

Czech Republic's Initial Report under the Kyoto Protocol

Calculation of the Assigned Amount

Prague, October 2006

Czech Hydrometeorological Institute

Ministry of Environment of the Czech Republic

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Introduction

The **Czech Republic's Initial Report under the Kyoto Protocol** has been prepared to meet obligations resulting from the Kyoto Protocol and decision 13/CMP.1 (FCCC/KP/CMP/2005/8/Add.2).

The initial report contains the following information:

- The complete GHG inventory for all the years from 1990 (or another approved base year or period under Article 3, paragraph 5) to the most recent year.
- Identification of the selected base year for hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) in accordance with Article 3, paragraph 8.
- The agreement under Article 4, where the Party has reached such an agreement, to fulfil its commitments under Article 3 jointly with the other Parties.
- Calculation of the Party's assigned amount pursuant to Article 3, paragraphs 7 and 8.
- Calculation of the Party's commitment period reserve in accordance with decision 13/CMP.1 (Article 17).
- Information on definitions, activities and accounting periods for use in accounting for the Party's land use, land-use change and forestry activities under Article 3, paragraphs 3 and 4.
- Description of the Party's national system in accordance with Article 5, paragraph 1.
- Description of the Party's national registry, reported in accordance with the guidelines for the preparation of the information required under Article 7.

The Czech Republic's Initial Report is structured on the basis of the above-mentioned topics and provides all the necessary information and answers. As national inventories are already the subject of a separate submission, they are not described in greater detail here and only a summary necessary for the purposes of this report is provided.

The major part of the report describes the National Inventory System (NIS) as a key source of information for the purposes of GHG inventories and provides a complete picture of NIS structure and functioning.

1 The Czech Republic's Greenhouse Gas Inventory

Table 1 contains a summary of the Czech Republic's national GHG inventory for the 1990 – 2004 period. The presented data are based on the National Greenhouse Gas Inventory Report of the Czech Republic (NIR, April 2006), which was submitted to the UNFCCC (and the EU) in April 2006.

The methodologies used in the preparation of the Czech Republic's greenhouse gas inventory are consistent with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* as complemented by the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and the *IPCC Good Practice Guidance on Land Use, Land-Use Change and Forestry*.

Table 1: Emissions of greenhouse gases excl. LULUCF 1990 – 2004 (in Gg CO_{2eq.})

	CO ₂	CH ₄	N ₂ O	CO ₂ , CH ₄ , N ₂ O total	HFCs	PFCs	SF ₆	F-gases total
1990	165 060	18 546	12 599	196 205	NE	NE	NE	NE
1991	155 261	16 975	10 849	183 085				
1992	140 160	15 848	9 608	165 616				
1993	136 704	14 776	8 577	160 057				
1994	131 242	13 878	8 413	153 533				
1995	132 125	13 542	8 720	154 387	1	0	75	76
1996	133 863	13 423	8 255	155 541	101	4	78	183
1997	138 389	12 670	8 465	159 524	245	1	95	341
1998	129 188	12 206	8 306	149 700	317	1	64	381
1999	122 099	11 500	8 063	141 663	268	3	77	347
2000	129 017	11 483	8 253	148 753	263	9	141	413
2001	129 033	11 405	8 486	148 924	393	12	168	574
2002	124 040	11 380	8 198	143 618	391	14	67	472
2003	128 075	11 054	7 739	146 868	590	25	100	715
2004	127 297	10 835	8 312	146 443	600	17	50	667

The Czech Hydrometeorological Institute (CHMI) has been commissioned by the Ministry of the Environment (MoE) to manage the National Inventory System in accordance with Article 5 of the Kyoto Protocol and decision 19/CMP.1 (FCCC/KP/CMP/2005/8/Add.3) and also decisions of the European Parliament and of the Council 280/2004/EC and 2005/166/EC (see Chapter 5).

2 Calculation of the Czech Republic's Assigned Amount

2.1 Commitment under the Article 3 of the Kyoto Protocol and Base Year Identification

In Annex B of the Kyoto Protocol, the Czech Republic is required to reduce its emissions to a level of 92% of those in the base year. 1990 was selected as the base year for CO₂, CH₄ and N₂O and 1995 was selected as the base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride, in accordance with Article 3(8) of the Kyoto Protocol.

