

Description of the Quality Management System

Supplement to
Switzerland's Greenhouse Gas Inventory
1990-2006

Submission of 15 April 2008
under the United Nations Framework Convention on Climate
Change and under the Kyoto Protocol



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Office for the Environment FOEN

Author

Andreas Schellenberger FOEN; Climate, Economics and Environmental Observation
Division

In cooperation with

Paul Filliger FOEN; Climate, Economics and Environmental Observation
Division

Jürg Heldstab INFRAS

Markus Nauser FOEN; Climate, Economics and Environmental Observation
Division

Published and distributed by:

Federal Office for the Environment FOEN
Climate, Economics and Environmental Observation Division
3003 Bern, Switzerland

Bern, 15 April 2008

Table of Contents

Table of Contents	3
1. Introduction	4
1.1 Switzerland's Greenhouse Gas Inventory	4
1.2 Definitions	4
1.3 Purpose	5
2. The NIS Quality Management System	6
2.1 Introduction	6
2.2 Inventory agency responsible for coordinating QA/QC activities	7
2.3 QA/QC plan	11
2.4 QC procedures	14
2.5 QA review procedures	17
2.6 Reporting, documentation, and archiving procedures	19
3. Inventory Development Plan	20
References	37
Annex	41
A. NIS Groups.....	41
B. Quality Manual	44
C. Internal Review 2008	56
D. Glossary and Abbreviations	59

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 on, the inventories have been submitted in the Common Reporting Format (CRF). In 2004, Switzerland started submitting a yearly National Inventory Report under the UNFCCC, on 10 November 2006 together with Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol (FOEN 2006, 2006h).

The present submission includes the National Inventory Report, the greenhouse gas inventory in the Common Reporting Format 1990–2006 (FOEN 2008) and, as a supplement, the Description of the Quality Management System on hand.

On 9 July 2003, Switzerland ratified the Kyoto Protocol under the UNFCCC. 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).

1.2 Definitions

The following terms are essential for the paper on hand. 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 1990-2006 documents the current status (April 2008) of the NIS quality management system (QMS). It will be updated as the QMS develops and improves.

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, 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).

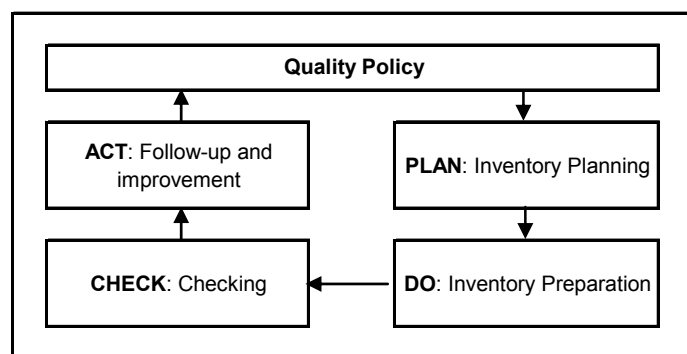


Figure 1 PDCA cycle.

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 (FOEN). 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.

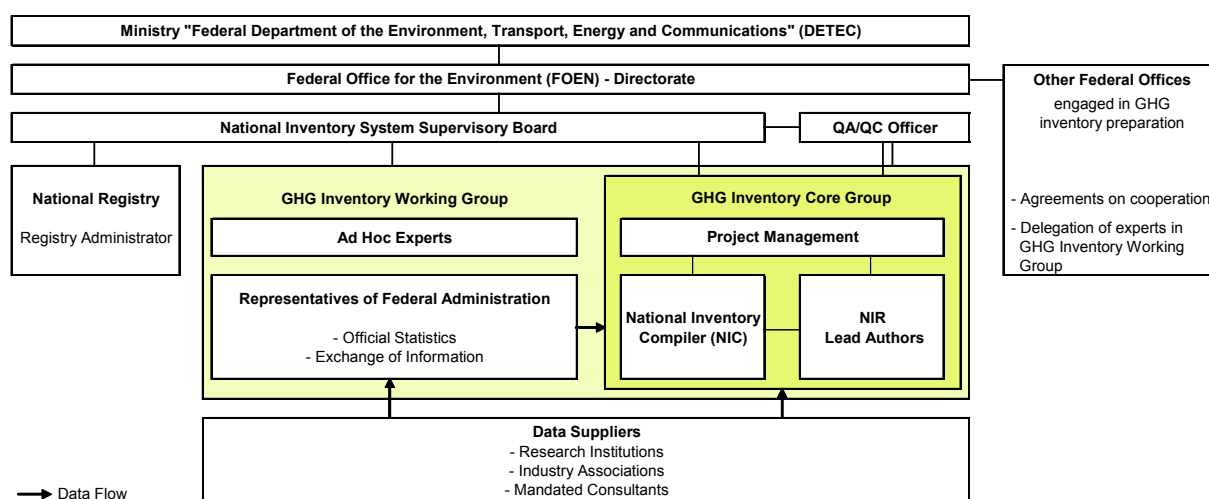


Figure 2 Institutional setting of the National Inventory System.

The tasks and responsibilities of the various actors in inventory-related activities are defined as follows (see Annex A for a specification of NIS Groups' members and a list 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 contribution focuses on the annual production of a high quality inventory, with quality being defined by the TCCCA criteria. 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 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. 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 and CRF tables; 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 and its outcome 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 of data 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 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 data base (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;
 - 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 (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 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.

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: 1–15 provide annual updates, 16–22 provide sporadic updates. The IPCC nomenclature is used for the inventory categories (1A1 = Energy Industries, 1A2 = Manufacturing Industries and Construction etc.). RA = Reference Approach. For further abbreviations see the glossary in 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 2005/ (NFR-Code)
2	FOEN, Air Pollution Control	Off-road Database			x		x								INFRAS 2007
3	FOEN, Waste and Raw Materials	Waste Statistics	x	x										x	FOEN 2007e
4	FOEN, Forest Division	Forest Statistics											x		FOEN 2008b
5	SFOE	Swiss overall energy statistics	x	x	x	x		x	x					x	SFOE 2007
6	FOCA	Civil Aviation			x										FOCA 2006a, 2007
7	Swiss Air Force Administration	Military Aviation			x										VTG 2007
8	SFSO	Agriculture, LULUCF,										x	x		SFSO 1997, 2000, 2000a, 2002, 2003, 2005, 2006b, 2007a
9	ART	Agriculture, LULUCF										x	x		internal document
10	WSL	National Forest Inventory											x		Brassel and Brändli 1999; EAFV/BFL 1988
11	CEPE/Basics AG	Energy Consumption		x		x									CEPE 2007; Basics 2007
12	Carbotech	Synthetic Gases								x					Carbotech 2008
13	Industry Associations: SGCI, Swissmem, VSAI etc.	Synthetic Gases								x					Carbotech 2008
14	Swiss Petroleum Association	Oil Statistics							x						EV 2007
15	cemsuisse	Cement, Clinker Production		x						x					Cemsuisse 2007
	Data suppliers (sporadic updates)														
16	SVGW	Gas Distribution Losses						x							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 2007
20	Sigmaplan, Meteotest	LULUCF											x		internal document

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

- the selection of appropriate (= complying with IPCC Good Practice Guidance) 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 QA/QC plan means a quality manual, e.g. as it is 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 with 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 identical 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 recently, 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/>). This approach has two major advantages:

- the sequential processing of one master file (especially with respect to the NIR), avoids the circulation of parallel versions, thus eliminating the danger of losing information;

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 with every alternate user saving a copy. By this means, 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 data base, where the actual inventory calculations are performed and archived (cf. Chapter 2.6).

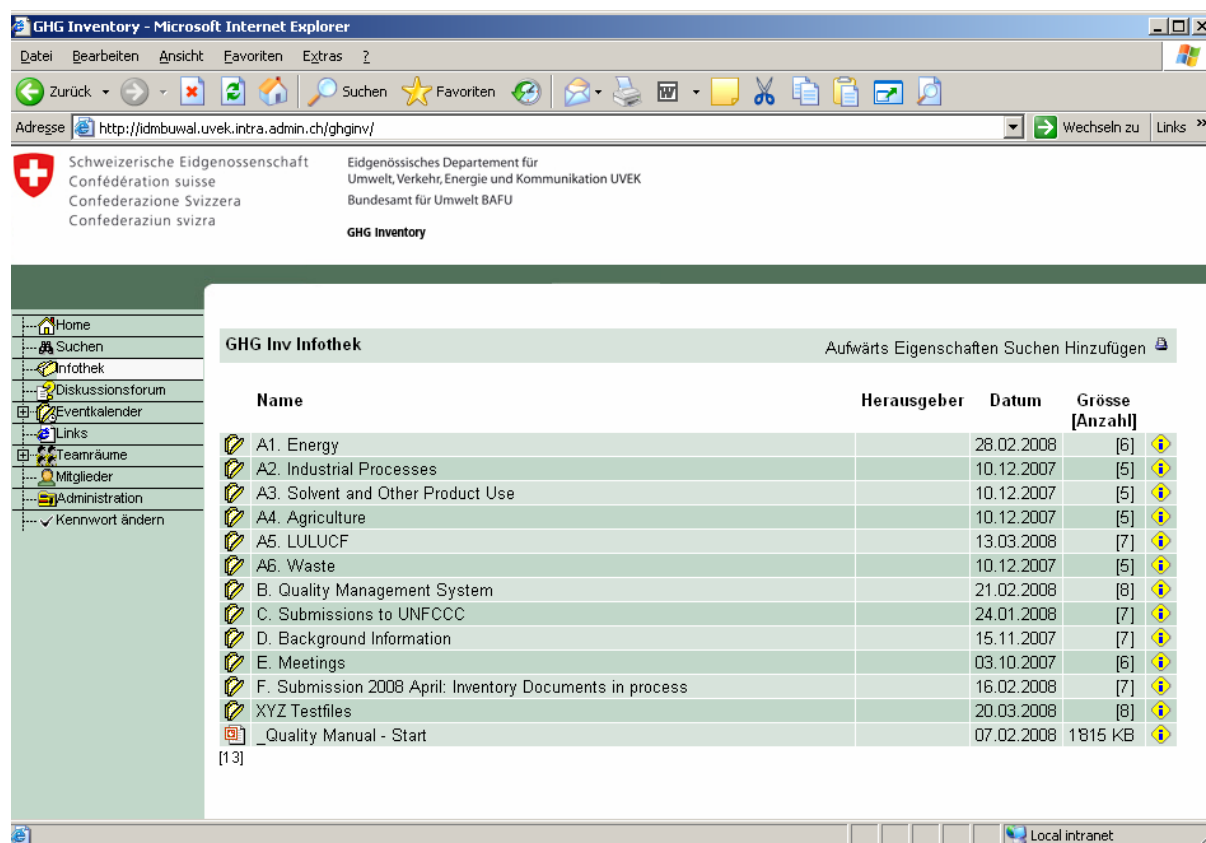


Figure 3 Screenshot “Infothek”, showing the top directory structure on the GHG Inv web platform. Access to the inventory files can either be achieved by clicking through the directory or with the help of the graphic interface provided by the quality manual (file “Quality Manual – Start”; cf. Annex B.1).

