

Description of the Swiss QA/QC System

Supplement
to the Greenhouse Gas Inventory 1990-2005

Submitted to the
United Nations Framework Convention on Climate Change
13 April 2007



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Office for the Environment FOEN

Lead Author

Andreas Schellenberger FOEN; Climate, Economics and Environmental Observation
Division

Authors

Paul Filliger FOEN; Climate, Economics and Environmental Observation
Division

Jürg Füssler Ernst Basler + Partner (EBP)

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, 13 April 2007

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 QA/QC System	6
2.1 Introduction	6
2.2 Inventory agency responsible for coordinating QA/QC activities	6
2.3 QA/QC plan	10
2.4 QC procedures	12
2.5 QA review procedures	14
2.6 Reporting, documentation, and archiving procedures	15
2.7 Planned development	16
3. Inventory Development Plan	17
References	19
Annex	23
A. Internal Review	23
B. Glossary and Abbreviations	26

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 1990–2005 (FOEN 2007) and, as a supplement, the Description of the QA/QC System on hand.

On 9 July 2003, Switzerland ratified the Kyoto Protocol to the UNFCCC. The Swiss National Inventory System according to Article 5.1 of the Kyoto Protocol has been implemented and is now fully operational.

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 inven-

tory 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 1990-2005 documents the current status (April 2007) of the NIS QA/QC system. It will be updated as the QA/QC system develops and improves.

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

2. The NIS QA/QC System

2.1 Introduction

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 QA/QC system was initiated. This QA/QC system 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.

According to IPCC (2000) the major elements of a QA/QC system are:

- an inventory agency responsible for coordinating QA/QC activities;
- a QA/QC plan;
- QC procedures;
- QA review procedures;
- reporting, documentation, and archiving procedures.

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

2.2 Inventory agency responsible for coordinating QA/QC activities

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

With the formal approval of Switzerland's Initial Report under Article 7, paragraph 4 of the Kyoto Protocol by the Federal Council on 8 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 1 gives a schematic overview of the institutional setting of the NIS.

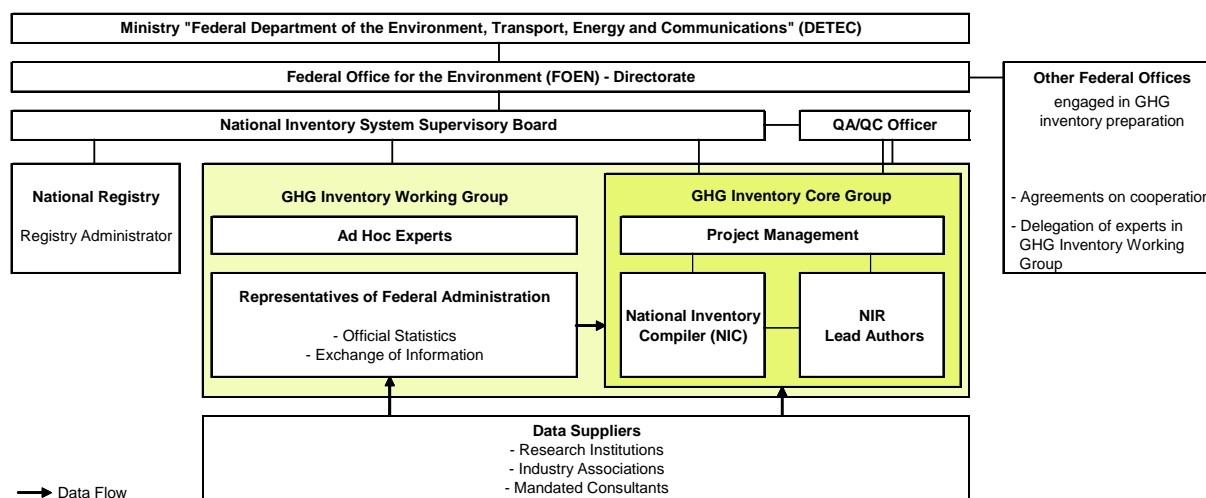


Figure 1 Institutional setting of the National Inventory System.

