

Description of the Quality Management System

Supplement to
Switzerland's Greenhouse Gas Inventory
1990-2007

Submission of 15 April 2009
under the United Nations Framework Convention on Climate
Change and under the Kyoto Protocol



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1. Introduction

1.1 Switzerland's Greenhouse Gas Inventory

On 10 December 1993, Switzerland ratified the United Nations Framework Convention on Climate Change (UNFCCC). Since 1996, the submission of its national greenhouse gas inventory has been based on IPCC guidelines. From 1998 onwards, the inventories have been submitted in the Common Reporting Format (CRF). In 2004, Switzerland started submitting a yearly National Inventory Report (NIR) under the UNFCCC.

On 9 July 2003, Switzerland ratified the Kyoto Protocol under the UNFCCC. November 2006 saw the submission of Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol (FOEN 2006h). The Swiss National Inventory System (NIS) according to Article 5.1 of the Kyoto Protocol has been implemented and is fully operational. On 06 December 2007, the NIS quality management system was certified to comply with ISO 9001:2000 requirements (SQS 2008).

The 2009 inventory submission under the United Nations Framework Convention on Climate Change and under the Kyoto Protocol includes the NIR, the greenhouse gas inventory 1990–2007, the Kyoto Protocol LULUCF tables 2000–2007 (FOEN 2009) and, as a supplement, the current Description of the Quality Management System (FOEN 2009a, this document).

1.2 Definitions

The following terms are essential for this QA/QC paper. All definitions are taken from UNFCCC (2006a):

- A **national system** (referred to as **National Inventory System (NIS)** in this paper) 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.
- **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.
- **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:
 - provide routine and consistent checks to ensure data integrity, correctness and completeness;
 - identify and address errors and omissions;
 - document and archive inventory material and record all QC activities.

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.

- **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.
- **Key category**¹ 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.
- **Recalculation** is a procedure for re-estimating anthropogenic greenhouse gas (GHG) emissions by sources and removals by sinks of previously submitted inventories 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.

Additional explanations and specifications for QA/QC are given in chapter 8 of IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (IPCC 2000).

1.3 Purpose

This supplement to the Greenhouse Gas Inventory 1990-2007 documents the current status (April 2009) of the NIS quality management system (QMS). It will be reviewed by the GHG Inventory Core Group during inventory year 2010 and in light of UNFCCC Expert Review Team's feedback and other input in the course of regular QA/QC activities priorities for the further development of the QMS will be derived.

¹ The term used in UNFCCC (2006a) is "Key source category".

2. The NIS Quality Management System

2.1 Introduction

History and quality objectives

In 2002, a total quality management (TQM) system was introduced within the Federal Office for the Environment (FOEN). The GHG inventory compilation was registered as a process to be managed in line with the principles of the TQM system. In 2004, the process was subjected to an audit. Subsequently, the establishment of an inventory-specific quality management system (QMS) was initiated. This QMS is designed to comply with the quality objectives of Good Practice Guidance of IPCC (2000), i.e. to ensure and continuously improve transparency, consistency, comparability, completeness, accuracy (TCCCA), and confidence in national GHG emission and removal estimates. Furthermore, Switzerland adopted timeliness as a quality objective. Based on these quality criteria, the objective of Switzerland's inventory system is to annually produce a high quality inventory that ensures full compliance with the reporting requirements of the UNFCCC and the Kyoto Protocol.

Structure: the PDCA cycle

The NIS quality management system described in this paper is designed according to a Plan-Do-Check-Act cycle (PDCA cycle), which is a generally accepted model for pursuing a systematic quality performance according to international standards (Figure 1). Key findings and planned improvements as a result of overall QA/QC procedures are included in the Inventory Development Plan (IDP; see Chapter 3 and Annex B.2b), which represents the main instrument for documenting potential improvements of national GHG emission and removal estimates to be conducted in a subsequent inventory cycle. This approach is in accordance with procedures described in decision 19/CMP.1 (UNFCCC 2006a) and in the IPCC Good Practice Guidance (IPCC 2000, Chapter 8). Its successful implementation in the National Inventory System in line with the ISO 9001:2000 standard has been certified by the Swiss Association for Quality and Management Systems in December 2007 (SQS 2008). A first surveillance audit has been conducted in November 2008.

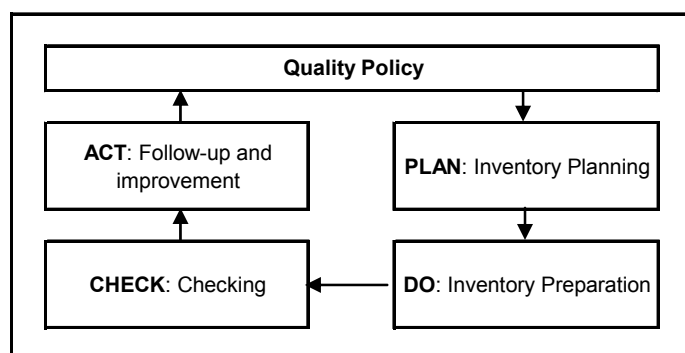


Figure 1 PDCA cycle.

Major elements

According to IPCC (2000) the major elements of a QMS are:

- an inventory agency responsible for coordinating QA/QC activities;
- a QA/QC plan;
- QC procedures;

- QA review procedures;
- reporting, documentation, and archiving procedures.

The state of implementation of these quality elements is described in Chapters 2.2 to 2.6.

2.2 Inventory agency responsible for coordinating QA/QC activities

The Swiss National Inventory System (NIS) is developed and managed under the auspices of the Federal Department of the Environment, Transport, Energy and Communications (DETEC). It is hosted by a DETEC agency, the Federal Office for the Environment. As stipulated in the Ordinance on the Internal Organization of DETEC of 13 December 2005, this agency has the lead within the federal administration regarding climate policy and its implementation.

With the formal approval of Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol (FOEN 2006h) by the Federal Council on 08 November 2006 the Swiss NIS became operative. By providing for structures and in defining tasks and responsibilities of institutions, organisations and consultants involved, the NIS itself is a key tool in ensuring and improving the quality as well as the process management of inventory preparation.

Figure 2 gives a schematic overview of the institutional setting of the NIS.

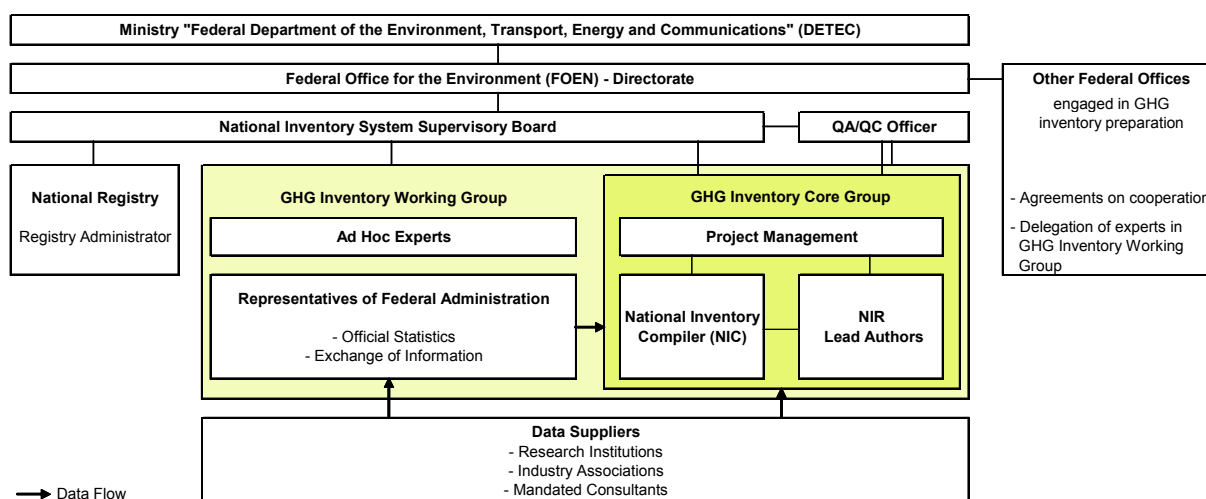


Figure 2 Institutional setting of the National Inventory System.

The tasks and responsibilities of the various actors in inventory-related activities are defined as follows (see Annex A for members of NIS Groups and lists of past meetings):

The **NIS Supervisory Board** was established by decision of the FOEN Directorate in summer 2006. The Board oversees activities related to the GHG Inventory and to the National Registry. It is independent of the inventory preparation process and, by its composition, combines technical expertise and political authority. According to its mandate, the main tasks of the NIS Supervisory Board are:

- official consideration of the annual inventory submission and recommendation of the inventory for official approval by the FOEN Directorate;
- assessment and approval of the recalculation of inventory data;
- handling of any issues arising from the UNFCCC review process that cannot be resolved at the level of the Inventory Project Management;

- facilitation of any non-technical negotiation, consideration or approval processes involving other institutions within the federal administration.

The **QA/QC Officer** has the overall responsibility for enforcement of the defined quality objectives. His / her contribution focuses on the annual production of a high quality inventory, with quality being defined by the TCCCA criteria as set out above. The QA/QC officer oversees design, development, and operation of the quality management system. He provides a quality manual, serving as a working tool for all contributors to the inventory (see Chapter 2.3), and coordinates and subsequently evaluates the QA/QC activities performed within the annual cycle of inventory preparation (see Chapters 2.4, 2.5 and 3; IDP). A further principal task is the consistent realisation of obligatory documentation and archiving procedures (IPCC 2000, Chapter 8.10; Chapter 2.6). The QA/QC officer, albeit no formal member, attends the meetings of the GHG Inventory Core Group and the GHG Inventory Working Group in advisory capacity and also advises the NIS Supervisory Board on matters relating to the conformity of the inventory with reporting requirements.

The **GHG Inventory Working Group** encompasses all technical personnel involved in the inventory preparation process or representing institutions that play a significant role as suppliers of data. The group as a whole meets at least once per year to take stock of the state of the inventory, to discuss priorities in the inventory development process, and to address specific issues of general interest that arise, e.g., from domestic or international reviews.

The **GHG Inventory Core Group** comprises the inventory experts employed at the FOEN or mandated on a regular basis, who are entrusted with specific, major responsibilities for inventory planning, preparation and/or management.

All inventory data are assembled and prepared for input into the CRF Reporter by the GHG Inventory Core Group, which is responsible for ensuring the conformity of the inventory with the Updated UNFCCC Reporting Guidelines on Annual Inventories (UNFCCC 2006b) and the 2008 Kyoto Protocol Reference Manual (UNFCCC 2008).

The Core Group consists of

- the **Inventory Project Management** with overall responsibility for the integrity of the inventory. The main tasks of the Project Management are:
 - inventory planning: definition and allocation of specific responsibilities in the inventory development process; definition of schedules and deadlines; elaboration of an updated Inventory Development Plan (together with the QA/QC officer) considering internal and external reviews as well as Tier 1/2 QC procedures performed on the basis of previous inventory submissions; assessment of need for recalculations;
 - inventory preparation: supervision of compilation, revision and editing of NIR, CRF tables, KP LULUCF tables, and supplementary information under the Kyoto Protocol; implementation and periodic updating of the Inventory Development Plan (together with the QA/QC officer); arrangement of independent evaluations of the inventory planning and preparation process as well as periodic internal evaluations of the operational procedures;
 - inventory management: managing and optimising the cooperation of all actors in the GHG Inventory Working Group and particularly in the GHG Inventory Core Group; supervision of the inventory change management; communication and information exchange with the UNFCCC secretariat; providing the NIS Supervisory Board with all information required to assume its responsibilities; supervision of review procedures; providing review teams with access to (confidential) information; facilitating and encouraging the participation of project collaborators in advanced training courses.

- quality control of own inventory activities, documentation in checklist;
 - participation in internal reviews;
 - preparation of the official submission of the GHG inventory to the UNFCCC.
- the **National Inventory Compiler**, responsible for the GHG inventory database (EMIS) and for the CRF tables. The main tasks of the National Inventory Compiler are:
 - compilation of emission data in EMIS;
 - implementation of tasks recorded in the Inventory Development Plan concerning EMIS and CRF tables;
 - ensuring completeness and consistency of the inventory;
 - calculation of emission estimates;
 - carrying out of recalculations;
 - presenting the results in CRF tables using the CRF Reporter;
 - export of time series of emission factors, activities and emission data from EMIS into spreadsheets in which tables and figure for the NIR are generated (hereafter: EMIS-NIR tables);
 - documentation of inventory information; archiving of the dataset;
 - quality control of own activities, documentation in checklist;
 - participation in internal reviews (where required);
 - uploading the inventory submission files to the UNFCCC web server using the submission portal released in February 2009 (following the official approval of the FOEN Directorate).
- the **NIR Lead Authors**, responsible for the National Inventory Report (NIR). The main tasks of the NIR Lead Authors are:
 - editing of the NIR, including checking of consistency between CRF tables, EMIS-NIR tables, and NIR;
 - scientific management of the individual NIR authors;
 - technical revision of assigned NIR chapters;
 - implementation of tasks recorded in the Inventory Development Plan concerning the NIR;
 - documentation of inventory information;
 - carrying out key category analysis;
 - carrying out uncertainty analysis;
 - quality control of own activities, documentation in checklist;
 - participation in internal reviews (as required).
- selected sectoral experts.

The GHG Inventory Core Group coordinates and integrates the activities of suppliers of raw and processed data within and outside the FOEN as well as those of mandated experts. Further data suppliers contributing to the inventory are research institutions and industry associations (Table 1). The latter are obliged by Art. 46 of the Federal Law relating to the Protection of the Environment (Swiss Confederation 1983) to provide the authorities with the information needed to enforce the law and, if necessary, to carry out inquiries or to cooperate by providing information for inquiries.

Table 1 Suppliers of raw and processed data: 1–14 provide annual updates, 15–20 provide sporadic updates. The IPCC nomenclature (IPCC 1997a) is used for the inventory categories (1A1 = Energy Industries, 1A2 = Manufacturing Industries and Construction etc.). RA = Reference Approach. For further abbreviations and acronyms see Annex D.

