inventory is subject to continuous improvement. An inventory improvement programme was established as part of the QMS, to grant transparency and monitoring of findings by the EC and UNFCCC [14] review experts (or other sources) on quality of activity data, emission factors, methods and other relevant technical elements of inventories. Any findings and discrepancies are documented; responsibilities, resources and a time schedule for implementation of measures and improvements (incl. recalculations) are attributed to each of these in the improvement plan.

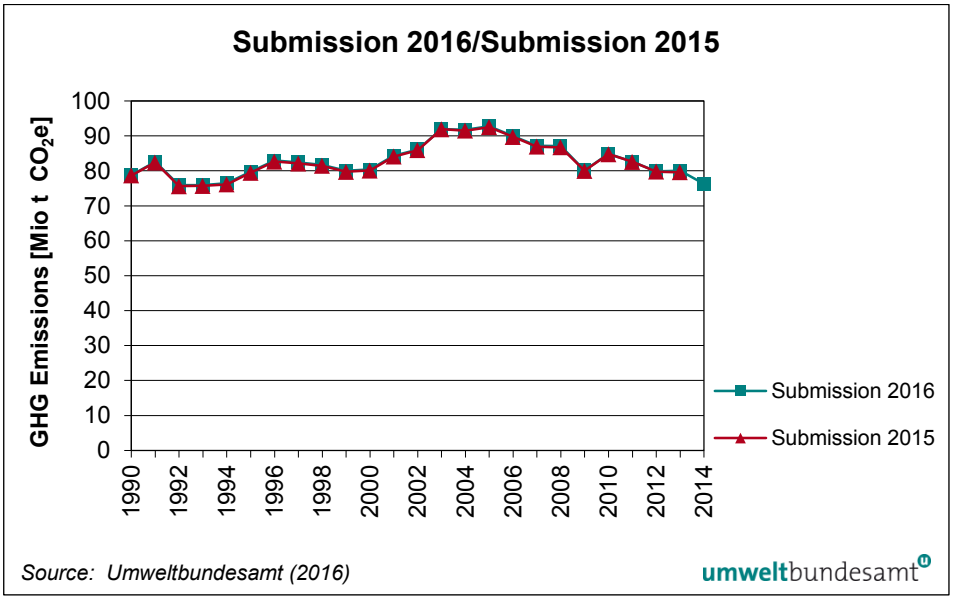
3.2 Implications (level, trend)

As can be seen in Figure 3, Austria's GHG emission reported this year (OLI 2015) in sum differs only slightly to the data submitted last year (OLI 2014 [15]). The national total (excl. LULUCF) for the base year is 0.14% higher, the national total (excl. LULUCF) for 2013 is 0.50% higher compared to the values submitted last year.

[14] No UNFCCC Review was conducted in 2015

[15] submitted on November 5th 2015

Figure 3: Comparison Submission 2016/Submission 2015 (Recalculations).



National total emissions (excluding LULUCF) for the base year **1990** have been slightly revised upwards since last years' submission (+109 kt CO_2e).

Revised total emissions for **2013** are 399 kt CO_2 equivalents higher than the value submitted last year, mainly because of revisions in sectors *Energy*, *Waste* and *Agriculture*.

In the *Energy* sector the recalculations are due to revisions of the energy balance. In sector *Agriculture*, the revision is mainly due to recalculation of emissions from subcategory crop residues according to the latest corrigendum of the 2006 IPCC GL and the inclusion of N-inputs from compost applied to agricultural soils, which were considered as activity for the first time. Recalculations in *Waste* are attributable to a slightly revised implementation of the First Order Decay Method to estimate CH_4 from solid waste disposal.

Table 5: Recalculation difference of Austria's GHG emissions compared to the previous submission

	National Total GHG emissions without LULUCF			
	Submission 2016	Submission 2015	Recalculation Difference	
	[kt CO_2e]	[kt CO_2e]	[kt CO_2e]	[%]
1990*	78 792	78 683	109	0.14%
1991	82 586	82 395	190	0.23%
1992	75 882	75 622	260	0.34%
1993	75 940	75 704	236	0.31%
1994	76 455	76 131	324	0.43%
1995	79 763	79 456	307	0.39%
1996	82 960	82 647	313	0.38%
1997	82 427	82 124	303	0.37%
1998	81 723	81 416	308	0.38%
1999	80 060	79 746	313	0.39%
2000	80 382	80 124	258	0.32%
2001	84 335	84 107	227	0.27%

	National Total GHG emissions without LULUCF			
	Submission 2016	Submission 2015	Recalculation Difference	
	[kt CO_2e]	[kt CO_2e]	[kt CO_2e]	[%]
2002	86 084	85 921	163	0.19%
2003	91 974	91 899	75	0.08%
2004	91 791	91 523	268	0.29%
2005	92 761	92 496	265	0.29%
2006	89 937	89 713	224	0.25%
2007	87 197	86 933	264	0.30%
2008	87 057	86 757	300	0.35%
2009	80 145	80 032	112	0.14%
2010	84 900	84 788	112	0.13%
2011	82 581	82 583	-1	0.00%
2012	79 851	79 793	58	0.07%
2013	79 998	79 599	399	0.50%

	Submission 2016		Submission 2015		Recalculation Difference	
THG	**1990**	**2013**	**1990**	**2013**	**1990**	**2013**
	[Mt CO_2e]		[Mt CO_2e]		[Mt CO_2e]	
Total	**78.79**	**80.00**	**78.68**	**79.60**	**0.11**	**0.40**
Energy	52.92	55.25	52.91	55.09	0.01	0.15
IPPU	13.66	15.98	13.59	16.01	0.07	−0.03
Agriculture	8.05	6.91	7.96	6.81	0.09	0.11
Waste	4.16	1.85	4.23	1.68	−0.07	0.17

without emissions from LULUCF

Table 6: Recalculations per sector.

The following table presents the recalculation difference with respect to last years' submission for each gas (positive values indicate that this years' estimate is higher). 2013 Emissions of CO_2, CH_4 and N_2O were revised upwards, whereas emissions of fluorinated compounds were revised downwards due to updated import data.

	1990 (Base year)	2013
	Recalculation Difference [%]	
Total	**0.14%**	**0.50%**
CO_2	0.13%	0.28%
CH_4	−0.61%	2.85%
N_2O	2.24%	2.92%
HFC, PFC, SF_6, NF_3	0.00%	−3.52%

without emissions from LULUCF

Table 7: Recalculations per gas.

3.3 Sectoral recalculations

The following section provides explanations for sectoral recalculations. Further background information and a complete description of the recalculation for the period 1990-2013 will be given in Austria's National Inventory Report 2016.

3.3.1 Energy

3.3.1.1 Stationary sources

The energy balance was revised by Statistik Austria for the years 2005 to 2013.

The most important revisions were made for gross natural gas consumption from 2009 onwards, which was revised upwards by 7.6 PJ in 2009 and by 2 PJ in the year 2013. Natural gas consumption was shifted from households to the commercial sector from the year 2005 onwards. In the year 2013 the revision resulted in a 8 PJ higher consumption of the commercial sector (1.A.4.a.i) and a 2 PJ lower consumption of households (1.A.4.b.i).

The most important reason of the shift was a revision of the household census data evaluation which also induces a shift of gasoil (2005: 8 PJ. 2013: 7 PJ) from households to the commercial sector. Solid biomass consumption of households was revised downwards for 2005 to 2012 with the highest decrease in 2012 (−7 PJ) while 2013 biomass consumption was revised upwards by 0.4 PJ.

Manufacturing Industries and Construction (1.A.2)

The changes in this subsector mainly resulted from the revisions of the energy balance. Elimination of coal consumption double counting of iron and steel industries (1.A.2.a) implies 28 kt lower CO_2 emissions in the year 2013. Furthermore about 33 kt CO_2 emissions have been shifted from 1.A.2.a to category 2.C.1 due to a revised emission estimate of blast furnaces.

Other sectors (1.A.4)

The revision of natural gas consumption implies 325 kt higher CO_2 emissions. The revision of coal (coke oven coke) consumption implies −39 kt less CO_2 emissions.

3.3.1.2 Mobile sources

Update/Improvement of activity data

Road transport (1.A.3.b)

In the national energy balance the levels for natural gas (CNG) show a strong increased revision from 2009 onwards. The emissions for 2013 have changed as follows: CO_2: +16 kt (+0.1%), CH_4: −0.06 kt, N_2O: +0.001 kt.

Rail transport (1.A.3.c)

The year 2013 has been revised in accordance with current statistical traffic performance data and slightly changed energy consumption data (diesel) for 2012 and 2013 taken from the national energy balance.

Navigation (1.A.3.d)

The year 2013 has been revised in accordance with current statistical traffic performance data for the River Danube.

Improvements of methodologies and emission factors

Rail transport (1.A.3.c)

The revision of emissions follows the changes in the off-road model by reorganizing the fleet composition in the course of the integration of the future emission class "Stage V".

Overall revisions have changed the emissions for 2013 as follows: CO_2: −0.2 kt, CH_4: −0.002 kt, N_2O: −0.007 kt N_2O.

Navigation (1.A.3.d 1 + 2)

The revision of emissions follows the changes in the off-road model by reorganizing the fleet composition (integration of the future emission class "Stage V") in the course of an updated evaluation of average emission factors for the Danube navigation.

Overall revisions have changed the emissions for 2013 as follows: +0.007 kt CO_2.

Off-road – mobile sources (1.A.2.f, 1.A.4.a, b, c)

Emissions of mobile off-road sources have only been changed for forestry. Due to changes in the implementation periods for chainsaws and other mobile equipment, emissions have been revised downwards for the whole time series. The most important changes in emissions for 2013 are: −0.5 kt CO_2, −0.01 kt CH_4.