Annual cycle of inventory planning, preparation, and management

The annual cycle of inventory planning, preparation, and management is an important document within the QMS. In Table 2 it is illustrated with a 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 – in part simultaneously – 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 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 review recommendations are an integral part of the annual cycle of inventory preparation;
- the performance of a key category analysis and an uncertainty analysis;
- 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 (EMIS); archiving of NIR text, tables and figures as well as outcomes of QA/QC procedures and other relevant documents produced during the inventory cycle by the QA/QC officer (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 once they have been evaluated (FOEN 2008c). 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 2008c).

Some data suppliers (e.g. Sigmaplan, Meteotest, ART with respect to uncertainties in the Agriculture sector, INFRAS with respect to the Tier 2 uncertainty analysis) 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 Inventory Project Management stipulates and supports such activities to an increasing degree.

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 data base;
- 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;
- correctness of recalculations;
- complete and correct archiving of GHG data;
- and documents his quality control activities in a checklist (see FOEN 2008c).

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 data base into 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 2008c).

The **Project Management**

- supervises the GHG emission estimates;
- monitors the key category analysis and the uncertainty analysis;
- 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 2008c).

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 in NIS use
- online-provision of submitted GHG inventories on www.climatereporting.ch, including background references like personal and written communications;

- composing of a guidance for the Internal Review
- keeping a list of professional experience as well as a list of participation in inventory 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 & acronyms.

Category-specific QC procedures

In addition to general QC, the Inventory Project Management ensures the performance of Tier 2 QC procedures both by initiating internal studies, where appropriate, and by providing for a FOEN (co)-funding of selected research projects, e.g:

- continuous measurement of halogenated GHG at the Jungfraujoch (HALCLIM) (Reimann et al. 2006), inter alia to check for the completeness of F-gases in the inventory (ongoing project HALCLIM-3);
- revision of methodology for methane emissions estimates from the Agriculture sector (Soliva 2006, 2006a);
- measurement of fossil CO₂ emissions from waste incineration (FOCAWIN) (EMPA 2007);
- reevaluation of CO₂ emission factors for fossil fuels (results are expected for summer 2008).

In 2007, the Project Management had taken note of the plan to prepare an application to the European Union FP7 to get support for a large research infrastructure and to launch an Integrated Carbon Observing System (ICOS). In this regard, it had requested the FOEN directorate to sign a "Letter of Participation" for Switzerland. It is expected that ICOS will make available the continuous high-quality data that are necessary for bottom-up verification of GHG fluxes over relevant land use types and over sufficiently long periods of time in the LULUCF sector.

To renew and reinforce its study on the comparison of CRF and IEA CO₂ emission data in the Energy sector (FOEN 2006e: 39 et seqq.; see below) the Project Management has invited experts from the Swiss Federal Office of Energy to collaborate investigating the small discrepancies that exist between both data sets. A kick-off meeting is scheduled for May 2008.

Significant outcomes of Tier 2 QC procedures will be discussed in the GHG Inventory Core Group and recorded in the Inventory Development Plan, where appropriate.

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).

In 2008, the waste sector will undergo a 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). The LULUCF sector will be reviewed once the new data of the third Swiss National Forest Inventory has been processed in the GHG inventory (scheduled for the April 2009 submission).

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 UNFCCC reporting guidelines and IPCC good practice guidance).

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 used to update the Inventory Development Plan (see also Annex B.2b).

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) has been implemented or at least partly realized in the meantime. The Inventory Development Plan has been updated accordingly (see Chapter 3). The remaining recommendations will be considered in a subsequent submission.

On April 04, 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 2007.

Internal review

The performance of an internal review prior to official approval and 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), the preparation of which he or she was not directly involved in. Also the QA/QC supplement is subject to that review process (see Annex C.1 for the responsibility assignment 2008). 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 from the NIR authors to the reviewers and documented in detail. Finally, the reviewers check the handling of their proposals and scrutinise the justification for any rejection. Follow-up activities will be discussed in the GHG inventory Core Group.

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) where the Swiss GHG inventories (NIR, CRF tables, QA/QC supplement), the Swiss National Communications and other reports submitted to the UNFCCC may be downloaded from an easy-to-navigate site. Furthermore, all UNFCCC review reports are listed. Thus, the most relevant information about the Swiss GHG emissions and climate policy is easily accessible for stakeholders and interested individuals. The Inventory Project Management plans to expand the online availability of significant documents – and thereby the options for public review – in the future. In the recent past, a great step forward has been achieved with 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.

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]).

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 data base. The Swiss national air pollution data base (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 2005/(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).

Information documented in the EMIS data base and in the IDM system (GHG Inv web platform) is held available at the FOEN for consultation by reviewers. The Inventory Project Management is prepared to respond to any request 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 should be possible to grant future 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 on November 02, 2007, mainly based on the In-Country Review Report "Report of the individual review of the greenhouse gas inventory of Switzerland submitted in 2006 ([FCCC/ARR/2006/CHE](http://fccc/arr/2006/che), 31 July 2007; UNFCCC 2007). Here, status changes are given as of April 2008.

- 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.

- **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)
FOEN	Federal Office for the Environment FOEN
INFRAS	INFRAS, private consultants (NIR co-authors)
Meteotest	Meteotest, private consultants (NIR co-authors)
Sigmaplan	Sigmaplan, private consultants (Experts land-use change)

- **FOEN staff members**

FP	Paul Filliger
HSO	Sophie Hoehn
LA	Andreas Liechti
LF	Fabio Leippert
MBU	Beat Müller
NM	Markus Nauser
SA	Andreas Schellenberger
THE	Esther Thürig
RN	Nele Rogiers
RV	Richard Volz

- **FOCA staff member**

rit	Theo Rindlisbacher
-----	--------------------

- 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 §" refers to the UNFCCC report [FCCC/ARR/2006/CHE](http://fccc/arr/2006/che).**

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
1	Key category analysis, Inclusion of the LULUCF sector	H	Spring 07	EBP	M	F	6, 21b, 113d
2	Key category analysis, Use of Tier 2 method	M	Spring 09	EBP	M	P	
3	Uncertainty analysis, Improvement of uncertainty estimations; inclusion of all categories; new run of Tier 2 analysis	M	Spring 08	INFRAS	M	F	
4	<p>Uncertainty analysis, Regarding the tier 2 uncertainty analysis, no documentation of ex- pert evaluations is presented.</p> <p>The Party is encouraged to extend the uncertainty analysis and to inte- grate it into inventory planning.</p> <p>Energy: Switzerland has provided sector-specific uncertainty analysis for CO₂ emissions from fuel com- bustion; however, the uncertainties of the EFs are not considered in this analysis. The Party is encouraged to improve the documentation of the uncertainty analysis to include emission factors.</p>	M	Spring 08	<p>INFRAS</p> <p>EBP</p>	M	<p>pR</p> <p>pR</p>	<p>15, 21aii</p> <p>27</p>
5	Energy, Development and realisa- tion of a project to reevaluate CO ₂ emission factors for transport fuels	M	2007/08	FOEN (LA, MBU)	H	P	
6	Energy, Reference Approach, Comparison IEA - UNFCCC: The IEA explains this difference as be- ing due to (a) the higher calorific values used for the IEA analysis, and (b) the fact that it takes into account liquid fuels in 2004 (other kerosene, naphtha, lubricants, re- finery feedstocks and other oils) in the reference approach, while these are not reported by Switzerland. The Party is taking measures to supplement its reference approach by incorporating of relevant liquid fuels and to harmonize its reporting for the UNFCCC and the IEA.	M	2008	FOEN (MBU, LA, HSO)	M	P	29

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	Switzerland has not reported in CRF table 1.A(a) apparent consumption (imports, exports and stock change) of fuels that are used as feedstocks; only bitumen is reported as a feedstock in this table. However, naphtha, petroleum feedstocks and lubricants appear in the IEA energy balance for the Party. Switzerland has not implemented a recommendation from the previous (2005) review that it should investigate this issue further, but it has indicated that it intends to report more liquid products in its next inventory submission (2008 submission).						31
7	Energy, International bunker fuels: IPCC 2006 Guidelines not approved, therefore, this can be considered only a national method, and as such it should be more transparently explained in the NIR.	L	2008	INFRAS, rit	M	F	30
8	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 (MBU, LA, HSO)	L	P	32
9	Energy, Municipal solid waste incineration in subsector 1.A.1a: a) Consideration of FOCAWIN results. b) 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 08	FOEN (MBU, LF)	L	P	33
10	Energy, Stationary combustion, liquid fuels, NCV values: The Party is recommended to repeat such	M	Spring 08	FOEN (LA) "Jäckle project"	M	P	34

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	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.						
11	Energy, Stationary combustion, liquid fuel: The information concerning the NCVs and the CO ₂ EFs that is given in annex A2.2 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	Spring 08	NIR: EBP/INFRAS Based on FOEN (LA) “Jäckle project”	L	P	35
12	Energy, Road transport, liquid fuels: Switzerland are encouraged to extend the reporting of data in table 44 of the NIR for the whole time series, and provide further information to support this explanation of the difference, including an assessment of the uncertainty of the transport statistics parameters.	M	Spring 08	INFRAS	M	pR	36
13	Energy, In many instances the NIR describes the CH ₄ and N ₂ O emission factors as country-specific, even though during the review the ERT identified them as IPCC or CORINAIR default values. Switzerland is recommended to ensure that the correct attribution of the source of an EF (or method) is reported in the NIR, and that it is always consistent with CRF summary table 3, for all gases.	H	Spring 08	EBP/INFRAS	L	F	38
14	IP, Cement Industry: Internal Review of CaO content in clinker and of EF of fuels	H	Summer 07	FOEN (FP), EBP	M	P	
15	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 production is assumed to be constant	H	Spring 08 2008	FOEN (MBU, LA), EBP	L	P	62 63