	Institution	Subject	Data supplied for inventory category...												References
			1A1	1A2	1A3	1A4	1A5	1B	RA	2	3	4	5	6	
	Data suppliers (annual updates)														
1	FOEN, Air Pollution Control	EMIS Database	x	x		x	x	x		x	x	x		x	EMIS 2009/ (NFR-Code)
2	FOEN, Waste and Raw Materials	Waste Statistics	x	x										x	FOEN 2008d, 2008g
3	FOEN, Forest Division	Forest Statistics											x		FOEN 2009b
4	SFOE	Swiss overall energy statistics	x	x	x	x		x	x					x	SFOE 2008
5	FOCA	Civil Aviation			x										FOCA 2006a, 2007, 2008
6	Swiss Air Force Administration	Military Aviation			x										VTG 2008
7	SFSO	Agriculture, LULUCF,										x	x		SFSO 1997, 2000a, 2002, 2005, 2008, 2008a
8	ART	Agriculture, LULUCF										x	x		ART 2008, 2008a
9	WSL	National Forest Inventory											x		EAFV/BFL 1988; Brassel and Brändli 1999; NFI 3 data (unpubl.)
10	CEPE/Basics AG	Energy Consumption		x		x									CEPE 2008; Basics 2008
11	Carbotech	Synthetic Gases								x					Carbotech 2009
12	Industry Associations: SGCI, Swissmem, VSAI etc.	Synthetic Gases								x					Carbotech 2009
13	Swiss Petroleum Association	Oil Statistics							x						EV 2008
14	cemsuisse	Cement, Clinker Production		x						x					Cemsuisse 2008
	Data suppliers (sporadic updates)														
15	FOEN, Air Pollution Control	Off-road Database			x		x								INFRAS 2008
16	SGWA, SGIA	Gas Distribution Losses						x							SGIA 2008; SGWA 2007; Swissgas 2007; Xinmin 2004
17	EMPA	Various Emission Factors	x	x	x	x									EMPA 1999; SFOE 2001
18	INFRAS	On-road Emission Model			x										SAEFL 2004
19	INFRAS	Off-road Emission Model			x	x	x								INFRAS 2008
20	Sigmaplan, Meteotest	LULUCF											x		Sigmaplan 2008; Meteotest 2008

In detail, **data suppliers** (see Table 1 for the most important ones) are responsible for

- the selection of appropriate (= complying with IPCC Guidelines (IPCC 1997a, 1997b, 1997c) and IPCC Good Practice Guidance (IPCC 2000, 2003)) methods for calculation of emissions;
- the collection of activity data, determination of appropriate emission factors, and/or calculation of emissions;
- the implementation of relevant tasks recorded in the Inventory Development Plan (see Chapter 3);
- applying Tier 1 QC procedures, documentation in checklists.

The formal arrangements (agreements, contracts, and documentations of roles and responsibilities) that have been established to consolidate and formalize cooperation between the relevant partners contributing to, or involved in, the GHG inventory preparation process are described in Chapter H.1.1 of Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol (FOEN 2006h).

2.3 QA/QC plan

Quality Manual

In the NIS quality management system, the QA/QC plan represents a quality manual as required by the ISO 9001:2000 standard. This quality manual constitutes the heart of the quality management system. It is designed as an IDM²-based interlinked compilation of all documents relevant to quality issues (QA; QC; reporting, documentation, and archiving procedures).

The quality manual contains (see also Annex B):

- basics on the quality management system;
- requirements, core processes, and results of the GHG inventory project;
 - core processes are presented by sectoral monitoring protocols which intend to ensure agreed standards and transparency. These flow charts specify the methodologies to be used, institutional tasks and responsibilities, the data sources and collection processes, relevant reference material and guidelines (e.g. the citation guide), and provide direct links to archived documents (e.g. to completed checklists or to processed data);
 - sub processes presented in similar monitoring protocols include the establishment of the IDP (continual improvement), the performance of recalculations, the process of EMIS data import and export, and the internal review procedure;
- current QA/QC activities (QA, Tier 1/2 QC, Internal Audit Plan, IDP);
- supporting processes;
- links to supporting documents (e.g. a composition of NIS groups' meetings including minutes, agenda items etc.; background information; important correspondence);
- links to official inventory submission data.

As required by the PDCA approach and as specified in the Internal Audit Plan the quality manual will be reviewed at least annually following inventory submission and, if necessary, modified by the QA/QC officer (after prior consultation with the project management).

Performance: the GHG Inv web platform

Until 2007, utilisation of the IDM-based quality manual has been restricted to FOEN employees. In order to facilitate cooperation and optimize overall QA/QC performance within the NIS, in autumn 2007 the quality manual has been made accessible to an extended user community by means of a certified SSL connection to a web platform. All members of the GHG Inventory Core Group, NIR authors, the most important data suppliers, and internal reviewers are now authorised to work online on IDM-based inventory files via the so-called GHG Inv web platform (Figure 3; URL: <http://idmbuwal.uvek.intra.admin.ch/ghginv/> (for authorised users only)). This approach has two major advantages:

- it allows the sequential processing of a single master file (especially with respect to the NIR) which avoids the circulation of parallel versions, thus both eliminating the danger of losing information and preventing duplication of work;

² IDM is the FOEN Internal Document Management System. In the IDM system, each file is identified by the assignment of a URL, which enables the interlinking of related documents.

- the IDM system creates a new file version every time a new user saves a copy. Therefore, each step of file processing is automatically archived in the IDM system. Older versions can easily be retrieved if necessary.

The GHG Inv web platform does not cover the EMIS database, where the actual inventory calculations are performed and archived (cf. Chapter 2.6).

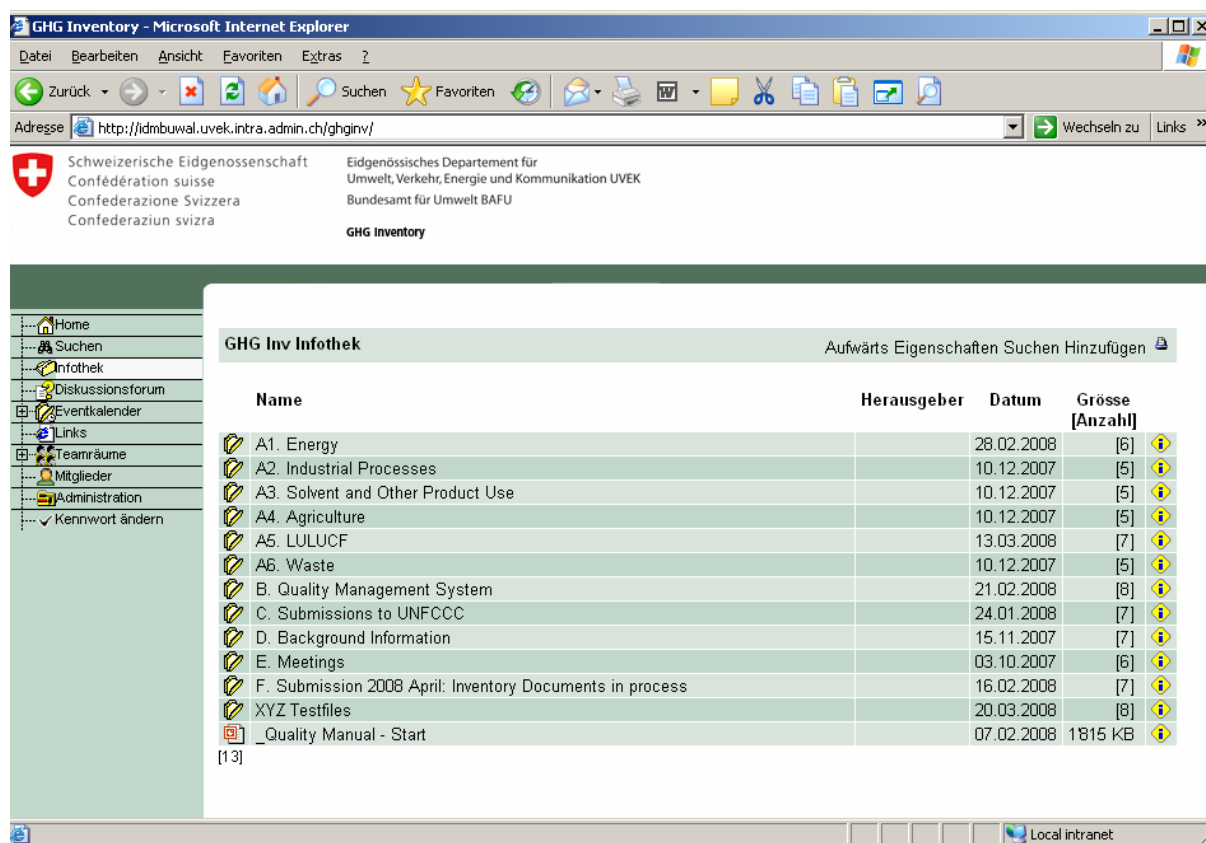


Figure 3 Screenshot “Infothek”, showing the top directory structure on the GHG Inv web platform. Access to the inventory files can either be achieved by clicking through the directory or with the help of the graphic interface provided by the quality manual (file “Quality Manual – Start”; cf. Annex B.1).

Annual cycle of inventory planning, preparation, and management

The annual cycle of inventory planning, preparation, and management is an important document within the QMS. Table 2 illustrates the annual inventory cycle with a particular focus on the timeliness for the performance of QA/QC activities.

Table 2 Annual cycle of inventory planning, preparation, and management.

	Year n												Year n+	
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Meeting of NIS Supervisory Board														
Meeting of GHG Inventory Core Group														
Annual Meeting of GHG Working Group														
Evaluation of UNFCCC Synthesis & Assessment Report														
Data Collection														
Quality Check of Energy Data														
Quality Check of Non-Energy Data														
Calculation of Emissions/Removals														
Compilation/Editing of NIR														
Generation of NIR Tables (EMIS)														
Generation of CRF Tables (EMIS)														
Completion of Checklists and other QC Activities														
Expert Peer Review														
Evaluation of UNFCCC Individual Review														
Uncertainty Analysis														
Key Category Analysis														
Internal Review														
Official Consideration and Approval														
Submission														
(Online) Publication and Archiving														
Check Internal Audit Plan														
Milestones regarding Inventory Development Plan														

Note: Red signatures in the line "Milestones regarding Inventory Development Plan" refer to meetings of the NIS Supervisory Board and the GHG Inventory Core Group, blue signatures refer to the evaluation of external or internal reviews, and the green one refers to the official consideration by the NIS Supervisory Board.

QA/QC activities to be conducted in the course of an inventory cycle include (cf. Table 2):

- regular meetings of the NIS Supervisory Board and both GHG Inventory Groups, involving all relevant individuals participating in inventory preparation. The GHG Inventory Working Group meeting is used as an opportunity for information exchange about new developments related to the GHG inventory process;
- completion of Tier 1 QC checklists by data suppliers and the members of the GHG Inventory Core Group (see Chapter 2.4); supervision and/or realisation of Tier 2 QC projects by members of the GHG Inventory Core Group;
- QA procedures, including an internal review of the inventory by members of the GHG Inventory Core Group prior to submission (see Chapter 2.5). External experts are mandated to review selected key categories after submission (expert peer reviews are not bound to a fixed time schedule). Furthermore, the consideration and implementation of UNFCCC Expert Review Teams' recommendations are an integral part of the annual cycle of inventory preparation;
- Tier 1 and Tier 2 key category analyses (both with and without LULUCF categories);
- a Tier 1 uncertainty analysis (a Monte Carlo Tier 2 uncertainty analysis is carried out every second year);
- official consideration of the inventory by the NIS Supervisory Board and, subsequently, official approval by the FOEN directorate;
- after submission: archiving of inventory data and CRF tables by the National Inventory Compiler (in the EMIS database); archiving of NIR text, tables and figures as well as outcomes of QA/QC activities and other relevant documents produced during the inventory cycle by the QA/QC officer (on the GHG Inv web platform; see Chapter 2.6).
- continuous documentation of findings resulting from QA/QC activities in the course of the inventory cycle by the QA/QC officer for discussion in the GHG Inventory Core Group and for subsequent incorporation in the Inventory Development Plan, where required (see Annex B.2b).

2.4 QC procedures

General QC procedures: Checklists

A standardized and formalized way of carrying out Tier 1 QC activities has been introduced in 2005 (effective for the 2006 inventory preparation process). All contributors to the inventory complete checklists that have been designed following the requirements of Table 8.1 of the Good Practice Guidance (IPCC 2000).

Five types of checklists have been introduced:

- checklist for suppliers of activity data (e.g. fuel statistics, waste fluxes, land use statistics);
- checklist for suppliers of activity data, emission factors, and emissions (e.g. energy, synthetic gases, agricultural data, LULUCF);
- checklist for the National Inventory Compiler;
- checklist for the NIR Lead Authors;
- checklist for the Project Management.

During the period of data collection, the data suppliers fill in the checklists. Once completed the checklists are returned to FOEN. Simultaneously to GHG inventory preparation, the suppliers of emission data, the National Inventory Compiler, the NIR Lead Authors, and the Project Management complete the respective checklists as well. The QA/QC officer reviews the checklists and contacts the suppliers if concerns about data integrity and/or the performance of quality control procedures arise.

The checklists that have been completed for the present submission will be published online after being evaluated (FOEN 2009c). Based on the evaluation of the checklists, possible follow-up activities for the next GHG inventory cycle will be defined by the QA/QC officer in close cooperation with the Inventory Project Management. Important findings will be listed in the Inventory Development Plan.

Further general QC procedures

Below, the QC activities of all actors involved in the inventory planning and preparation are summarised. Their correct documentation is systematically checked by the QA/QC officer.

Data suppliers carry the responsibility for the quality of their sectoral data. In detail, the QC activities of the data suppliers are to

- check the appropriate (= complying with IPCC Good Practice Guidance) choice of methods, activity data and emission factors;
- check for correct calculation and/or modelling of data and consistency of time series (comparison with previous estimates);
- document the results;
- document their quality control activities in a checklist (see FOEN 2009c).

The **FOEN Inventory Core Group** reviews the NIR, checks it for transparency, accuracy, completeness, consistency, comparability, and quality. In detail:

The **National Inventory Compiler** checks for the

- correct import and transcription of data delivered by suppliers into the EMIS database;
- consistent use of emission factors;
- correctness of emissions aggregation;

- integrity of data structures in the inventory;
- completeness of the inventory;
- consistency of the time series;
- correct and complete transcription of data from CRF Reporter into CRF tables;
- correct transcription from EMIS into EMIS-NIR tables;
- correctness of recalculations;
- complete and correct archiving of GHG data;
- and documents his quality control activities in a checklist (see FOEN 2009c).

The **NIR Lead Authors**

- compare the methods used with IPCC Good Practice Guidance requirements;
- check the correct description of methods applied in the NIR;
- check the correct transcription of data from the EMIS database into EMIS-NIR tables and figures;
- check for consistency between data tables and text in the NIR;
- check for completeness of references in the NIR;
- document their quality control activities in a checklist (see FOEN 2009c).

