



umweltbundesamt^U

NISA
NATIONAL INVENTORY SYSTEM AUSTRIA
Implementation Report

REPORT
REP-0004

Vienna, 2005



Project management

Barbara Muik

Authors

Barbara Muik

Manuela Wieser

Reviewed and approved by

Manfred Ritter

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Imprint

Owner and Editor: Umweltbundesamt GmbH
Spittelauer Lände 5, 1090 Vienna/Austria

Printing by: Umweltbundesamt GmbH

Printed on recycling paper

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ISBN 3-85457-803-2



ZUSAMMENFASSUNG

Artikel 5 des Kyoto-Protokolls verpflichtet Österreich zur Einrichtung eines Nationalen Inventursystems. Ziel dieses Systems ist die Qualitätssicherung der nationalen Inventur bei Planung, Erstellung und Management von Treibhausgasdaten in Österreich.

Der vorliegende Bericht dokumentiert das bestehende Nationale Inventursystem in Österreich (NISA), analysiert die Übereinstimmung mit den Richtlinien für nationale Inventursysteme nach Artikel 5 des Kyoto Protokolls und zeigt erforderliche Verbesserungen auf.

Die wichtigsten Anforderungen des Kyoto Protokolls an das österreichische Inventursystem (NISA) sind:

- (1) Festlegung und Dokumentation von institutionellen Einrichtungen und bestehenden rechtlichen Vereinbarungen;
- (2) Festlegung einer nationalen Koordinierungsstelle für die Emissionsberichterstattung sowie die Definition der Verantwortlichkeiten im Entstehungsprozess der Inventur;
- (3) Erstellung des Qualitätssicherungs- und Qualitätskontroll-Plans;
- (4) Sicherstellung der Konformität der Inventur-Erstellung mit den IPCC-Richtlinien (Intergovernmental Panel on Climate Change);
- (5) Sicherstellung der Datenverfügbarkeit bei Überprüfung der nationalen Treibhausgasinventur durch internationale UN-Überprüfungsteams.

Der vorliegende Bericht dokumentiert die Erfüllung der Anforderungen durch folgende Rahmenbedingungen:

- Die institutionelle Einrichtung mit Verantwortlichkeit in der Inventur-Erstellung ist das *Umweltbundesamt*.
- Das *Umweltbundesamt* ist durch das Umweltkontrollgesetz als nationale Koordinierungsstelle zur Emissionsberichterstattung bestimmt. Die Verantwortlichkeiten für Planung, Erstellung und Management der Inventur sind im Rahmen eines Umweltbundesamt-internen Qualitätsmanagements geregelt und werden von den an der Emissionsinventur beteiligten Mitarbeitern des *Umweltbundesamt* wahrgenommen.
- Die nationale Treibhausgasinventur wird vom *Umweltbundesamt* in der Organisationseinheit Überwachungsstelle *Emissionsbilanzen* durchgeführt, für welche eine Akkreditierung nach EN/ISO 17020 (*Allgemeine Kriterien für den Betrieb verschiedener Typen von Stellen, die Inspektionen durchführen*) in naher Zukunft erfolgt. Das Akkreditierungsaudit des *Umweltbundesamt* als Überwachungsstelle für die Erstellung von Treibhausgasemissionsinventuren fand im September 2005 statt. Die Akkreditierung durch Bescheid ausgestellt vom Bundesministerium für Wirtschaft und Arbeit wird voraussichtlich Anfang 2006 erfolgen.
- Das Qualitätsmanagementsystem (QMS) umfasst die notwendigen Prozesse, um eine kontinuierliche Qualitätsverbesserung der Treibhausgasemissionsinventur zu garantieren. Diese Verfahren gewährleisten die Dokumentation und Definition der Verantwortlichkeit von jeder identifizierten Unstimmigkeit und im speziellen der Anmerkungen im Rahmen der internationalen Überprüfung der Inventur (UNFCCC Review Process).

- Die Erstellung der Inventur, die die Methodenwahl, die Berechnung der Emissionen, die Identifizierung von Hauptkategorien, Unsicherheitsbestimmungen der Emissionen und Qualitätskontroll-Verfahren umfasst, wird im NISA nach den Richtlinien der IPCC (Intergovernmental Panel on Climate Change), der GPG (Good Practice Guidance) sowie der EN/ISO 17020 durchgeführt.
- Das Inventur-Management als Teil des QMS beinhaltet ein Kontrollsystem für Eingangsdaten sowie für die Emissionsberechnungen, regelt die erforderlichen Aufzeichnungen sowie die Archivierung sämtlicher Daten, Dokumente und Aufzeichnungen. Dadurch ist die notwendige Dokumentation gewährleistet, um eine künftige Rekonstruktion der Inventur und eine zügige Antwort auf die Rückfragen während der internationalen Überprüfung der Inventur zu ermöglichen.
- Ein Teil der rechtlichen Vereinbarungen als Grundlage des nationalen Systems betrifft die Datenverfügbarkeit für die jährliche Zusammenstellung der Treibhausgas-Inventur. Die wichtigste Datenquelle für die Erstellung der Österreichischen Inventur ist Statistik Austria. Die Erstellung zahlreicher Statistiken ist gesetzlich geregelt; die Erstellung der nationalen Energiebilanz wird durch Verträge in Auftrag gegeben.
- Andere Datenquellen sind Meldepflichten aufgrund nationaler und Europäischer Verordnungen und die Meldungen von Firmen und Fachverbänden. Eine Dokumentation dieser Vereinbarungen findet sich in dem vorliegenden Bericht.

Neben diesen erfüllten Anforderungen zeigt der vorliegende Bericht auch die folgenden Möglichkeiten zu einer verbesserten Umsetzung des Artikel 5 des Kyoto Protokolls auf:

- Die vorliegenden Daten zur Unsicherheit der Inventur beruhen auf einer Erhebung aus dem Jahr 1999. Es wird empfohlen, diese Unsicherheitsabschätzung im kommenden Jahr zu aktualisieren, da es seit 1999 zu methodischen Änderungen bei der Emissionsberechnung in einigen Sektoren gekommen ist.
- Im Jahr 2003 wurden 75 % der gesamten Treibhausgas-Emissionen durch fossilen Brennstoffeinsatz verursacht. Die Datengrundlage für diesen Sektor ist die Energiebilanz, die aufgrund eines fünfjährigen Vertrages zwischen dem BMLFUW und der Statistik Austria und einem entsprechenden Vertrag zwischen dem BMWA und der Statistik Austria erstellt wird. Um die langfristige Datenverfügbarkeit für diesen wichtigen Sektor zu gewährleisten, sollte ein Vertrag abgeschlossen werden, der die Kyoto-Periode 2008-2012 abdeckt. Weiters sollten in diesen Vertrag halbjährliche Treffen mit dem Verantwortlichen bei Statistik Austria und dem Experten des Umweltbundesamt aufgenommen werden. Diese Treffen sollen dazu dienen, die Energiebilanz hinsichtlich der Anforderungen in der Erstellung der nationalen Inventur zu optimieren.
- 2003 wurden 14 % der gesamten Treibhausgas-Emissionen (ohne LULUCF) durch die Senken des LULUCF Sektors (Waldbestand) kompensiert. Um die langfristige Datenverfügbarkeit für diese für Österreich sehr wichtige Senke zu gewährleisten, sollte die regelmäßige Erstellung der Österreichischen Waldinventur gesetzlich verankert werden.



EXECUTIVE SUMMARY

This report presents an overview of the National Inventory System Austria (NISA) and evaluates its compliance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol.