The tasks and responsibilities of the various actors in inventory-related activities are defined as follows:

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 QA/QC system. He provides a QA/QC plan, 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 Chapter 2.4 and Chapter 2.5). A further principal task is the consistent realisation of obligatory documentation and archiving procedures (IPCC 2000; Chapter 8.10). 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 Inventory Development Plan (together with the QA/QC officer); assessment of need for recalculations;
 - inventory preparation: supervision of compilation, revision and editing of NIR and CRF tables; implementation and 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.
- 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;
 - calculation of emission estimates using the CRF Reporter;
 - ensuring completeness and consistency of the inventory;
 - implementation of tasks recorded in the Inventory Development Plan concerning EMIS and CRF tables;
 - carrying out of recalculations (following the approval of the NIS Supervisory Board);
 - documentation of inventory information; archiving of the dataset;
 - quality control of own activities, documentation in checklist;
 - participation in internal reviews (where required).
- 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;
 - documentation of inventory information;
 - carrying out key category analysis;

- carrying out uncertainty analysis;
- implementation of tasks recorded in the Inventory Development Plan concerning the NIR;
- 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 source categories (1A1 = Energy Industries, 1A2 = Manufacturing Industries and Construction etc.). RA = Reference Approach. For further abbreviations see the glossary in Annex B.

	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	FOEN 2006c
2	FOEN, Air Pollution Control	Off-road Database			x		x								SAEFL 2005a
3	FOEN, Waste and Raw Materials	Waste Statistics	x	x										x	SAEFL 2005c
4	FOEN, Forest Division	Forest Statistics											x		SAEFL 2005b
5	SFOE	Swiss overall energy statistics	x	x	x	x		x	x						SFOE 2006
6	FOCA	Civil Aviation			x										FOCA 2006a
7	Swiss Air Force Administration	Military Aviation			x										VTG 2006a
8	SFSO	Agriculture, LULUCF, Waste										x	x	x	SFSO 1997, 2000, 2000a, 2002, 2005, 2006, 2006b
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 2006; Basics 2006a
12	Carbotech	Import Statistics of Synthetic Gases								x					Carbotech 2007
13	Industry Associations: SGCI, Swissmem, VSAI etc.	Synthetic Gases								x					Carbotech 2007
14	Swiss Petroleum Association	Oil Statistics							x						EV 2006
15	Cemsuisse	Cement, Clinker Production		x						x					Cemsuisse 2005
	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	Electrowatt	Off-road Activity Data			x	x	x								Electrowatt 2005
20	TTM Mayer	Off-road Emission Factors			x	x	x								Mayer 2006
21	INFRAS	Off-road Emission Model			x	x	x								SAEFL 2005a
22	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 calculation of emissions;
- the implementation of relevant tasks recorded in the Inventory Development Plan;
- applying 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

The NIS Quality Management System: structure and content

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 2). Key findings and planned improvements as a result of QA/QC procedures are implemented in the Inventory Development Plan (Chapter 3), which represents the main instrument for documenting potential improvements of national GHG emission and removal estimates. 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).

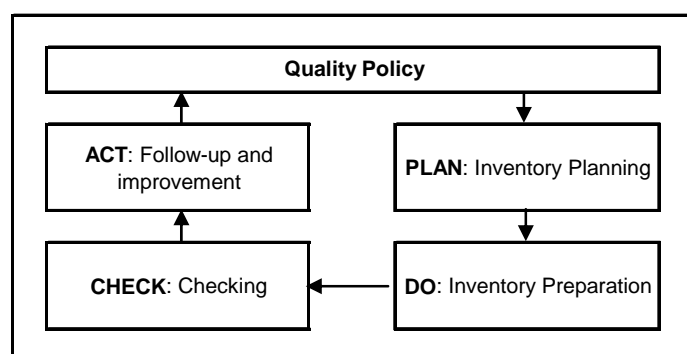


Figure 2 PDCA-cycle.

The QA/QC plan constitutes the heart of the quality management system. It is designed as an IDM¹-based interlinked compilation of all documents relevant to quality issues. In the system, each document is identified by the assignment of a URL.

The QA/QC plan contains a description of current QA/QC activities and planned improvements as well as a register of previous QA/QC activities and key findings. At present, specific monitoring protocols for each source and sink category are being added to ensure agreed standards and transparency. These protocols specify the methodologies to be used, institu-

¹ IDM is the FOEN Internal Document Management System.

tional 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. Simultaneously, a method is being implemented to ensure systematic documentation of all essential decisions reached by the experts involved in inventory planning and preparation as well as the archiving of all obligatory information summarised in Chapter 8.10 of IPCC (2000).