The **Project Management**

- supervises the GHG emission estimates;
- monitors the key category analyses and the uncertainty analyses;
- checks the implementation of improvements defined in the Inventory Development Plan;
- checks the performance of the quality management system;
- checks the completeness of the inventory submission files;
- documents its own quality control activities in a checklist (see FOEN 2009c).

Besides planning and supervision of standardised NIS QA/QC activities, the **QA/QC Officer** executes further general QC procedures in the framework of QMS operation, including

- technical and organisational steering of the ISO 9001:2000 certification;
- provision of an Internal Audit Plan, realisation of internal audits;
- composing of citation guidelines, compilation of references used in the NIS
- online-provision of submitted GHG inventories on www.climatereporting.ch, including background references like expert estimates (personal and written communications);
- guidelines for the Internal Review
- documenting professional experience and inventory specific training (workshops, meetings, UNFCCC activities etc.) for selected NIS members;
- keeping a list of absences of GHG Inventory Core Group members;
- provision of a list of abbreviations and acronyms used in Swiss inventory compilation.

Some data suppliers and data processors (ART in prep.; INFRAS with respect to the Tier 2 uncertainty analysis, INFRAS 2008a; Meteotest 2008; Sigmaplan 2008) produce an internal documentation that describes their operational procedures and internal QA/QC activities within the GHG inventory project beyond the degree documented in the NIR. The National Inventory Compiler and staff members have started to compose a comprehensive manual for the EMIS database, at this stage focusing on a detailed description of the diverse QC procedures implemented. Once finished it will replace the reference FOEN (2006c). The Inventory Project Management stipulates and supports such activities.

Category-specific QC procedures

In addition to general QC, the Inventory Project Management and members of the GHG Inventory Core Group ensure the performance of Tier 2 QC activities both by initiating internal studies, where appropriate, and by providing for a FOEN (co)-funding of selected research projects:

- reevaluation of CO₂ emission factors for fossil fuels (completed; Intertek 2008);
- measurement of fossil CO₂ emissions from waste incineration (FOCAWIN) (completed; EMPA 2007; Mohn et al. 2008);
- emission modelling of road transport (completed; SAEFL 2004);
- establishment of a nonroad database: emission factors, activities and emission modelling for the off-road sector (railway, navigation, machinery/vehicles in agriculture, forestry, construction, industry, garden, hobby, military) (completed; INFRAS 2008);
- compilation of greenhouse gas emissions from biogenic transport fuels (completed; Ernst Basler + Partner, Zollikon; FOEN internal document);
- revision of methodology for methane emissions estimates from the Agriculture sector (completed; Soliva 2006, 2006a);
- update of comment to EMIS database concerning wastewater treatment plants (completed; Ernst Basler + Partner, Zollikon; FOEN internal document);
- continuous measurement of halogenated GHGs at the Jungfrauoch (HALCLIM) (Reimann et al. 2006 and several peer reviewed papers, e.g., Reimann et al. 2008; Steinbacher et al. 2008), inter alia to check for the completeness of F-gases in the inventory (EMPA; ongoing project HALCLIM-3);
- compilation of the uncertainty of agricultural CH₄ and N₂O emissions in Switzerland (ART 2008a) and of QA/QC activities in the agricultural sector 2008-2009 (ART in prep.) (Agroscope Reckenholz-Tänikon Research Station, Zürich; ongoing QA/QC activities);
- study on technical measures and their potential to reduce methane and nitrous oxide emissions from Swiss animal livestock activities (ETH Zürich, Institute of Animal Sciences; launched in 2009);
- in order to improve the quantification of annual changes in the soil carbon pool several case-studies are being conducted:
 - estimating the influence of wind throw on soil organic carbon (WSL; ongoing project "Bodenkohlenstoff nach Windwurf – eine CO₂-Quelle?"; results are expected in summer 2009);
 - testing the warming and nitrogen theory of carbon sequestration (University of Basel; co-funding of ongoing project in COST action 639 (BurnOut); results are expected in 2012);

- turnover and stabilization of soil organic matter: effect of land-use change in alpine regions (WSL; co-funding of ongoing project in COST action 639 (BurnOut); results are expected in 2012).

In the framework of the European Union FP7, a proposal for a large research infrastructure project “Integrated Carbon Observing System” (ICOS) was submitted. In 2007, the Project Management requested the FOEN directorate to endorse the project and sign a “Letter of Participation” for Switzerland. ICOS will provide continuous high-quality data required for bottom-up estimates of GHG fluxes over various land use types in the LULUCF sector over sufficiently long time periods. The first ICOS stakeholder conference (Amsterdam, 19-20 May 2008) was attended by a representative of the Swiss NIS.

The following Tier 2 QC activities are scheduled to be launched in inventory year 2010:

- study on turnover and stabilization of soil organic matter in high elevation grasslands (Agroscope Reckenholz-Tänikon Research Station, Zürich; co-funding of project in COST action 639 (BurnOut));
- validation of modelling results from Biome-BGC (see NIR Chapter 7.3.2.f; FOEN 2009) with eddy-covariance measurements from the FLUXNET measurement site Lägeren and Davos (ETH Zürich; results are expected in autumn 2009);
- quantifying the influence of wood decay on wood density and on carbon content in dead wood. This will allow better estimates of temporal changes in the dead wood pool (WSL; results are expected in autumn 2009);
- measurement of fossil CO₂ emissions from waste incineration (continuation of FOCAWIN study, see above).

Significant outcomes of Tier 2 QC procedures will be discussed in the GHG Inventory Core Group with respect to implementation in inventory preparation and / or incorporation into the Inventory Development Plan.

2.5 QA review procedures

Expert peer reviews, domestic reviews

QA procedures in the form of in-depth reviews carried out by independent experts are conducted sector by sector with the aim to successively cover the complete inventory. In general, key categories are given priority. Thereafter, an episodic recurrence of peer reviews is planned.

In 2006, the Energy and Industrial Processes sectors as well as methane emissions from the Agriculture sector were subjected to a thorough domestic review (eicher+pauli 2006; Soliva 2006, 2006a).

Currently, the waste sector is undergoing an expert peer review. The former plan to review the LULUCF sector in 2007 (cf. FOEN 2006e: 14) was abandoned due to the outcomes of the UNFCCC in-country review in March 2007 (UNFCCC 2007a), calling for a revision of the forest definition introduced in the Initial Report (FOEN 2006h). Meanwhile, also the new data of the third Swiss National Forest Inventory have been incorporated in the GHG inventory (FOEN 2009) and the LULUCF sector will be reviewed subsequent to the waste sector.

UNFCCC reviews

National inventory submissions to the UNFCCC secretariat are subject to the review procedures defined in the relevant COP/MOP decisions. The secretariat publishes three types of inventory review reports for Annex I Parties:

- **Status Reports** for each individual Party (providing information on the completeness and timing of the inventory submission);
- **Synthesis and Assessment Reports** (part I synthesizing and comparing inventory data across all Annex I Parties; part II, not publicly available, for each Annex I Party subject to an individual review);
- **Annual Inventory Review Reports** (being prepared by expert review teams and providing an assessment of the conformity of the inventory with the reporting guidelines under the UNFCCC (UNFCCC 2006b) and under the Kyoto Protocol (UNFCCC 2008) and with IPCC Guidelines (IPCC 1997a, 1997b, 1997c) and IPCC Good Practice Guidance (IPCC 2000, 2003)).

As indicated in Table 2, the outcomes of UNFCCC inventory review reports are systematically evaluated by the Project Management together with the QA/QC Officer and, where appropriate, with members of the GHG Inventory Core Group and used to update the Inventory Development Plan (see also Annex B.2b).

In June 2008 the GHG Inventory Core Group was informed of the result of the initial check for the 2008 inventory submission (Annual status report of the greenhouse gas inventory of Switzerland; FCCC/ASR/2008/CHE). The Synthesis and Assessment Report on the Greenhouse Gas Inventories submitted in 2008 (FCCC/WEB/SAI/2008) has been published by the UNFCCC secretariat on 21 July 2008. On 03 September 2008 Switzerland responded to the questions and comments raised in part II of the Synthesis and Assessment Report on the greenhouse gas inventories submitted in 2008.

Most of the UNFCCC expert recommendations following the in-country review in March 2007 ("Initial Review under the Kyoto Protocol and Annual 2006 Review under the Convention for Switzerland"; UNFCCC 2007, 2007a) have been implemented in the meantime (see IDP; Chapter 3). In September 2008 the individual review of the greenhouse gas inventories of Switzerland submitted in 2007 and 2008 took place. Several findings that had been discussed with the Expert Review Team in the course of the review process were simultaneously incorporated into the inventory improvement process. The review report (FCCC/ARR/2008/CHE), however, could not be considered for the present submission because it was still unpublished at editorial deadline.

Internal review

The performance of an internal review prior to official approval and inventory submission is an integral part of the annual cycle of inventory preparation (see Table 2).

The review team consists of members of the GHG Inventory Core Group and of the staff of the companies involved in inventory compilation. Every reviewer checks a NIR chapter (including selective crosschecks of associated CRF tables), in which he or she was not directly involved in during report drafting. Also the QA/QC supplement is subject to that review process (see Annex C.1 for the responsibility assignment in 2009). The sequence of the different review steps is defined by the QA/QC officer and is communicated in detail to all persons involved (see Annex C.2 for a recent flowchart). Any findings and discrepancies identified in the course of the review procedure are directly noted in the NIR master file (using MS WORD Track Changes) or, in the case of substantial objections, recorded on a specially designed review form (see Annex C.3 for a template). Subsequent acceptance or rejection of proposed amendments are communicated by the NIR authors to the reviewers and documented in detail. Finally, the reviewers check how the issues they raised have been handled and scrutinise the justification for any rejection. Follow-up activities will be discussed in the GHG inventory Core Group. If necessary, the Inventory Development Plan will be updated (see Annex B.2b).

Reviewers and authors gain access to the NIR and to the associated review forms via the GHG Inv web platform. By doing so, each step of the review procedure is automatically archived in the FOEN IDM system. For official reviews, all revised text files and review forms are available on demand.

Comparison of CRF and IEA CO₂ emission data

In 2006, an internal study (FOEN 2006g) was conducted to explain the small discrepancies that exist between the 1990-2003 Swiss CO₂ emissions from the Energy sector as reported in FOEN (2006) and those published by the IEA (OECD/IEA 2005). Although the relative deviation is smaller than the range admitted by IEA to be 'normal' (due to the fact of different methods of data collection; OECD/IEA 2005: I.5-I.6), the Inventory Project Management was interested in learning about the reasons behind it. A compilation of the most relevant results is provided in FOEN (2006e: 39 et seqq.).

Public information

FOEN operates a homepage (www.climatereporting.ch) from which the Swiss GHG inventories (NIR, CRF tables, KP LULUCF tables, QA/QC supplement), the Swiss National Communications and other reports submitted to the UNFCCC can be downloaded. Furthermore, all UNFCCC review reports are listed there. Thus, except for confidential data all relevant information about the Swiss GHG emissions and climate policy is easily accessible for stakeholders and interested individuals. The Inventory Project Management plans to further expand the online availability of significant documents – and thereby the options for public review – in the future. As a major improvement in the recent past, the online-provision of most papers, internal reports, domestic reviews, Excel calculation sheets, and other difficult-to-access material ('grey literature'³) quoted in the GHG inventory has been achieved.

2.6 Reporting, documentation, and archiving procedures

Inventory data as well as background information on activity data and emission factors are archived by the National Inventory Compiler in the EMIS database. The Swiss national air pollution database (EMIS) underwent a full redesign in 2005/2006 in order to serve as a central database for all atmospheric emissions. EMIS allows to file background information (e.g. interim worksheets, references, rationale for choice of methods) for any subset of inventory-related data (EMIS 2009/(NFR-Code); FOEN 2006c).

Information on the QMS, all QA/QC activities performed, decisions reached by the experts (minutes), reviews, results of key category analyses and uncertainty analyses, inventory development (IDP) as well as all important inventory data is documented and archived in the FOEN IDM system and accessible to authorised collaborators via the GHG Inv web platform.

All inventory information, as far as needed to reconstruct and interpret inventory data and to describe the inventory system and its functions, is accessible at a single location at the FOEN in Ittigen near Bern. Information flows, documentation and archiving are specified by the QMS monitoring protocols (see Chapter 2.3 and Annex B).

³ 'Grey literature' (Non-conventional literature) comprises scientific and technical reports, patent documents, conference papers, internal reports, government documents, newsletters, factsheets and theses, which are not readily available through commercial channels. It specifically does not include normal scientific journals, books or popular publications that are available through traditional commercial publication channels (Wikipedia, [01.03.2008]).

Information documented in the EMIS database and in the IDM system (GHG Inv web platform) is available at the FOEN for consultation by reviewers. The Inventory Project Management is prepared to respond to any requests from the review process in line with the relevant decisions of the COP/MOP for the review of information under Article 8 of the Kyoto Protocol. In principle, it would be possible to grant UNFCCC review teams an own account to the GHG Inv web platform.

While all information officially submitted under Article 7 of the Kyoto Protocol is translated into English, this may not be possible for background information made available during the review process as the official inventory documentation language is German.

Data backup is managed by the Federal Office of Information Technology, Systems and Telecommunication (FOITT) using a Storage Area Network. FOITT runs backups facilities at two distinct locations on a nocturnal as well as on a weekly basis.

3. Inventory Development Plan

The Inventory Development Plan has been updated during the GHGI Core Group meeting on 24 June 2008. Here, status changes are given as of April 2009. The individual review of the inventories submitted in 2007 and 2008 (FCCC/ARR/2008/CHE) could not be considered for the 2009 inventory submission because it was still unpublished at editorial deadline.

- 1) Explanation of column “Priority”:** H: High
M: Medium
L: Low

2) Explanation of column “Responsibility”:

If more than one institution/person is mentioned, the first one has the lead.