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	from 1990 until 2004. The Party is encouraged to review the activity data and check its consistency at the industry level.						
16	IP, The CRF and the NIR are not fully consistent where the following are concerned: methods and emission 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 ethylene 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 adequately described in the NIR, and the Party is recommended to improve the transparency of its reporting by including descriptions of industrial processes and technology.	H	Spring 08	EBP, FOEN	M	pR	42
17	IP & QA/QC, The QA/QC procedure is in place and is currently being implemented using the tier 1 method. Improvements are needed in the analysis of the integrity of activity data and emission factors from the data suppliers. The Party is recommended to cross-check its data between the EMIS database, the Federal Office for the Environment (FOEN) internal GHG inventory files, the NIR and the CRFs. It is also recommended to undertake a thorough review of its internal documentation and organization of the EMIS database in order to ensure that up-to-date AD, EFs and background information are reported in the NIR and the CRF tables. A quality assurance plan to	M	Spring 08	FOEN (MBU, HSO, LF) NIR: EBP/INFRAS	M	pR	44

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	check/verify source-specific AD and EFs of key sources should be implemented.						
18	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	Spring 08	FOEN (MBU, LA, HSO)	L	P	49
19	IP, Metal production: Aluminium – CO ₂ : The emission factor used is country-specific at 1.6 tonne CO ₂ per tonne of aluminium used. CO ₂ is generated from the oxidation of the anode in the electrolysis process and the calculation is based on the amount of anode used in the material, which is 0.43 tonne of coke per tonne of aluminium. This EF was provided by Swiss foundries in 1990 and is assumed to be constant up to 2004. It is recommended that the Party verify the validity of the EFs supplied by the plant.	M	Spring 08	FOEN (MBU, LA, HSO)	L	F	51
20	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	Spring 08	Carbotech - EBP	L	NS	53
21	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	2008	Carbotech	M	NS	58
22	IP, Solvent and other product use – CO ₂ : The Party is encouraged to continually improve the quality of its	L	Permanent	Carbotech	L	pR	59

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	NIR indicates. The low EF is due to the use of high organic contaminants of scrap materials used as feed during steel production, which aids in the reduction process. The Party is encouraged to use the tier 1 method as described in the NIR and to describe how the organic contaminants have affected the EF that is reported.						
26	Solvent and Other Product Use, Designation of a FOEN expert responsible for the “Solvent and Other Product Use” sector.	M	2008	FOEN (FP)	L	NS	
27	Agriculture, Revision of animal categories to achieve consistency for CH ₄ and N ₂ O reporting	H	Spring 07	ART, INFRAS, FOEN (FP)	M	F	
28	Agriculture, Revision of uncertainty estimates However, the results of the uncertainty analysis do not seem to be used for setting the priorities of the inventory development plan. Switzerland is therefore encouraged to use the results of the uncertainty analysis when establishing the inventory development plan.	M	Spring 08	ART, INFRAS FOEN (SA, FP)	M	pR	73
29	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	pR	71
30	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	P	72
31	Agriculture, Enteric fermentation – CH ₄ , Livestock classification:	M	Spring 08	ART, INFRAS	M		

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	<p>Switzerland's detailed livestock classification is designed to reflect country-specific conditions; however, neither the NIR nor the CRF gives a clear explanation of each type of livestock. Emissions from non-dairy cattle, suckler cow calves and milk-fed calves are reported as "IE" and "NO" from 1990 to 1998. The ERT recommends that Switzerland provide an explanation of each livestock category in the NIR and ensure completeness by providing the explanations in CRF table 9(a), especially for its use of the notation keys "IE" and "NO" for non-dairy cattle, suckler cow calves and milk-fed calves.</p> <p>There are notable differences between the data from national statistics and the data of the Food and Agriculture Organization of the United Nations (FAO). Even though data from national statistics should be accurate, the reason for the differences should be assessed as part of a source-specific QA/QC procedure. The ERT recommends Switzerland to assess its national AD against the FAO data, in line with source-specific QA/QC of the IPCC good practice guidance (page 4.22, chapter 4.1.3).</p> <p>Under 10 Other (livestock) in CRF tables 4s1, 4.A and 4.B(a)s1, there are many columns for kinds of livestock. This reporting, with this level of disaggregation, may be a cause of misunderstanding. The ERT recommends Switzerland to reconsider how these very detailed disaggregated data are aggregated to be put into the CRF.</p>			ART		pR	75
				ART		F	76
				ART		F	77
32	Agriculture, Manure management – CH ₄ and N ₂ O: Source-specific QA/QC has been conducted; how-	M	2008	ART	M	pR	79

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	ever, 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.						
33	<p>Agriculture, Agricultural soils – N₂O:</p> <p>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 country-specific EFs and the default IPCC EFs.</p> <p>In the CRF there are many data gaps which are pointed out in the synthesis and assessment report – part II. However, in the original calculation process (Switzerland's Excel spreadsheet), such gaps are not found (e.g. FracNCRO is reported as "not available" ("NA") in the CRF, but in the Party's original calculations figures are given). The ERT presumes that an error of conversion unit occurred when the data were exported to EMIS. The ERT recommends the Party to conduct comparisons (e.g., of units) between EMIS and the result of the original calculation processes as a part of routine QA/QC and to archive the result.</p> <p>N₂O emissions reported under 4.D.4 Other amounted 24.0 Gg CO₂ equivalent in 2004. For the period 1990–1994, they are reported as "IE", but this is not properly explained either in the NIR or in the CRF. The ERT recommends to give a clear explanation of "IE" both in the NIR and in the CRF.</p>	M	2008	<p>ART</p> <p>FOEN (MBU, HSO), ART</p> <p>ART, INFRAS</p>	M	<p>P</p> <p>F</p> <p>pR</p>	<p>80</p> <p>81</p> <p>82</p>

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
34	Agriculture, Field burning of agricultural residues – CH ₄ and N ₂ O: The ERT encourages the Party not to report same values for all years but to calculate year by year.	L	2009	FOEN (MBU, LA), ART	M	NS	83
35	LULUCF, Definition of Forest; concomitant revision of CC categories	H	Spring 08	FOEN (THE, SA), Meteotest	H	F	
36	LULUCF. Methodological adjustments; implementation of new AREA data and of the results of National Forest Inventory III	H	NFI III depending on data availability (2008/09)	FOEN (SA, THE), Meteo-test, Sigmaplan	H	pR	
37	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.	L	2009/10	FOEN (THE, SA), ART	M	NS	8
	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.	H	2009/10	FOEN (THE/RN, SA), ART	H	pR	89, 93
	The organic matter above mineral soil is reported for mineral soils, which is not consistent with the IPCC good practice guidance for LULUCF. The Party does not carry out quantitative uncertainty analysis for categories in the LULUCF sector. The ERT therefore recommends the Party to report organic matter above mineral soil for dead organic matter, and to quantify the uncertainties of the key categories in its future submissions.					F pR	

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
38	<p>LULUCF, Forest land remaining forest land – CO₂:</p> <p>The attribution of a conversion period of one year for “Land converted to Forest Land” is not consistent with the IPCC good practice guidance for LULUCF, which defines the land-use conversion period as 20 years or longer. The Party’s current attribution of a conversion period of one year tends to overestimate CO₂ removals for forest land remaining forest land. The ERT recommends the Party to explore further whether the available historical data would support the use of a minimum of 20 years as the conversion period to distinguish the subcategories under forest land.</p> <p>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.</p>	<p>H</p> <p>M</p>	<p>Autumn 2007</p> <p>2009</p>	<p>FOEN (SA, THE/RN, RV), Meteotest</p> <p>FOEN (THE)</p>	<p>H</p> <p>M</p>	<p>F</p> <p>P</p>	<p>90</p> <p>92</p>
39	<p>LULUCF, Cropland remaining cropland – CO₂:</p> <p>The tier 2 method in the IPCC good practice guidance for LULUCF and country-specific factors are used for calculating carbon emissions from organic soil, but they are not transparently documented in the NIR.</p> <p>Carbon stock changes in both living biomass and mineral soils are as-</p>	M	Spring 09	ART	M	<p>F</p> <p>pR</p>	94

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	sumed to be zero. The ERT therefore recommends Switzerland to estimate and report carbon stock changes in mineral soils for this category and to improve the documentation on this in its next NIR.						
40	LULUCF, Land converted to cropland, land converted to grassland and land converted to settlements – CO ₂ : The ERT recommends the Party to improve its documentation in the NIR concerning the estimation of carbon stock changes in these categories.	L	Spring 08	ART NIR: BR	L	F	95
41	LULUCF, Grassland remaining grassland – CO ₂ : Tier 2 methods in the IPCC good practice guidance for LULUCF and country-specific emission factors are used for estimating carbon emissions from organic soil, but they are not transparently documented in the NIR. Carbon stock changes in both living biomass and mineral soils are assumed to be zero. The ERT therefore recommends Switzerland to estimate and report carbon stock changes in living biomass and mineral soils for this category and to improve the documentation in its NIR.	M	Spring 09	ART NIR: BR	M	F pR	97
42	LULUCF, Biomass burning – CH ₄ and N ₂ O: The country-specific emission factor for CH ₄ emissions from forest fire is much lower than the IPCC default value. The ERT therefore recommends the Party to reconsider this EF in its future submissions.	M	Spring 08	FOEN (SA, MBU)	L	F	98
43	Waste: Domestic review	H	2007	FOEN (FP)	H	P	
44	Waste Designation of a FOEN expert responsible for the Waste sector.	M	Spring 08	FOEN (FP)	L	NS	

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
45	<p>CRF table 9(a) “IE”-table</p> <p>Waste – Sector overview:</p> <p>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: CH₄ from industrial waste water (included in domestic waste water; and explanation is provided in the NIR); N₂O from industrial waste; and N₂O and CH₄ 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 include the explanation for the allocation of these emissions in the CRF and in the NIR.</p>	H	Spring 08	FOEN (MBU, HSO)	M	pR	100
46	<p>Waste – Sector overview:</p> <p>Some minor gaps in the CRF and inconsistencies between the NIR and the CRF relating to the reporting of methods and emission factors used were identified for the years 1990 and 2004. These include CO₂ emissions from waste incineration – no information is provided in CRF table summary 3; and CH₄ 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.</p>	M	Spring 08	<p>CRF: FOEN (MBU, HSO)</p> <p>NIR: EBP</p>	L	pR	102
47	<p>Waste, Solid waste disposal sites – CH₄:</p> <p>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 estimating parameters such as DOC, k, waste composition and historical activity data; (b) the values used for waste composition, DOC and k by</p>	M	2008	EBP	M	pR	106

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	<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>			FOEN (MBU, HSO)			107
48	<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	2008	EBP	M	NS	108 109
49	<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</p>	M	Spring 08	EBP	L	pR	110