The QA/QC plan will be reviewed annually and modified by the QA/QC officer if necessary (after prior consultation with the project management).

Annual cycle of inventory planning

Table 2 illustrates the annual cycle of inventory planning and preparation including the timelines for the performance of QA/QC activities as defined in the QA/QC plan.

Table 2 Schedule for inventory planning and preparation.

	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									♦				
Consideration of UNFCCC Synthesis & Assmt. Report													
Data Collection			Energy Data			Non-Energy Data							
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						Not linked to specific phase							
Implementation of Individual Inventory Review													
Uncertainty Analysis													
Key Category Analysis													
Internal Review													
Official Consideration and Approval												♦	
Submission												♦	
Publication and Archiving													

As illustrated by Table 2, several QA/QC activities are conducted simultaneously in the course of inventory preparation. This includes:

- 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;
- the performance of a key category analysis and an uncertainty analysis;
- completion of checklists by data suppliers and the members of the GHG Inventory Core Group (see Chapter 2.4);
- 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;
- official consideration of the inventory by the NIS Supervisory Board and, subsequently, official approval by the FOEN directorate;
- after submission: archiving of CRF tables (National Inventory Compiler), and NIR text, tables and figures as well as outcomes of QA/QC procedures (QA/QC officer) (see Chapter 2.6).

2.4 QC procedures

General QC procedures: Checklists

A standardized and formalized way of carrying out Tier 1 QC activities was 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 and/or calculation of emissions and removals, the data suppliers fill in their checklists. Once completed the checklists are returned to FOEN. Simultaneously to GHG inventory preparation, 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 2007c). Based on the evaluation of the checklists, possible follow-up activities for the next GHG inventory preparation phase will be defined by the QA/QC officer in close cooperation with the Inventory Project Management.

Further general QC procedures

Below, the QC activities of all actors involved in the inventory planning, preparation, and compilation 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 2007c).

Some data suppliers 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 plans and supports such activities.

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 2007c).

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 2007c).

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 2007c).

Category-specific QC procedures

In addition to general QC, the Inventory Project Management ensures the performance of Tier 2 QC procedures by providing for a FOEN (co)-funding of, e.g., the following projects:

- continuous measurement of halogenated GHG at the Jungfrauoch (HALCLIM-2) (Reimann et al. 2006), inter alia to check for the completeness of F-gases in the inventory;
- revision of methodology for methane emissions estimates from the Agriculture sector (Soliva 2006, 2006a);
- measurement of fossil CO₂ emissions from waste incineration (FOCAWIN) (start scheduled for 2007);
- reevaluation of CO₂ emission factors for transport fuels (start scheduled for 2007/08).

Recently, the Project Management has 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 has requested the FOEN directorate to sign a "Letter of Participation" for Switzerland. It is expected that ICOS would 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.

2.5 QA review procedures

Expert Peer Reviews

In 2006, the Energy and Industrial Processes sectors as well as methane emissions from the Agriculture sector, as published in the 2005 GHG inventory (SAEFL 2005f), were subjected to a thorough domestic review (eicher+pauli 2006; Soliva 2006, 2006a).

QA procedures in the form of in-depth reviews carried out by independent experts will be continued sector by sector with the aim to successively cover the complete inventory. Key categories will be given priority. Thereafter, an episodic recurrence of peer reviews is planned.

The former plan to review the LULUCF sector in 2007 (cf. FOEN 2006e: 14) was abandoned due to the outcomes of the in-country review in March 2007, calling for a revision of the forest definition introduced in the Initial Report (FOEN 2007h). Instead, the waste sector will undergo a peer review.

UNFCCC Reviews

National inventory submissions to the UNFCCC secretariat are subject to the review procedures defined in the relevant COP/MOP decisions.

The largest part of the Inventory Development Plan (see Annex 5 in FOEN 2006), that was updated in response to the UNFCCC expert recommendations following the individual review of the inventory submitted in 2005 (UNFCCC 2006), has been implemented in the meantime.

In March 2007, an in-country review ("Initial Review under the Kyoto Protocol and Annual 2006 Review under the Convention for Switzerland") took place. Once the expert review team has finalized its report (expected for August 2007), the Inventory Development Plan will be updated accordingly. The remaining recommendations will then be considered in a subsequent submission.

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).