- Federal Agencies / Consultants**

ART	Swiss Federal Research Station for Agroecology and Agriculture
Carbotech	Carbotech AG, private consultants (Experts synthetic gases)
EBP	Ernst Basler + Partner AG, private consultants (NIR co-authors)
FOCA	Federal Office of Civil Aviation
FOEN	Federal Office for the Environment
INFRAS	INFRAS, private consultants (NIR co-authors)
Meteotest	Meteotest, private consultants (NIR co-authors)
Sigmaplan	Sigmaplan, private consultants (Experts land-use change)
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research

- FOEN staff members**

FP	Paul Filliger	RN	Rogiers Nele
HSO	Sophie Hoehn	ROR	Regine Röthlisberger
LF	Fabio Leippert	RV	Richard Volz
LSI	Liechti Simon	SA	Andreas Schellenberger
MBU	Beat Müller	THE	Esther Thürig
MJ	Jiri Mika		

- FOCA staff member**

rit	Theo Rindlisbacher
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- 3) Explanation of column “Workload”:** H: High
M: Medium
L: Low

- 4) Explanation of column “Status”:** F: Work finished
pR: Work partially realized
P: Work in progress
NS: Work not yet started

- 5) Column “ARR 2006 §”** refers to the In-Country Review Report “Report of the individual review of the greenhouse gas inventory of Switzerland submitted in 2006 (FCCC/ARR/2006/CHE; UNFCCC 2007).

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
5	Energy/IP, CO ₂ emissions from the consumption of natural gas in the process of producing hydrogen from the synthesis of ammonia by steam re-forming are reported under 1.A.2. The Party is recommended to report these emissions in the industrial processes sector (2.B.1) in accordance with the IPCC good practice guidance.	M	Spring 08	FOEN (LF)	L	F	32
6	Energy, Municipal solid waste incineration in subsector 1.A.1a: Consideration of FOCAWIN results. FOCAWIN: Planning and realisation of follow-up studies. The ERT commends Switzerland for its use of CO ₂ EFs that are based on measurements of carbon content of MSW and recommends it to evaluate and present in the NIR relevant statistical parameters (such as standard deviation) that are needed for uncertainty evaluation.	M	Spring 09	FOEN (FP, MBU) FOEN (FP, MBU, HSO) FOEN (HSO)	L	F P F	33
7	Energy, Stationary combustion, liquid fuels, NCV values: The Party is recommended to repeat such measurements at regular intervals in order to improve the accuracy of the inventory, and to obtain more reliable information on the uncertainties of these parameters.	M	Spring 08	FOEN (MJ) Jäckle project	M	F	34
8	Energy, Stationary combustion, liquid fuel: The information concerning the NCVs and the CO ₂ EFs that is given in annex A2.1 to the NIR should be presented in a more detailed and transparent way, including the number of analyses for each fuel type and the year in which the analysis was undertaken.	M	Autumn 08	NIR: EBP/INFRAS Based on FOEN (MJ) Jäckle project	L	F	35
9	Energy, Road transport, liquid fuels: Implementation of results of final offroad report,	H	Spring 09	INFRAS	L	F	
10	Energy, Road transport, liquid fuels: Overview on and implementation of Biofuels in CRF and NIR	M	Spring 09	Study: Infrass / EBP, Implementation CRF: MBU	M	F	

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
11	Energy, Stationary combustion: Clarification of EF of alternative fuels (Cemsuisse)	M	2009	FOEN (HSO, FP)	L	pR	
12	Fugitive Emissions from Oil, Natural Gas and Other Sources: Evapora- tive emissions Double Counting of CO ₂ from NMVOC from NMVOC evaporation	H	Autumn 08	FOEN (MBU)	L	F	
13	IP, Cement Industry: Internal Review of CaO content in clinker and of EF of fuels	H	Summer 07	FOEN (FP), EBP	M	F	
14	IP, Ammonia production – CO ₂ : Review of EF The Party is encouraged to include more information on the source(s) of CO ₂ emissions and its country- specific EFs in the NIR. The NIR reports that ammonia pro- duction is assumed to be constant from 1990 until 2004. The Party is encouraged to review the activity data and check its consistency at the industry level.	H	2009 2009	FOEN (LF, LSI), EBP	L	pR	62 63
15	IP, The CRF and the NIR are not fully consistent where the following are concerned: methods and emis- sion factors reported in the NIR as compared to CRF summary table 3; the categories under which some emissions are reported (e.g., the NIR indicates that emissions from asphalt roofing are reported in 2.G Other, while the relevant CRF table indicates that they are reported under 2A.6); and the occurrence and non-occurrence of activity and emissions (e.g., production of eth- ylene and PVC and emissions from plaster). It is recommended that the Party update the CRF tables and make them fully consistent with the 2006 NIR, and vice versa. Specific AD and EFs are not ade- quately described in the NIR, and the Party is recommended to im- prove the transparency of its report- ing by including descriptions of industrial processes and technol- ogy.	H	Spring 08	EBP, FOEN	M	F	42

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
16	IP, Mineral products: cement production – CO ₂ : The Party is encouraged to report CO ₂ emissions from the blasting operation during the extraction of limestone for cement production under category 2.G Others (industrial processes) separately.	M	2009	FOEN (LF, HSO)	L	pR	49
17	IP, Metal production: Aluminium – PFC: Emissions of PFCs are reported to consist of 90 per cent tetrafluoromethane (CF ₄) and 10 per cent hexafluoroethane (C ₂ F ₆). The NIR does not make it clear whether the EF was derived using the tier 3b approach. The Party is encouraged to determine and report in the NIR the methodology used and the technologies in place in the EU countries considered.	L	2009	Carbotech - EBP	L	pR	53
18	IP, Solvent and other product use – CO ₂ : The Party is encouraged to use a country-specific carbon content of NMVOC emissions and production-based NMVOC emissions data to estimate CO ₂ emissions.	L	2009	Carbotech	M	NS	58
19	IP, Solvent and other product use – CO ₂ : The Party is encouraged to continually improve the quality of its data on the consumption and production of solvents in order to reduce the uncertainty of the activity data.	L	Permanent	Carbotech	L	F	59
20	IP, Solvent and other product use – N ₂ O: The Party is encouraged to use production-based and/or consumption-based AD and EFs as recommended in the Revised 1996 IPCC Guidelines.	M	Spring 08	EBP (Task: Has to be described correctly in the NIR. Data is consumption based.)	M	F	61
21	IP, Nitric acid production – N ₂ O: The NIR reports an EF for N ₂ O of 5 kg/t from 1990 to 2004. This was based on ranges of EF values given in the IPCC Guidelines for the USA and atmospheric pressure plants in Canada. The NIR is not clear on what technology was used or whether abatement technology has been installed.	L	2009	CRF: FOEN (LF) NIR: EBP	L	pR	64

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
	During the in-country review, the emission factors from EMIS were confirmed by the Party to be 0.08 kg/t in 1996 and in 2003, as reported by the industry. It is recommended that the Party verify the data from the industry and recalculate these N ₂ O emissions from 1996 to 2004 using the verified EF. The Party is also encouraged to describe the abatement technology installed.						65
22	Solvent and Other Product Use, Designation of a FOEN expert responsible for the “Solvent and Other Product Use” sector.	M	2009	FOEN (FP)	L	NS	
23	Recalculation table 8(b): Agriculture, Sector Overview: However, CRF table 8(b) does not provide an explanation of the recalculations. The ERT recommends Switzerland to provide an explanation of the recalculations in the relevant CRF tables.	H	Spring 08	FOEN (MBU, HSO)	M	F	71
24	Agriculture, Sector Overview: However, for agricultural soils, source-specific QA/QC procedures are only partially applied; there are only internal QC checks. The ERT recommends Switzerland to improve source-specific QA/QC procedures for all key categories of the agriculture sector.	M	2008	ART	H	F	72
25	Agriculture, Manure management – CH ₄ and N ₂ O: Source-specific QA/QC has been conducted; however, the Party has not undertaken a comparison of the country-specific EFs and the IPCC default EFs. The ERT recommends Switzerland to conduct a comparison of the country-specific EFs and the IPCC default EFs as part of its QA/QC procedure and to archive the results.	M	2009	ART	M	F	79
26	Agriculture, Agricultural soils – N ₂ O: In this source category, source-specific QA/QC procedures have been conducted only to a limited extent. The ERT recommends the Party to improve source-specific QA/QC procedures and to perform a comparison of the CS EFs and the default IPCC EFs.	M	2009	ART	M	P	80

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
27	LULUCF, AD: Implementation of updated method to avoid the generation of negative AD (CC areas).	H	8/2008	Sigmaplan	M	F	
28	LULUCF, Sector overview: The Party assumes carbon stock changes in forest soils for forest land remaining forest land and mineral soil for cropland remaining cropland to be zero, because of lack of data. The ERT recommends Switzerland to make efforts to improve the estimates for carbon stock changes in forest soils, and for mineral soil for cropland remaining cropland. Except for organic soil in cropland and grassland, the carbon stock changes in dead organic matter and soils are assumed to be zero for land remaining [X] land under all six land-use categories.	L H	2009/10 2009/10	FOEN (RN, SA), WSL (THE), ART FOEN (THE, RN, SA), ART	M H	P pR	8 89, 93
29	LULUCF, Forest land: Implementation of National Forest Inventory 3 data	H	10/2008	WSL (THE), Meteotest	H	F	
30	LULUCF, Forest land remaining forest land – CO ₂ : The Party uses a biomass expansion factor (BEF) for stocking to estimate the increment of living biomass. This is not consistent with the IPCC good practice guidance for LULUCF, which defines BEF1 for increment and BEF2 for stocking separately. Given that the IPCC default value for BEF1 is lower than BEF2, the Party's use of BEF2 for increment tends to overestimate the increase in carbon stock of living biomass. The ERT therefore recommends the Party either to improve its method or to use the appropriate BEF values in its future submissions.	M	2009	WSL (THE)	M	F	92
31	LULUCF, Forest land: (Methodological) handling of CC11 (application of 20-yr conversion time?)	H	09/2008	FOEN (RV, RN, THE, SA), Meteotest	L	F	
32	LULUCF, Forest land: Standardisation of increase in living biomass over 3 years	L	2009	WSL (THE), FOEN (RN)	M	F	

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
33	LULUCF, Forest land: Assessment of dead biomass (with NFI 3 data)	M	10/2008	WSL (THE)	M	F	
34	LULUCF, Forest land, soil: Further development of Biome- BCG,	L	2009	WSL (THE), FOEN (RN)	H	P	
35	LULUCF, Cropland remaining crop- land – CO ₂ : Carbon stock changes in both living biomass and mineral soils are as- sumed to be zero. The ERT there- fore recommends Switzerland to estimate and report carbon stock changes in mineral soils for this category and to improve the docu- mentation on this in its next NIR.	M	Spring 09	ART	M	P	94
36	LULUCF, Grassland remaining grassland – CO ₂ : Carbon stock changes in both living biomass and mineral soils are as- sumed to be zero. The ERT there- fore recommends Switzerland to estimate and report carbon stock changes in living biomass and min- eral soils for this category and to improve the documentation in its NIR.	M	Spring 09	ART NIR: BR	M	P	97
37	LULUCF, Supplementary informa- tion under KP 3.3 and 3.4: Generation of “Kyoto Tables” 2000- 2007 New NIR/Annex sub-chapter with 3 “Kyoto-NIR-Tables”, methodological description, and supplementary information according to 15/CMP.1.	H H	12/2008 Spring 2009	WSL (THE), FOEN (RN) FOEN (RN, RV, THE)	H M	F F	
38	LULUCF, Uncertainties: Generation of uncertainties esti- mates for all LU units.	H	12/2008	FOEN (RN), WSL (THE), ART, Meteotest	M	F	
39	LULUCF, QA/QC: Revision of CC 13 with 2008 SFSO AD.	M	Autumn 08	FOEN (RN), WSL (THE)	M	NS	
40	LULUCF, QA/QC: Comparison of AREA and NFI for- ested areas	L	2009	FOEN (RN), WSL (THE)	M	P	
41	LULUCF, QA/QC: Validation of afforestations and clearing data	M	2009	FOEN (RN)	M	F	

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
42	Waste: Domestic review	H	Autumn 2008	FOEN (FP)	H	P	
43	Waste Designation of a FOEN expert re- sponsible for the Waste sector.	M	Spring 08	FOEN (FP)	L	F	
44	CRF table 9(a) "IE"-table Waste – Sector overview: The following categories are re- ported as "IE" in the set of CRF tables 6, but the explanation is not provided in CRF table 9a: CH ₄ from industrial waste water (included in domestic waste water; and explana- tion is provided in the NIR); N ₂ O from industrial waste; and N ₂ O and CH ₄ from incineration of biogenic wastes (included in non-biogenic wastes, as explained during the in- country review). For the sake of transparency, the Party should in- clude the explanation for the alloca- tion of these emissions in the CRF and in the NIR.	H	Spring 08	FOEN (MBU, HSO)	M	F	100
45	Waste – Sector overview: Some minor gaps in the CRF and inconsistencies between the NIR and the CRF relating to the report- ing of methods and emission fac- tors used were identified for the years 1990 and 2004. These in- clude CO ₂ emissions from waste incineration – no information is pro- vided in CRF table summary 3; and CH ₄ emissions from solid waste disposal sites (SWDS) – the NIR describes the application of the tier 2 IPCC methodology, while in the CRF a "CS" (country-specific) method is reported. These should be corrected for the Party's next inventory submission.	M	Spring 08	CRF: FOEN (HSO) NIR: EBP	L	F	102
46	Waste, Solid waste disposal sites – CH ₄ : The ERT recommends Switzerland to include the following information, with a reference to the original source, in the NIR (or as an annex to it): (a) the assumptions made and methodology used for estimat- ing parameters such as DOC, k, waste composition and historical activity data; (b) the values used for waste composition, DOC and k by	M	2008	EBP	M	F	106

	Planned Improvement	Priority	Time schedule – Implementation	Responsibility	Work-load	Status	ARR 2006 §
	<p>types of waste; (c) waste management practices for the periods before 1990, and for selected years of the time series; and (d) the sources of information on CH₄ recovery (including the part flared)</p> <p>In CRF table 6A (additional information), the reported values of DOC and k correspond to MSW, and not to those for construction wastes and sewage sludge. The ERT recommends the Party either to explain in the documentation box what kind of waste the values refer to or to provide weighted average values, if applicable.</p>	L	2009	FOEN (HSO)	L	P	107
47	<p>Waste, Waste-water handling – CH₄ and N₂O</p> <p>The ERT recommends Switzerland to revise the EF used and compare its methodology with those used in countries where conditions are similar, since these emissions could be underestimated. It also recommends that the source for the percentage of the population that is connected to waste-water treatment plants and the EFs be provided in the NIR.</p> <p>The IPCC default methodology for estimating N₂O from human sewage is used to estimate emissions from domestic waste water using default emission factors, although not clearly explained in the NIR or reported in the corresponding CRF table 6.B. Switzerland should include this information in its next inventory submission.</p>	M	2009	EBP	M	pR	108
					F		109
48	<p>Waste, Waste incineration – CO₂, CH₄ and N₂O</p> <p>Emission factors are provided for 2004, but not for the whole time series. References to documentation to explain their use or the estimation process, as applicable, are not included in the NIR. [...] It would be helpful to include the sources of activity data or the assumptions used in the Party's next NIR.</p>	M	Spring 08	EBP	L	F	110