2.2 Calculation of the Czech Republic's Assigned Amount

The calculation of the Czech Republic's assigned amount is based on the 2006 GHG emission inventory submission. In the Czech Republic, land-use change and forestry constituted a net sink of GHG emissions in 1990, so that the Czech Republic's assigned amount for the commitment period (2008-2012) is calculated as the total GHG emissions (in CO₂ eq.) in 1990 excluding LULUCF plus F-gases emissions (in CO₂ eq.) in 1995 (see Table 1), multiplied by the Czech Republic's reduction commitment (92 %) and multiplied by 5:

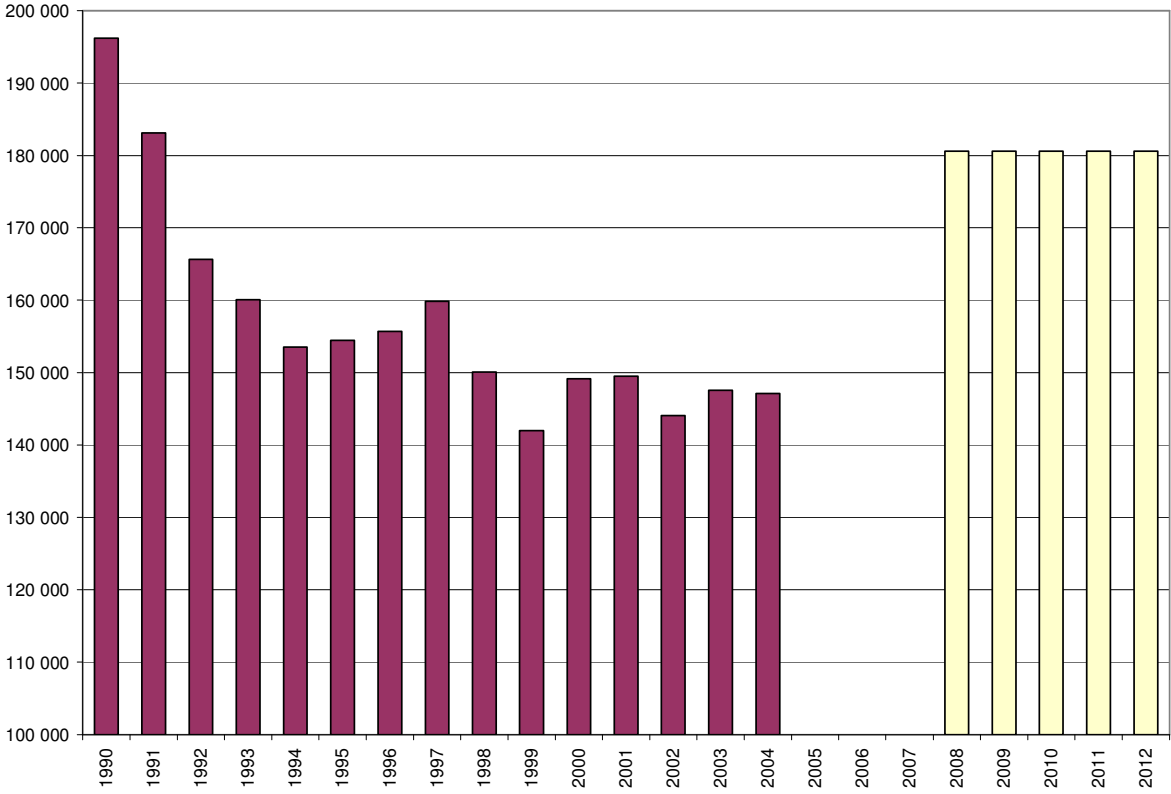
The Czech Republic's Assigned Amount = [(GHG 1990 excl. LULUCF) + (F-gases 1995)] * 0.92 * 5,

which means that the Czech Republic's Assigned Amount is:

$$(196\,204.518 + 76.058) * 0.92 * 5 = 902\,890.649 \text{ Gg CO}_2 \text{ eq.}$$

The average Assigned Amount per year over the commitment period is thus 180 578.130 Gg CO₂ eq.

Figure 1: GHG emissions for 1990 – 2004 (excl. LULUCF) and the average assigned amount 2008 – 2012 (in Gg CO_{2eq.})



3 Commitment Period Reserve

Each Party included in Annex I shall maintain, in its national registry, a commitment period reserve which should not drop below 90 per cent of the Party's assigned amount calculated pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol, or 100 per cent of five times the most recently reviewed inventory, whichever is lowest.