3.3.1.3 Fugitive Emissions

No recalculations were made.

3.3.2 Industrial Processes and Other Product Use

Update of activity data

2.C.1 Iron and Steel Production

Input of coke oven gas was updated in the IEA questionnaire for the years from 2005 onwards, resulting in higher CO_2 emissions (+33 kt in 2013).

2.F.1 Refrigeration and Air Conditioning

The calculation was further improved by adjusting the overall amounts of cooling agents to the amounts actually considered in the calculations, where previously estimated amounts from importers were used. Additionally some parameters for the model concerning the share of refrigerants filled into new equipment of sub category commercial refrigeration was improved to remove minor inconsistencies of the resulting IEF. This results in an overall decline in emissions from 2011 onwards (−22 Gg CO_2e in 2011, −45 Gg CO_2e in 2012 and −72 Gg CO_2e in 2013).

2.D. Non Energy products from Fuels and Solvent Use

Emissions from *2.D.1 Lubricant Use* and *2.D.2. Parrafin Wax Use* were included.
The calculation model for emissions from solvent use was improved and in depth QA/QC activities concerning the input data from import/exports statistics identified further non-solvent use of alcohols. Furthermore, emissions were updated where possible using information of the reports for the VOC Solvent Emissions Directive. On the other hand, for those sub categories concerning the use of paints statistical data of national paints consumption was applied, and for the categories concerning domestic use, data based on a survey was extrapolated using population statistics. The whole time series were revised, in 2013 by +5.7 kt CO_2.

Improvements of methodologies and emission factors

2.A.2 Lime production

Based on the recommendation from the 2014 annual review report, CO_2 emissions from lime production in the sugar industry were included. This resulted in higher CO_2 emissions for the whole time series (+0.1 kt in 2013).

3.3.3 Agriculture

Update of activity data

3.A Enteric Fermentation, 3.B Manure Management, 3.D Agricultural Soils

Annual livestock data

For the year 2013 updated livestock data for the animal categories horses, poultry (chicken and other poultry) and deer became available. Livestock numbers of the years 2011 and 2012 for the respective animal categories were interpolated.

3.G Liming

Cropland area

Recalculations have been carried out due to harmonization of the cropland area with the sector LULUCF leading to slightly revised emissions of CO_2 in several years from 1991 to 2012.

Improvements of methodologies and emission factors

3.B Direct N_2O emissions from manure management

The 2006 IPCC default emission factor for poultry manure (0.001 kg N_2O-N /kg N_{ex} for liquid and solid) has been implemented in the Austrian inventory. N_2O emissions of this source category decreased compared to previous inventories (-0.05 kt in 2013).

3.D.a Agricultural Soils (direct soil emissions – N_2O)

Animal manure applied to soils (CRF 3.D.a.2.a)

As the Austrian calculation model is based on the N-flow concept, the implementation of the lower 2006 IPCC default emission factor for poultry in sector *3.B Manure Management* led to slightly increased N_2O emissions in sector *3.D Agricultural Soils* (+0.01 kt N_2O for 2013).

Other organic fertilizers applied to soils (*CRF 3.D.a.2.c*)

As recommended by the 2006 IPCC Guidelines N-inputs from compost applied to agricultural soils were considered as activity for the first time resulting in additional N_2O emissions of 0.02 kt for the year 2013.

Crop Residues (CRF 3.D.a.4)

The calculation of crop residues was revised according to the latest corrigendum of the 2006 IPCC GL, which was published by end of July 2015 updating equation 11.7A for calculating crop residues. Revisions resulted in increased N_2O emissions for the whole time series (+0.3 kt for 2013).

3.D.b Agricultural Soils (indirect soil emissions – N_2O)

The inclusion of indirect N_2O emissions resulting from N of compost applied to soils (volatilization and leaching) is the main reason for the revision of the whole time series upwards. Furthermore, there are also recalculations due to the application of the 2006 IPCC default value for poultry manure (see *3.B Direct N_2O emissions from manure management*). The revisions are resulting in +0.04 kt N_2O for 2013.

3.F Field burning of agricultural residues (CH_4, N_2O)

The calculation was revised according to the methodology provided in the 2006 IPCC GL resulting in lower CH_4 emissions (-1.0 t CH_4 for 2013) and slightly higher N_2O emissions (+0.01 t N_2O for 2013).

3.3.4 LULUCF

Revisions of the data series for LULUCF are due to the following changes:

4.A Forest land

Some minor calculation errors were corrected which affect the carbon stock gains from LUC to forest land and the carbon stock changes (CSC) of deadwood in forest land remaining forest land.

4.B Cropland

The most important revision compared to previous submission has been implemented in cropland remaining cropland where the methodology for the calculation of soil CSC has been refined. With the old approach CSC were calculated with a mean factor that reflected the different cropland management types and multiplied with the total annual/perennial cropland area. The new approach calculates the soil CSC for all cropland management types by applying the specific management factors for each of these types. In addition the temporal resolution has been improved: Each cropland area is supposed to accumulate soil carbon for the 20 years transition period, after this period the net CSC is assumed to be zero.

In addition, some minor changes were undertaken in the sub-category perennial cropland remaining perennial cropland:

- the area of energy wood is no longer including the area of energy crops which is reported under annual cropland instead.
- general correction of insignificant calculation errors.

4.C Grassland

The area for grassland remaining grassland has been slightly revised due to the correction of small calculation errors.

4.D Wetlands

The data for wetland areas have been slightly revised in the real estate database (BEV).

4.E Settlements

The data for settlement areas have been slightly revised in the real estate database (BEV).

4.F Other lands

No revisions of the time series

4.G HWPs

The production data for sawnwood for the year 2013 has been revised by the FAO and therefore the value reported for HWPs for the year 2013 has changed.

LULUCF KP estimates

The Af-/reforestation, deforestation and forest management time series were not revised.

3.3.5 Waste

Update of activity data

5.B Biological Treatment of Solid Waste

CH_4 and emissions have been recalculated from 2000 onwards (2013: CH_4 +0.5 kt; N_2O: −0.04 kt) mainly due to corrections of activity data. A national study on municipal green waste in Austria was conducted in 2015, showing significant lower amounts of green waste compared to estimates for the years before. Therefore, waste amounts treated in composting plants had to be revised, in particular the assumptions made on biologically treated waste not covered by the Electronic Data Management[16] on activity data 2011−2013,". Moreover based on the study/research it can be assumed that historical amounts (prior to 2011) indicated in the Federal Waste Management Plans (BMLFUW 2011[17] and previous plans) probably were overestimated. Consequently, activity data for 2000 to 2010 had to be interpolated.

[16] E.g. small composters are not obliged to report their waste amounts via "Abfallbilanzmeldung". Their waste amounts however affect emissions and are thus included in the inventory.

[17] BMLFUW – Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft (2011): Bundes-Abfallwirtschaftsplan 2011 (BAWP 2011). Wien. http://www.bundesabfallwirtschaftsplan.at/

A further change compared to last years' submission is that methane loss in anaerobic treatment is considered for the first time in accordance with the IPCC 2006 Guidelines.

5.D Wastewater Treatment and Discharge

N_2O emissions 2013 were slightly revised (+0.3 t) due to a correction of a transcription error.

Improvements of methodologies and emission factors

5.A Solid Waste Disposal

In 2015 the practical implementation of the First Order Decay Model has been revised in accordance with the IPCC 2006 Guidelines affecting the amount of landfill gas generated and CH_4 emitted (2013: +6.7 kt CH_4).

In the course of this, the number of considered years for the annual calculation has been extended to unlimited, starting with 1950 (i.e. consideration of historical depositions for 64 years in this years' submission) for all waste types. In previous submissions 5 half lifes were taken as indicative for some waste types (e.g. residual waste). Furthermore, delay time and average residence time have been considered in the calculation.

4 NATIONAL INVENTORY SYSTEM

The regulations under the UNFCCC and the Kyoto Protocol define the standard for national emission inventories related to transparency, consistency, comparability, completeness and accuracy (TACCC) of inventories. Above this, each Party shall have in place a national system [18] including all institutional, legal and procedural arrangements made within a Party for estimating anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and for reporting and archiving inventory information.

To meet these requirements Austria has set the National Inventory System Austria (NISA) covering all aspects from establishing a legal basis for inventory preparation along with defining responsibilities, over availability of data, quality control and quality assurance (QA/QC) to continuous improvement of the inventory.

In Austria, emissions of greenhouse gases are estimated together with emissions of air pollutants in a database based on the CORINAIR (CORe INventory AIR)/SNAP (Selected Nomenclature for sources of Air Pollution) system. This nomenclature is designed to estimate not only emissions of greenhouse gases but all kinds of air pollutants. To comply with the reporting obligations under the UNFCCC, emissions are transformed according to the IPCC Guidelines into the UNFCCC Common Reporting Format (CRF).

This section provides a short description of the most important aspects of NISA; a detailed description including all required information as set down in Decision 15/CMP.1, part II ("Reporting of supplementary information under Article 7, paragraph 2", D. National systems in accordance with Article 5, paragraph 1) can be found in the Austrian Initial Report [19], in Austria's NIR 2015 [20] and in the NISA Implementation Report [21].

Austria has a centralized inventory system, with all the work related to inventory preparation being carried out at a single national entity. The most important legal arrangement is the Austrian Environmental Control Act (Umweltkontrollgesetz, UKG [22]), which defines the main responsibility for inventory preparation and identifies the Umweltbundesamt as the single national entity with the overall responsibility for inventory preparation. To comply with the stringent requirements the Umweltbundesamt established the 'Inspection Body for Emission Inventories' which is entrusted with the preparation of emission inventories as assigned to the Umweltbundesamt under the UKG.