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus	ARR 2006 §
49	QA/QC: Improvement of Web platform	H	2009	FOEN (SA, ROR)	M	P	
50	QA/QC: Transparency, Updating and documentation of EMIS back- ground datasheets. Waste – Sector overview: The ERT strongly recommends Switzerland to provide a more de- tailed description of the methodolo- gies used, including the assump- tions made and the rationale for them, especially for the key catego- ries. It is further recommended that a table be included as an annex to the NIR with data for the most im- portant parameters, the original reference source of each, and an explanation of how they are se- lected or, if applicable, how they are estimated.	M	Spring 09	FOEN (MBU, HSO, LF, NN) NIR: EBP	H	pR	10, 21i, 113b 101
51	Completeness: CRF Tables 7, 8, 9: Completion of information on key categories, recalculations and nota- tion keys.	H	Spring 08	FOEN (MBU, HSO, NN)	M	F	8, 21aiii, 113b
52	CC Issue: Modification of structure of NIR Annex according to FCCC/SBSTA/2006/9	M	Spring 09	INFRAS, SA	L	F	
53	CC Issue: Modification/Clarification of structure of NIR Chapter 2.	M	Spring 09	INFRAS	L	F	
54	CC Issue: Revision of NIR table 168 (FOEN 2008) "Assignments of NFR Codes to titles of EMIS data- base comments".	L	2009	FOEN (MBU, HSO)	L	F	
55	CC Issue: Mandate for FOEN Core Group.	L	2009	FOEN (FP)	L	NS	
56	CC Issue: Co-operation with SFOE: Reporting to IEA and UNFCCC (standardisation).	M	2009	FOEN (FP)	M	pR	
57	CC Issue: Performance of a Risk Analysis for the NIS.	H	2009	FOEN (FP)	M	P	
58	Request Energy, E-Mail-Exchange Sole Xam Mar - LA (26.07.07): Fu- gitive emissions from natural gas, doubts about EF.	H	Spring 08	FOEN (FP)	M	F	

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Annex

A. NIS Groups

A1. Composition of NIS Groups

Status April 2009. See Figure 2 for a schematic of the Swiss NIS.

FOEN – Directorate

NIS Supervisory Board (FOEN)

Andrea Burkhardt (Head of Climate Unit; Climate, Economics, Environmental Observation Division)
Paul Filliger (Climate, Economics, Environmental Observation Division; Project Leader)
Roland Hohmann (Climate, Economics, Environmental Observation Division; NISSB secretary)
Rolf Manser (Head of Forest Division)
Gérard Poffet (FOEN Vice Director; Management Representative for the Quality Management System)
Andreas Schellenberger (Climate, Economics, Environmental Observation Division; QA/QC Officer)
Martin Schiess (Head of Air Pollution Control and Non-Ionising Radiation Division)
Thomas Stadler (Head of the Climate, Economics, Environmental Observation Division)

QA/QC Officer (FOEN)

Andreas Schellenberger (Climate, Economics, Environmental Observation Division)
Paul Filliger (Climate, Economics, Environmental Observation Division; Alternate)

GHG Inventory Core Group

Daniel Bretscher (ART; Agriculture)
Paul Filliger (FOEN; Project leader)
Jürg Heldstab (INFRAS; NIR Lead Author and NIR Compiler)
Sophie Hoehn (FOEN; NIC Alternate; Energy, Waste)
Simon Liechti (FOEN; Industrial Processes, Solvents)
Beat Müller (FOEN; NIC; Energy)
Beat Rihm (Meteotest; NIR Lead Author)
Nele Rogiers (FOEN; LULUCF, KP LULUCF)
Andreas Schellenberger (FOEN; QA/QC)
Markus Sommerhalder (EBP; NIR Lead Author)

Project Management (FOEN)

Paul Filliger (Climate, Economics, Environmental Observation Division; Project Leader)
Andreas Schellenberger (Climate, Economics, Environmental Observation Division; Alternate)

National Inventory Compiler NIC (FOEN)

Beat Müller (Air Pollution Control and Non-Ionising Radiation Division)
Sophie Hoehn (Air Pollution Control and Non-Ionising Radiation Division; Alternate)

NIR Lead Authors

Jürg Heldstab (INFRAS; Energy (Transport), Industrial Processes (synthetic gases), Agriculture)

Beat Rihm (Meteotest; LULUCF)

Markus Sommerhalder (EBP; Energy (excluding Transport), Industrial Processes, Solvent and Other Product Use, Waste)

Swiss GHG Inventory Working Group

All members of the GHG Inventory Core Group

FOEN

Keith Anderson (FOEN, Forest Division)

Andrea Burkhardt (FOEN, Climate, Economics, Environmental Observation Division)

Elena Havlicek (FOEN, Substances, Soil, Biotechnology Division)

Blaise Horisberger (FOEN, Substances, Soil, Biotechnology Division)

Roland Hohmann (FOEN, Climate, Economics, Environmental Observation Division)

Michael Hügi (FOEN, Waste and Raw Materials Division)

Thomas Stadler (FOEN, Climate, Economics, Environmental Observation Division)

Esther Thürig (FOEN, Forest Division; WSL)

Richard Volz (FOEN, Forest Division)

Federal Administration (besides FOEN) and Institutions

Urs Baserga (Swiss Air Forces)

Pia Baumann (SFOE)

Reto Burkard (FOAG)

Jens Leifeld (ART)

Edgar Kaufmann (WSL)

Michael Kost (SFOE)

Theo Rindlisbacher (FOCA)

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Roman Bolliger (EBP)

Fredy Dinkel (Carbotech)

Stefan Kessler (INFRAS)

Christoph Könitzer (Sigmaplan)

Lukas Mathys (Sigmaplan)

Ulrich Roth (Sigmaplan)

Sonja Gehrig (INFRAS)

et al.

National Registry

Reto Schafer (FOEN, Climate, Economics, Environmental Observation Division; Registry Administrator)

Yvan Keckeis (FOEN, Climate, Economics, Environmental Observation Division)

Kristin Hoffman (FOEN, Climate, Economics, Environmental Observation Division)

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A2. Meetings of NIS Groups (2003-2009)

1. Meetings of the National System Inventory Supervisory Board

Minutes of

- 17 March 2009 [doc / pdf signed] (agenda)
- 12 September 2008 [doc / pdf signed] (agenda)
- 18. March 2008 [doc / pdf signed] (agenda)
- 17 October 2007 [doc / pdf signed] (agenda)
- 20 March 2007 [doc / pdf signed] (agenda)
- 22 September 2006 [doc / pdf signed] (agenda)

2. Meetings of the GHG Inventory Core Group

Minutes of

- 01 April 2009 (agenda)
- 11 February 2009 (agenda)
- 13 November 2008 (agenda)
- 03 September 2008 (agenda)
- 24 June 2008 (agenda)
- 17 March 2008 (agenda)
- 17 January 2008 (agenda)
- 30 October 2007 (agenda)
- 08 May 2007 (agenda)
- 08 January 2007 (agenda)
- 23 November 2006 [cancelled]
- 23 August 2006 (agenda)
- 22 June 2006 (agenda)
- 19 April 2006 (agenda)
- 16 March 2006 (agenda)
- 19 January 2006 (agenda)
- 18 October 2005 (agenda)
- 31 August 2005 (agenda)
- 30 March 2005 (agenda)
- 02 February 2005 (agenda)
- 03 December 2004 (agenda)
- 16 March 2004 (agenda)
- 23 January 2004 (agenda)
- 25 November 2003 (agenda)
- 03 September 2003 (agenda)
- 14 July 2003
- 28 May 2003

3. Meetings of the GHG Inventory Working Group

Presentations and documents of

- 18 February 2009 (agenda)
- 26. February 2008 (agenda)
- 06 February 2007 (agenda)
- 19 January 2006 (agenda)
- 20 May 2005 (agenda)

4. Meetings of the Agriculture Group

Minutes of

- 16 January 2007
- 09 November 2006 (agenda)

5. Meetings of the LULUCF Group

Minutes of

- 15 September 2008 (Minutes Annex / Add.) (agenda)
- 08 May 2008 (agenda)
- 12 December 2007 (agenda)
- 21 August 2007 (agenda)
- 01 May 2007 (agenda)
- 01 March 2007 [cancelled]
- 09 November 2006 (minutes II) (agenda)
- 29 June 2006 (agenda)
- 27 April 2006

On the GHG Inv web platform all dates above are linked to the respective minutes and associated documents.

B. Quality Manual

1. Quality Manual – Start

2. GHG Inventory Monitoring Protocols

- a) Sectors
 - 1) Energy (pages 1 and 2)⁴
 - 2) Industrial Processes
 - 3) Solvents and Other Product Use
 - 4) Agriculture
 - 5) LULUCF
 - 6) Waste
- b) Continual Improvement: Inventory Development Plan
- c) Recalculations
- d) EMIS database: Data Import/Export

Please note: On the GHG Inv web platform all links on the quality manual user interfaces are active. In the monitoring protocols (MP), signatures [A1], [A2] etc. and [QC] retrieve archived data sets and completed QC Tier 1 checklists, respectively, depending on their position in the flow chart. Example: [A1] in MP 5. LULUCF retrieves the processed land use data delivered by the Federal Statistical Office to Sigmaplan for any given inventory year.

⁴ Flow charts on page 2 are identical for all six main source categories.



Quality Manual Swiss GHG Inventory



Related QA/QC Documents

- [QA/QC Supplement](#) to National Inventory Report
- FOEN: [Total Quality Management](#)

Reporting

- [UNFCCC](#)
- [Official Swiss Web Site](#)

Supporting Documents

- [Meetings](#)
- [Absences](#)
- [NIS Human Resources](#)
- [Citation Guide](#)
- [Compilation](#) of NIS-References
- [Training](#)

Help

- [Glossary](#)
- [Abbreviations & Acronyms](#)
- [Manual, Structure Platform](#)

Management – Basics

Quality Objectives

Corporate Principles
FOEN

[Initial Report](#)
[NIS Groups](#)

Management Review

Guidelines
(for Core Processes)

Recalculations

Requirements

UNFCCC
([Kyoto Protocol](#),
[Convention](#))

„CO₂-Gesetz“

Core Processes

1. Energy

2. Industrial Processes

3. Solvent and Other Product Use

4. Agriculture

5. LULUCF

6. Waste

CO₂ Statistics

Results

Submissions
to UNFCCC

CO₂ Statistics

Continual Improvement (IDP)

QA/QC Documents

Inventory Development Plan

[QC Tier 1](#)
[QC Tier 2](#)
[QA Procedures](#)

[Internal Audit Plan](#),
[Annual Cycle](#)

Supporting Processes

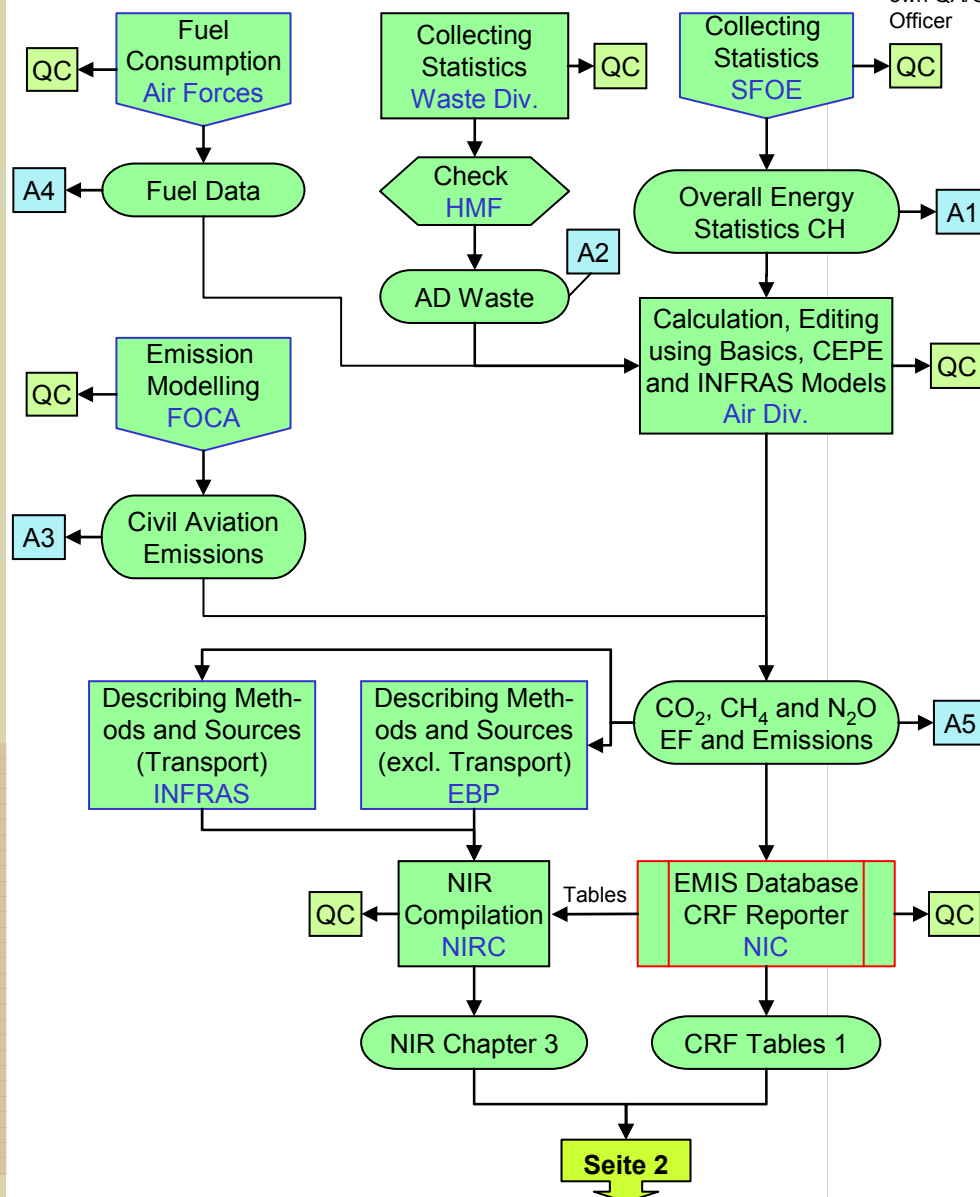
Human Resources

Finances + Controlling

External Services,
Infrastructure



Since 2007:
own QA/QC
Officer



Navigation Energy

- [Quality Manual – Home](#)
- [Sector Energy on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