As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Austria is required to produce and regularly update National Greenhouse Gas (GHG) Inventories. The *Umweltbundesamt* is identified as the single national entity with overall responsibility for the national inventory by law. The responsibilities for the inventory planning, preparation and management are specified and are all allocated within the *Umweltbundesamt*.

The national greenhouse gas inventory is prepared by the inspection body for GHG inventories within the *Umweltbundesamt* which will soon be accredited as inspection body according to the International Standard ISO 17020 *General Criteria for the operation of various types of bodies performing inspections*. The accreditation audit of the *Umweltbundesamt* as inspection body took place in September 2005. Official conclusion of the accreditation is foreseen for early 2006. The Quality Management System (QMS) also includes the necessary procedures to ensure quality improvement of the emission inventory. These comprise documentation and attribution of responsibilities of any discrepancy found and of the findings by UNFCCC review experts in particular.

The inventory preparation, including identification of key categories, uncertainty estimates and QC procedures, is performed according to the 2000 Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance and Uncertainty Management of Greenhouse Gas Inventories. An update of uncertainty estimates is planned for 2006.

The inventory management as part of the QMS includes a control system for data and calculations, for records and their archiving as well as documentation on QA/QC activities. This ensures the necessary documentation and archiving for future reconstruction of the inventory and for the timely response to requests during the review process.

Part of the legal and institutional arrangements in place as basis for the national system concerns the data availability for the annual compilation of the GHG inventory. The main data source for the Austrian inventory preparation is the Austrian statistical office (*Statistik Austria*). The compilation of several statistics is regulated by law; the compilation of the national energy balance is regulated by contracts only. Other data sources include reporting obligations under national and European regulations and reports of companies and associations.



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1 INTRODUCTION

As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Austria is required to produce and regularly update National Greenhouse Gas (GHG) Inventories. The emission inventories have to be compiled according to specific guidelines and are subject to annual reviews.

Under the Kyoto Protocol, which sets emission targets for Annex I countries, the parties to the protocol have to comply with new and more stringent regulations. Member States are required to carry out transparent, comparable, complete, consistent and precise emissions calculations. In particular, as a result of integration of flexible mechanisms within the Kyoto Protocol, specific requirements have been formulated for the implementation of these aims. Introduction of Joint Implementation, Clean Development Mechanisms and emissions trading will ultimately give emissions monetary value, with the result that a number of procedures will be required to make the Protocol's provisions enter into force and to deal with issues of monitoring and control of compliance. Only when the independent review of a party's inventory has been successfully completed can it be certified for the use of flexible mechanisms.

The Kyoto Protocol (Article 5.1) as specified under the Marrakesh Accord (see decision 20/CP.7) requires that the parties have a National System in place by the end of 2006 at the latest. This system should ensure the quality for estimating anthropogenic greenhouse gas emissions by sources and removals by sinks and for reporting and archiving the results.

In Decision 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions it is required that Member Countries establish a national greenhouse gas inventory system as fast as possible and at latest by the end of 2005 with the aim of the Commission's adoption of the EC inventory system by 30 June 2006.

Austria's aim is to set up a national system that fulfils all the requirements of the Kyoto Protocol and also works as an efficient system to fulfil all the other obligations regarding air emission inventories Austria has to comply with. Figure 1 illustrates the structure of the emission inventory system in Austria.

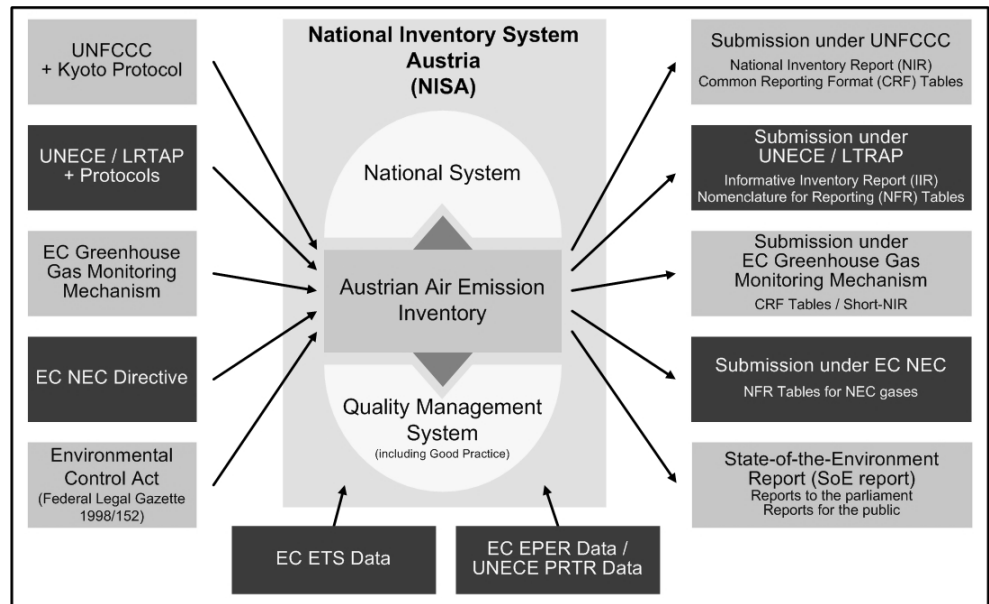


Figure 1: Structure of the emission inventory system in Austria

This report gives an overview of the National Inventory System Austria (NISA) and evaluates its compliance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol as specified under the Marrakesh Accord (see decision 20/CP.7).



2 REQUIREMENTS AND FUNCTIONS OF NATIONAL SYSTEMS

2.1 General Requirements

The overall goal of National Systems is to ensure the quality of the inventory through planning, preparation and management of inventory activities.

National Systems should enable Parties to estimate emissions in accordance with the relevant inventory guidelines [IPCC Guidelines and Good Practice Guidance (GPG)] to comply with the requirements of the Kyoto Protocol.

General quality principles for National Inventories are:

- Transparency
- Accuracy
- Completeness
- Comparability
- Consistency
- Timeliness

The general functions of the National System are

- to establish and maintain the institutional, legal, and procedural arrangements defined in the guidelines for national systems between the government agencies and other entities,
- to ensure sufficient capacity for timely performance,
- to designate a single national entity with overall responsibility for the national inventory,
- to prepare national annual inventories and supplementary information in timely manner and
- to provide information necessary to meet the reporting requirements.

2.2 Specific Requirements

Sections 12 to 17 of the guidelines for national systems (UNFCCC Decision 20/CP.7) list the specific functions related to the inventory planning, preparation and management intended to be performed by the national system, which will assist in the attainment of the objectives set for the national systems and in the performance of their general functions. The full version of the Decision 20/CP.7 can be found in chapter 5 Annex: Guidelines for National Systems. The specific functions are summarized below.

- For inventory planning Parties shall designate a single national entity with the overall responsibility for the national inventory, define and allocate specific responsibilities in the inventory development process, elaborate an inventory QA/QC plan, establish processes for the official consideration and approval of the inventory, and consider ways to improve quality of inventories.



- For inventory preparation Parties shall select methods and prepare estimates following the IPCC good practice guidance; identify key sources, make a quantitative uncertainty estimate, compile the national inventory and implement general inventory QC procedures in accordance with the IPCC good practice guidance.
- As part of the inventory preparation Parties should apply source category specific QC procedures for key sources, and should provide for a review of the inventory by personnel that have not been involved in the inventory development and should periodically re-evaluate the inventory planning process in order to meet the established quality objectives.
- As part of the inventory management Parties shall archive inventory information for each year, provide review teams with access to this information and respond to requests for clarifying inventory information resulting from the different stages of the review process.