Every member of the review team checks a chapter (including selective crosschecks of associated CRF tables), the preparation of which he or she was not directly involved in (see Annex A.1 for the responsibility assignment). 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 A.2 for a flowchart). Any findings and discrepancies identified in the course of the review procedure are directly noted in the document (using MS WORD Track Changes) or, in the case of substantial objections, recorded on a specially designed review form (see Annex A.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.

After each step of the review procedure all NIR text files and review forms are collected by the QA/QC officer and archived in the FOEN IDM system. Their unambiguous identification is ensured by the application of a systematic nomenclature. For official reviews, all revised text files and review forms are available on demand.

Public information

FOEN operates a homepage (www.climatereporting.ch) where the Swiss GHG inventories (NIR and CRF tables), the Swiss National Communications and other reports submitted to the UNFCCC may be downloaded from an easy-to-navigate site. 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. During the last year, a great step forward has been achieved with the online-provision of most internal reports, domestic reviews, Excel calculation sheets, and other difficult-to-access material ('grey literature'¹) quoted in the present inventory (FOEN 2007).

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.).

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.

For the present submission (FOEN 2007), emissions from EMIS that are relevant for the GHG inventory were exported for the second time to the CRF Reporter. As a quality control measure in the implementation of the new EMIS data base, the emission estimates were generated independently (i) by the EMIS data base and (ii) by the previous (but independently updated) internal GHG files. See Chapter 1.4.3 in FOEN (2007) for details.

Information on QA/QC activities, decisions reached by the experts (minutes), reviews, results of key category analysis and uncertainty analysis as well as inventory development is documented and archived in the FOEN IDM system. 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 managed by the QA/QC plan (see Chapter 2.3).

¹ '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.

Information documented in the EMIS data base and the IDM system 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. 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.

2.7 Planned development

In 2007, the Inventory Project Management plans to realise two substantial projects regarding the inventory quality management system:

- The quality management system, defining the structure of and the operational procedures within the NIS, shall be subject to certification according to the ISO 9001:2000 standard.
- The IDM-based quality system (see Chapter 2.3), the use of which is currently restricted to employees of FOEN, shall be made accessible to all members of the GHG Inventory Core Group, to NIR authors, and to the most important data suppliers (by means of SSL connection to a web-based IDM platform) in order to facilitate cooperation and optimize overall QA/QC performance.

3. Inventory Development Plan

The Inventory Development Plan has been updated on April 05, 2007.

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 Forschung und Beratung, private consultants (NIR co-authors)
Meteotest	Meteotest, private consultants (NIR co-authors)
Sigmaplan	Sigmaplan, private consultants (Experts land-use change)

- **FOEN staff member**

FP	Filliger Paul
HSO	Hoehn Sophie
LA	Liechti Andreas
MBU	Müller Beat
NM	Nauser Markus
SA	Schellenberger Andreas
THE	Thürig Esther

3) Explanation of column “Workload”: H: High

M: Medium

L: Low

4) Explanation of column “Status”: P: Work in progress

F: Work finished

pR: Work partially realized

	Planned Improvement	Pri- ority	Time schedule – Implemen- tation	Responsibility	Work- load	Sta- tus
1	Key category analysis: Inclusion of the LULUCF sector	H	Spring 07	EBP	M	pR
2	Key category analysis: Use of Tier 2 method	M	Spring 08	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	P
4	QA/QC: Further development and implementation of the quality man- agement system	H	Spring 08	FOEN (SA)	H	pR
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	IP: Cement Industry: Internal Review of CaO content in clinker and of EF of fuels	H	Summer 07	FOEN (FP), EBP	M	P
7	IP: Ammonia production: Review of EF	H	Spring 07	FOEN (MBU, LA), EBP	L	P
8	Agriculture: Revision of animal categories to achieve consistency for CH ₄ and N ₂ O reporting	H	Spring 07	ART, INFRAS, FOEN (FP)	M	pR
9	Agriculture: Revision of uncertainty estimates	M	Spring 08	ART, INFRAS, EBP	M	P
10	LULUCF: Definition of Forest; concomitant revision of CC catego- ries	H	Spring 08	FOEN (THE, SA), Meteotest	H	P
11	LULUCF: Methodological adjust- ments; implementation of new AREA data and of the results of National Forest Inventory III	H	Depending on data availability (2008/09)	FOEN (SA, THE), Meteo- test, Sigmaplan	H	P
12	Waste: Domestic review	H	2007	FOEN (FP)	H	P
13	Transparency: Online documenta- tion of NIR-“Expert Estimates” in accordance with IPCC expert judg- ment procedure	M	Spring 08	FOEN (SA), INFRAS, EBP, Meteotest (Lead Authors),	M	pR
14	Transparency: Updating and online documentation of EMIS background datasheets	M	Spring 08	FOEN (MBU, HSO, SA)	H	P
15	Completeness: CRF Tables 7, 8, 9: Completion of information on key categories, recalculations and nota- tion keys	H	Spring 07	FOEN (MBU, LA, HSO, SA)	M	pR
16	Consistency: CRF-NIR: More de- tailed method description in CRF (consistent with NIR)	H	Spring 07	FOEN (HSO, MBU), INFRAS, EBP, Carbo- tech	M	pR