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[18] 19/CMP.1 Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol; FCCC/KP/CMP/2005/8/Add.3

http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf

[19] BMLFUW (2006): Austria's Initial Report under Article 7, paragraph 4, of the Kyoto Protocol, Federal Ministry of Agriculture and Forestry, Environment and Water Management, Vienna.

[20] Umweltbundesamt (2016): Austria's National Inventory Report 2016, Submission under the United Nations Framework Convention on Climate Change and under the Kyoto Protocol. Umweltbundesamt, Vienna. Not published yet.

[21] Umweltbundesamt (2005): NISA National Inventory System Austria, Implementation Report, REP-0004; Umweltbundesamt, Vienna. http://www.umweltbundesamt.at/umweltkontrolle/

[22] „Umweltkontrollgesetz" – Bundesgesetz über die Umweltkontrolle und die Einrichtung einer Umweltbundesamt Gesellschaft mit beschränkter Haftung; Federal Law Gazette 152/1998.

Inspection Body for Emission Inventories
PSID 241

Umweltbundesamt GmbH, Environment Agency Austria
Dr. Klaus Radunsky (Head of Inspection Body), DI Michael Anderl (Deputy)
Spittelauer Lände 5
1090 Wien, Austria

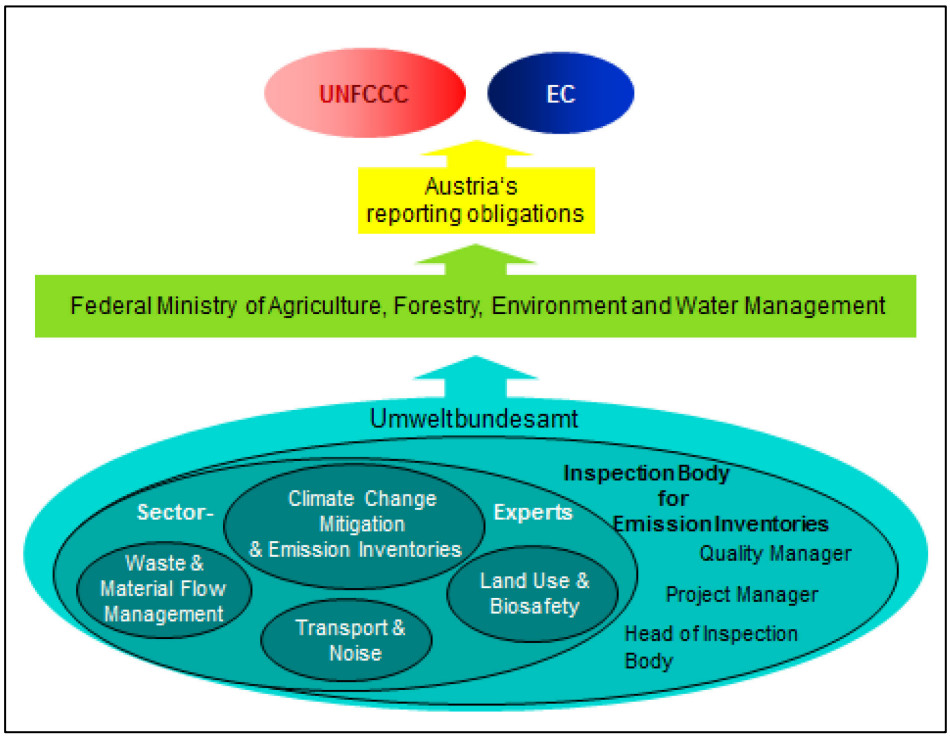

Figure 4: Responsibilities within the Austrian National Inventory System Austria.

The personnel of the IBE is made up of staff from various organisational units of the Environment Agency Austria, who in the course of their inspection activity for the IBE are assigned to the IBE and therefore responsible to the head of the inspection body. The head of the inspection body (HI) supervises the project manager (PM), who is responsible for coordinating the IBE staff (SM) when carrying out their inspections.

The national energy balance is the most important data basis for the Austrian Air Emissions Inventory. The Austrian statistical office (Statistik Austria) is required by contract with the Federal Ministry of Agriculture, Forestry, Environment and Water Management and with the Federal Ministry of Economics and Labour to annually prepare the national energy balance. The compilation of several other relevant statistics is regulated by law; other data sources include reporting obligations under national and European regulations and reports of companies and associations.

4.1.1 Legal and institutional arrangements

The Umweltbundesamt is designated as Single National Entity responsible for inventory preparation including QA/QC.

LEGAL ARRANGEMENT: ENVIRONMENTAL CONTROL ACT (FEDERAL LAW GAZETTE 152/1998)

- § 5 (regulates responsibilities of the Umweltbundesamt)

  Regulates responsibilities regarding environmental control in Austria and is also the basis for the outsourcing of the 'Umweltbundesamt GmbH'
- § 6 (regulates tasks of the Umweltbundesamt)

  (2)15 …the *Umweltbundesamt* is obliged to prepare "technical expertise for *compliance* with UNECE/LRTAP convention […] and with the UNFCCC and the Kyoto Protocol, including the preparation of emission inventories, evaluation of the impact of measures, and assistance in preparation of reports regarding climate".
- § 11 (regulates financing of the Umweltbundesamt)

  …ensures financial resources for preparation of tasks as referred to in para 6.
- § 7 (regulates issues related to data security)

  … in processing the legally assigned tasks the Umweltbundesamt is seen as a public authority and can therefore process (confidential) personal data and can exchange these data with other public authorities.

To ensure the availability of data necessary for the annual compilation of the GHG inventory further legal and institutional arrangements have been made.

Due to the above mentioned ENVIRONMENTAL CONTROL ACT the following **INSTITUTIONAL ARRANGEMENTS** with data provider were agreed:

1. Statistic Austria

- Statistical yearbook (public)
- National Energy balance (comprehensive/detailed Energy balance and IEA/Eurostat questionnaire)
  - **Long-term Contract** with the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and Federal Ministry of Economy, Family and Youth (BMWFJ)
- Production/Import/Export statistics for solvents, F-gases
  - **Contract on annual basis** with the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW)
- Agricultural statistics (public)
- Transport Statistics (public)
- Flight movements per aircraft type and airports (non-standard analysis by Statistic Austria and AustroControl for free)

  Procedural arrangement:
  - close cooperation Umweltbundesamt – Statistic Austria on definition of data format and specification

- data flow is organised through (encrypted) communication (e-mail) or in case of confidential data through personal handover of CD/DVD
- harmonisation of data: elimination of discrepancies

2. Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW)

BMFLUW as representative of the Republic of Austria owns (100%) the Umweltbundesamt, which has the legal status of a limited liability company. As superior authority and in the framework of the ENVIRONMENTAL CONTROL ACT the following institutional agreements regarding access to data of different reporting obligations were agreed:

- data on emissions and activity data from installations under the EU ETS (Federal law gazette 118/2011 establishing a scheme for greenhouse gas emission allowance trading)
- activity data of certain F-gases (Austrian Fluorinated Compounds Ordinance 139/2007 regarding prohibitions and restrictions of HFCs, PFCs, SF6)
- activity data from landfill sites (Austrian Landfill Ordinance No. 39/2008) – EDM (Electronic Data Management)
- activity data regarding waste incineration (Austrian Waste Incineration Ordinance No. 35/2013)
- emissions data collected in the framework of E-PRTR (Austrian Ordinance No. 380/2007 concerning the establishment of the European Pollutant Release and Transfer Register)
- emissions data (SO_2, NO_x, dust) and activity data from steam boiler installations (Federal law gazette 127/2013 establishing integrated pollution prevention and control)

  Procedural arrangement: The access to the data is organised for free via the EDM – Electronic Data Management – **http://edm.gv.at**, which is an information network which allows enterprises and authorities to handle registration and notification obligations in the waste and environment sectors online.

  - EDM aimed at sustainably reducing the administrative burden of enterprises and authorities to efficient, electronic recording and notification systems and to ensure a high level of environmental protection in Austria.
  - EDM is set up by Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management, BMLFUW and operated by Umweltbundesamt

3. Austrian Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW)

- National Forest inventory
  - **Contract on a regular interval** with the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW)
- Forest soil condition survey (of all federal provinces)

  Procedural arrangement: close cooperation Umweltbundesamt – BFW on definition of data format and specification;

4. Research institutions:

a. Technical University (TU) of Graz (Karl-Franzens-Universität Graz)

- NEMO – Emission model road (IPCC sector 1.A.3.b): calculation of road emissions
- GEORG – Emission model of off-road machinery: calculation of off-road emissions
  - Contract on annual basis with Umweltbundesamt

    Procedural arrangement: close cooperation Umweltbundesamt – TU Graz

b. University of Natural Resources and Life Sciences Vienna (BOKU) / Leibniz Institute for Agricultural Engineering Potsdam-Bornim (ATB)

- Agricultural model: calculation of emissions
  - Contract on a regular interval with Umweltbundesamt

    Procedural arrangement: close cooperation Umweltbundesamt – BOKU

5. Austrian Economic Chambers and Associations of the Austrian Industries as well as Individual plant operators/companies

- Activity data, emission data and relevant parameters; information on the process and abatement technology
  - no formal agreements were made but it is in Austria good practice to have a good cooperation and exchange of knowledge regarding the requirements of GHG and Air pollutants Inventory on a continuing basis

    Procedural arrangement: close cooperation

4.1.2 Data Sources

The following table presents the main data sources used for activity data as well as information on who did the actual calculations (for unpublished studies a detailed description of the methodologies is given in the NIR):

Table 8: Main data sources for activity data and emission values.