3 COMPLIANCE WITH THE FUNCTIONS OF NATIONAL SYSTEMS IN AUSTRIA

3.1 General functions

One of the major requirements of national systems is the establishment and maintenance of the institutional, legal and procedural arrangements between the government agencies and other entities responsible for the performance of all functions defined in the guidelines for national systems. A detailed description of existing arrangements is outlined in this chapter.

Fulfilment of Para 10(a)

Following internal *Umweltbundesamt* quality management regulation, a yearly plan is implemented to ensure capacity for timely performance of the functions defined in the guidelines for national systems. The technical competence of the staff involved in the inventory process is ensured due to arrangements in the *Umweltbundesamt* internal training plan.

Fulfilment of Para 10(b)

The compliance with the other general functions of national systems concerning inventory preparation is addressed in detail in chapter 3.2.

Fulfilment of Para 10(d) (e)

3.1.1 Responsibilities

Fulfilment of Para 10(c) and 12(c)

The responsibilities in the Austrian National System are visualized in Figure 2.

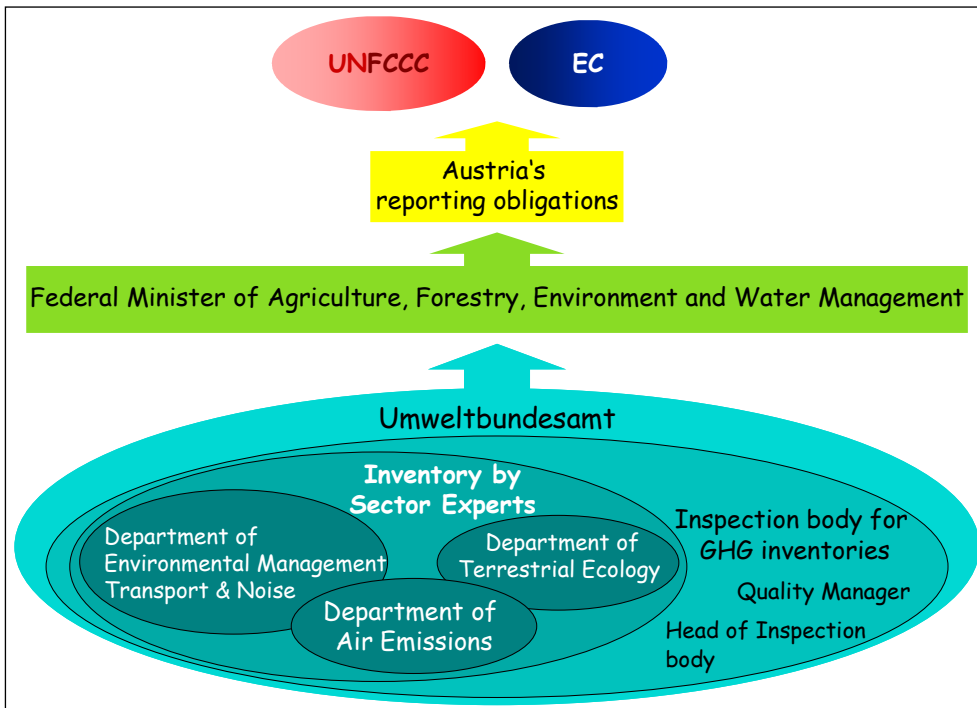


Figure 2: Responsibilities in the Austrian National System for Greenhouse Gas Inventories

Austria's reporting obligations to the UNFCCC and EC are administered by the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW). The *Umweltbundesamt* is identified as single national entity with overall



responsibility for inventory preparation by law. Within the *Umweltbundesamt* the department of air emissions is responsible for preparation of the Austrian air emission inventory (“Österreichische Luftschadstoff-Inventur OLI”) and all work related to inventory preparation. Responsibilities are divided by sectors between sector experts from Departments within the *Umweltbundesamt* (see Table 1). The “Inspection body for GHG inventory” within the *Umweltbundesamt* is responsible for the compilation of the greenhouse gas inventory. The quality system is maintained relevant and current under the responsibility of the Quality Manager. The Quality Manager within the “Inspection body for GHG inventory” has irrespective of other duties defined authority and responsibility for quality assurance within the inspection body. The Quality Manager has direct access to top management.

Table 1: Responsibilities for the air emission inventory per sector in 2005

IPCC Sector	Sector expert from
1 A Fuel Combustion Activities	Department of Air Emissions
1 A 3 Transport	Department of Environmental Management, Transport and Noise
1 B Fugitive Emissions	Department of Air Emissions
2 Industrial Processes	Department of Air Emissions
3 Solvent and other product use	Department of Air Emissions
4 Agriculture	Department of Air Emissions
5 Land use, Land use change and forestry	Department of Terrestrial Ecology
6 Waste	Department of Air Emissions

3.1.2 Institutional and legal arrangements

Fulfilment of Para 10(a)

3.1.2.1 Legal basis of the inventory system Austria

The main basis for NISA is the Austrian Environmental Control Act (Umweltkontrollgesetz)¹, which sets the main responsibility for inventory preparation; it is outlined below.

Outline of the Austrian law to designate a single national entity for inventory preparation

The “Umweltkontrollgesetz” regulates responsibilities regarding environmental control in Austria and is also the basis for the outsourcing of the “*Umweltbundesamt GmbH*” (Austrian federal environment agency ltd.) that took place in 1999.

¹ The “[Umweltkontrollgesetz](http://www.umweltbundesamt.at/umweltkontrolle)” (Federal Law Gazette 152/ 1998) can be found at the homepage of the Umweltbundesamt: <http://www.umweltbundesamt.at/umweltkontrolle>

An English excerpt can also be found at the homepage of the Umweltbundesamt:

<http://ta1.umweltbundesamt.at/fileadmin/site/umweltkontrolle/gesetze/ukg-e.pdf>



Relevant paragraphs for NISA (National Inventory System Austria) are:

- **para. 6 (regulates tasks of the Umweltbundesamt GmbH) (2) 15:**

...the *Umweltbundesamt* is obliged to prepare “technical expertise for *compliance* with [...] the UNFCCC and the Kyoto Protocol, including the preparation of emission inventories”.

- **para. 11 (regulates financing of the Umweltbundesamt GmbH):**

...ensures financial resources for preparation of tasks as referred to in para 6.

- **para. 7 (regulates issues related to data security):**

...the *Umweltbundesamt* is a public authority and can therefore process (confidential) personal data and can exchange these data with other public authorities.

3.1.2.2 Legal arrangements and other agreements

Fulfilment of Para 10(a)

Besides the Environmental Control Act there are some other legal and institutional arrangements in place as basis for the national system:

- The ordinance to the Austrian Emissions Trading Law² that regulates monitoring and reporting in the context of the EU Emissions Trading scheme in Austria; it is outlined below.

Ordinance regarding Monitoring and Reporting of Greenhouse Gas Emissions³

Paragraph 15 of this ordinance is designed to ensure consistency of emission trading data with the national inventory. It states that the *Umweltbundesamt* has to incorporate, as far as necessary, the emission reports of the emissions trading scheme into the national greenhouse gas inventory in order to comply with requirements of the EU Monitoring Mechanism Decision (280/2004/EC) and the UNFCCC. First data from the EU Emissions Trading scheme will be available for the year 2005; these data will be considered in the National Inventory Report 2007.