In the case of the Czech Republic, the relevant size of the Commitment Period Reserve is five times the most recent reviewed inventory (2003), which is calculated below:

$$5 \times 147\,143.942 = 735\,719.710 \text{ Gg CO}_2 \text{ eq}$$

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

4.1 Definition of a forest for reporting under Articles 3.3 and 3.4 of the Kyoto Protocol

For reporting under the Kyoto Protocol, forest land is defined as land with tree crown cover over at least 30 % (or equivalent stocking density) and an area of more than 0.05 hectares. Trees should reach a minimum height of 2 meters at maturity. Tree rows of less than 20 meters are not considered to form a forest. Although the proposed country-specific parameters differ from those of the standard FAO definition, reporting of the Czech Republic to the FAO so far included all forest areas that would also qualify under the Kyoto Protocol definition. However, the reported forest area to FAO also includes the permanently unstocked cadastral forest land. This land was excluded in the latest LULUCF recalculation of the whole reported time series in the 2006 submission to UNFCCC and will identically be excluded for reporting purposes under the Kyoto Protocol.

4.2 Methods for identification of land areas associated with LULUCF activities

Land areas associated with LULUCF activities will be identified within a geographic boundary encompassing units of land or land subject to multiple activities under Article 3.3 and 3.4 activities (reporting method 1).

4.3 Selection of activities under Article 3.4 of the Kyoto Protocol

In the Czech Republic, the optional activity of Forest Management will be included in the accounting for the first commitment period.

4.4 Accounting

For the LULUCF activities under Article 3.3 and for Forest Management under Article 3.4, the Czech Republic intends to account for the entire commitment period.

5 Description of the national system in accordance with Article 5(1) of the Kyoto Protocol, in accordance with the guidelines under Article 7 of the Kyoto Protocol

5.1 Background

Under Article 5 of the Kyoto Protocol, each party in Annex I shall implement a national system for estimating anthropogenic emissions by sources and removal by sinks of all greenhouse gases not controlled by the Montreal Protocol by 1 January 2007. In addition, for EU member states, under Decision No. 280/2004/EC of the European Parliament and of the Council, the national system must be in place by the end of 2005. In the Czech Republic, the national system was established in accordance with this Decision in December 2005.

In this chapter, the national system is also referred to as the national inventory system (NIS).

Under decision 19/CMP.1 (FCCC/KP/CMP/2005/8/Add.3), the NIS has to ensure the functioning of all institutional, legal and procedural arrangements required to evaluate GHG emissions and removals. NIS is designed and operated to ensure the inventory quality and its transparency, consistency, comparability and accuracy through planning, preparation and management of inventory activities.

Reporting requirements on inventory results for EU are given in Decision No. 280/2004/EC and in its implementing provisions 2005/166/EC; reporting under UNCCC and its Kyoto Protocol is the subject of the relevant decisions of COP and COP/MOP (FCCC/CP/2002/8, FCCC/KP/CMP/2005/8/Add.3).

5.2 The name and contact information for the national entity and its designative representative for the national inventory of the Party

In the Czech Republic, the Ministry of the Environment (MoE) is the national entity with overall responsibility for the NIS.

The Czech Hydrometeorological Institute (CHMI), founded by the MoE, is designated as the coordinating and managing organisation responsible for the compilation of the national greenhouse gas inventory and reporting its results (completed by 29 July 2005). In addition, the MoE provides additional specific financial resources for the NIS performance to the CHMI. The representative of CHMI for the NIS is Dr. Pavel Fott (fott@chmi.cz).

5.3 The roles and responsibilities of various agencies and entities in relation to the inventory development process, as well as the institutional, legal and procedural arrangements made to prepare the inventory

The main roles and responsibilities of the CHMI are: inventory management, general and cross-cutting issues, QA/QC, reporting data (CRF), preparation of NIR, communication with the relevant UN FCCC and EU bodies, etc. Sectoral inventories are prepared by specialized institutions (sectoral compilers), which are coordinated and controlled by the CHMI. The responsibilities for the GHG inventory compilation from individual sectors are allocated as follows:

- KONEKO marketing, Ltd. (KONEKO), with responsibility for the inventory compilation in the Energy sector, in particular for stationary sources and fugitive emissions;
- The Transport Research Centre (CDV), with responsibility for the inventory compilation in the Energy sector, in particular for mobile sources;
- The Czech Hydrometeorological Institute (CHMI), with responsibility for the inventory compilation in the Industrial Processes and Product Use sectors;
- The Institute of Forest Ecosystem Research (IFER), with responsibility for the inventory compilation in the Agriculture and Land Use, Land Use Change and Forestry sectors;
- Charles University Environment Centre (CUEC), with responsibility for the inventory compilation in the Waste sector.

The official submission of the National GHG Inventory is prepared by the CHMI and approved by the MoE. Moreover, the MoE secures contacts with other relevant governmental bodies, such as the Czech Statistical Office (CSO), the Ministry of Industry and Trade (MoIT) and the Ministry of Agriculture (MoA).