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	be helpful to include the sources of activity data or the assumptions used in the Party's next NIR.						
50	QA/QC, Further development and implementation of the quality management system	H	Spring 08	FOEN (SA)	H	F	113a
51	QA/QC: Transparency, (Online) documentation of NIR-“Expert Estimates” in accordance with IPCC expert judgment procedure	M	Spring 08	FOEN (SA), INFRAS, EBP, Meteotest (Lead Authors)	M	pR	21aii, 113c
52	QA/QC: Transparency, Updating and online documentation of EMIS background datasheets. Waste – Sector overview: The ERT strongly recommends Switzerland to provide a more detailed description of the methodologies used, including the assumptions made and the rationale for them, especially for the key categories. It is further recommended that a table be included as an annex to the NIR with data for the most important parameters, the original reference source of each, and an explanation of how they are selected or, if applicable, how they are estimated.	M	Spring 08	FOEN (MBU, HSO, SA) NIR: EBP	H	P	10, 21i, 113b 101
53	CRF table 9(a) “IE”-table QA/QC: Transparency, The ERT found that the reporting of the notation keys “not estimated” (“NE”) and “included elsewhere” (“IE”) is not always transparent, and corresponding explanations in CRF table 9(a) are not provided. The ERT encourages Switzerland to provide explanations of all cases when the notation keys are used.	H	Spring 08	FOEN (MBU, HSO)	M	pR	11, 21aiii, 100, 113b
54	QA/QC: Transparency, Methodologies are generally well described in the NIR, but in a number of cases the information reported is not sufficient to explain the assumptions made in choosing methodologies or	M	2008	INFRAS / EBP	M	pR	12

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus (4/ 08)	ARR §
	estimating activity data and emission factors (e.g. in energy, industrial processes, agriculture, waste). The ERT recommends that Switzerland improve the documentation on methodology in the NIR, particularly for the key categories.						
55	QA/QC: Transparency, More detailed elaboration on the EMIS data base in the NIR. Or provision of a manual.	M	2008	FOEN (MBU)	M	pR	
56	QA/QC, IDP procedure to be included in time schedule (incl. chart of process: internal review and external reviews and checklists and QC Tier 2 procedures and feedback from colleagues are collected by QA/QC officer and prepared for discussion in the core group)?	M	Spring 08	FOEN (SA)	L	F	
57	Completeness: CRF Tables 7, 8, 9: Completion of information on key categories, recalculations and notation keys.	H	Spring 08	FOEN (MBU, LA, HSO, SA)	M	pR	8, 21a ⁱⁱⁱ , 113b
58	Consistency: CRF-NIR: More detailed method description in CRF (consistent with NIR).	H	Spring 08	FOEN (HSO, MBU), INFRAS, EBP, Carbo-tech	M	pR	
59	CC Issue, Agriculture (brd) not represented in Core Group. Why?	H	with immediate effect	FOEN (FP)	L	F	
60	CC Issue, Mandate for FOEN Core Group (cf. last Core Group minutes).	L	Spring 08	FOEN (FP)	L	NS	
61	CC Issue: Co-operation with SFOE: Reporting to IEA and UNFCCC (standardisation).	M	2008	FOEN (FP)	M	P	
62	CC Issue: Performance of a Risk Analysis for the NIS.	H	2008	FOEN (FP)	M	NS	
63	Request Energy, E-Mail-Exchange Sole Xam Mar - LA (26.07.07): Fugitive emissions from natural gas, doubts about EF.	H	Spring 08	FOEN (LA)	M	P	

References

- Basics 2007:** CO₂-Emissionen 1990-2006 von Industrie und Dienstleistungen. Teil Industrie. Short documentation, February 2005. Updated 17.12.2007, including Excel-files for update of year 2006. Basics AG, Zürich
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- Brassel, P., Brändli, U.-B. 1999:** Schweizerisches Landesforstinventar. Ergebnisse der Zweitaufnahme 1993-1995. [Results of the second Swiss national forest inventory 1993-1995]. Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft, Birmensdorf. Bundesamt für Umwelt, Wald und Landschaft, Bern. Haupt, Bern, Stuttgart, Wien. [available in German, French and Italian]
- Carbotech 2008:** Swiss Greenhouse Gas Inventory 2006: PFCs, HFCs and SF₆ Emissions. Confidential report no. 251.09 for internal use on behalf of the Federal Office for the Environment, Bern. Basel.
- Cemsuisse 2007:** Jahresbericht cemsuisse 2006. [Rapport annuel 2006]. Association of the Swiss Cement Industry, Bern.
www.cemsuisse.ch/file/Jahresbericht_2006.pdf [German and French] [01.03.2008]
- CEPE 2007:** Energieverbrauch und CO₂-Emissionen des Dienstleistungssektors in der Schweiz: Aufdatierung für das Jahr 2006. Short documentation for FOEN (17.12.2007). Centre for Energy Policy and Economics (CEPE), Zürich
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- EAFV/BFL (eds.) 1988:** Schweizerisches Landesforstinventar. Ergebnisse der Erstaufnahme 1982-1986. [Results of the first Swiss national forest inventory 1982-1986]. Eidgenössische Anstalt für das forstliche Versuchswesen, Berichte Nr. 305.
- eicher+pauli 2006:** Review of the National Greenhouse Gas Inventory (May 2005 Submission). Categories Energy and Industrial Processes. Final Report. Dr. Eicher+Pauli AG, Liestal.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- EMIS 2005/(NFR-Code):** Comments to EMIS database. Internal documents. Federal Office for the Environment, Bern.
To find the EMIS comment that belongs to the specified NFR Code, see NIR-Table 168 in FOEN 2008 [available in German only].
- EMPA 1999:** Written communication from Dr. H.W. Jäckle (EMPA, Dübendorf) to Andreas Liechti (FOEN, Bern), 09.03.1999.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- EMPA 2007:** FOCAWIN Fossil carbon dioxide emissions from waste incineration facilities. Dübendorf, Bern. [German]
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- EV 2007:** Jahresbericht 2006. Erdöl-Vereinigung [Rapports annuel 2006. L'Union Pétrolière]. Zürich.
<http://www.erdoel.ch/doc/300319850511072007.pdf> [German] [01.03.2008]
<http://www.erdoel.ch/doc/314815700111072007.pdf> [French] [01.03.2008]
- FOCA 2006a:** GHG emissions of Swiss civil aircraft in 1990, 1995, 2000, 2002, 2004 and 2005: data, proceeding and description of the calculations. Written communication from Theo Rindlisbacher (FOCA, Bern) to Paul Filliger (FOEN, Bern), 17.11.2006.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>

- FOCA 2007** GHG emissions of Swiss civil aircraft in 2006. Written communication from Theo Rindlisbacher (FOCA, Bern) to Beat Müller (FOEN, Bern), 03.12.2007.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- FOEN 2006:** Switzerland's Greenhouse Gas Inventory 1990–2004, National Inventory Report and CRF tables 2006. Submission of 10 November 2006 to the United Nations Framework Convention on Climate Change. Federal Office for the Environment, Bern.
<http://www.environment-switzerland.ch/climatereporting/03211/index.html?lang=en>
- FOEN 2006c:** Prozess EMIS (Luftschadstoff-Emissions-Inventar der Schweiz). Beschrieb des Prozesses (= Handbuch zur EMIS-Datenbank (Entwurf)). Internes Dokument. [Manual to EMIS database (draft). Internal document]. Federal Office for the Environment, Bern.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- FOEN 2006e:** Description of the Swiss QA/QC system. Supplement to the Greenhouse Gas Inventory 1990–2004. Submission of 10 November 2006 to the United Nations Framework Convention on Climate Change. Federal Office for the Environment, Bern.
<http://www.bafu.admin.ch/climatereporting/03211/index.html?lang=en>
- FOEN 2006g:** Comparison of CRF and IEA CO₂ emission data for the Energy sector 1990–2003. Internal report. Federal Office for the Environment, Bern.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- FOEN 2006h:** Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol. Federal Office for the Environment, Bern. Including the Update following the UNFCCC review.
<http://www.environment-switzerland.ch/climatereporting/03211/index.html?lang=en>
- FOEN 2007e:** Abfallmengen und Recycling 2006 im Überblick. Federal Office for the Environment, Bern.
<http://www.bafu.admin.ch/abfall/01517/01519/05042/index.html?lang=de> [01.03.2008]
- FOEN 2008:** Switzerland's Greenhouse Gas Inventory 1990–2006, National Inventory Report and CRF tables 2008. Submission of 15 April 2008 under the United Nations Framework Convention on Climate Change and under the Kyoto Protocol. Federal Office for the Environment, Bern.
To be published on <http://www.climatereporting.ch>
- FOEN 2008b:** Jahrbuch Wald und Holz 2007. Umwelt-Wissen Nr. 0807. [Annuaire La forêt et le bois 2007. Connaissance de l'environnement no 0807]. Federal Office for the Environment, Bern. [German and French]
To be published on <http://www.environment-switzerland.ch/publikationen>
- FOEN 2008c:** Checklists (QC Tier 1) completed for the GHG Inventory submitted on 15 April 2008. To be published on
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- INFRAS 2007:** Schadstoffemissionen und Treibstoffverbrauch des Offroad-Sektors. Unpublished draft version to FOEN. Bern, November 2007.
- IPCC 2000:** Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (IPCC GPG). Intergovernmental Panel on Climate Change.
<http://www.ipcc-nggip.iges.or.jp/public/gp/english/> [01.03.2008]
- OECD/IEA 2005:** CO₂ emissions from fuel combustion 1971–2003. IEA Statistics, Paris.
- Reimann, S., Folini, D., Vollmer, M.K., Hill, M., Steinbacher, M., Buchmann, B. 2006:** Kontinuierliche Messung von halogenierten Treibhausgasen auf dem Jungfraujoeh (HALCLIM-2). Schlussbericht, 31. Mai 2006. EMPA Projekt-Nr: 201'203.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>