References

- Basics 2006a:** CO₂-Emissionen 1990-2005 von Industrie und Dienstleistungen. Teil Industrie. Short documentation, February 2005. Updated 07.12.2006, including Excel-files for update of year 2005. 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 2007:** Swiss Greenhouse Gas Inventory 2005: PFCs, HFCs and SF₆ Emissions. Confidential report for internal use on behalf of the Federal Office for the Environment, Bern. Basel.
- Cemsuisse 2005:** Jahresbericht cemsuisse 2005. [Rapport annuel 2005]. Association of the Swiss Cement Industry, Bern.
http://www.cemsuisse.ch/file/Jahresbericht_2005_09.05.06.pdf [German and French] [04.04.2007]
- CEPE 2006:** Energieverbrauch und CO₂-Emissionen des Dienstleistungssektors in der Schweiz: Aufdatierung für das Jahr 2005. Short documentation for FOEN (10.12.2006). 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>
- Electrowatt 2005:** Neue Offroad-Datenbank 2000, Mengengerüste. Electrowatt Infra im Auftrag des Bundesamt für Umwelt, Wald und Landschaft (BUWAL), Bern Dezember 2005 (noch nicht veröffentlicht). [Activity data for off-road database, draft December 2005].
- EMPA 1999:** Written communication from Dr. H.W. Jäckl (EMPA, Dübendorf) to Andreas Liechti (FOEN, Bern), 09.03.1999.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- EV 2006:** Jahresbericht 2005. Erdöl-Vereinigung [Rapports annuel 2005. L'Union Pétrolière]. Zürich.
<http://www.erdoel.ch/doc/673351466725072006.pdf> [German] [04.04.2007]
<http://www.erdoel.ch/doc/609066188425072006.pdf> [French] [04.04.2007]
- 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>
- 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.bafu.admin.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.
<http://www.environment-switzerland.ch/climatereporting/03211/index.html?lang=en>
- FOEN 2007:** Switzerland's Greenhouse Gas Inventory 1990–2005, National Inventory Report and CRF tables 2007. Submission of 13 April 2007 to the United Nations Framework Convention on Climate Change. Federal Office for the Environment, Bern.
To be published on <http://www.climatereporting.ch>
- FOEN 2007c:** Checklists (QC Tier 1) completed for the GHG Inventory submitted on 13 April 2007. To be published on
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- 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/> [04.04.2007]
- Mayer, A. 2006:** Offroad-Datenbank 2000, Emissionsfaktoren und Lastfaktoren. Report for internal use to FOEN. Draft 26.06.2006.
- 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 Jungfrauoch (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] [04.04.2007]
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en> [English]
- SAEFL 2005a:** Schadstoffemissionen und Treibstoffverbrauch des Offroad-Sektors, Entwurf Schlussbericht, Swiss Agency for the Environment, Forests and Landscape / INFRAS, 23.12.2005, Bern (draft final report).
[Comment by NIR Lead Author: Emission modelling in SAEFL 2005a is based on EF provided by Mayer 2006, for which the draft appeared later than draft SAEFL 2005a. Emission results in SAEFL 2005a are fully compatible with EF provided by Mayer 2006.]
- SAEFL 2005b:** Wald und Holz. Jahrbuch 2005. [La forêt et le bois. Annuaire 2005]. Schriftenreihe Umwelt Nr. 386. Swiss Agency for the Environment, Forests and Landscape, Bern.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en> [German and French]