- The Austrian statistical office (Statistik Austria) is required by contract with the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and with the Federal Ministry of Economics and Labour (BMWA) to annually prepare the national energy balance (the contracts also cover some quality aspects). The energy balance is prepared consistent with the methodology of the Organisation for Economic Co-operation and Development (OECD) and is submitted annually to the International Energy Agency (IEA) (IEA/EUROSTAT Joint Questionnaire (JQ) Submission). The national energy balance is the most important data basis for the Austrian Air Emissions Inventory.
- According to national legislation (Bundesstatistikgesetz⁴), the Austrian statistical office has to prepare annually import/export statistics, production statistics and statistics on agricultural issues (livestock counts etc.), which is an important data basis for calculating emissions from the sectors *Industrial Processes, Solvents and Other Product Use* and *Agriculture*.

² “Emissionszertifikate-Gesetz”, Federal Law Gazette 46/2004

³ „Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über die Überwachung und Berichterstattung betreffend Emissionen von Treibhausgasen“, Federal Law Gazette 458/2004

⁴ “Bundesstatistikgesetz”, Federal Law Gazette 163/1999

- In order to comply with the reporting obligations, the *Umweltbundesamt* has the possibility to obtain confidential data from the national statistical institute (of course this data has to be treated confidential). The legal basis for this data exchange is the “Bundesstatistikgesetz”⁴ (federal statistics law), which allows the national statistical office to provide confidential data to authorities that have a legal obligation for the processing of these data.
- According to the Landfill Ordinance (Deponieverordnung)⁵, which came into force in 1997, the operators of landfill sites have to report their activity data annually to the *Umweltbundesamt*, where they are stored in the database for solid waste disposals (*Deponiedatenbank*). This data is the main data basis for calculating emissions from the sector *Waste*.
- Since 2004 there is also a reporting obligation under the Austrian Fluorinated Compounds (FC)-regulation⁶ to the BMLFUW for users of FCs in the following applications: refrigeration and air-conditioning, foam blowing, semiconductor manufacture, electrical equipment, fire extinguishers and aerosols. These data are used for estimating emissions from the consumption of fluorinated compounds (*IPCC sector 2 F*).

Fulfilment of Para 10(a)

3.1.2.3 Data basis per sector

This chapter describes data sources and availability necessary for the annual inventory compilation. Thus it concentrates on the data basis of activity data. The applied methodologies for emission calculation and the choices of emission factors for each IPCC category are described in detail in the National Inventory Report that is submitted annually to the UNFCCC.

Energy Sector

Arrangements relevant for the Energy Sector

A national energy balance compatible with requirements of the International Energy Agency (IEA Joint Questionnaires) is the main data source for this sector. Its annual preparation by *Statistik Austria* is ensured by a contract between Statistik Austria and the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and an analogous contract between Statistik Austria and the Federal Ministry of Economics and Labour (BMWA).

Data from Industry, studies and from the annual steam boiler inventory (reporting is obligatory according to para 10 (7) of LRG-K⁷), are used to verify the data from the national energy balance.

With the commencement of the Austrian Emissions Trading Law and the respective Ordinance regarding Monitoring and Reporting of Greenhouse Gas Emissions³ more detailed information on emissions from combustion of fuels than provided in the national energy balance will be available. This means for the Energy sector that the fuel inputs can be compared with data of the national energy balance, and if

⁵ „Deponieverordnung“, Federal Law Gazette 164/1996

⁶ „Industriegas-Verordnung (HFKW-FKW-SF6-VO)“, Federal Law Gazette 447/2002

⁷ “LRG-K“, Federal Law Gazette 380/1988

necessary the data of the emissions trading scheme can be used to improve e.g. the sectoral division of the energy balance. Additionally, plant specific emissions factors reported for emissions trading can be used for the national inventory to improve the data quality (especially for non-standard fuels).

For the sub-sector *Transport* statistical data (*Statistik Austria* is obliged to compile these data by law^{4,8}) are used for the allocation of sold fuel (from the energy balance) to the specific applications.

Data Sources/Data Availability

Table 2: Data sources/Data Availability in the Energy sector

IPCC Category (share in national total GHG emissions 2003)	Data Source	Availability ensured long-term?	How?
1 A 1 Energy Industries (11.5%)	IEA JQ*	yes	quinquennial contract
1 A 2 Manufacturing Industries and Construction (9.3%)	IEA JQ	yes	quinquennial contract
1 A 3 a Civil aviation (0.1%)	IEA JQ	yes	quinquennial contract
1 A 3 b Road Transport (24.2%)	IEA JQ	yes	quinquennial contract
1 A 3 c Railways (0.2%)	IEA JQ	yes	quinquennial contract
1 A 3 d e Navigation and Other Transportation (0.1%)	IEA JQ	yes	quinquennial contract
1 A 4 Other sectors (11.6%)	IEA JQ	yes	quinquennial contract
1 A 5 Other sectors (0.04%)	IEA JQ	yes	quinquennial contract
1 A Stationary Fuel Combustion (gaseous) (18.1%)	IEA JQ	yes	quinquennial contract
1 B (0.6%)	IEA JQ	yes	quinquennial contract
	Industry**	no	

* International Energy Agency Joint Questionnaire

** Association of the Austrian Petroleum Industry

Industrial Processes Sector

Arrangements relevant for the Industrial Processes Sector

National import/export statistics and production statistics are important data sources for this sector. Their availability is ensured by the “Bundesstatistikgesetz”⁴ (federal statistics law). For fluorinated compounds (IPCC Category 2 F) in particular exists a reporting obligation⁶ since 2004.

Other important data sources for this sector are the voluntary reports of companies and associations including production figures and emissions. Several specific regulations in the Austrian legislation exist concerning measurement and documentation of emission data that also concern verification for Quality Assurance and Quality Control.

⁸ “Straßen- und Schienenverkehrsstatistikgesetz”, Federal Law Gazette 142/1983



The ordinance that regulates monitoring and reporting in the context of the EU Emissions Trading scheme in Austria will ensure data availability (activity and emission data) for the most key sources. Data will be reported from plant operators from all mineral products (IPCC Category 2 A) as well as from the iron and steel industry (IPCC Category 2 C) as from 2005.

Data Sources/Data Availability

Table 3: Data sources/Data Availability in the Industry sector

IPCC Category (share in national total GHG emissions 2003)	Data Source	Availability ensured long-term?	How? / Comment
2 A 1 Cement production (1.9%)	Studies on behalf of the cement industry ⁹	no	Activity data could be obtained from Statistik Austria alternatively
2 A 2 Lime production (0.6%)	Association of Stone & Ceramic Industry	no	Activity data could be obtained from Statistik Austria alternatively
2 A 3 Limestone and Dolomite Use (0.3%)	Association of Glass Industry & Iron and Steel Producer	no	Activity data could be obtained from Statistik Austria alternatively
2 A 4 Soda Ash Use (0.02%)	Association of Glass Industry	no	Activity data could be obtained from Statistik Austria alternatively
2 A 7 Other mineral products (0.5%)	Statistik Austria	yes	Bundesstatistikgesetz ⁴
2 B 1 Ammonia production (0.5%)	Ammonia Producer	no	Activity data could be obtained from Statistik Austria alternatively
2 B 2 Nitric Acid production (1%)	Nitric Acid Producer	no	Activity data could be obtained from Statistik Austria alternatively
2 B 4 Calcium Carbide production (0.04%)	Carbide Producer	no	Activity data could be obtained from Statistik Austria alternatively
2 B 5 Production of fertilizers and urea (0.03%)	Fertilizer and Urea Producer	no	Activity data could be obtained from Statistik Austria alternatively
2 C 1 Iron and Steel production (4.9%)	Statistik Austria Iron and Steel Producer	yes	Bundesstatistikgesetz ⁴
2 F Consumption of halocarbons and SF6 (2.2%)	Reported Statistik Austria	yes	FC-regulation ⁶

⁹ Hackl, A.; Mauschitz, G. (1995/1997/2001/2004): Emissionen aus Anlagen der Österreichischen Zementindustrie



Solvent Sector

Arrangements relevant for the Solvent Sector

Import/export statistics and production statistics are the data sources for this sector. Their availability is ensured by the “Bundesstatistikgesetz”⁴ (federal statistics law).