- SAEFL 2004:** Luftschadstoff-Emissionen des Strassenverkehrs 1980-2030. [Émissions polluantes du trafic routier de 1980 à 2030]. [Pollutant emissions from road transport 1980-2030]. Schriftenreihe Umwelt Nr. 355. Swiss Agency for the Environment, Forests and Landscape, Bern.
http://www.hbefa.net/documents/sru_355_d.pdf [German] [01.03.2008]
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en> [English]
- SFOE 2001:** Schweizerische Gesamtenergiestatistik 2000. Statistique globale suisse de l'énergie 2000. Swiss Federal Office of Energy, Bern.
http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=fr&name=fr_166628788.pdf [German and French] [01.03.2008]
- SFOE 2007:** Schweizerische Gesamtenergiestatistik 2006. Statistique globale suisse de l'énergie 2006. Swiss Federal Office of Energy, Bern.
http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=de&name=de_237460077.pdf [German and French] [01.03.2008]
- SFSO 1997:** Digital terrain model („Geländedaten“, 100m-Raster). Swiss Federal Statistical Office, GEOSTAT, Neuchâtel.
<http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/gelaendedaten.html> [01.03.2008]
- SFSO 2000:** Einblicke in die schweizerische Landwirtschaft. Swiss Federal Statistical Office (SFSO), Neuchâtel.
- SFSO 2000a:** Digital soil map 1:200'000 („Bodeneignungskarte“, BEK). Swiss Federal Statistical Office, GEOSTAT, Neuchâtel.
http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/digitale_bodeneignungskarte.html [01.03.2008]
- SFSO 2002:** Einblicke in die schweizerische Landwirtschaft. Swiss Federal Statistical Office, Neuchâtel. [available in German and French]
- SFSO 2003:** Statistisches Jahrbuch der Schweiz 2003 [Statistical Yearbook of Switzerland 2003]. Swiss Federal Statistical Office, Neuchâtel [in German and French]
http://www.bfs.admin.ch/bfs/portal/en/index/dienstleistungen/publikationen_statistik/statistische_jahrbuecher/stat_jahrbuch_der.html [01.03.2008]
- SFSO 2005:** Swiss Land Use Statistics (Arealstatistik Schweiz). Supply of hectare-based data of the first survey (Arealstatistik 1979/85, ASCH1) and second survey (Arealstatistik 1992/97, ASCH2). Swiss Federal Statistical Office, Neuchâtel.
http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen_quellen/blank/blank/arealstatistik/01.html [01.03.2008] and
<http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/nomenklaturen/blank/blank/arealstatistik/01.html> [01.03.2008]
- SFSO 2006b:** Wood production in Switzerland 1975-2005. Swiss Federal Statistical Office, Neuchâtel.
<http://www.agr-bfs.ch> [official text in German, English, French and Italian] [01.03.2008]
- SFSO 2007a:** Supply of provisional data of the AREA Land Use Statistics. Written communication from Felix Weibel and Jürg Burkhalter (SFSO, Neuchâtel) to Helmut Recher (Sigmaplan, Bern), 29.06.2007.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- Soliva, C.R. 2006:** Report to the attention of IPCC about the data set and calculation method used to estimate methane formation from enteric fermentation of agricultural livestock population and manure management in Swiss agriculture. On behalf of the Federal Office for the Environment, Bern. ETH Zurich, Institute of Animal Science.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>

- Soliva, C.R. 2006a:** Dokumentation der Berechnungsgrundlage von Methan aus der Verdauung und dem Hofdünger landwirtschaftlicher Nutztiere. Im Auftrag des Bundesamtes für Umwelt, Bern. ETH Zürich, Institut für Nutztierwissenschaften.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- SQS 2008:** IQNet and SQS ISO 9001:2000 Certificate. Certified area: National Inventory System. Field of activity: Greenhouse Gas Inventory and CO₂ Statistics. Registration Number: CH-34433. Issued on 04.01.2008
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- Swiss Confederation 1983:** Loi fédérale du 7 octobre 1983 sur la protection de l'environnement (Loi sur la protection de l'environnement, LPE). As at 23 August 2005.
http://www.admin.ch/ch/f/rs/c814_01.html [official text in German, French and Italian] [01.03.2008]
- UNFCCC 2006a:** Guidelines for National Systems under Article 5, paragraph 1, of the Kyoto Protocol. FCCC/KP/CMP/2005/8/Add.3, Decision 19/CMP.1, 30 March 2006.
<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf> [01.03.2008]
- UNFCCC 2007:** Report of the individual review of the greenhouse gas inventory of Switzerland submitted in 2006. FCCC/ARR/2006/CHE, 31 July 2007.
<http://unfccc.int/resource/docs/2007/arr/che.pdf> [01.03.2008]
- UNFCCC 2007a:** Report of the review of the initial report of Switzerland. FCCC/IRR/2007/CHE, 17 August 2007.
<http://unfccc.int/resource/docs/2007/irr/che.pdf> [01.03.2008]
- VTG 2007:** Consumption of aviation fuel and jet kerosene of Swiss military aircraft in 2006. Written communication from Urs Baserga (VTG, Dübendorf) to Paul Filliger (FOEN, Bern), 19.11.2007.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- Xinmin, J. 2004:** Die Methanemissionen der Schweizer Gasindustrie. Abschätzung der Gasemissionen [Methane emissions from Swiss gas industry. Estimation of methane emissions]. Gas, Wasser, Abwasser 5/2004: 337-345.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>

Annex

A. NIS Groups

A1. Composition of NIS Groups

Status April 2008. Confer Figure 2 for a schema 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)
Rolf Manser (Head of Forest Division)
Arthur Mohr (Head of the Climate, Economics, Environmental Observation Division)
Markus Nauser (Climate, Economics, Environmental Observation Division; NIS)
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)

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)
Leippert Fabio (FOEN; Industrial Processes, Solvents)
Beat Müller (FOEN; NIC; Energy)
Beat Rihm (Meteotest; NIR Lead Author)
Andreas Schellenberger (FOEN; QA/QC)
Markus Sommerhalder (EBP; NIR Lead Author)
Esther Thürig (FOEN/WSL; LULUCF)

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), Agriculture)

Beat Rihm (Meteotest; LULUCF)

Markus Sommerhalder (EBP; Energy (excluding Transport), Industrial Processes, Solvents, Waste)

Swiss GHG Inventory Working Group

All members of the GHG Inventory Core Group

FOEN

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

Adrienne Grêt-Regamey (FOEN, Forest Division)

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

Michael Hügi (FOEN, Waste and Raw Materials Division)

Arthur Mohr (FOEN, Climate, Economics, Environmental Observation Division)

Markus Nauser (FOEN, Climate, Economics, Environmental Observation Division)

Nele Rogiers (FOEN, Forest Division)

Richard Volz (FOEN, Forest Division)

Federal Administration (besides FOEN) and Institutions

Urs Baserga (Swiss Air Forces)

Pia Baumann (SFOE)

Ladislav Dolecek (SFOE)

Jens Leifeld (ART)

Edgar Kaufmann (WSL)

Reto Burkard (FOAG)

Theo Rindlisbacher (FOCA)

Felix Weibel (SFSO)

Ad Hoc Experts (on request):

Roman Bolliger (EBP)

Fredy Dinkel (Carbotech)

Stefan Kessler (INFRAS)

Christoph Könitzer (Sigmaplan)

Lukas Mathys (Sigmaplan)

Ulrich Roth (Sigmaplan)

Myriam Steinemann (INFRAS)

et al.

A2. Meetings of NIS Groups (2003-2008)

1. Meetings of the National System Inventory Supervisory Board

Minutes of

- 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

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

3. Meetings of the GHG Inventory Working Group

Presentations and documents of

- 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

- 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 further 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 retrieve the processed land use data delivered by the Federal Statistical Office to Sigmaplan for an arbitrary inventory year.

⁴ Flow charts on page 2 are identical for all six sectors.

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](#) (Core Group)
- [NIS Human Resources](#)
- [Citation Guide](#)
- [Compilation](#) of NIS-References in Use
- [Training](#)

Help

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

Management – Basics

Quality Objectives

Corporate Principles
FOEN

Initial Report

NIS:
a) [Schema](#)
b) [Groups](#)

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

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](#)

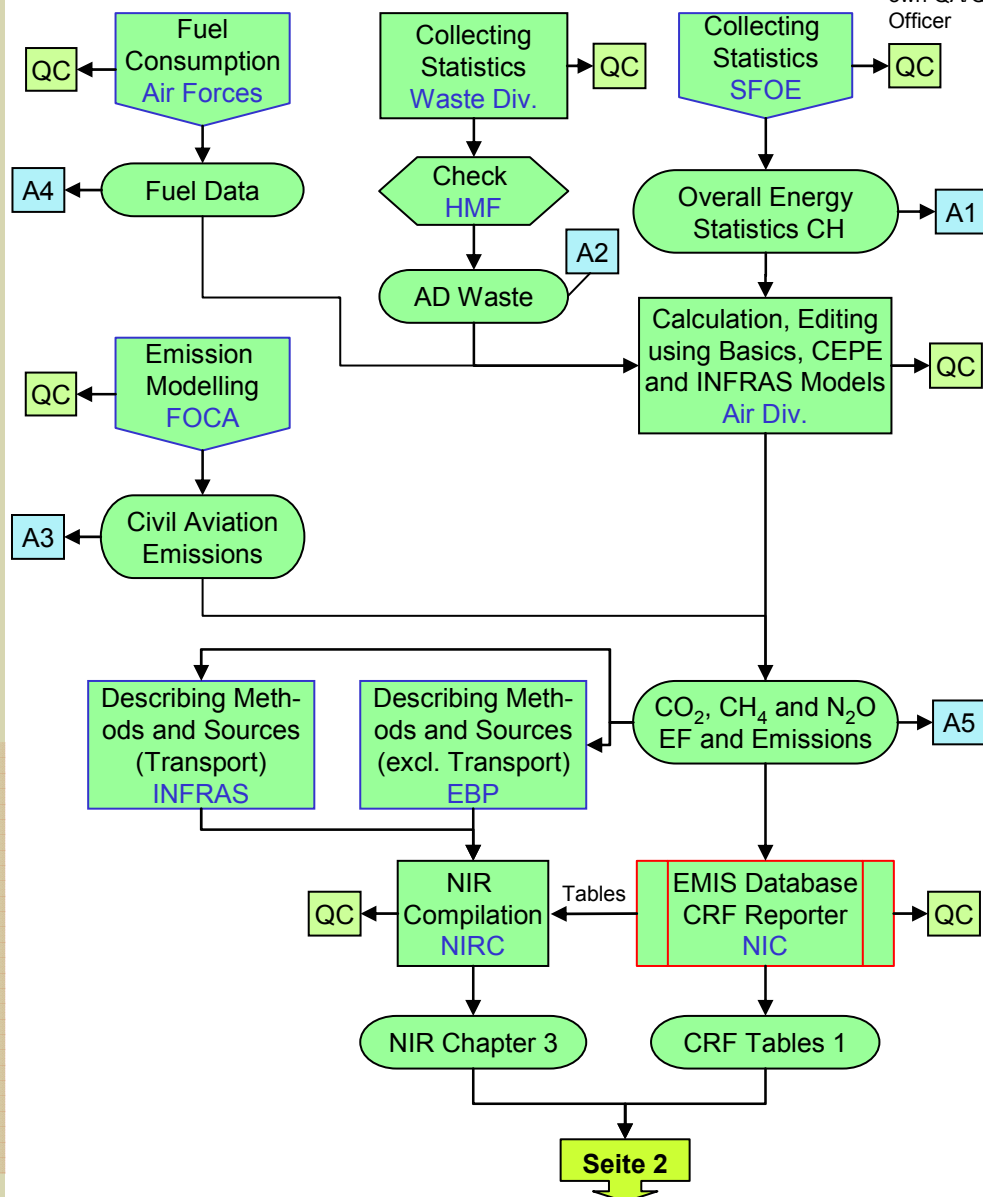
National System

- [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)