National System

- [Schema National System](#)
- [NIS Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|--|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • EF | Emission Factor(s) |
| • HMF | Michael Hügi, FOEN: Waste and Raw Materials Division |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • PM | Project Management |

Responsible: [SA](#); last update: 080205

Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [IPCC GPG 2000 \[Web\]](#)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)
- A1: [Direct Link to SFOE](#)

Models in Use (Last Results)

- [Basics](#) (Industry Sector)
- [CEPE](#) (Services Sector)
- [INFRAS](#) (Off-road transport)

Seite

1

2



Navigation Energy

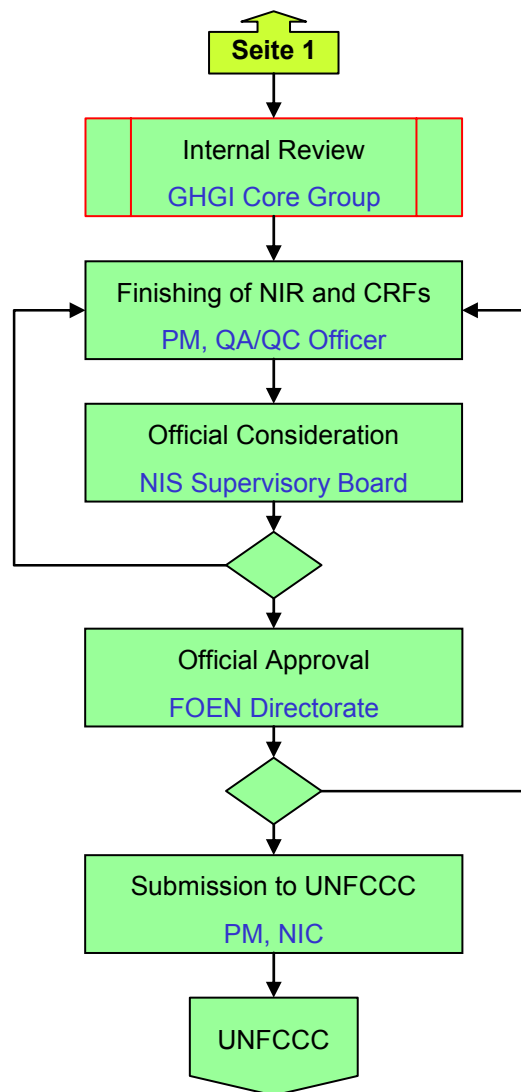
- [Quality Manual – Home](#)
- [Sector Energy on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

National System

- [Schema National System](#)
- [NIS Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|--|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • EF | Emission Factor(s) |
| • HMF | Michael Hügi, FOEN: Waste and Raw Materials Division |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
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GHG Inventory Monitoring Protocol

1. Energy



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [IPCC GPG 2000 \[Web\]](#)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)
- Archiving A1: [Link](#)

Models in Use (Last Results)

- [Basics](#) (Industry Sector)
- [CEPE](#) (Services Sector)
- INFRAS (Off-road transport)



Navigation Industrial Processes

- [Quality Manual – Home](#)
- [Sector Industrial Processes on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

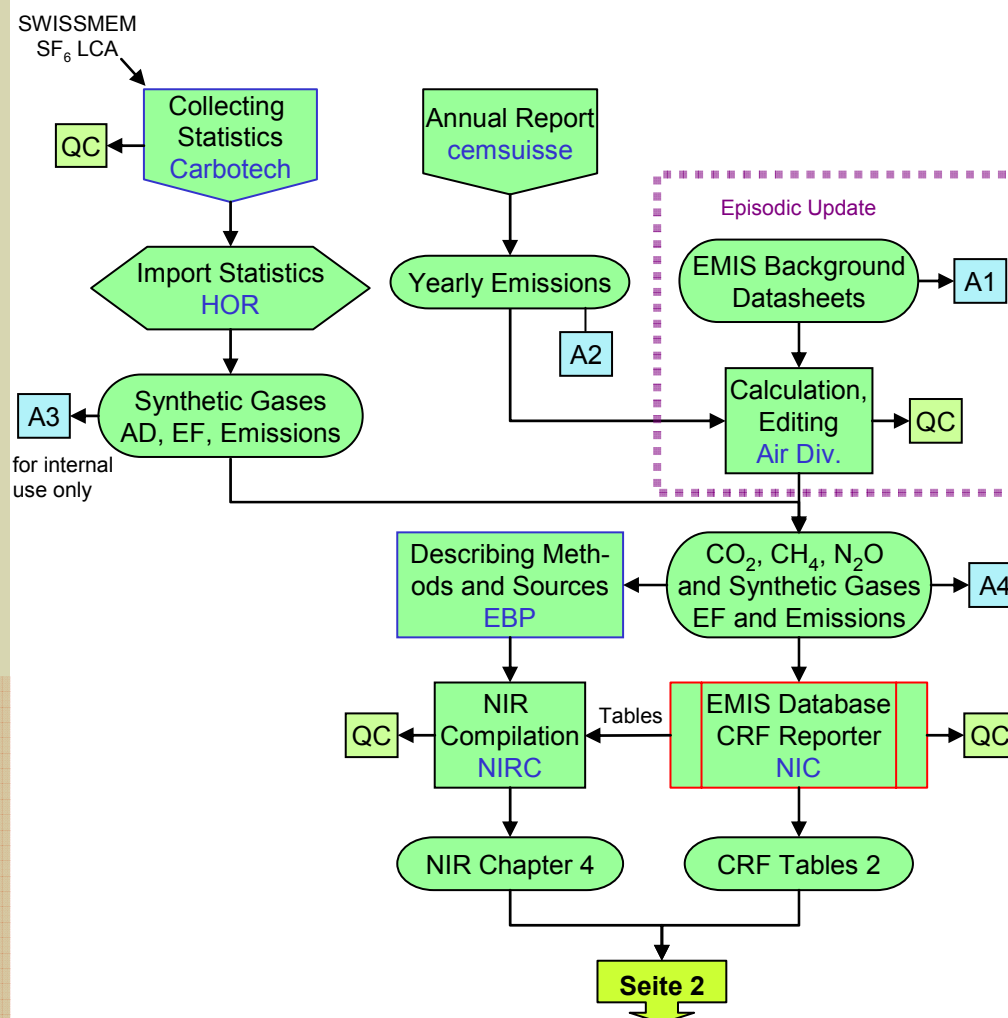
National System

- [Schema National System](#)
- [GHG Inventory Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|--|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • EF | Emission Factor(s) |
| • HOR | Blaise Horisberger, FOEN: Substances, Soil, Biotechnology Division |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • PM | Project Management |

Responsible: [SA](#); last update: 080208



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [IPCC GPG 2000 \[Web\]](#)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)
- Archiving A1: [EMIS Background Datasheets](#)

Seite

1

2



Navigation Solvents

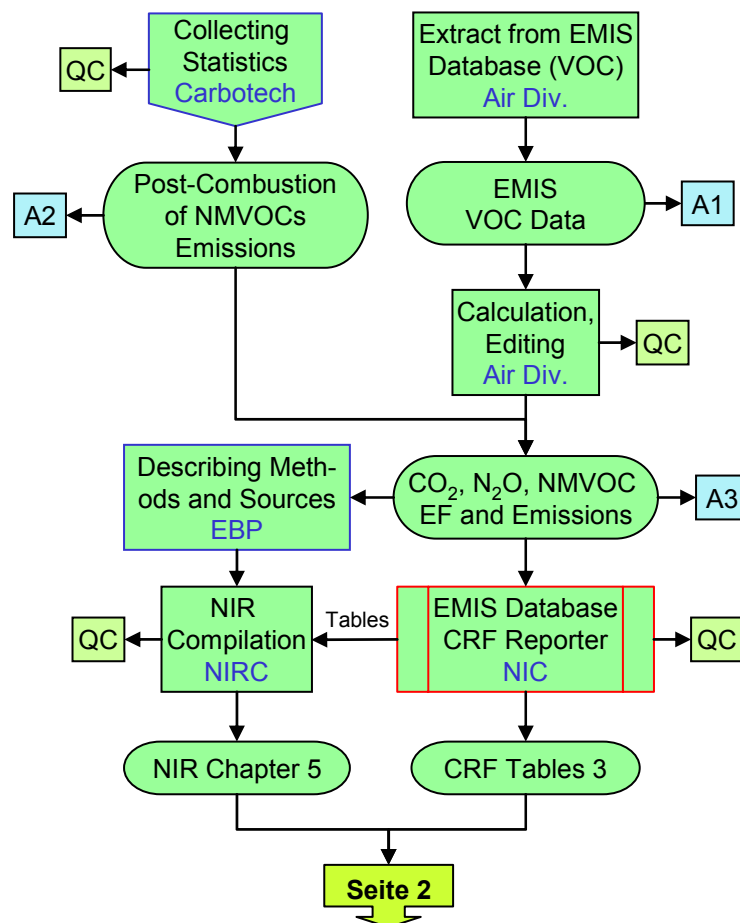
- [Quality Manual – Home](#)
- [Sector Solvents on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

National System

- [Schema National System](#)
- [GHG Inventory Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|--------------------------------|
| A | Archiving (QA/QC Officer) |
| QC | Tier 1 Checklists (QA/QC Off.) |
| • AD | Activity Data |
| • EF | Emission Factor(s) |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • PM | Project Management |
| • VOC | Volatile Organic Compound |



GHG Inventory Monitoring Protocol

3. Solvents and Other Product Use



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [IPCC GPG 2000 \[Web\]](#)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)
- Archiving A1: EMIS Background Datasheets



Navigation Agriculture

- [Quality Manual – Home](#)
- [Sector Agriculture on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

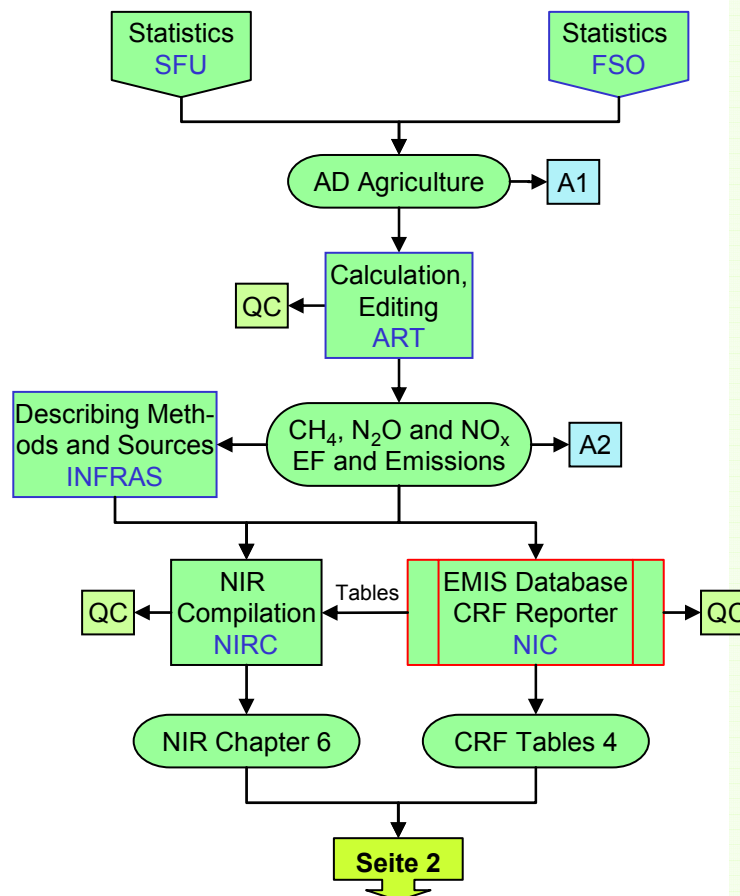
National System

- [Schema National System](#)
- [NIS Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|---|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • ART | Agroscope Reckenholz-Tänikon Research Station |
| • EF | Emission Factor(s) |
| • FSO | Federal Statistical Office |
| • NIC | National Inventory Compiler |
| • NIRC | NIR Compiler |
| • PM | Project Management |
| • SFU | Swiss' Farmers Union |

Responsible: [SA](#); last update: 090409



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [2006 IPCC AFOLU](#)
- [Soliva \(2006\)](#): Methodology for methane emissions.
- [Berthoud \(2004\)](#): Methodology for N₂O emissions.
- Schmid et al. (2000): Methodology for N₂O emissions.
- Archiving A1: [Link 1](#), [Link 2](#)

Finally...

Out now: Uncertainty Analysis for Agriculture.