- SAFEL 2005c:** Abfallmengen und Recycling 2004 im Überblick. Swiss Agency for the Environment, Forests and Landscape, Bern.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- SAEFL 2005f:** Switzerland's Greenhouse Gas Inventory 1990-2003, National Inventory Report and CRF tables 2005. Submission of 14 April 2005 to the United Nations Framework Convention on Climate Change. With a resubmission of CRF tables on 25 May 2005. Swiss Agency for the Environment, Forests and Landscape, Bern.
<http://www.environment-switzerland.ch/climatereporting/00545/00547/index.html?lang=en>
- 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] [04.04.2007]
- SFOE 2006:** Schweizerische Gesamtenergiestatistik 2005. Statistique globale suisse de l'énergie 2005. Swiss Federal Office of Energy, Bern.
http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=de&name=de_147881043.pdf [German and French] [04.04.2007]
- 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> [04.04.2007]
- 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 [04.04.2007]
- SFSO 2002:** Einblicke in die schweizerische Landwirtschaft. Swiss Federal Statistical Office, Neuchâtel. [available in German and French]
- 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/de/index/infothek/erhebungen_quellen/blank/blank/arealstatistik/01.html [04.04.2007] and
<http://www.bfs.admin.ch/bfs/portal/de/index/infothek/nomenklaturen/blank/blank/arealstatistik/01.html> [04.04.2007]
- SFSO 2006:** Supply of provisional data of the AREA Land Use Statistics. Written communication from Felix Weibel and Jürg Burkhalter (SFSO, Neuchâtel) to Helmut Recher (Sigmaplan), 21.6.2006.
<http://www.environment-switzerland.ch/climatereporting/00545/01913/index.html?lang=en>
- SFSO 2006b:** Swiss Federal Statistical Office. Wood production in Switzerland 1975-2005.
<http://www.agr-bfs.ch> [official text in German, English, French and Italian] [04.04.2007]
- 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>

- 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] [04.04.2007]
- UNFCCC 2006:** Report of the individual review of the greenhouse gas inventory of Switzerland submitted in 2005. FCCC/ARR/2005/CHE, 11 April 2006. <http://unfccc.int/resource/docs/2006/arr/che.pdf> [04.04.2007]
- 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> [04.04.2007]
- VTG 2006a:** Consumption of aviation fuel and jet kerosene of military aircraft in Switzerland 2005. Written communication from Urs Baserga (VTG) to Paul Filliger (FOEN, Bern), 27.11.2006. <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