Navigation Energy

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

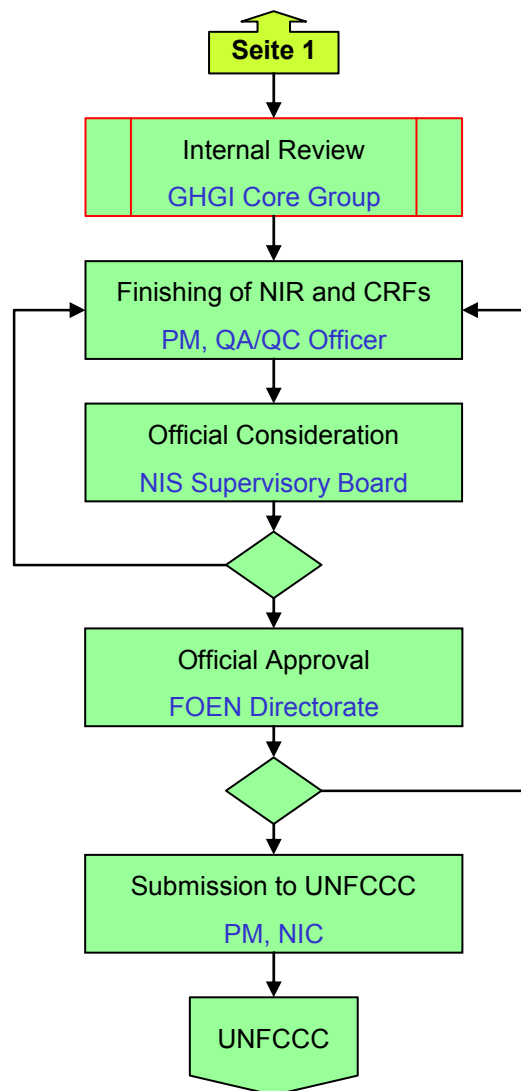
National System

- [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



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)

Seite

1

2



Navigation Industrial Processes

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

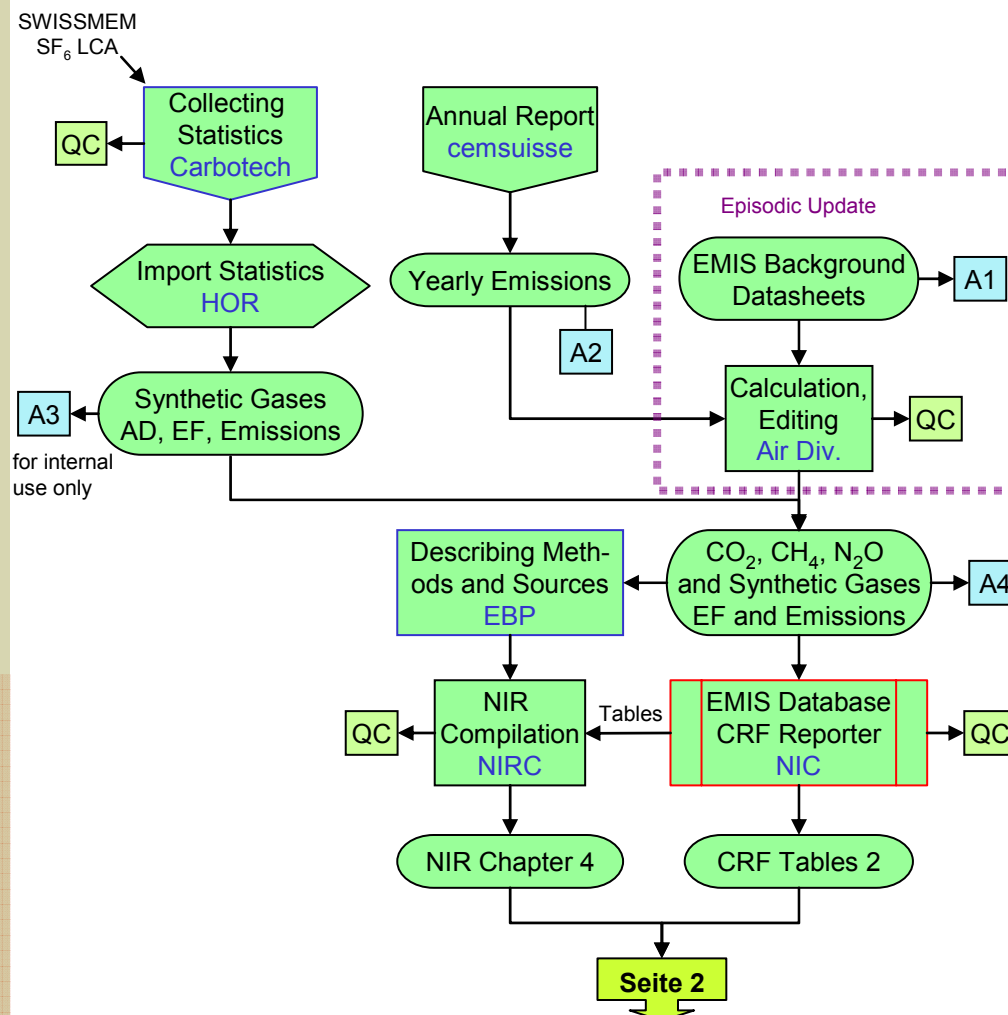
National System

- [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

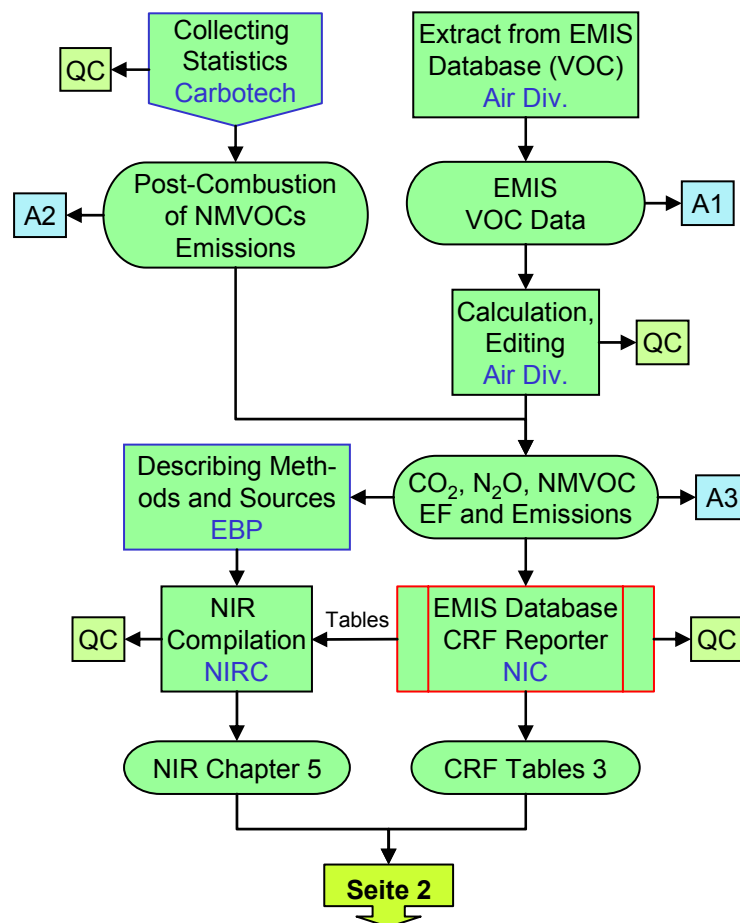
- [Quality Manual – Home](#)
- [Sector Solvents on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

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](#)

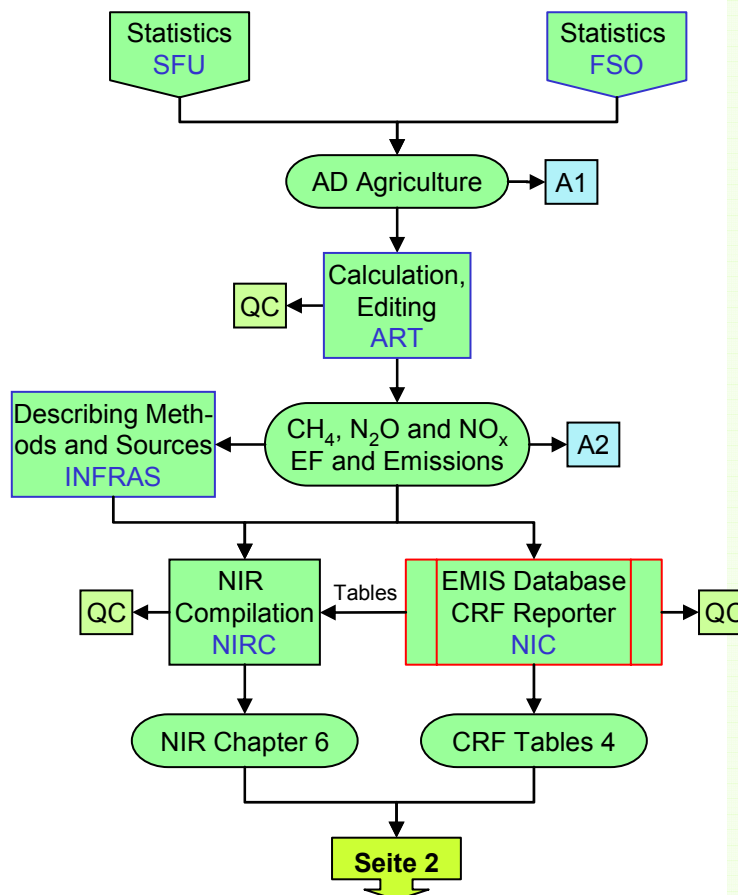
National System

- [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: 080207



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...

An Uncertainty Analysis for Agriculture is in progress.