Data Sources/ Data Availability

Table 4: Data sources/Data Availability in the Solvent sector

IPCC Category (share in national total GHG emissions 2003)	Data Source	Availability ensured long-term?	How?
3 solvent and other product use (0.5%)	Statistik Austria	yes	Bundesstatistikgesetz ⁴

Agriculture Sector

Arrangements relevant for the Agriculture Sector

Statistics on agricultural issues (livestock counts etc.) are the data sources for this sector. Their availability is ensured by the “Bundesstatistikgesetz”⁴ (federal statistics law). Each year the Minister of Agriculture and Forestry has to prepare and publish a report (Grüner Bericht) according to para 9 of the “Landwirtschaftsgesetz”¹⁰ (agriculture law) that contains the business situation of agriculture. This report contains the main statistical data for the sector *Agriculture*.

Every third year the ministry of agriculture and forestry has to prepare and publish a status report on the Austrian water bodies (Gewässerschutzbericht) according to para 33e of the “Wasserrechtsgesetz”¹¹.

¹⁰ “Landwirtschaftsgesetz”, Federal Law Gazette 375/1992

¹¹ “Wasserrechtsgesetz”, Federal Law Gazette 87/2005

Data Sources/ Data Availability

Table 5: Data sources/Data Availability in the Agriculture sector

IPCC Category (share in national total GHG emissions 2003)	Data Source	Availability ensured long-term?	How?
4 A Enteric Fermentation (3.4%)	Grüner Bericht	yes	Landwirtschaftsgesetz ¹⁰
	Statistik Austria	yes	Bundesstatistikgesetz ⁴
4 B Manure Management (1.7%)	Grüner Bericht	yes	Landwirtschaftsgesetz ¹⁰
	Statistik Austria	yes	Bundesstatistikgesetz ⁴
4 D Agricultural Soils (2.9%)	Grüner Bericht	yes	Landwirtschaftsgesetz ¹⁰
	Statistik Austria	yes	Bundesstatistikgesetz ⁴
	Gewässer-schutzbericht	yes	Wasserrechtsgesetz ¹¹

Land Use, Land Use Change and Forestry (LULUCF) Sector

Arrangements relevant for the LULUCF Sector

Legal arrangements do not exist to ensure data availability for IPCC Sector 5 A Forest Land. Data sources are the Austrian National Forest Inventory (published in irregular intervals) that is compiled by the Federal forest office (BFW), the annually reported records of wood harvested (Österreichische Waldberichte; Jahresberichte über die Forstwirtschaft) that are published by the Federal Institute of Agricultural Economics (BMLF) and the Austrian wood balance (Ökobilanz Wald) published 1995 by Statistik Austria.

Statistics on agriculture and agricultural structure are the data sources for the sub-sectors Cropland and Grassland. Their availability is ensured by the “Bundesstatistikgesetz”⁴ (federal statistics law). These statistical data have to be published according to the European Council Regulation on the organization of Community surveys on the structure of agricultural holdings¹². Another data source is INVEKOS (Integriertes Verwaltungs- und Kontrollsystem). The legal basis for INVEKOS is the European Council Regulation establishing an integrated administration and control system for certain European Community aid schemes¹³.

¹² Council Regulation 88/571/EEC on the organization of Community surveys on the structure of agricultural holdings

¹³ Council Regulation 92/3508/EEC establishing an integrated administration and control system for certain Community aid schemes



Data Sources/ Data Availability

Table 6: Data sources/Data Availability in the LULUCF sector

IPCC Category	Data Source	Availability ensured long-term?	How?
5 A Forest Land	BFW	no	
	Waldberichte	no	
	Ökobilanz Wald	no	
5 B Cropland 5 C Grassland	Statistik Austria	yes	Bundesstatistik-gesetz ⁴
	INVEKOS	yes	EC Regulation ¹³

Waste Sector

Arrangements relevant for the Waste Sector

The “Deponieverordnung”⁵ is the most important legal arrangement for this sector. Activity data are reported by the operators of landfill sites and are collected in the “Deponiedatenbank”, which is the main data basis for calculating emissions from the IPCC sub-sector 6 A.

Another relevant legal arrangement is the European Commission Directive on Urban Waste Water Treatment¹⁴. The biennial reporting obligation (Article 16) is fulfilled by Austria with the help of the “Kläranlagendatenbank” where all relevant data are collected.

Data Sources/ Data Availability

Table 7: Data sources/Data Availability in the Waste sector

IPCC Category (share in national total GHG emissions 2003)	Data Source	Availability ensured long-term?	How?
6 A Solid waste disposal on land (3.1%)	Deponiedatenbank	yes	Deponieverordnung ⁵
6 B Waste water handling (0.5%)	Statistik Austria	yes	Bundesstatistik-gesetz ⁴
	Kläranlagendatenbank	yes	EC directive ¹⁴
	Gewässerschutzberichte	yes	Wasserrechtsgesetz ¹¹
6 D Other Waste (0.1%)	Several studies	no	

¹⁴ Directive 91/271/EEC on Urban Waste Water Treatment



3.2 Specific functions

3.2.1 Inventory planning

Fulfilment of Para 12(a) **Single national entity**

As mentioned before the *Umweltbundesamt* is designated as single national entity responsible for preparation of the annual greenhouse gas inventory by law. The Environmental Control Act regulates responsibilities of environmental control in Austria and lists the tasks of the *Umweltbundesamt* (see chapter 0 for more detailed information). Thus the *Umweltbundesamt* prepares and annually updates the Austrian air emission inventory which covers greenhouse gases and emissions of other air pollutants. The *Umweltbundesamt* is also responsible for gathering all the (supplementary) information necessary to meet the reporting requirements defined in the guidelines under Article 7 of the Kyoto Protocol.

Fulfilment of Para 12(b) **The postal and electronic addresses of the single national entity are:**

Umweltbundesamt
Spittelauer Lände 5
1090 Wien/Austria
office@umweltbundesamt.at
www.umweltbundesamt.at

Fulfilment of Para 12(c) **Responsibilities**

An overview of the general responsibilities in the inventory development and reporting process is given in chapter 3.1.1. As mentioned before, the *Umweltbundesamt* has the overall responsibility for the national inventory, comprising greenhouse gases as well as other air pollutants. Within the inventory system specific responsibilities for the different emission source categories are defined (“sector experts”), as well as for all activities related to the preparation of the inventory, including QA/QC, data management and reporting.

The sector experts are in charge of specific responsibilities related to choice of methods, data collection, processing and archiving. As part of the quality management system the head of the “Inspection body for GHG inventory“ approves the methodological choices. Sector experts are also responsible for performing Quality Control (QC) activities that are incorporated in the Quality Management System (QMS).

Fulfilment of Para 12(d) **QA/QC**

The quality management system (QMS) has been designed to contribute to the objectives of *good practice guidance*, namely to improve transparency, consistency, comparability, completeness and confidence in national inventories of emissions estimates. The Quality Assurance and Quality Control (QA/QC) procedures within the QMS correspond to the QA/QC system outlined in IPCC-GPG Chapter 8 “Quality Assurance and Quality Control”.