Sector	Data Sources for Activity Data	Emission Calculation
Energy	Energy Balance from Statistik Austria; EU-ETS; Steam boiler database; direct information from industry or associations of industry	Umweltbundesamt, plant operators
Transport	Energy Balance from Statistik Austria	Umweltbundesamt (Aviation), Technical University Graz (Road and Off-road transport)
IPPU	National production statistics, import/export statistics; EU-ETS; direct information from industry or associations of industry Short term statistics for trade and services Austrian foreign trade statistics Structural business statistics Surveys at companies and associations	Umweltbundesamt, plant operators F Gases: Umweltbundesamt, based on ÖkoRecherche Solvents: Umweltbundesamt, based on studies by Institut für industrielle Ökologie and Forschungsinstitut für Energie und Umweltplanung, Wirtschaft und Marktanalysen GmbH[23]
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
LULUCF	National forest inventory obtained from the Austrian Federal Office and Research Centre for Forests National agricultural statistics and land use statistics obtained from Statistik Austria	Umweltbundesamt
Waste	Federal Waste Management Plan (Data sources: Database on landfills (1998–2007), Electronic Data Management (EDM) in environment and waste management) EMREG-OW (Electronic Emission Register of Surface Water Bodies)	Umweltbundesamt

The main sources for emission factors are:

- national studies for country specific emission factors
- plant-specific data reported by plant operators
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories[24]
- EMEP/EEA air pollutant emission inventory guidebook – 2009. Technical report No. 6/2009.[25] (previously known as EMEP/CORINAIR Emission Inventory Guidebook)
- EMEP/EEA air pollutant emission inventory guidebook – 2013. Technical report No. 12/2013.[26]
- Handbook emission factors for road transport (HBEFA), Version 3.2 (planned to be published by INFRAS, Bern/Switzerland, by beginning of 2014)

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

[24] http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.htm

[25] Prepared by the UNECE/EMEP Task Force on Emissions Inventories and Projections (TFEIP) and published by the European Environment Agency (EEA). Copenhagen 2009. http://www.eea.europa.eu/publications/emep-eea-emission-inventory-guidebook-2009

[26] http://www.eea.europa.eu/publications/emep-eea-guidebook-2013

4.1.3 QA/QC Plan (QMS of IBE)

A Quality Management System (QMS) has been designed and implemented to fulfil all requirements of *good practice, i.e.* to improve transparency, consistency, comparability, completeness and accuracy as well as confidence in the national inventory. Since December 2005 the inventory team at the Umweltbundesamt has been accredited as inspection body (Id.No.241) in accordance with the Austrian Accreditation Law (AkkG)[27] by decree of the Minister of Economics and Labour[28]. This standard takes into account standards regarding a QMS as set out in the EN/ISO 9000 series and goes beyond: it also provides a clear statement of requirements regarding competence and independence; impartiality and integrity.

The implementation of QA/QC procedures as required by the IPCC supports the development of national greenhouse gas inventories that can be readily assessed in terms of quality and completeness. The QMS as implemented in the Austrian inventory includes all elements of the QA/QC system outlined in IPCC 2006 GL Volume 1 'QA/QC and Verification', and goes beyond. It comprises supporting and management processes in addition to the QA/QC procedures in inventory compilation and thus ensures agreed standards not only within (i) the inventory compilation process and (ii) supporting processes (e.g. archiving), but also for (iii) management processes (e.g. annual management reviews, internal audits, regular training of personnel, error prevention).

As part of the QMS an efficient process is established to grant transparency when collecting and analyzing findings by UNFCCC review experts or any other issues concerning the quality of activity data, emission factors, methods and other relevant technical elements of inventories. Any findings and discrepancies are documented; responsibilities, resources and a time schedule are attributed to each of these in the improvement plan. Measures, which include possible recalculations, are taken by the sector experts.

The Austrian Quality Management System is described in detail in Austria's NIR 2015, some aspects and improvements compared to the previous submission are described below (QMS activities and improvements 2015).

The Quality Manual can be downloaded at:
http://www.umweltbundesamt.at/umweltsituation/luft/emissionsinventur/emi_ueberwachung/

Sector Experts

Within the inventory system specific responsibilities for the different emission source/sink categories ('Sector Experts') are defined. There are 7 sectors defined (Energy, Transport, Fugitive Emissions, IPPU, Agriculture, LULUCF and Waste). Two experts form a sector team, whereas one team member is nominated as team leader ('Sector Lead'). Sector experts collect activity data, emission factors and all relevant information needed for finally estimating emissions. The sector experts are also responsible for the choice of methods, data processing and archiving and for contracting studies (if needed), and perform Quality As-

[27] *„Akkreditierungsgesetz"*; Federal Law Gazette No. 28/2012

[28] No. BMWA-92.715/0036-I/12/2005, issued on 19 January 2006, valid from 23 December 2005

surance and Quality Control (QA/QC) activities. The main data sources used, as well as information on who did the actual calculations, are presented in Table 8.

Data Management

The Austrian Inventory is based on the SNAP nomenclature and has to be transformed into the UNFCCC Common Reporting Format to comply with the reporting obligations under the UNFCCC. In addition to the actual emission data, the background tables of the CRF are filled in by the sector experts, and finally QA/QC procedures as defined in the inventory planning process are carried out before the data are submitted to the European Commission and to the UNFCCC.

As part of the QMS's documentation and archiving procedures a reliable data management system has been established to fulfil the data collecting and reporting requirements. This ensures the necessary documentation and archiving for future reconstruction of the inventory and consequently enables easy access to up-to-date and previously submitted data for the quantitative evaluation of recalculations.

QMS activities and improvements 2015

In 2015 a comprehensive, so called 'Re-Accreditation audit' conducted by two external auditors took place (as technical and QM audit) to assess the Quality Management System of the IBE with regard to compliance with the underlying standard EN ISO/IEC 17020, to check its implementation in practice and to assure that continuous improvement takes place. Such a comprehensive audit is obligatory every 5 years, in between periodic reviews have to be conducted every 15 months. The final judgement of the auditors confirmed the compliance and practicability of the QM system.

The following QA/QC measures were implemented in 2015:

- Several adaptions of the Quality Manual and its procedures were made to better fit the technical requirements to practical circumstances (e.g. timely documentation, requirements on calculation sheets, obligatory write protection of xls sheets, etc.).
- New and adapted methods were described in more detail as technical instructions in 'Standard Operation Procedures' across all sectors. Excel sheets were validated.
- A new function 'Inventory Generalist' was established within the IBE
- The Mutual Review New Zealand – Austria was continued in 2015. Focus was on QA/QC processes (tools and organizational aspects), experience with the CRF Reporter and the IPPU sector.

4.1.4 Changes in the national inventory system

The national inventory system is unchanged compared to the description given in chapter 0 and in the Austrian Initial Report under the Kyoto Protocol[29].

[29] http://unfccc.int/files/national_reports/initial_reports_under_the_kyoto_protocol/application/pdf/at-initial-report-200611-corr.pdf

5 CHANGES IN THE NATIONAL REGISTRY

The following changes to the national registry of Austria have occurred in 2015:

Table 9: Changes to the national registry of Austria in 2015.

Reporting Item	Description
15/CMP.1 annex II.E paragraph 32.(a) Change of name or contact	There were no changes.
15/CMP.1 annex II.E paragraph 32.(b) Change regarding cooperation arrangement	No change of cooperation arrangement occurred during the reported period.
15/CMP.1 annex II.E paragraph 32.(c) Change to database structure or the capacity of national registry	There was no change to the database structure as it pertains to KP functionality in 2015. Versions of the CSEUR released after 6.3.3.2 (the production version at the time of the last Chapter 14 submission) introduced minor changes in the structure of the database. These changes were limited and only affected EU ETS functionality. No change was required to the database and application backup plan or to the disaster recovery plan. The database model is provided in 'Annex A_CSEUR_DB_MODEL_20150113', submitted by separate upload at EIONET/CDR (confidential document). No change to the capacity of the national registry occurred during the reported period.
15/CMP.1 annex II.E paragraph 32.(d) Change regarding conformance to technical standards	Changes introduced since version 6.3.3.2 of the national registry are listed in 'Annex B_Changes From 6.3.2 to 6.7.3', submitted by separate upload at EIONET/CDR. Each release of the registry is subject to both regression testing and tests related to new functionality. These tests also include thorough testing against the DES and were successfully carried out prior to the relevant major release of the version to Production (see Annex B – confidential document). Annex H testing will be carried out in February 2016 and the test report will be submitted thereafter. No other change in the registry's conformance to the technical standards occurred for the reported period.
15/CMP.1 annex II.E paragraph 32.(e) Change to discrepancies procedures	No change of discrepancies procedures occurred during the reported period.
15/CMP.1 annex II.E paragraph 32.(f) Change regarding security	No change of security measures occurred during the reporting period.
15/CMP.1 annex II.E paragraph 32.(g) Change to list of publicly available information	No change to the list of publicly available information occurred during the reporting period.
15/CMP.1 annex II.E paragraph 32.(h) Change of Internet address	No change of the registry internet address occurred during the reporting period.
15/CMP.1 annex II.E paragraph 32.(i) Change regarding data integrity measures	No change of data integrity measures occurred during the reporting period.
15/CMP.1 annex II.E paragraph 32.(j) Change regarding test results	Changes introduced since version 6.3.3.2 of the national registry are listed in Annex B. Both regression testing and tests on the new functionality were successfully carried out prior to release of the version to Production. The site acceptance test was carried out by quality assurance consultants on behalf of and assisted by the European Commission; the report is attached as Annex B. Annex H testing will be carried out in February 2016 and the test report will be submitted thereafter.