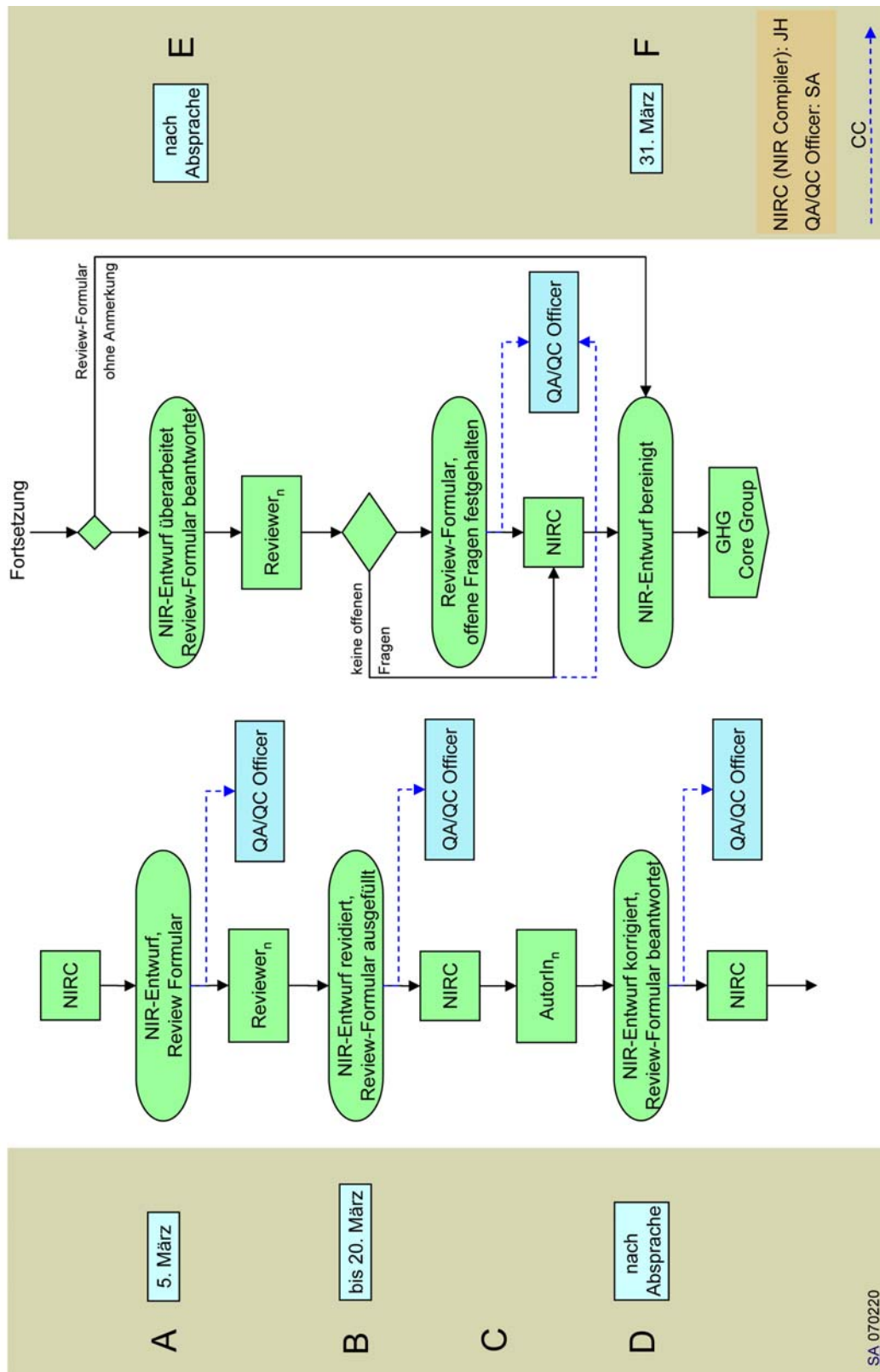
A. Internal Review

A.1 Responsibility assignment

NIR Chapter	Author(s)	Reviewer(s)
1 Introduction	INFRAS	Filliger, Nauser, Schellenberger
2 Trends	INFRAS	Filliger, Schellenberger
3 Energy (except for Transport)	EBP	INFRAS
3 Energy (Transport incl. Off-road)	INFRAS	EBP
4 Industrial Processes	EBP	Liechti
5 Solvent and Other Product Use	EBP	Liechti
6 Agriculture	INFRAS	EBP
7 LULUCF	Meteotest	Schellenberger
8 Waste	EBP	INFRAS
9 Recalculations	INFRAS, EBP	Filliger, Schellenberger
A1.1 Key Category Analysis	EBP	Filliger, Schellenberger
A2 Energy	EBP, INFRAS	Liechti
Inventory Development Plan	Inventory Core Group	Filliger

A.2 Monitoring Protocol (Flowchart)

GHG Inventory
Internal Review
April 2007



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

A.3 Template of the review form

Review-Formular für das Interne Review NIR April 2007

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) aufzuführen, 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	
NIR umbenannt	<input type="radio"/> Ja
Review-Formular umbenannt	<input type="radio"/> Ja
Datum / Signum	.....

Muster: NIR-CH-2007-Draft-yymdd-KürzelReviewer.doc
Muster: NIR-CH-2007-April-ChapterX-KürzelReviewer.xls
Beide Files bitte zurücksenden an JH (juerg.heldstab@infrs.ch), Kopie an SA (andreas.schellenberger@bafu.admin.ch).

Review zur Kenntnis genommen	
NIR umbenannt	<input type="radio"/> Ja
Review-Formular umbenannt	<input type="radio"/> Ja
Datum / Signum	.....

Muster: NIR-CH-2007-Draft-yymdd-KürzelReviewer-KürzelAutorIn.doc
Muster: NIR-CH-2007-April-ChapterX-KürzelReviewer-KürzelAutorIn.xls
Beide Files bitte zurücksenden an JH (juerg.heldstab@infrs.ch), Kopie an SA (andreas.schellenberger@bafu.admin.ch).

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)

Review-Formular umbenannt	<input type="radio"/> Ja
Datum / Signum	.....

Muster: NIR-CH-2007-April-ChapterX-KürzelReviewer-KürzelAutorIn-KürzelReviewer.xls
Review-Formular bitte zurücksenden an JH (juerg.heldstab@infrs.ch), Kopie an SA (andreas.schellenberger@bafu.admin.ch).

B. Glossary and Abbreviations

English term	German term
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
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