The implemented QMS is based on the International Standard ISO 17020 *General Criteria for the operation of various types of bodies performing inspections*. The QMS ensures the fulfilment of requirements as stipulated in Chapter 8 of the IPCC-GPG. The accreditation audit of the *Umweltbundesamt* as inspection body took place in September 2005. Formal accreditation is foreseen for early 2006.

The implementation of QA/QC procedures as required by IPCC-GPG support the development of national greenhouse gas inventories that can be readily assessed in terms of quality and completeness. A QMS goes beyond QA/QC activities and comprises supporting and management processes in addition to the QA/QC procedures in inventory compilation. A system of standard operating procedures (SOPs) ensures agreed standards as well as transparency within (i) the inventory compilation process (ii) supporting processes (e.g. archiving) and (iii) management processes (e.g. annual management reviews, internal audits, regular training of personnel, error prevention).

The QMS is characterized by a *process based approach*, referring to the application of three processes within its organisation, along with the identification and interactions of these processes and their management. A scheme of the QMS of the Austrian emission inventory can be found in Figure 3

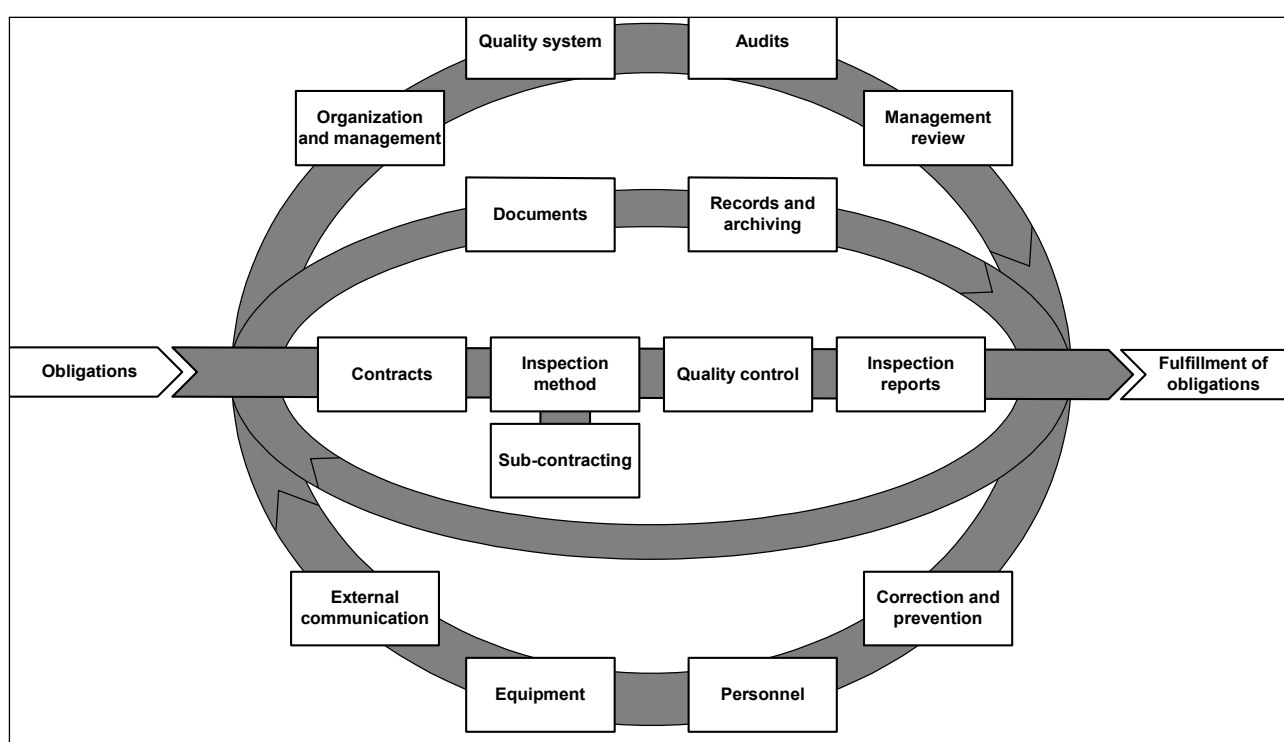


Figure 3: *Process-based QMS. The outer circle corresponds to management processes, the straight line to realisation processes and the inner circle to supporting processes.*

Official consideration and approval

A process for official consideration and approval of the inventory prior to its submission is established. The *Umweltbundesamt* informs the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) about the inventory, which is then submitted by the Minister to the UNFCCC secretariat.

Fulfilment of Para 12(e)

Review process

The responses to any issues raised by the inventory review process under Article 8 of the Kyoto Protocol are coordinated by the head of the “Inspection body for GHG inventory” and conducted by the sector experts post submission.

Fulfilment of Para 12(e)



Fulfilment of Para 13 Quality improvement

As part of the QMS (Corrective and Preventive Actions) an efficient process is established to gain transparency when collecting and analyzing findings by UNFCCC reviews experts or any other discrepancies 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. A periodic review assesses the progress of the inventory improvement process.

3.2.2 Inventory preparation

Fulfilment of Para 14(b) (c) (e) (f)

The most recent Austrian greenhouse gas inventory for the period 1990 to 2003 (NIR 2005) was compiled according to the recommendations for inventories set out in the UNFCCC reporting guidelines according to Decision 18/CP.8, the Common Reporting Format (CRF)¹⁵ (version 1.01), Decision 13/CP.9, the new CRF for the Land Use Change and Forestry Sector, the IPCC 1996 Guidelines for National Greenhouse Gas Inventories, which specify the reporting obligations according to Articles 4 and 12 of the UNFCCC [IPCC Guidelines, 1997] as well as the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories [IPCC GPG, 2000].

As mentioned before sector experts collect activity data, emission factors and all relevant information needed for finally estimating emissions. The sector experts are also responsible for methodological choices (with release by the head of the “Inspection body for GHG inventory”) and for contracting studies, if needed.

Fulfilment of Para 14(a)

Key source categories

The method to identify key source categories followed the Tier 1 method - quantitative approach described in the Good Practice Guidance [IPCC-GPG, 2000], Chapter 7 *Methodological Choice and Recalculation*.

Fulfilment of Para 14(d)

Uncertainty

In the last submission uncertainty estimates for all key sources were presented. They are mainly based on results from the first comprehensive uncertainty analysis that was performed in 2001 based on data from submission 1999¹⁶.

Fulfilment of Para 14(g) and 15(a)

QC procedures

QC procedures follow the recommendations of IPCC-GPG chapter 8 on *Quality Assurance and Quality Control* and are part of the QMS. Priority is given to key sources. For all sources, fundamental checks such as completeness of estimates, time series consistencies, data transcription and documentation are performed. For

¹⁵http://www.unfccc.de/resource/CRFV1_01o01.zip

¹⁶WINIWARTER, W.; RYPDAL, K. (2001): Assessing the Uncertainty Associated with National Greenhouse Gas Emission Inventories: A Case Study for Austria, Accepted for publication in Atmospheric Environment.



key sources, activity data, emission factors, emissions and uncertainty analysis are assessed using the Tier 1 checklist. In addition Tier 2 QC procedures are employed where applicable. Special attention is given to documentation, archiving and reporting as outlined in chapter 8.10 of IPCC-GPG.