6 REPORTING UNDER ARTICLE 7 MMR

Information on Article 7(1) a – d of the MMR is provided in the respective CRF Tables and MMR IR reporting template ('MMR_IR_AnnexX_ESD_AT_2016'). Information on the accounting of emissions and removals from LULUCF activities, in accordance with Decision No 529/2013/EU and Art. 3(3) and (4) of the Kyoto Protocol, is included in Chapter 2.4 as well as submitted by separate upload at EIONET/CDR. Emission trends 1990–2014 (Article 7(1) e) are described in Chapter 2. Changes to the national system and the national registry are presented in Chapters 4 (Article 7(1) n) and 5 (Article 7(1) o). Article 7(1) p-information is given in Chapter 4.1.3 (QA/QC Plan) and the respective MMR IR reporting template ('MMR-IRArticle14_Uncertainty_AT_2016').

Information on Article 7(1) f – m is given hereinafter:

6.1 Article 7 (1) f

Information on indicators, as set out in Annex III of the MMR, for the year 2014 is reported as a separate file ('Annex II_AT Indicators_2016') by EIONET/CDR upload. See also Annex II of this report.

6.2 Article 7 (1) g

Information from the national registry on acquisition, holding, transfer, cancellation, retirement and carry-over of AAUs, RMUs, ERUs, CERs, tCERs and lCERs for 2014 and 2015 has been reported as separate files ('SEF_AT_CP2_2014_20150111', SEF_AT_CP2_2015_20150111') in xls and xml format each by EIONET/CDR upload.

6.3 Article 7 (1) h

Summary information on concluded transfers pursuant to Article 3(4) and (5) of Decision No 406/2009/EC for the year 2015 has been reported as XML file in the directory 'Concluded transfers 2015' by EIONET/CDR upload.

6.4 Article 7 (1) i

Information on the use of joint implementation, of the CDM and of international emissions trading, pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, or any other flexible mechanism provided for in other instruments adopted by the Conference of the Parties to the UNFCCC or the Conference of the Parties to

the UNFCCC serving as the meeting of the Parties to the Kyoto Protocol, to meet their quantified emission limitation or reduction commitments pursuant to Article 2 of Decision 2002/358/EC and the Kyoto Protocol or any future commitments under the UNFCCC or the Kyoto Protocol is reported as a separate file ('AT_Art-7-1-i_Mechanisms_2016') by EIONET/CDR upload.

6.5 Article 7 (1) j

In 2015 no individual UNFCCC Review took place, so only an empty template is submitted as a separate file ('MMR_IR Article9_recommendations_AT_2016').

6.6 Article 7 (1) k

The allocation of the verified emissions reported by installations and operators under Directive 2003/87/EC to the source categories of the national greenhouse gas inventory and the ratio of those verified emissions to the total reported greenhouse gas emissions in those source categories for 2014 is reported as a separate file ('MMR_IRArticle10_ETS_AT_2016').

6.7 Article 7 (1) l

ETS reports are fully considered in the Austrian greenhouse gas inventory; consistency of data is thus given and the Article not relevant for Austria.

For details, especially the methodology of consideration of ETS-data ('bottom up' data) see chapter 3.2.9.1 of the National Inventory Report 2015.

6.8 Article 7 (1)m (i)

The Austrian Air Emission Inventory (OLI) covers both, greenhouse gases and air pollutants reported under the NEC Directive 2001/81/EC and CLRTAP. Data basis (activity data and other relevant parameters) is thus consistent for NEC, CLRTAP and MMR reporting.

Results of the checks performed for each air pollutant on the consistency of the data, for the year 2014 show no differences of more than +/− 5% between the total emissions excluding LULUCF. Minor differences are solely due to different reporting requirements regarding air transport and international navigation.

For the comparison the following versions were taken (NEC: v1.0 submitted 31/12/2015, CLRTAP not submitted yet).

6.9 Article 7 (1)m (ii)

There are no producers of F-gases in Austria, and imports and exports of F-Gases to and from Austria are all from inside the EU. Article 6(1) of this regulation is thus not relevant for Austria.

6.10 Article 7 (1)m (iii)

Checks performed on the consistency of the data used to estimate emissions in preparation of the greenhouse gas inventory for 2014 with the energy data reported pursuant to Article 4 of Regulation (EC) No 1099/2008 show no differences of more than +/− 2%.

7 ABBREVIATIONS

BFW ..... Bundesamt und Forschungszentrum für Wald
Austrian Federal Office and Research Centre for Forest

BMLFUW..... Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
Federal Ministry of Agriculture, Forestry, Environment and Water Management

BMWA..... Bundesministerium für Wirtschaft und Arbeit
Federal Ministry for Economic Affairs and Labour (renamed as BMWFJ)

BMWFJ ..... Bundesministerium für Wirtschaft, Familie und Jugend
Federal Ministry of Economy, Family and Youth (formerly called BMWA)

CDR ..... Central Data Repository

COP ..... Conference of the Parties

CORINAIR..... Core Inventory Air

CRF..... Common Reporting Format

EC ..... European Community

EEA..... European Environment Agency

EIONET..... European Environment Information and Observation NETwork

EMEP..... Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

EN ..... European Norm

ETC..... European Topic Centre

EU ..... European Union

ERT..... Expert Review Team (in context of the UNFCCC review process)

FAO..... Food and Agricultural Organisation of the United Nations

GHG..... Greenhouse Gas

GLOBEMI..... Globale Modellbildung für Emissions- und Verbrauchsszenarien im Verkehrssektor
(Global Modelling for Emission- and Fuel consumption Scenarios of the Transport Sector) see (HAUSBERGER 1998)

GWP ..... Global Warming Potential

IPCC ..... Intergovernmental Panel on Climate Change

IEA ..... International Energy Agency

ISO..... International Standards Organisation

LTO ..... Landing/Take-Off cycle

LULUCF ..... Land Use, Land-Use Change and Forestry – IPCC CRF Category 5

MMR ..... Monitoring Mechanism Regulation

MM IR ..... Monitoring Mechanism – Commission Implementing Regulation

NEMO ..... Network Emission Model

NFI ..... National Forest Inventory

NFR ..... Nomenclature for Reporting (Format of Reporting under the UNECE/CLRTAP Convention)

NISA ..... National Inventory System Austria

OLI ..... Österreichische Luftschadstoff-Inventur
Austrian Air Emission Inventory

QA/QC ..... Quality Assurance/Quality Control

QMS ..... Quality Management System

SNAP ..... Selected Nomenclature on Air Pollutants

UNECE/CLRTAP .. United Nations Economic Commission for Europe, Convention on Long-range Transboundary Air Pollution

UNFCCC ..... United Nations Framework Convention on Climate Change

ANNEX I: EMISSION TRENDS

This Annex presents emission trends for CO_2, CH_4, N_2O and FCs.

This report uses the following UNFCCC notation keys 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.

Table A.I-1: Emission Trends GHG emissions (kt CO_2e).