Seite

1

2



Navigation LULUCF

- [Quality Manual – Home](#)
- [Sector LULUCF on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

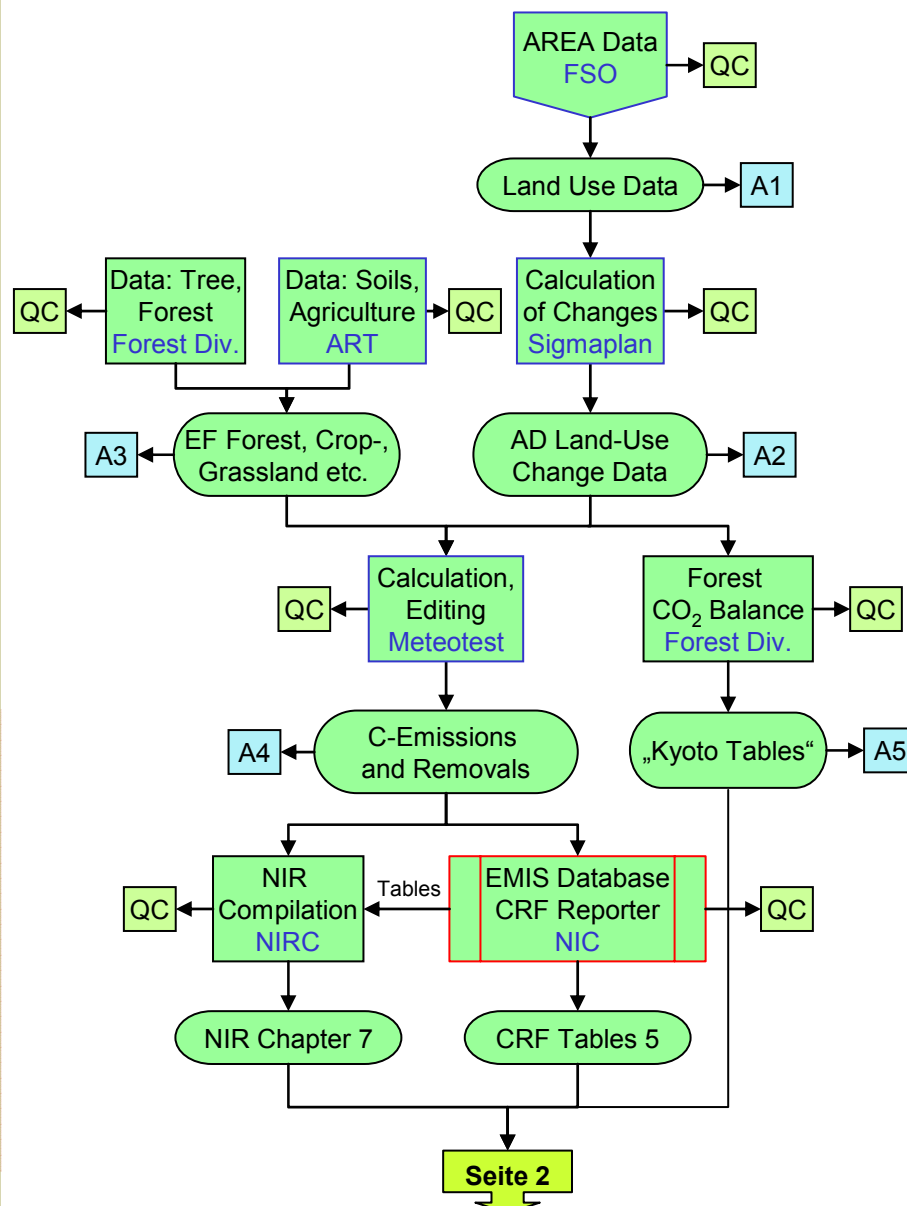
National System

- [Schema National System](#)
- [NIS Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|---|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • ART | Agroscope Reckenholz-Tänikon Research Station |
| • EF | Emission Factor(s) |
| • FSO | Federal Statistical Office |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • PM | Project Management |

Responsible: [SA](#); last update: 090409



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- GPG LULUCF (2003) [\[Web / Local\]](#)
- [2006 IPCC AFOLU](#)
- [Manual AREA](#) (2004/09) (Land-Use Statistics)
- [CC-Matrix](#) (AD)

Finally...

An expert peer review (QA) is projected for 2010.

Seite

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Navigation Waste

- [Quality Manual – Home](#)
- [Sector Waste on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

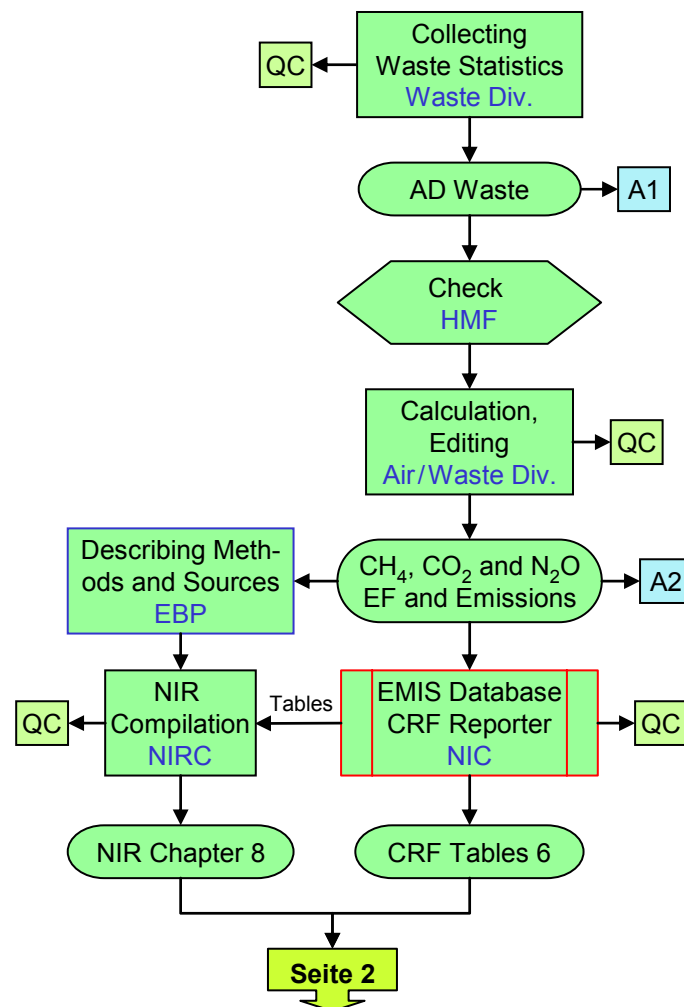
National System

- [Schema National System](#)
- [GHG Inventory Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

- | | |
|-----------|--|
| A | Archiving |
| QC | Tier 1 Checklists |
| • AD | Activity Data |
| • EF | Emission Factor(s) |
| • HMF | Michael Hügi, FOEN: Waste and Raw Materials Division |
| • NIC | National Inventory Compiler |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • PM | Project Management |

Responsible: [SA](#); last update: 090409



GHG Inventory Monitoring Protocol

6. Waste



Background Information

- [COP/MOP Decisions](#)
- [Scientific Publications](#)
- [Other Documents](#)
- [Conference Proceedings](#)
- [Internal Documentation](#)
- [Related Projects](#)

Relevant Documents

- [IPCC GPG 2000 \[Web\]](#)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)
- Archiving A1: [Link 1](#)

Finally...

An expert peer review (QA) is projected for 2009.

Seite

1

2



Navigation

- [Quality Manual – Home](#)

Supporting Documents

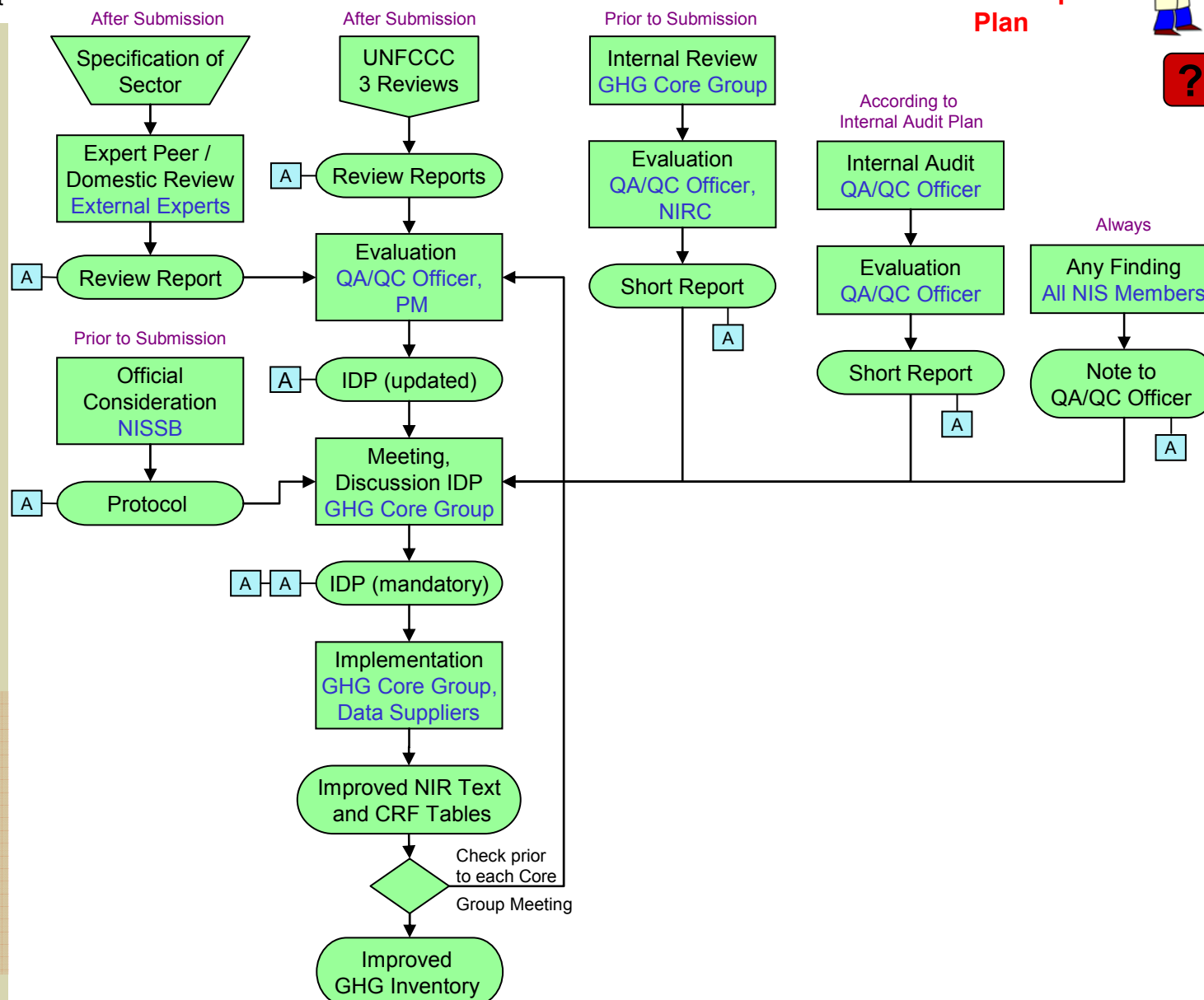
- [Annual Cycle](#)
- [Inventory Development Plan \(IDP\)](#)
- [NIS Groups](#)
- [Meetings of NIS Groups](#)
- [Internal Audit Plan](#)

UNFCCC Reviews

- [Status Report](#)
- [Synthesis and Assessment Report](#)
- [Individual Report](#)

Legend and Abbreviations

- | | |
|----------|----------------------------|
| A | Archiving (QA/QC Officer) |
| • CRF | Common Reporting Format |
| • IDP | Inventory Development Plan |
| • NIR | National Inventory Report |
| • NIRC | NIR Compiler |
| • NIS | National Inventory System |
| • NISSB | NIS Supervisory Board |
| • PM | Project Management |





Navigation

- [Quality Manual – Home](#)

National System

- [Schema National System](#)
- [NIS Groups](#)
- [NISSB Mandate](#)

Legend and Abbreviations

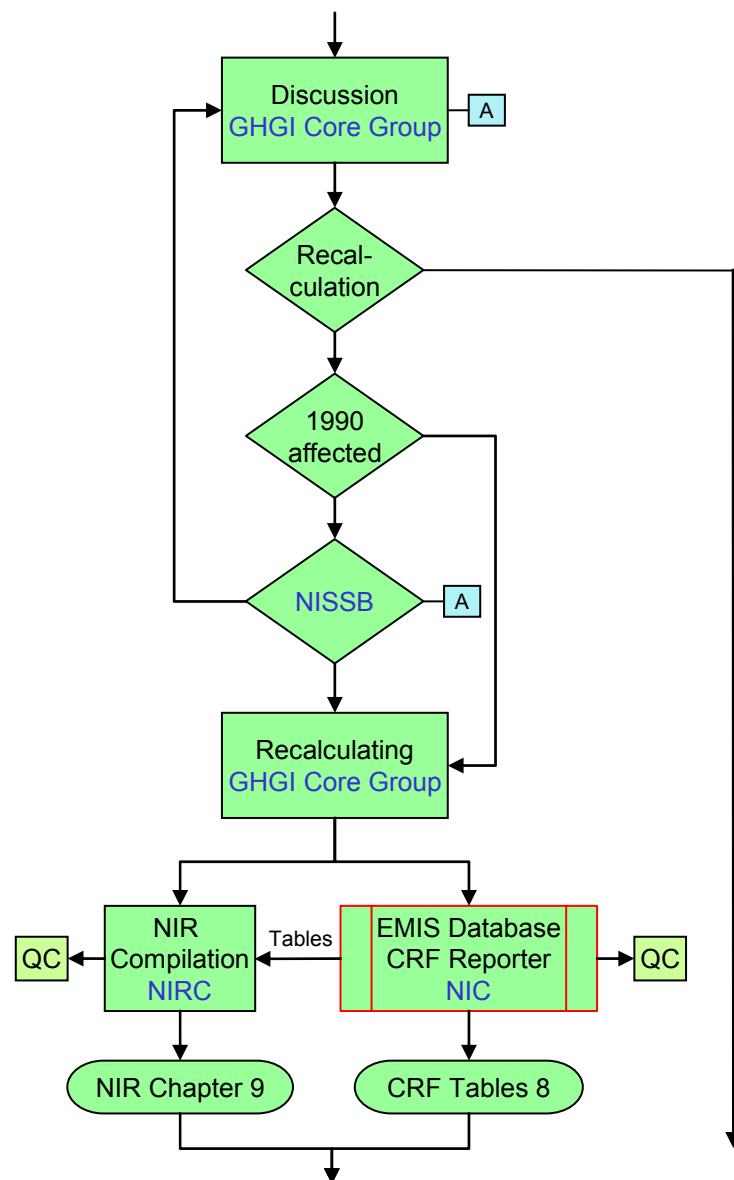


Archiving



Tier 1 Checklists

- CRF Common Reporting Format
- NIC National Inventory Compiler
- NIR National Inventory Report
- NIRC NIR Compiler
- NISSB NIS Supervisory Board
- PM Project Management



GHG Inventory Monitoring Protocol

Recalculation



Relevant Documents

- [IPCC GPG 2000](#)
(Chapter 7.3)
- [2006 IPCC Guidelines](#)
- [Revised 1996 IPCC](#)

Finally...