3.2.3 Inventory management

Fulfilment of Para 16(a) (b) (c) and 17

For the inventory management a reliable data management to fulfil the data collecting and reporting requirements is needed. As mentioned above, data collection is performed by the different sector experts and the reporting requirements grow rapidly and may change over time. Data management is carried out by using MS ExcelTM spreadsheets in combination with Visual BasicTM macros, which is a very flexible system that can easily be adjusted to new requirements. The data is stored on a central network server which is backed up daily for the needs of data security. Furthermore as part of the QMS backups of the entire inventory information are made twice a year on write-protected dvds. The inventory management as part of the QMS includes a control system for all documents and data, for records and their archiving as well as documentation on QA/QC activities.

This ensures the necessary documentation and archiving for future reconstruction of the inventory and for the timely response to requests during the review process.

3.3 Summary

Requirements of national systems as mentioned in Decision 20/CP.7 Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol, and their fulfilment in the Austrian National Inventory System are summarized in Table 8. The full version of the Decision 20/CP.7 can be found in chapter 5 Annex: Guidelines for National Systems.

Table 8: Requirements of national system and their fulfilment in NISA

Decision 20/CP.7 Guidelines	Requirement	Requirement complied with?	How? Comment or Recommendation
Para 10 (a)	Institutional, legal, procedural arrangements	Partly	See Para 12 (c)
Para 10 (b)	Ensure sufficient capacity for timely performance	Yes	Internal Umweltbundesamt regulation is being implemented
Para 10 (c),(d),(e)	General	Yes	See following paragraphs
Para 12 (a),(b)	Single national entity	Yes	Umweltbundesamt under the Environmental Control Act
Para 12 (c)	Define and allocate specific responsibilities	Yes	Sector experts and quality manager; responsibilities defined in the QMS
	Institutional, legal, procedural arrangements	Partly	Long-term availability of activity data for inventory preparation still needs to be ensured in some sectors (see chapter 3.1.2.3)
Para 12 (d)	QA/QC plan	Yes	QMS based on ISO 17020 and 2000 IPCC-GPG
Para 12 (e)	Official consideration and approval of the inventory prior to submission	Yes	Approval and submission by the Minister of Agriculture, Forestry, Environment and Water Management
Para 13	Quality improvement	Yes	QMS, improvement plan; "should requirement"
Para 14 (a)	Key source categories	Yes	Tier 1
Para 14 (b),(c),(e),(f),	Estimates in accordance with IPCC guidelines	Yes	See NIR 2005 and accordingly reports from the inventory review process
Para 14 (d)	Uncertainty	Partly	At the moment based on data from 1999. An update of uncertainty estimates is planned.
Para 14 (g)	QC procedures	Yes	For all sources Tier 1 QC
Para 15 (a)	QC procedures	Yes	Tier 2 QC procedures, where applicable; "should requirement"
Para 15 (b),(c),(d)	Review of independent party before submission	No	"should requirement"
Para 16 (a),(b),(c)	Archiving of inventory information	Yes	Regulated in the QMS; backups
Para 17	Collecting of inventory information at a single location	Yes	Data are stored on a central network server; daily backups; "should requirement"

4 RECOMMENDATIONS

- **Steps should be taken to further investigate possibilities to establish a national expert review of the inventory prior to its submission by personnel that have not been involved in the inventory development.** The guidelines furthermore recommend that key source categories should be reviewed more extensively. Nevertheless, the corresponding paragraphs (para 15 (b),(c),(d)) are "should requirements" and the following points have to be considered for their fulfilment: (1) the timeliness of the inventory must be ensured, (2) the additional benefit of this review to the obligatory review by the UNFCCC experts and (3) the additional costs.
- **It is recommended to update uncertainty estimates.** Current estimates are based on the inventory 1999. Due to methodological changes in the emission calculation of some sectors, the uncertainties in the sectors concerned and the uncertainty of the whole inventory should be re-evaluated. This update could be included in the inventory planning 2006, if the necessary resources are provided.
- **It is recommended to ensure more formalised relations with the energy balance.** In the year 2003 75% of total Greenhouse Gas (GHG) emissions were caused by fossil fuel combustion. The data basis for this sector is the energy balance which is prepared due to a quinquennial contract between Statistik Austria and the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and an analogous contract between Statistik Austria and the Federal Ministry of Economics and Labour (BMWA). To assure data availability for this most important sector a contract is recommended to cover the Kyoto-period 2008-2012. Furthermore it is necessary to ensure correspondence between allocation of fuel input in the energy balance and the sectoral division necessary for preparing the inventory according to the IPCC guidelines. For this the contract should include a paragraph that provides for semi-annual meetings between the responsible person of Statistik Austria and the sector expert from the *Umweltbundesamt*. These meetings shall be used to furthermore improve the consistency between the energy balance and the GHG inventory.
- **It is recommended to formalise relations with the forest inventory.** In the year 2003 CO₂ removals from the sector LULUCF accounted for a sink of 14% of the total GHG emissions. All removals from this sector came from subcategory Forrest Land. Setting-up a legal basis for the preparation of the Austrian National Forest Inventory would help to ensure annual data availability for this subcategory.



5 ANNEX: GUIDELINES FOR NATIONAL SYSTEMS

Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol¹⁷

I. APPLICABILITY

1. The provisions of these guidelines shall apply for each Party included in Annex I which is also a Party to the Kyoto Protocol. Parties' implementation of national system requirements may differ according to national circumstances, but shall include the elements described in these guidelines. Any differences in implementation shall not impair the performance of the functions described in these guidelines.

II. DEFINITIONS

A. Definition of national system

2. A national system includes all institutional, legal and procedural arrangements made within a Party included in Annex I 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.

B. Other definitions

3. The meaning of the following terms in these guidelines for national systems¹⁸ is the same as in the glossary of the Intergovernmental Panel on Climate Change (IPCC) good practice guidance¹⁹, accepted by the IPCC at its sixteenth session²⁰:

(a) Good practice is a set of procedures intended to ensure that greenhouse gas inventories are accurate in the sense that they are systematically neither over- nor underestimated as far as can be judged, and that uncertainties are reduced as far as possible. Good practice covers choice of estimation methods appropriate to national circumstances, quality assurance and quality control at the national level, quantification of uncertainties, and data archiving and reporting to promote transparency;

(b) Quality control (QC) is a system of routine technical activities to measure and control the quality of the inventory as it is being developed. The QC system is designed to:

- (i) Provide routine and consistent checks to ensure data integrity, correctness and completeness;
- (ii) Identify and address errors and omissions;
- (iii) Document and archive inventory material and record all QC activities.

¹⁷ "Article" in these guidelines refers to an Article of the Kyoto Protocol, unless otherwise specified.

¹⁸ The guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol are referred to herein as "guidelines for national systems".

¹⁹ The IPCC "Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories" is referred to as the "IPCC good practice guidance" in these guidelines for national systems.

²⁰ Montreal, 1-8 May 2000.

Quality control activities include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardized procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting. Higher tier QC activities also include technical reviews of source categories, activity and emission factor data and methods;

(c) Quality assurance (QA) activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation development process, to verify that data quality objectives were met, ensure that the inventory represents the best possible estimate of emissions and sinks given the current state of scientific knowledge and data available, and support the effectiveness of the QC programme;

(d) Key source category is one that is prioritized within the national inventory because its estimate has a significant influence on a country's total inventory of direct greenhouse gases in terms of the absolute level of emissions, the trend in emissions, or both;

(e) Decision tree is a flow-chart describing the specific ordered steps which need to be followed to develop an inventory or an inventory component in accordance with the principles of good practice.