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Emissions/Removals with LULUCF	**65 939.70**	**65 653.00**	**63 464.29**	**81 382.71**	**83 857.27**	**80 692.90**	**81 776.34**	**75 064.38**	**78 375.02**	**75 647.53**	**73 500.13**	**74 796.60**	**70 719.63**
Total Emissions without LULUCF	**78 792.48**	**79 763.42**	**80 381.97**	**92 760.79**	**89 937.10**	**87 197.09**	**87 057.01**	**80 144.68**	**84 900.01**	**82 581.10**	**79 851.45**	**79 998.05**	**76 278.06**
1. Energy	**52 917.19**	**54 447.32**	**55 312.49**	**67 336.11**	**64 021.31**	**60 688.16**	**60 233.05**	**56 776.53**	**59 833.11**	**57 433.51**	**55 265.53**	**55 248.09**	**51 418.32**
A. Fuel Combustion (Sectoral Approach)	52 215.44	53 983.36	54 816.08	66 853.89	63 504.13	60 164.05	59 750.78	56 236.12	59 311.71	56 918.88	54 737.50	54 716.38	50 927.67
1. Energy Industries	13 841.88	12 969.97	12 275.17	16 378.21	15 254.30	13 982.73	13 780.89	12 828.15	14 157.26	13 932.26	12 530.84	11 279.68	9 660.68
2. Manufacturing Industries and Construction	9 891.83	10 326.76	10 039.69	11 854.66	11 451.68	11 042.12	11 435.27	10 996.97	11 561.68	11 543.32	11 259.66	11 036.43	10 542.77
3. Transport	13 975.66	15 886.57	18 818.20	24 936.85	23 631.89	23 788.41	22 510.82	21 709.44	22 386.74	21 704.64	21 596.98	22 820.38	22 180.72
4. Other Sectors	14 470.20	14 766.67	13 641.22	13 639.60	13 121.20	11 305.17	11 977.63	10 654.85	11 158.77	9 690.84	9 301.63	9 530.93	8 493.98
5. Other	35.87	33.39	41.80	44.58	45.06	45.62	46.17	46.69	47.26	47.82	48.38	48.96	49.51
B. Fugitive Emissions from Fuels	701.74	463.96	496.40	482.23	517.18	524.10	482.27	540.42	521.40	514.64	528.04	531.71	490.65
1. Solid Fuels	333.22	36.84	27.19	0.13	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Oil and Natural Gas	368.52	427.12	469.21	482.09	517.04	524.10	482.27	540.42	521.40	514.64	528.04	531.71	490.65
C. CO_2 Transport and Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Industrial Processes and Other Product Use	**13 663.05**	**13 610.27**	**14 641.62**	**15 607.05**	**16 251.81**	**16 940.79**	**17 274.08**	**13 946.78**	**15 924.32**	**16 082.68**	**15 694.95**	**15 980.09**	**16 065.15**
A. Mineral Industry	3 092.46	2 657.39	2 733.20	2 888.79	3 053.33	3 265.67	3 276.09	2 714.93	2 660.68	2 779.36	2 703.56	2 719.69	2 721.68
B. Chemical Industry	1 555.31	1 528.06	1 623.74	943.33	983.43	908.74	1 011.99	792.94	784.49	785.56	759.40	696.28	809.87
C. Metal Industry	8 177.44	7 842.13	8 482.76	9 576.79	10 049.47	10 546.86	10 740.63	8 403.23	10 227.41	10 245.97	9 901.54	10 264.21	10 197.63
D. Non-Energy Products from Fuels and Solvent Use	348.94	234.07	227.86	210.14	206.55	207.36	202.74	196.14	192.89	195.68	200.08	182.14	181.98
E. Electronics Industry	133.87	509.61	419.96	352.34	370.08	391.05	370.94	113.86	149.77	119.16	101.25	90.35	96.94
F. Product Uses as Substitutes for ODS	0.00	347.14	708.85	1 140.73	1 146.10	1 186.95	1 239.19	1 304.69	1 479.61	1 532.18	1 608.40	1 599.75	1 630.34
G. Other Product Manufacture and Use	355.03	491.86	445.25	494.93	442.84	434.16	432.51	421.01	429.46	424.77	420.73	427.66	426.71
H. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
3. Agriculture	**8 051.99**	**7 910.77**	**7 376.93**	**6 973.00**	**6 944.11**	**6 980.70**	**7 078.77**	**7 100.35**	**6 951.70**	**6 992.44**	**6 921.61**	**6 914.95**	**7 029.96**
A. Enteric Fermentation	4 820.53	4 638.25	4 386.67	4 143.41	4 129.87	4 145.16	4 137.39	4 190.19	4 178.56	4 124.82	4 096.08	4 101.79	4 119.71
B. Manure Management	975.51	962.91	898.25	853.38	849.61	857.41	846.29	857.28	854.11	840.77	832.88	830.27	829.97
C. Rice Cultivation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Agricultural Soils [(2)]	2 159.95	2 208.31	1 992.14	1 871.98	1 858.68	1 869.93	1 989.01	1 941.77	1 810.73	1 920.39	1 883.57	1 874.38	1 968.26
E. Prescribed Burning of Savannas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F. Field Burning of Agricultural Residues	1.58	1.51	1.32	1.28	1.19	1.22	1.19	1.10	1.06	0.86	0.68	0.64	0.70
G. Liming	89.97	91.85	90.19	91.19	89.85	89.05	88.33	88.03	87.68	87.24	86.73	86.36	85.87
H. Urea application	4.45	7.95	8.37	11.76	14.91	17.92	16.55	21.97	19.56	18.36	21.69	21.51	25.44
I. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Land Use, Land-Use Change and Forestry	**-12 852.77**	**-14 110.42**	**-16 917.68**	**-11 378.08**	**-6 079.82**	**-6 504.19**	**-5 280.67**	**-5 080.31**	**-6 524.99**	**-6 933.57**	**-6 351.33**	**-5 201.45**	**-5 558.43**
A. Forest Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B. Cropland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. Grassland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Wetlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E. Settlements	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F. Other Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G. Harvested Wood Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5. Waste	**4 160.25**	**3 795.06**	**3 050.93**	**2 844.63**	**2 719.86**	**2 587.44**	**2 471.11**	**2 321.02**	**2 190.87**	**2 072.47**	**1 969.35**	**1 854.91**	**1 764.63**
A. Solid Waste Disposal on Land	3 880.10	3 499.08	2 754.60	2 491.23	2 362.11	2 227.81	2 113.31	1 965.05	1 835.19	1 715.67	1 609.34	1 501.27	1 403.60
B. Biological Treatment of Solid Waste	35.74	69.09	82.59	151.36	157.38	162.50	163.90	164.89	167.44	169.62	173.73	166.28	172.25
C. Incineration and Open Burning of Waste	27.09	11.01	12.30	12.30	10.18	8.15	6.11	4.07	2.04	2.04	2.04	2.04	2.04
D. Waste Water Treatment and Discharge	217.32	215.87	201.44	189.73	190.18	188.99	187.79	187.00	186.21	185.13	184.25	185.33	186.75
E. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
6. Other *(please specify)*	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Memo Items:													
International Bunkers	950.23	1 410.04	1 793.48	2 069.35	2 148.12	2 281.79	2 281.45	1 978.58	2 148.06	2 259.09	2 163.98	2 070.74	2 066.86
Aviation	895.54	1 341.95	1 713.23	1 980.31	2 070.31	2 198.56	2 204.85	1 913.35	2 071.02	2 191.30	2 094.55	1 996.28	1 997.57
Navigation	54.68	68.09	80.26	89.04	77.81	83.23	76.60	65.23	77.04	67.79	69.43	74.46	69.29

Table A.I-2: Emission Trends CO_2 (kt).

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Emissions/Removals with LULUCF	**49 428.83**	**50 077.02**	**49 342.63**	**68 196.27**	**70 840.01**	**67 747.51**	**68 767.64**	**62 584.16**	**65 988.41**	**63 374.69**	**61 328.44**	**62 736.69**	**58 685.33**
Total Emissions without LULUCF	**62 297.10**	**64 202.09**	**66 274.68**	**79 588.43**	**76 934.87**	**74 268.03**	**74 066.18**	**67 682.65**	**72 531.75**	**70 327.09**	**67 698.58**	**67 957.05**	**64 262.49**
1. Energy	**51 303.90**	**53 110.97**	**54 081.38**	**66 158.13**	**62 854.33**	**59 525.96**	**59 075.50**	**55 655.98**	**58 649.93**	**56 289.65**	**54 107.51**	**54 067.44**	**50 323.37**
A. Fuel Combustion (Sectoral Approach)	51 201.80	52 983.82	53 916.73	65 952.97	62 622.17	59 288.80	58 863.34	55 390.82	58 412.76	56 056.48	53 870.33	53 816.26	50 102.19
1. Energy Industries	13 792.26	12 918.31	12 220.72	16 290.04	15 160.15	13 882.73	13 673.55	12 719.73	14 029.41	13 808.59	12 409.18	11 166.13	9 555.35
2. Manufacturing Industries and Construction	9 813.33	10 232.93	9 916.35	11 708.10	11 303.83	10 890.72	11 281.68	10 847.52	11 413.28	11 395.54	11 114.96	10 891.14	10 400.79
3. Transport	13 777.19	15 686.02	18 645.32	24 752.11	23 450.09	23 604.39	22 332.60	21 533.06	22 204.33	21 522.54	21 410.76	22 618.17	21 976.38
4. Other Sectors	13 784.01	14 114.02	13 093.54	13 159.15	12 664.03	10 866.34	11 530.32	10 244.78	10 719.45	9 282.96	8 888.04	9 092.84	8 121.15
5. Other	35.00	32.55	40.80	43.57	44.06	44.63	45.19	45.72	46.28	46.84	47.40	47.97	48.52
B. Fugitive Emissions from Fuels	102.09	127.15	164.65	205.16	232.16	237.16	212.16	265.17	237.17	233.18	237.18	251.18	221.18
1. Solid Fuels	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Oil and Natural Gas	102.09	127.15	164.65	205.16	232.16	237.16	212.16	265.17	237.17	233.18	237.18	251.18	221.18
C. CO_2 Transport and Storage	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Industrial Processes and Other Product Use	**10 871.89**	**10 980.34**	**12 082.47**	**13 315.08**	**13 965.64**	**14 626.97**	**14 879.70**	**11 912.60**	**13 772.55**	**13 929.80**	**13 480.63**	**13 779.72**	**13 825.78**
A. Mineral Industry	3 092.46	2 657.39	2 733.20	2 888.79	3 053.33	3 265.67	3 276.09	2 714.93	2 660.68	2 779.36	2 703.56	2 719.69	2 721.68
B. Chemical Industry	643.49	669.46	674.08	643.58	666.25	601.61	651.72	587.90	676.83	692.75	662.02	599.11	715.41
C. Metal Industry	6 787.00	7 419.42	8 447.33	9 572.21	10 037.36	10 546.58	10 740.33	8 402.69	10 227.14	10 245.82	9 897.08	10 255.39	10 181.97
D. Non-Energy Products from Fuels and Solvent Use	348.94	234.07	227.86	210.14	206.55	207.36	202.74	196.14	192.89	195.68	200.08	182.14	181.98
E. Electronics Industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Product Uses as Substitutes for ODS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Other Product Manufacture and Use	0.00	0.00	0.00	0.36	2.15	5.75	8.82	10.94	15.01	16.19	17.90	23.38	24.74
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
3. Agriculture	**94.42**	**99.80**	**98.56**	**102.95**	**104.76**	**106.97**	**104.89**	**110.01**	**107.24**	**105.60**	**108.42**	**107.86**	**111.31**
A. Enteric Fermentation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Manure Management	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils [(2)]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
G. Liming	89.97	91.85	90.19	91.19	89.85	89.05	88.33	88.03	87.68	87.24	86.73	86.36	85.87
H. Urea application	4.45	7.95	8.37	11.76	14.91	17.92	16.55	21.97	19.56	18.36	21.69	21.51	25.44
I. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4. Land Use, Land-Use Change and Forestry	**-12 868.26**	**-14 125.07**	**-16 932.04**	**-11 392.16**	**-6 094.86**	**-6 520.52**	**-5 298.54**	**-5 098.49**	**-6 543.33**	**-6 952.40**	**-6 370.14**	**-5 220.36**	**-5 577.16**
A. Forest Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Cropland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Grassland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Wetlands	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested Wood Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	**26.89**	**10.97**	**12.26**	**12.26**	**10.15**	**8.12**	**6.09**	**4.06**	**2.03**	**2.03**	**2.03**	**2.03**	**2.03**
A. Solid Waste Disposal on Land	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Biological Treatment of Solid Waste	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Incineration and Open Burning of Waste	26.89	10.97	12.26	12.26	10.15	8.12	6.09	4.06	2.03	2.03	2.03	2.03	2.03
D. Waste Water Treatment and Discharge	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
6. Other *(please specify)*	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Memo Items:													
International Bunkers	935.45	1 388.98	1 767.97	2 040.20	2 119.21	2 251.24	2 251.64	1 952.94	2 120.08	2 230.68	2 136.52	2 044.04	2 040.64
Aviation	885.97	1 327.42	1 695.58	1 959.83	2 048.88	2 175.79	2 181.97	1 893.40	2 049.55	2 168.44	2 072.66	1 975.44	1 976.70
Navigation	49.48	61.55	72.39	80.37	70.33	75.44	69.67	59.54	70.53	62.24	63.86	68.60	63.94

Table A.I-3: Emission Trends CH_4 (kt).