Try to avoid recalculations



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Office for the Environment

Emission Determination and Documentation Process

Internal/External Expert 1 is responsible for a certain number of *Emission Sources* (Sector X). He/She compiles information about Activity Data, Emission Factors and Emissions. As of April 2009:

- **Energy:** HSO, MBU, rit (FOCA)
- **Industrial Processes:** LSI, MBU, fd (Carbotech)
- **Solvents:** LSI, fd (Carbotech)
- **Agriculture:** dbr (ART)
- **LULUCF:** BR (Meteotest)
- **Waste:** HSO, MBU

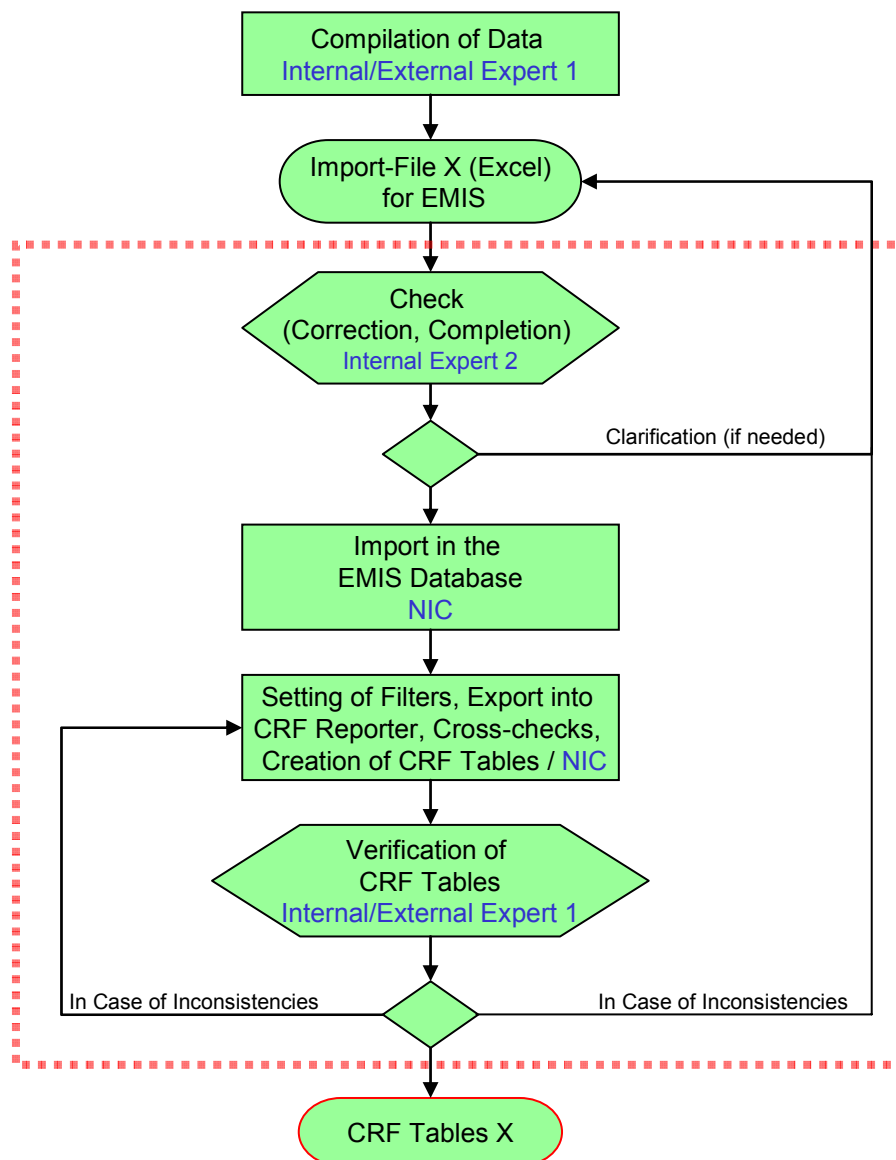
Internal Expert 2: MBU, HMF, HSO, SA

Legend and Abbreviations

- CRF Common Reporting Format
- NIC National Inventory Compiler

Responsible: [SA](#), [MBU](#);
last update: 090409

Sector X



GHG Inventory Monitoring Protocol

EMIS: Data Im-/Export



Creation of CRF Tables Subprocess

More about EMIS Database

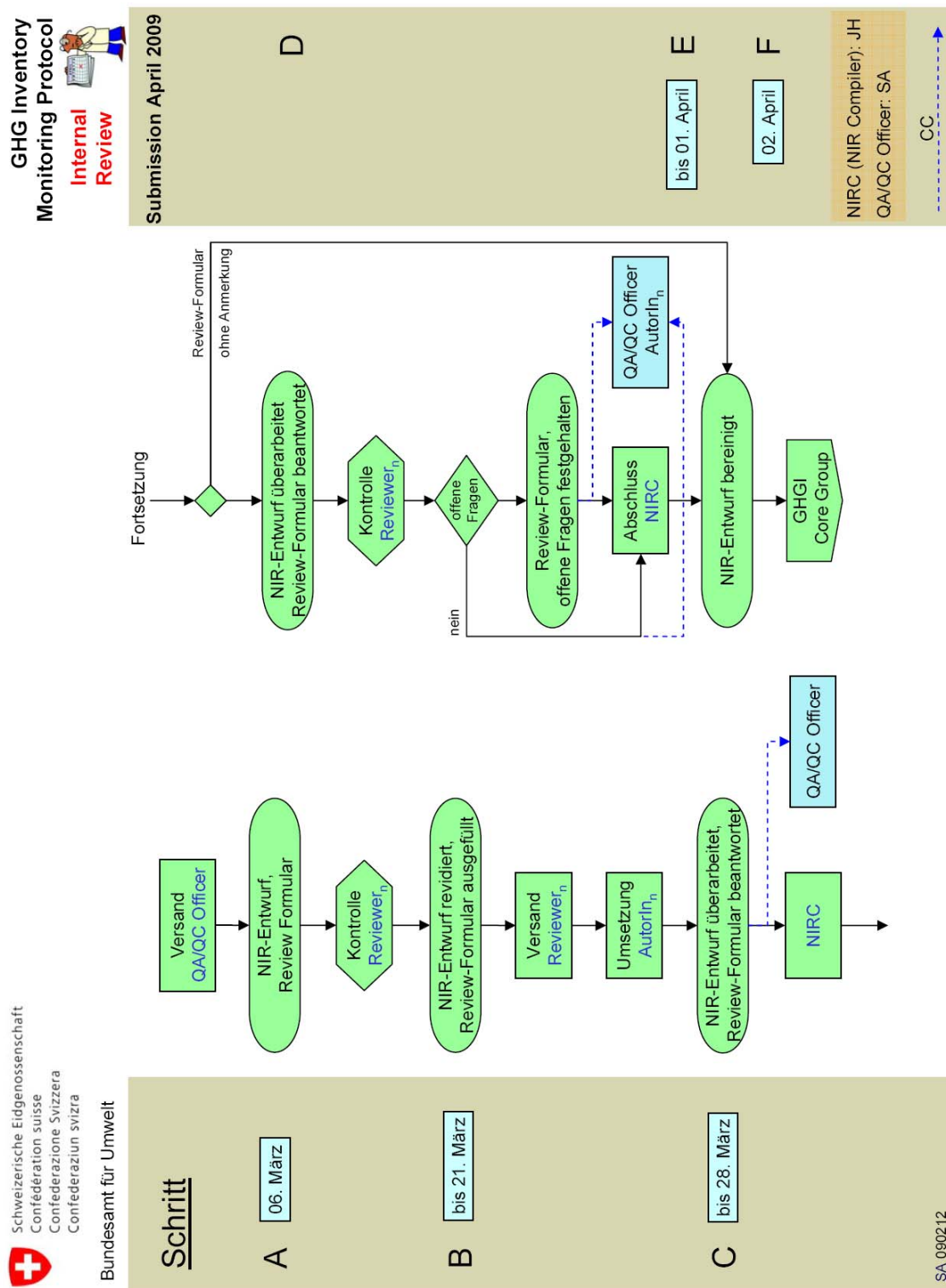
- Prozess EMIS ([FOEN 2006c](#))
- [PP Presentation](#) (MBU, March 2007)
- [EMIS Background Data Sheets](#)

C. Internal Review 2009

C.1 Responsibility assignment

NIR Chapter incl. associated CRF tables and Kyoto Protocol LULUCF tables	Author(s)	Reviewer(s)
1 Introduction (incl. Executive Summary)	Infras (JH), SA (Chapter 1.6)	FP, ROR
2 Trends	Infras (JH, FK)	FP, ROR
3 Energy (excl. Transport) + Annex 2, Annex 3.1	EBP (RBO)	Infras (SK)
3 Energy (Transport incl. Off-road)	Infras (JH, FK)	EBP (TL)
4,5 Industrial Processes, Solvents + Annex 3.2	EBP (RBO), Infras (SK)	LSI, HSO
6 Agriculture + Annex 3.3	Infras (SG)	EBP (HCA), brd
7 LULUCF	Meteotest (BR), RN, ART (lej, brd), WSL (THE)	RV, SA
8 Waste	EBP (SO)	Infras (BO)
9 Recalculations	Infras (JH), EBP (RBO), SA	FP, HSO, MBU
Annex 1 Key Category Analysis	EBP (RBO)	FP, SA
Annex 4 CO ₂ Reference Approach and com- parison with Sectoral Approach	EBP (RBO)	INFRAS (SK), HSO
Annex 5 Completeness, Annex 6 Additional information	Infras (JH)	FP, ROR
Annex 7 Uncertainty Evaluation	Infras (FK)	FP, SA
Annex 8: Information required under Art. 7 KP (15/CMP.1)	RN, KYE & SRE, FP, SA, RJ	FP, ROR, SA (LULUCF), RV (LULUCF)
QA/QC Supplement (excl. Inventory Development Plan)	SA	FP, ROR
Inventory Development Plan	SA, FP	JH

C.2 Monitoring Protocol (Flowchart)



Notations A-F refer to sub-chapters within the internal review guidance (internal document).

C.3 Template of the review form

Review-Formular für das Interne Review Submission April 2009

Reviewer Amt / Firma Telefon, E-Mail	
Begutachtete(s) Kapitel, inklusive Annex, CRF-Tabellen, References	

Bitte ggf. spezifizieren

NIR-AutorIn Firma Telefon, E-mail	
---	--

Hinweise für die Reviewer / AutorInnen

Reviewer: Bitte an dieser Stelle nur übergeordnete Punkte (Unstimmigkeiten; Stellungnahme der Autorin/des Autors gewünscht) aufführen, restliche Korrekturen mit Korrekturmodus direkt im Word-File vornehmen!

AutorInnen: Bitte zu den einzelnen Punkten Stellung nehmen.

Kommentare des Reviewers (gelb) und Erwiderung der Autorin/des Autors (grün)
1)
zu 1)
2)
zu 2)
3)
zu 3)
4)
zu 4)
5)
zu 5)
etc. (bei Bedarf Zeilen hinzufügen)

Review durchgeführt Datum / Signum	
--	--

Deadline: 20. März 2009

Review zur Kenntnis genommen Datum / Signum	
---	--

Deadline: 27. März 2009

Gegebenenfalls: Weitere Stellungnahme Reviewer

Nicht ausgeräumte Unstimmigkeiten bzw. nötige Folgearbeiten

Für den Fall, dass wesentliche Punkte des Reviews nicht berücksichtigt wurden.

1)
2)
etc. (bei Bedarf Zeilen hinzufügen)

Datum / Signum	
----------------	--

Deadline: 31. März 2009

D. Abbreviations and Acronyms

English Term	German Term
Federal Administration and Federal Institutions	
ART , Agroscope Reckenholz-Tänikon Research Station	ART , Forschungsanstalt Agroscope Reckenholz-Tänikon
CEPE , Centre for Energy Policy and Economics of ETH Zurich	CEPE , –
DETEC , Federal Department of the Environment, Transport, Energy and Communications	UVEK , Eidgenössisches Departement für Umwelt, Verkehr und Kommunikation
EMPA , Swiss Federal Laboratories for Materials Testing and Research	EMPA , Eidgenössische Materialprüfungs- und Forschungsanstalt
FOAG , Swiss Federal Office for Agriculture	BLW , Bundesamt für Landwirtschaft
FOCA , Federal Office of Civil Aviation	BAZL , Bundesamt für Zivilluftfahrt
FOEN , Federal Office for the Environment	BAFU , Bundesamt für Umwelt
FOEN: Climate, Economics and Environmental Observation	BAFU: Klima, Ökonomie und Umweltbeobachtung
FOEN: Air Pollution Control and Non-Ionizing Radiation	BAFU: Luftreinhaltung und nichtionisierende Strahlung
FOEN: Waste and Raw Materials	BAFU: Abfall und Rohstoffe
FOEN: Substances, Soil, Biotechnology	BAFU: Stoffe, Boden, Biotechnologie
FOEN: Forest	BAFU: Wald
FOITT , Federal Office of Information Technology, Systems and Telecommunication	BIT , Bundesamt für Informatik und Telekommunikation
SFOE , Swiss Federal Office of Energy	BFE , Bundesamt für Energie
SFSO , Swiss Federal Statistical Office	BFS , Bundesamt für Statistik
VTG , Defence, Swiss Air Force	VTG , Verteidigung, Betriebe Luftwaffe
WSL , Swiss Federal Institute for Forest, Snow and Landscape Research	WSL , Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft
Further Abbreviations and Acronyms	
CRF , Common Reporting Format	CRF , einheitliches Berichterstattungsformat
EF , Emission factor	EF , Emissionsfaktor
EMIS , Swiss national air pollution database (Emission Information System)	EMIS , Nationale Datenbank für Luftschadstoffe und Klimagase (Luftschadstoffemissionsinventar)
GHG , Green House Gas	THG , Treibhausgas (klimawirksames Gas)
IDM , FOEN Internal Document Management System	IDM , Internes Dokumente-Archiviersystem des BAFU
IDP , Inventory Development Plan	IDP , Inventar-Entwicklungsplan
IPCC , Intergovernmental Panel on Climate Change	IPCC , Zwischenstaatliches Expertengremium für Klimafragen
NIR , National Inventory Report	NIR , Nationaler Bericht zum Treibhausgasinventar
NIS , National Inventory System	NIS , Nationales Inventar-System
PDCA Cycle , Plan-Do-Check-Act Cycle	PDCA - oder Deming-Zyklus
QA , Quality Assurance	QA , Qualitätssicherung
QC , Quality Control	QC , Qualitätskontrolle
SGIA , Swiss Gas Industry Association	VSG , Verband der Schweizerischen Gasindustrie
SGWA , Swiss Gas and Water Industry Association	SVGW , Schweizerischer Verein des Gas- und Wasserfaches
SPA , Swiss Petroleum Association	EV , Erdölvereinigung
TCCCA , transparency, consistency, comparability, completeness, accuracy (the "inventory principles")	TCCCA , Transparenz, Konsistenz, Vergleichbarkeit, Vollständigkeit, Genauigkeit (die "Inventar-Prinzipien")
UNFCCC , United Nations Framework Convention on Climate Change	UNFCCC , Klimakonvention der Vereinten Nationen

For more abbreviations and acronyms used in the context of the Swiss GHG inventory see the Glossary in FOEN (2009).