Seite

1

2

**Navigation LULUCF**

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

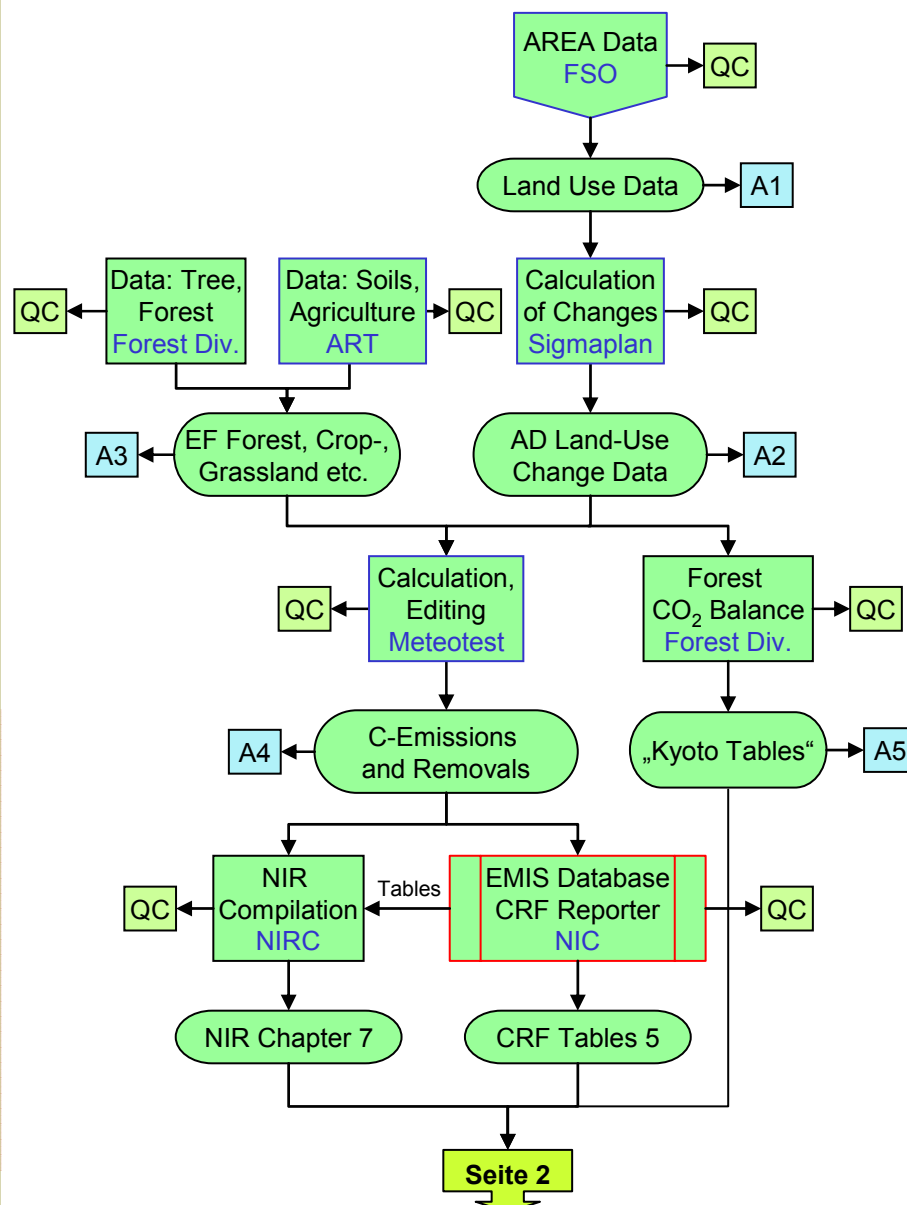
National System

- [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: 080207

**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 2009.

Seite

1

2

Navigation Waste

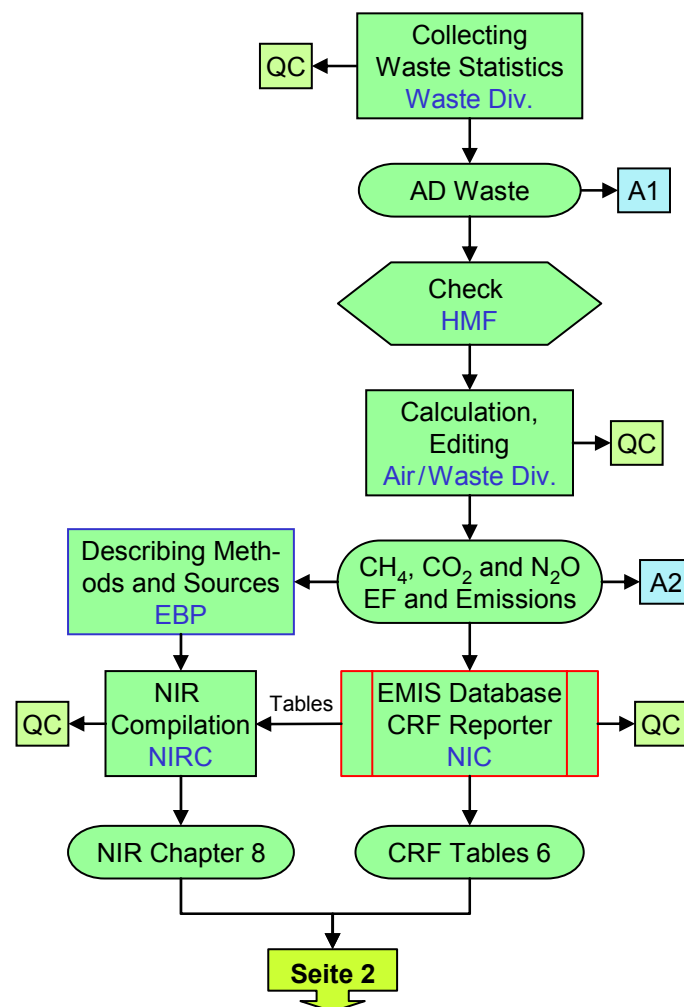
- [Quality Manual – Home](#)
- [Sector Waste on the GHGI Web Platform](#)
- [Meetings](#)
- [Recent Correspondence](#)
- [Recent Methodological Development](#)

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 |



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 2008.

Seite

1

2



GHG Inventory Monitoring Protocol

Inventory Development Plan



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](#)

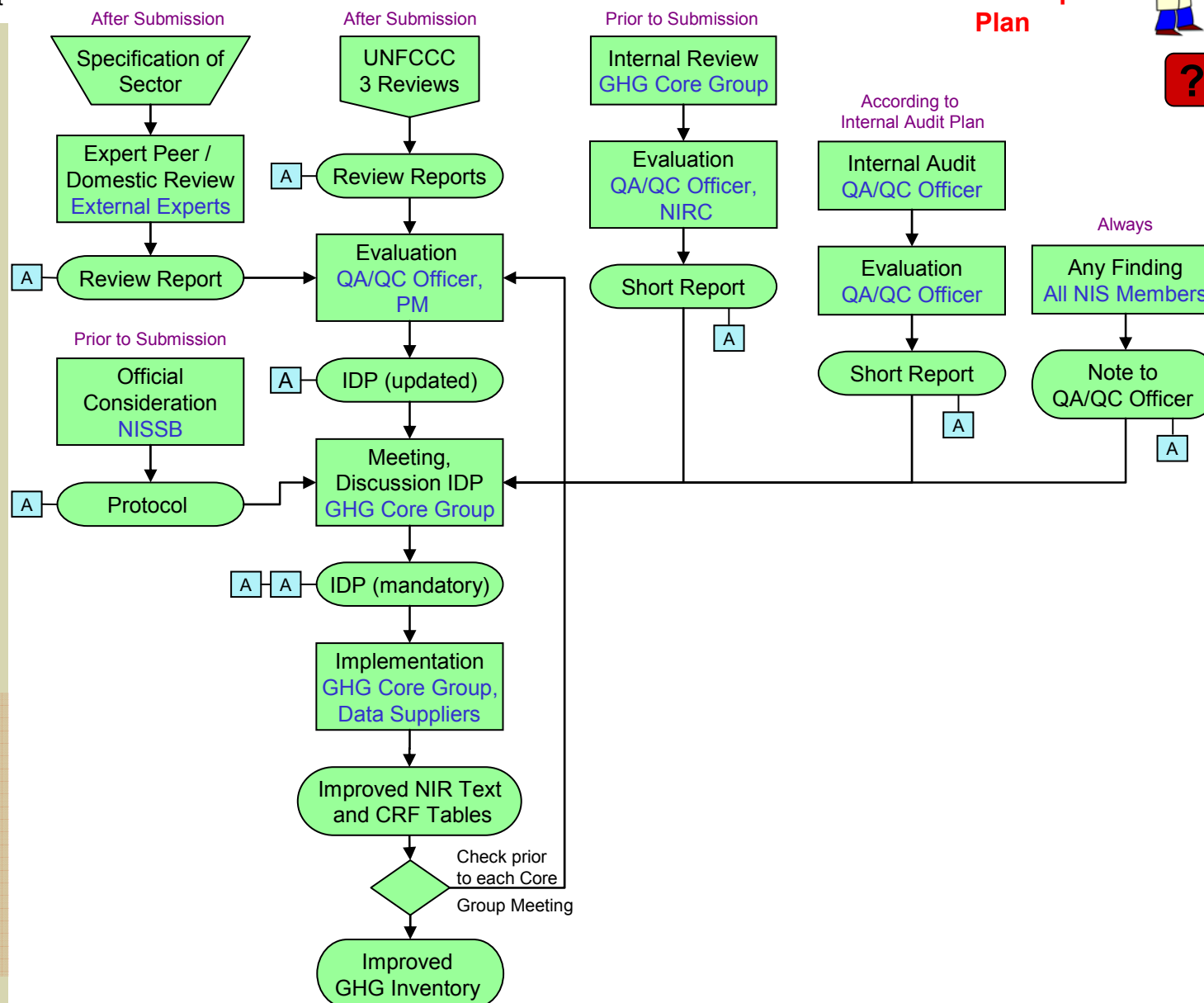
Legend and Abbreviations



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

Responsible: [SA](#); last update: 080201





Navigation

- [Quality Manual – Home](#)