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Emissions/Removals with LULUCF	**421.98**	**385.09**	**336.90**	**310.73**	**305.06**	**300.07**	**294.32**	**290.10**	**285.65**	**277.41**	**272.57**	**268.67**	**263.28**
Total Emissions without LULUCF	**421.96**	**385.09**	**336.89**	**310.73**	**305.05**	**300.07**	**294.32**	**290.10**	**285.64**	**277.41**	**272.57**	**268.66**	**263.28**
1. Energy	**45.61**	**32.58**	**27.59**	**22.94**	**22.63**	**22.28**	**21.81**	**21.30**	**22.60**	**21.62**	**22.34**	**22.63**	**20.42**
A. Fuel Combustion (Sectoral Approach)	21.62	19.11	14.32	11.86	11.23	10.81	11.00	10.29	11.23	10.36	10.70	11.41	9.64
1. Energy Industries	0.24	0.23	0.23	0.34	0.38	0.39	0.41	0.44	0.48	0.50	0.53	0.50	0.51
2. Manufacturing Industries and Construction	0.33	0.39	0.44	0.51	0.53	0.54	0.58	0.60	0.60	0.60	0.57	0.56	0.56
3. Transport	2.62	1.68	1.05	0.84	0.74	0.67	0.58	0.52	0.48	0.45	0.41	0.40	0.37
4. Other Sectors	18.44	16.81	12.60	10.17	9.58	9.21	9.43	8.72	9.68	8.80	9.19	9.95	8.20
5. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B. Fugitive Emissions from Fuels	23.99	13.47	13.27	11.08	11.40	11.48	10.80	11.01	11.37	11.26	11.63	11.22	10.78
1. Solid Fuels	13.33	1.47	1.09	0.01	0.01	NA	NA	NA	NA	NA	NA	NA	NA
2. Oil and Natural Gas	10.66	12.00	12.18	11.08	11.40	11.48	10.80	11.01	11.37	11.26	11.63	11.22	10.78
C. CO_2 Transport and Storage	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Industrial Processes and Other Product Use	**1.40**	**1.38**	**1.40**	**1.45**	**1.92**	**1.90**	**1.88**	**1.84**	**1.87**	**1.87**	**1.87**	**1.96**	**1.87**
A. Mineral Industry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Chemical Industry	1.40	1.38	1.40	1.45	1.92	1.90	1.88	1.84	1.87	1.87	1.87	1.96	1.87
C. Metal Industry	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Non-Energy Products from Fuels and Solvent Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronics Industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Product Uses as Substitutes for ODS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Other Product Manufacture and Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
3. Agriculture	**214.37**	**205.91**	**193.79**	**182.57**	**181.84**	**182.52**	**181.87**	**184.17**	**183.63**	**181.18**	**179.84**	**179.99**	**180.68**
A. Enteric Fermentation	192.82	185.53	175.47	165.74	165.19	165.81	165.50	167.61	167.14	164.99	163.84	164.07	164.79
B. Manure Management	21.50	20.33	18.28	16.79	16.61	16.68	16.33	16.53	16.45	16.16	15.97	15.90	15.87
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils [(2)]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.02
G. Liming	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H. Urea application	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
I. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4. Land Use, Land-Use Change and Forestry	**0.02**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**
A. Forest Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Cropland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Grassland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Wetlands	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested Wood Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	**160.58**	**145.21**	**114.12**	**103.77**	**98.67**	**93.36**	**88.76**	**82.78**	**77.54**	**72.73**	**68.52**	**64.08**	**60.31**
A. Solid Waste Disposal on Land	155.20	139.96	110.18	99.65	94.48	89.11	84.53	78.60	73.41	68.63	64.37	60.05	56.14
B. Biological Treatment of Solid Waste	0.52	1.04	1.25	2.48	2.70	2.86	2.94	2.98	3.03	3.06	3.15	3.02	3.15
C. Incineration and Open Burning of Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Waste Water Treatment and Discharge	4.85	4.21	2.68	1.64	1.48	1.39	1.29	1.20	1.10	1.05	1.00	1.01	1.02

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other *(please specify)*	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Memo Items:													
International Bunkers	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.05
Aviation	0.01	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04
Navigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A.I-4: Emission Trends N_2O (kt).

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Emissions/Removals with LULUCF	**14.45**	**14.77**	**14.47**	**12.06**	**12.01**	**12.05**	**12.64**	**11.87**	**11.23**	**11.47**	**11.33**	**11.33**	**11.55**
Total Emissions without LULUCF	**14.40**	**14.72**	**14.43**	**12.01**	**11.96**	**12.00**	**12.58**	**11.81**	**11.17**	**11.41**	**11.27**	**11.27**	**11.49**
1. Energy	**1.59**	**1.75**	**1.82**	**2.03**	**2.02**	**2.03**	**2.05**	**1.97**	**2.07**	**2.02**	**2.01**	**2.06**	**1.96**
A. Fuel Combustion (Sectoral Approach)	1.59	1.75	1.82	2.03	2.02	2.03	2.05	1.97	2.07	2.02	2.01	2.06	1.96
1. Energy Industries	0.15	0.15	0.16	0.27	0.28	0.30	0.33	0.33	0.39	0.37	0.36	0.34	0.31
2. Manufacturing Industries and Construction	0.24	0.28	0.38	0.45	0.45	0.46	0.47	0.45	0.45	0.45	0.44	0.44	0.43
3. Transport	0.45	0.53	0.49	0.55	0.55	0.56	0.55	0.55	0.57	0.57	0.59	0.65	0.65
4. Other Sectors	0.76	0.78	0.78	0.76	0.73	0.70	0.71	0.64	0.66	0.63	0.62	0.64	0.56
5. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B. Fugitive Emissions from Fuels	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
1. Solid Fuels	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Oil and Natural Gas	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
C. CO_2 Transport and Storage	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Industrial Processes and Other Product Use	**3.69**	**3.52**	**3.82**	**1.44**	**1.43**	**1.39**	**1.56**	**1.00**	**0.69**	**0.63**	**0.62**	**0.62**	**0.62**
A. Mineral Industry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Chemical Industry	2.94	2.77	3.07	0.88	0.90	0.87	1.05	0.53	0.20	0.15	0.17	0.16	0.16
C. Metal Industry	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Non-Energy Products from Fuels and Solvent Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronics Industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Product Uses as Substitutes for ODS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Other Product Manufacture and Use	0.75	0.75	0.75	0.56	0.53	0.52	0.51	0.47	0.48	0.47	0.45	0.46	0.46
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
3. Agriculture	**8.72**	**8.94**	**8.17**	**7.74**	**7.70**	**7.75**	**8.15**	**8.01**	**7.56**	**7.91**	**7.78**	**7.74**	**8.06**
A. Enteric Fermentation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Manure Management	1.47	1.53	1.48	1.46	1.46	1.48	1.47	1.49	1.49	1.47	1.45	1.45	1.45
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils [(2)]	7.25	7.41	6.69	6.28	6.24	6.27	6.67	6.52	6.08	6.44	6.32	6.29	6.60
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G. Liming	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H. Urea application	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
I. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4. Land Use, Land-Use Change and Forestry	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
A. Forest Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Cropland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Grassland	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Wetlands	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested Wood Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	**0.40**	**0.52**	**0.62**	**0.80**	**0.82**	**0.82**	**0.83**	**0.83**	**0.84**	**0.85**	**0.85**	**0.84**	**0.86**
A. Solid Waste Disposal on Land	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Biological Treatment of Solid Waste	0.08	0.14	0.17	0.30	0.30	0.31	0.30	0.30	0.31	0.31	0.32	0.30	0.31
C. Incineration and Open Burning of Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Waste Water Treatment and Discharge	0.32	0.37	0.45	0.50	0.51	0.52	0.52	0.53	0.53	0.53	0.53	0.54	0.54
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
6. Other *(please specify)*	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Memo Items:													
International Bunkers	0.05	0.07	0.08	0.09	0.09	0.10	0.10	0.08	0.09	0.09	0.09	0.09	0.08
Aviation	0.03	0.05	0.06	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.07	0.07
Navigation	0.02	0.02	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Table A.I-5: Emission Trends HFCs, PFCs, SF_6 and NF_3