4. Recalculation, consistent with the UNFCCC reporting guidelines on annual inventories²¹, is a procedure for re-estimating anthropogenic greenhouse gas (GHG)²² emissions by sources and removals by sinks of previously submitted inventories²³ as a consequence of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used, or the inclusion of new source and sink categories.

III. OBJECTIVES

5. The objectives of national systems under Article 5, paragraph 1, for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, referred to below as national systems, are:

(a) To enable Parties included in Annex I to estimate anthropogenic GHG emissions by sources and removals by sinks, as required by Article 5, and to report these emissions by sources and removals by sinks in accordance with Article 7, paragraph 1, and relevant decisions of the Conference of the Parties (COP) and/or the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP);

(b) To assist Parties included in Annex I in meeting their commitments under Articles 3 and 7;

(c) To facilitate the review of the information submitted under Article 7 by Parties included in Annex I, as required by Article 8;

(d) To assist Parties included in Annex I to ensure and improve the quality of their inventories.

IV. CHARACTERISTICS

²¹ FCCC/CP/1999/7.

²² References to greenhouse gases (GHG) in these guidelines for national systems refer to GHGs not controlled by the Montreal Protocol.

²³ "National GHG inventories" are referred to simply as "inventories" in these guidelines for the sake of brevity.



6. National systems should be designed and operated to ensure the transparency, consistency, comparability, completeness and accuracy of inventories as defined in the guidelines for the preparation of inventories by Parties included in Annex I, in accordance with relevant decisions of the COP and/or COP/MOP.

7. National systems should be designed and operated to ensure the quality of the inventory through planning, preparation and management of inventory activities. Inventory activities include collecting activity data, selecting methods and emission factors appropriately, estimating anthropogenic GHG emissions by sources and removals by sinks, implementing uncertainty assessment and quality assurance/quality control (QA/QC) activities, and carrying out procedures for the verification of the inventory data at the national level, as described in these guidelines for national systems.

8. National systems should be designed and operated to support compliance with Kyoto Protocol commitments related to the estimation of anthropogenic GHG emissions by sources and removals by sinks.

9. National systems should be designed and operated to enable Parties included in Annex I to consistently estimate anthropogenic emissions by all sources and removals by all sinks of all GHGs, as covered by the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* and IPCC good practice guidance, in accordance with relevant decisions of the COP and/or COP/MOP.

V. GENERAL FUNCTIONS

10. In the implementation of its national system, each Party included in Annex I shall:

(a) Establish and maintain the institutional, legal and procedural arrangements necessary to perform the functions defined in these guidelines for national systems, as appropriate, between the government agencies and other entities responsible for the performance of all functions defined in these guidelines;

(b) Ensure sufficient capacity for timely performance of the functions defined in these guidelines for national systems, including data collection for estimating anthropogenic GHG emissions by sources and removals by sinks and arrangements for technical competence of the staff involved in the inventory development process;

(c) Designate a single national entity with overall responsibility for the national inventory;

(d) Prepare national annual inventories and supplementary information in a timely manner in accordance with Article 5 and Article 7, paragraphs 1 and 2, and relevant decisions of the COP and/or COP/MOP;

(e) Provide information necessary to meet the reporting requirements defined in the guidelines under Article 7 in accordance with the relevant decisions of the COP and/or COP/MOP.

VI. SPECIFIC FUNCTIONS

11. In order to meet the objectives and perform the general functions described above, each Party included in Annex I shall undertake specific functions related to inventory planning, preparation and management.²⁴

A. Inventory planning

12. As part of its inventory planning, each Party included in Annex I shall:

(a) Designate a single national entity with overall responsibility for the national inventory;

(b) Make available the postal and electronic addresses of the national entity responsible for the inventory;

(c) Define and allocate specific responsibilities in the inventory development process, including those related to choice of methods, data collection, particularly activity data and emission factors from statistical services and other entities, processing and archiving, and QC and QA. This definition shall specify the roles of, and cooperation between, government agencies and other entities involved in the preparation of the inventory, as well as the institutional, legal and procedural arrangements made to prepare the inventory;

(d) Elaborate an inventory QA/QC plan which describes specific QC procedures to be implemented during the inventory development process, facilitate the overall QA procedures to be conducted, to the extent possible, on the entire inventory and establish quality objectives;

(e) Establish processes for the official consideration and approval of the inventory, including any recalculations, prior to its submission and to respond to any issues raised by the inventory review process under Article 8.

13. As part of its inventory planning, each Party included in Annex I should consider ways to improve the quality of activity data, emission factors, methods and other relevant technical elements of inventories. Information obtained from the implementation of the QA/QC programme, the review process under Article 8 and other reviews should be considered in the development and/or revision of the QA/QC plan and the quality objectives.

B. Inventory preparation

14. As part of its inventory preparation, each Party included in Annex I shall:

(a) Identify key source categories following the methods described in the IPCC good practice guidance (chapter 7, section 7.2);

(b) Prepare estimates in accordance with the methods described in the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, as elaborated by the IPCC good practice guidance, and ensure that appropriate methods are used to estimate emissions from key source categories;

(c) Collect sufficient activity data, process information, and emission factors as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;

(d) Make a quantitative estimate of inventory uncertainty for each source category and for the inventory in total, following the IPCC good practice guidance;

²⁴ For the purpose of these guidelines for national systems, the inventory development process encompasses inventory planning, preparation and management. These steps of the inventory development process are considered in these guidelines only in order to clearly identify the functions to be performed by the national systems, as described in paragraphs 12 to 17 of the present guidelines.



(e) Ensure that any recalculations of previously submitted estimates of anthropogenic GHG emissions by sources and removals by sinks are prepared in accordance with the IPCC good practice guidance and relevant decisions of the COP and/or COP/MOP;

(f) Compile the national inventory in accordance with Article 7, paragraph 1, and relevant decisions of the COP and/or COP/MOP;

(g) Implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan following the IPCC good practice guidance.

15. As part of its inventory preparation, each Party included in Annex I should:

(a) Apply source category specific QC procedures (tier 2) for key source categories and for those individual source categories in which significant methodological and/or data revisions have occurred, in accordance with the IPCC good practice guidance;

(b) Provide for a basic review of the inventory by personnel that have not been involved in the inventory development, preferably an independent third party, before the submission of the inventory, in accordance with the planned QA procedures referred to in paragraph 12 (d) above;

(c) Provide for a more extensive review of the inventory for key source categories, as well as source categories where significant changes in methods or data have been made;

(d) Based on the reviews described in paragraphs 15 (b) and 15 (c) above and periodic internal evaluations of the inventory preparation process, re-evaluate the inventory planning process in order to meet the established quality objectives referred to in paragraph 12 (d).

C. Inventory management

16. As part of its inventory management, each Party included in Annex I shall:

(a) Archive inventory information for each year in accordance with relevant decisions of the COP and/or COP/MOP. This information shall include all disaggregated emission factors, activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory. This information shall also include internal documentation on QA/QC procedures, external and internal reviews, documentation on annual key sources and key source identification and planned inventory improvements;

(b) Provide review teams under Article 8 with access to all archived information used by the Party to prepare the inventory, in accordance with relevant decisions of the COP and/or COP/MOP;

(c) Respond to requests for clarifying inventory information resulting from the different stages of the review process of the inventory information, and information on the national system, in a timely manner in accordance with Article 8.

17. As part of its inventory management, each Party included in Annex I should make the archived information accessible by collecting and gathering it at a single location.

VII. UPDATING OF THE GUIDELINES

18. These guidelines shall be reviewed and revised, as appropriate, by consensus, in accordance with decisions of the COP/MOP, taking into account any relevant decisions of the COP.