National System

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

Legend and Abbreviations



Archiving

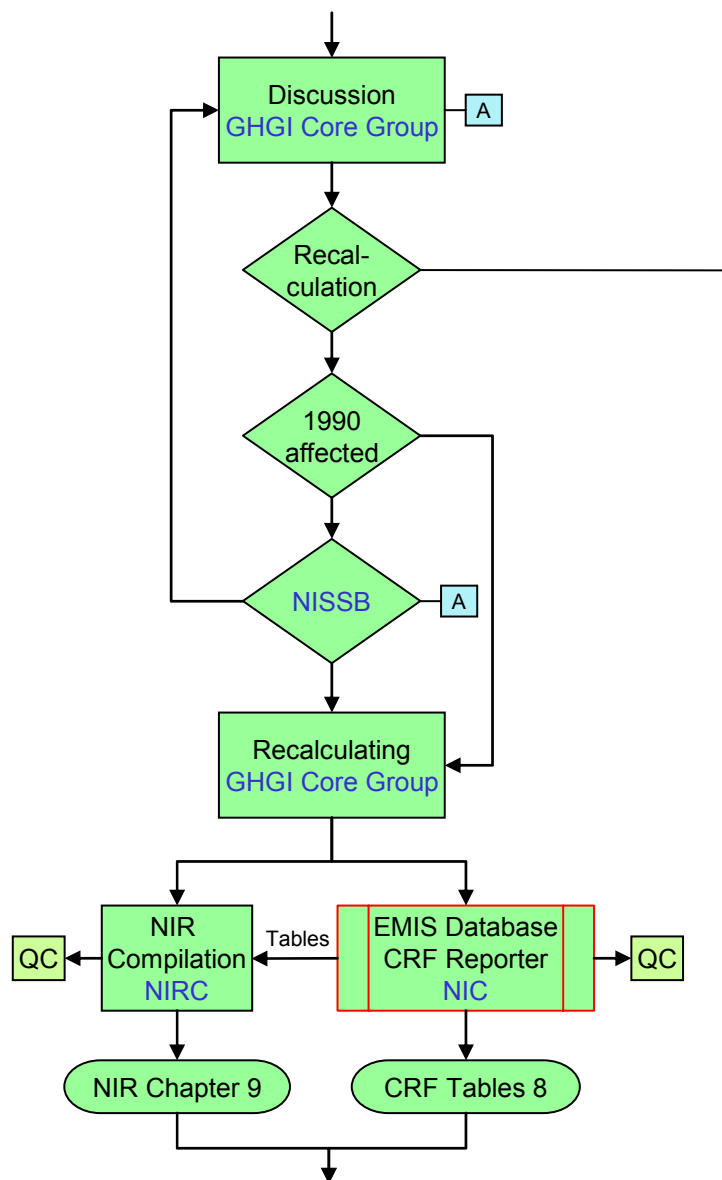


Tier 1 Checklists

- 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



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 Oct 2007:

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

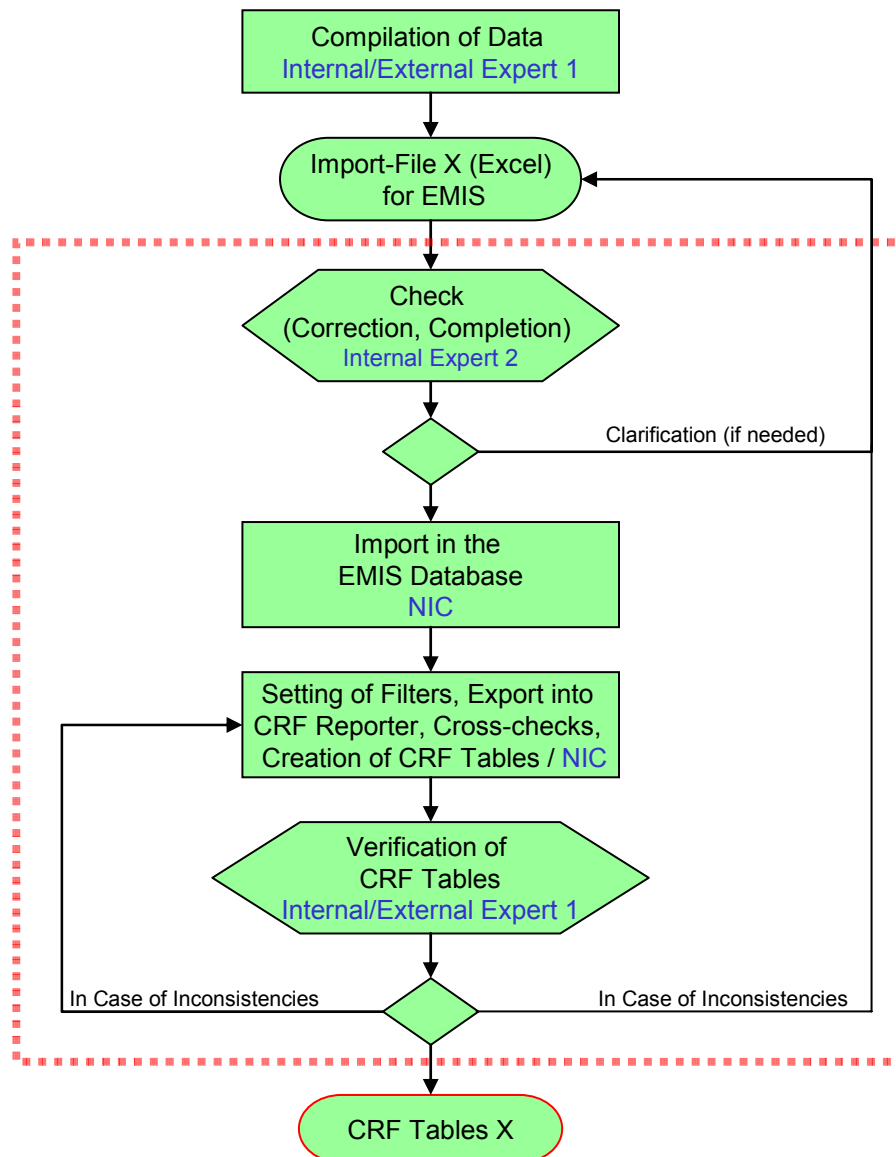
Internal Expert 2:
LA, MBU, HMF, HSO, SA

Legend and Abbreviations

- CRF Common Reporting Format
- NIC National Inventory Compiler

Responsible: [SA](#), [MBU](#);
last update: 071007

Sector X



GHG Inventory Monitoring Protocol

EMIS: Data Im-/Export



Creation of CRF Tables Subprocess

More about EMIS Database

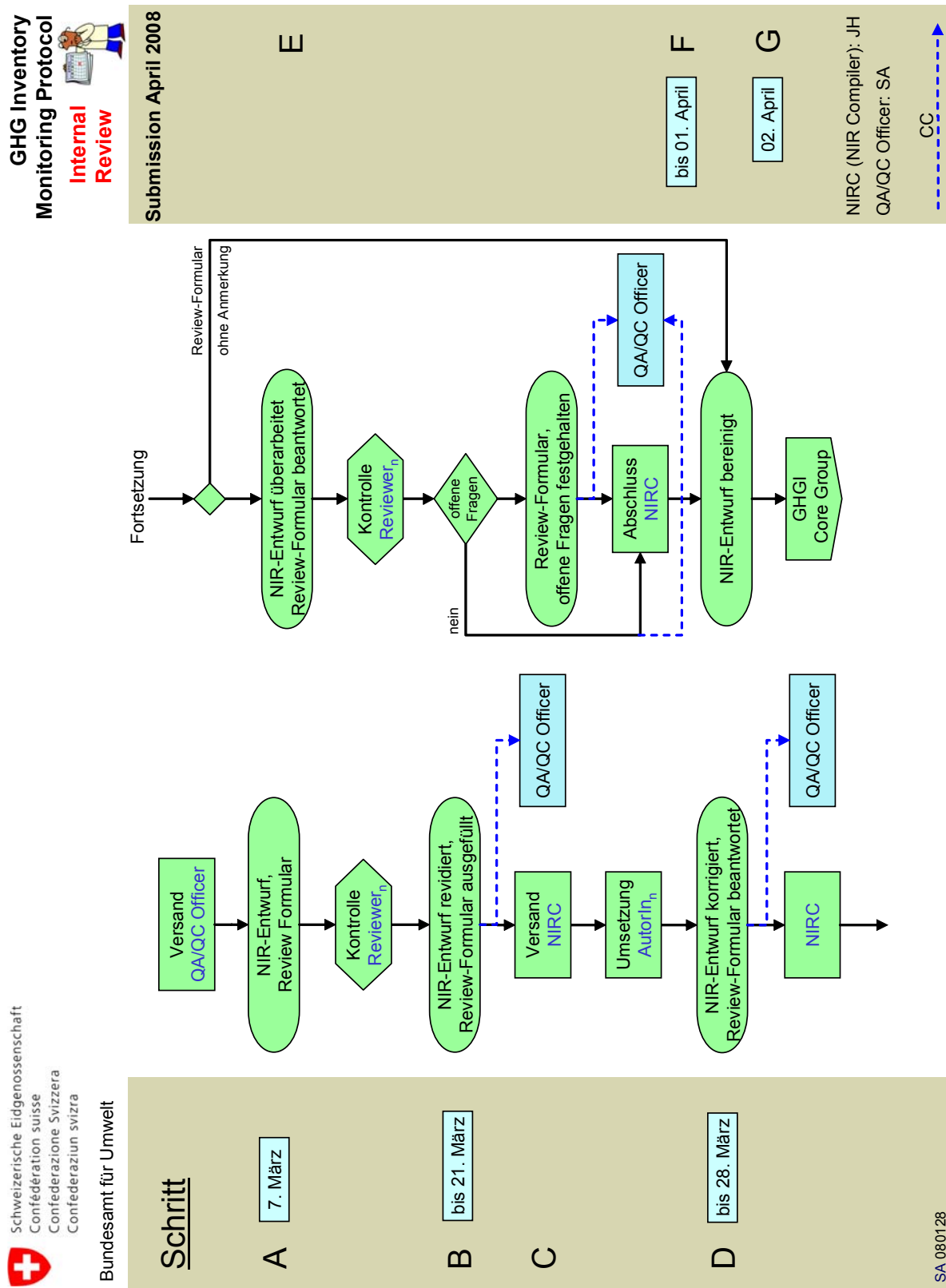
- Prozess EMIS ([FOEN 2006c](#))
- [PP Presentation](#) (MBU, March 2007)
- EMIS Background Data Sheets

C. Internal Review 2008

C.1 Responsibility assignment

NIR Chapter	Author(s)	Reviewer(s)
1 Introduction (incl. Executive Summary)	Infras, (SA)	FP, NM
2 Trends	Infras	FP, SA
3 Energy (excluding Transport)	EBP	Infras
3 Energy (Transport incl. Off-road)	Infras	EBP
4,5 Industrial Processes, Solvents	EBP	LF
6 Agriculture	Infras	EBP
7 LULUCF	Meteotest	RV, SA
8 Waste	EBP	Infras
9 Recalculations	Infras, EBP, SA	FP, MBU
A1.1 Key Category Analysis	EBP	FP, SA
A1.2 Uncertainty Evaluation	Infras	FP, SA
A2 Energy	EBP, Infras	MBU
QA/QC Supplement (excluding Inventory Development Plan)	SA	FP, NM
Inventory Development Plan	SA, FP	JH

C.2 Monitoring Protocol (Flowchart)



Notations A-G 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 2008

Reviewer	
Amt / Firma	
Telefon, E-mail	
Begutachtete(s) Kapitel	
Seiten (inkl. Annex, References)	

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: 21. März 2008

Review zur Kenntnis genommen	
Datum / Signum	

Deadline: 28. März 2008

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: 01. April 2008

D. Glossary and Abbreviations

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	
CO₂ , Carbon Dioxide	CO₂ , Kohlendioxid
CRF , Common Reporting Format	CRF , einheitliches Berichterstattungsformat
EF , Emission factor	EF , Emissionsfaktor
EMIS , Swiss national air pollution data base (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
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