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990 (Base year)	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Emissions of HFCs – kt CO_2 equivalent	**2.44**	**357.93**	**713.63**	**1 145.76**	**1 152.47**	**1 195.89**	**1 248.53**	**1 306.85**	**1 481.67**	**1 534.24**	**1 610.49**	**1 601.86**	**1 632.35**
HFC-23 (kt)	0.00	0.00	0.00	0.43	0.33	0.41	0.86	0.86	0.86	0.86	0.86	0.86	0.86
HFC-32 (kt)	0.00	0.16	5.67	19.16	20.90	24.67	27.25	32.57	38.92	47.66	53.32	56.65	58.58
HFC-43-10mee / act (kt)	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFC-125 (kt)	0.00	2.22	26.03	68.71	75.54	80.15	88.20	98.44	116.73	126.06	133.42	131.77	134.12
HFC-134a (kt)	0.00	222.76	301.06	409.69	376.54	389.36	394.32	390.77	420.47	438.10	466.31	481.35	494.85
HFC-143a (kt)	0.00	2.37	23.81	58.24	64.24	65.20	71.70	77.52	91.75	92.47	94.43	88.48	88.90
HFC-152a (kt)	0.00	81.68	595.21	204.69	247.82	248.70	87.15	129.37	134.38	0.00	0.00	0.00	0.00
HFC-227ea (kt)	0.00	0.00	0.00	0.31	0.63	0.11	0.00	0.00	0.00	0.74	0.00	0.00	0.00
HFC-245fa (kt)	0.00	0.00	1.50	4.55	2.36	2.31	2.26	2.21	2.16	2.11	2.06	2.01	1.97
HFC-365mfc (kt)	0.00	0.00	1.50	4.57	2.38	2.33	2.28	2.22	2.17	2.12	2.08	2.03	1.98
Unspecified mix of listed HFCs (kt CO_2 equivalent)	2.44	10.79	4.78	5.03	6.36	8.94	9.35	2.16	2.05	2.06	2.09	2.12	2.01
Emissions of PFCs (kt CO_2 equivalent)	**1 182.79**	**83.35**	**87.32**	**157.79**	**172.39**	**230.33**	**208.19**	**36.02**	**78.05**	**73.51**	**50.72**	**49.23**	**53.03**
CF_4 (kt)	137.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C_2F_6 (kt)	10.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C_3F_8 (kt)	0.00	0.00	0.00	0.00	0.21	0.17	0.11	0.00	0.00	0.00	0.00	0.00	0.00
C_4F_{10} (kt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unspecified mix of listed PFCs (kt CO_2 equivalent)	34.03	83.35	87.32	157.79	170.57	228.85	207.25	36.02	78.05	73.51	50.72	49.23	53.03
Emissions of SF_6 (kt CO_2 equivalent)	**470.61**	**1 100.11**	**574.53**	**493.63**	**453.46**	**367.01**	**373.43**	**341.68**	**335.87**	**307.35**	**311.88**	**304.87**	**312.96**
SF_6 (t)	20.64	48.25	25.20	21.65	19.89	16,10	16.38	14.99	14.73	13.48	13.68	13.37	13.73
Emissions of NF_3 (kt CO_2 equivalent)	**0.00**	**6.44**	**10.51**	**28.16**	**32.73**	**59.39**	**53.47**	**4.54**	**4.12**	**4.10**	**8.56**	**9.75**	**10.56**
NF_3 (t)	0.00	0.37	0.61	1.64	1.90	3.45	3.11	0.26	0.24	0.24	0.50	0.57	0.61

ANNEX II: INDICATORS

This Annex presents the indicators pursuant to Article 7(1) f of Regulation (EU) No 525/2013 'Monitoring Mechanism Regulation'. Information on all priority indicators (including Additional Priority Indicators) is provided[30]; however, data for one supplementary indicator was not available (indicated by NA).

Table A.III: Indicators pursuant to Article 7 (1) f of the Regulation No. 525/2013/EC 'Monitoring Mechanism Regulation' (MMR) for the years 1990, 1995, 2000, 2005–2014.

No	Indicator	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Priority													
1	Total CO_2 intensity of GDP [t CO_2/Mio Euro]	319.7	293.5	261.1	287.9	269.3	250.9	246.4	234.0	246.2	232.2	221.8	222.0	209.1
2	Energy related CO_2 intensity of GDP [t CO_2/Mio Euro]	262.8	242.2	212.4	238.6	219.2	200.3	195.8	191.5	198.3	185.1	176.5	175.8	163.1
3	Specific CO_2 emissions of passenger cars [g CO_2/km]	203.0	197.4	192.9	187.0	182.2	180.6	176.9	173.2	171.4	170.1	167.8	166.9	164.8
4	Energy related CO_2 intensity of industry [t/Mio Euro]	288.4	267.9	230.3	245.1	224.4	204.9	208.1	230.4	235.7	223.0	216.1	212.7	203.4
5	Specific CO_2 emissions of households [t CO_2/dwelling]	3.40	3.17	2.76	2.41	2.19	1.94	1.97	1.78	1.95	1.67	1.71	1.70	1.41
6	CO_2 intensity of the commercial and institutional sector [t CO_2/Mio Euro]	22.8	25.8	20.6	23.6	24.3	17.9	20.3	17.3	16.0	12.8	9.7	10.6	10.9
7	Specific CO_2 emissions of public and autoproducer power plants [t CO_2/TJ]	166.8	151.0	128.5	122.4	121.1	117.1	106.4	98.2	102.0	104.8	100.7	105.4	107.7
	Additional Priority													
1	Freight transport on road [g CO_2/ton-km]	109.7	95.3	79.4	74.4	73.6	71.4	70.6	69.7	67.7	67.9	67.5	64.2	63.1
2	Total CO_2 intensity – iron and steel industry [t CO_2/Mio Euro]	2 304	1 819	1 448	1 954	2 036	1 939	1 898	3 541	3 448	3 470	3 068	3 260	3 138
3	Energy related CO_2 intensity – chemical industry [t CO_2/Mio Euro]	566.1	432.9	403.6	428.8	359.7	316.6	423.9	484.3	447.3	466.5	389.3	423.7	410.4
4	Energy related CO_2 intensity – glass, pottery and building materials industry [t CO_2/Mio Euro]	606.7	560.8	523.6	549.3	565.4	595.2	645.7	683.9	624.2	620.6	636.5	643.6	639.4

[30] The units of the transport indicators (No. 3 Priority Indicator, No. 1 Additional Priority Indicator, and No.1-3 Supplementary Indicator) were changed to the common unit g CO_2/km (the suggested unit was g CO_2/100 km). Furthermore, the names of the transport indicators No. 3 and 4 Supplementary Indicator have been adapted for consistency reason.

No	Indicator	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Priority													
5	Specific CO_2 emissions of iron and steel industry [t CO_2/t production]	2.2	2.0	1.9	1.8	1.8	1.7	1.8	1.9	1.8	1.7	1.7	1.7	1.7
6	Specific energy related CO_2 emissions of cement industry [t CO_2/t production]	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Supplementary													
1	Specific diesel related CO_2 emissions of passenger cars [g CO_2/ km]	186.4	184.3	182.3	179.4	173.0	173.1	172.8	169.3	168.6	167.3	165.4	164.6	162.4
2	Specific petrol related CO_2 emissions of passenger cars [g CO_2/ km]	206.5	202.3	201.0	197.5	195.9	192.3	183.4	179.2	175.6	174.2	171.3	170.5	168.7
3	Passenger transport on road [g CO_2/passenger-km]	148.9	152.5	157.4	157.2	153.7	152.9	150.3	147.7	146.6	145.8	144.3	143.9	142.5
4	Passenger transport by air [kg CO_2/passenger]	234.0	226.1	125.8	110.8	110.7	108.8	98.8	96.0	81.6	93.3	86.1	86.3	85.7
5	Energy related CO_2 intensity – food, drink and tobacco industry [t CO_2/Mio Euro]	181.7	164.7	155.6	161.5	152.0	123.8	138.0	154.8	153.3	159.4	154.5	152.9	150.2
6	Energy related CO_2 intensity – paper and printing industry [t CO_2/Mio Euro]	893.2	851.8	688.7	622.0	551.3	510.4	531.1	608.6	623.5	510.5	488.4	374.6	347.5
7	Specific CO_2 emissions of households for space heating [t CO_2/m²]	33.26	29.85	25.07	21.37	19.22	16.87	17.12	15.31	16.73	14.24	14.57	14.28	11.73
8	Specific CO_2 emissions of commercial and institutional sector for space heating [kg CO_2/m²]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Specific CO_2 emissions of public power plants [t CO_2/TJ]	166.4	143.5	133.2	111.8	109.8	102.7	93.5	84.8	85.1	87.6	83.6	82.3	78.1
10	Specific CO_2 emissions of autoproducer plants [t CO_2/TJ]	168.2	168.6	117.4	160.4	156.4	157.0	145.6	140.3	153.3	152.6	142.2	155.1	164.5
11	Carbon intensity of total power generation [t CO_2/TJ]	68.4	59.1	48.2	59.0	57.2	53.6	49.0	43.2	50.2	52.5	42.2	42.2	39.4
12	Carbon intensity of transport [t CO_2/TJ]	66.0	64.1	63.7	65.3	62.7	61.8	60.4	60.4	60.5	60.2	60.5	60.9	60.0
13	Specific energy related CO_2 emissions of paper industry [t CO_2/t production]	0.8	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3
14	Carbon intensity in Industry [kt CO_2 /PJ]	45.3	46.9	39.1	39.0	37.2	35.6	36.1	35.7	35.6	35.5	35.2	34.2	33.0
15	Carbon intensity Households [kt CO_2 /PJ]	40.9	37.5	34.9	32.4	30.9	28.0	28.0	26.3	26.6	24.8	24.7	23.2	22.3

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In "Austria's Annual Greenhouse Gas Inventory 1990–2014" the Umweltbundesamt presents updated figures of greenhouse gas (GHG) emissions in Austria. In 2014, the second year of the second commitment period under the Kyoto-Protocol, GHG emissions amounted to 76.3 million tonnes of CO_2 equivalents. This corresponds to a 3.2% decrease against 1990 and a 4.7% decrease compared to 2013. The key driver for the development 2013 to 2014 was the lower electricity production by thermal coal and gas power plants as well as the lower heating demand due to the mild weather conditions. GHG emissions according to Article 2(1) of Decision No. 406/2009/EC ("Effort Sharing Decision") amounted to 48.2 Mt CO_2 equivalents and were thus 3.9 Mt CO_2 equivalents below the annual emission allocation (AEA) for 2014.

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