A brief professional description of the sectoral compilers follows:

The Czech Hydrometeorological Institute is an institution founded by the MoE to perform the function of the Czech Republic's central governmental institution for air quality, hydrology, water quality, climatology, and meteorology, providing objective specialist and expert services and the corresponding research and development activities, preferentially for the state administration. The CHMI was already engaged in compiling national GHG inventories before the NIS was established (in the years 1995 – 2005). In preparing inventories, the CHMI cooperated with a relatively stable team of contracted experts from research, academic and private workplaces, specializing in energy statistics, fugitive emissions, some industrial processes including product use and use of F-gases, forestry and wastes. Some special topics were occasionally consulted with “ad hoc” experts.

KONEKO marketing, Ltd., as a consulting and research company, provides contributions to technology assessment on the basis of systematic energy, economic and environmental analysis, including energy statistics. Important clients of KONEKO include mainly central governmental bodies (e.g. MoE, CHMI, CSO, The Czech Energy Committee of the World Energy Council) and private companies.

The Transport Research Centre is a research and development institute with state-wide activities in all fields in the transport sector. In the field of the environment, the CDV is focused on the comprehensive resolution of issues related to transport and the environment. Key projects are aimed at development of emission calculation methodologies for individual modes of transport, determination of the amount of emissions produced by transport, application of the CORINAIR inventory methodology in the Czech Republic and long- and short-term forecasts of emission from transport with respect to the efficiency of reduction measures.

The Institute of Forest Ecosystem Research is an independent institute focused on forest research and its application. It is primarily concerned with development and implementation of forest inventory methods, including terrestrial carbon and biodiversity assessment. This Institute provides expert support for several national forest inventories in Europe. Other activities include ecosystem inventory, monitoring and analysis, providing relevant interpretation for forest management, ecology and policy.

Charles University Environment Centre conducts environmental research in many environmental disciplines, including socio-economic metabolism, environmental economy and environmental education. CUEC also provides expertise and information for students, for the staff of Charles University and for governmental and non-governmental organisations and for the general public. CUEC also maintains close contact with international bodies such as the OECD and the EEA, and is substantially involved in the 5th and 6th Framework Program of Research and Development of the EU.

The Czech inventory team consists of 12 experts from the above-mentioned organisations for regular work and about 6 “ad hoc” consultants.

5.3.1 Legal aspects

There is a no special law regulating NIS in the Czech Republic. Nevertheless, two Acts are related to NIS to a certain extent:

Act No. 86/2002 Coll., on protection of the air (including amendments 521/2002, 92, 186 and 695/2004 and 180 and 385/2005 Coll.). This Act also includes some aspects of protection of the climate system of the Earth and takes into account the requirements of Decision No. 280/2004/EC of the European Parliament and of the Council.

Act No. 695/2004 Coll. on conditions for trading GHG allowances, implementing Directive 2003/87/EC, and Decree No. 696/2004 Coll., corresponding to Commission Decision No. 2004/156/EC on monitoring, reporting and verification of GHG emissions. Results of CO₂ monitoring under this legislation will be used for comparison with and verification of the national GHG inventory starting with the data for 2005.

5.4 Description of the process for collecting activity data, for selecting emission factors and methods, and for the preparation of emission estimates

Collection of activity data is based mainly on the official, annually published documents of the CSO (e.g. the Czech Statistical Yearbook). In some cases, if needed, inventory compilers

use additional statistical documents compiled by sectoral associations or providing for specific relevant inquiries.

Emission estimates from Sector 1A - Energy combustion are based on the official Czech Energy Balance, compiled by the CSO. Data are processed both in the Reference Approach (TPES - data for primary sources) and in the Sectoral Approach (data for fuel transformations and final consumptions).

In general, the national GHG inventory is based on the IPCC methodology (*Revised 1996 IPCC Guidelines, 1997, Good Practice Guidance, 2000 and Good Practice Guidance for LULUCF, 2003*). This approach assures transparency, consistency, comparability, completeness and accuracy of the inventory, avoids data overestimation and underestimation and reduces the level of uncertainties. Inventory activities include activity data collection, appropriate methods and emission factors (EFs), selection and implementation of uncertainty assessment and quality assurance / quality control procedures (QA/QC).

In accordance with the IPCC methodology, country-specific EFs should be preferred for key source categories. However, in many cases, only default EFs have been used to date due to the lack of financial resources to provide for new, relevant national studies.

5.5 Data processing, storage and documentation

Data for Energy (combustion of fuels) are processed by the system of interconnected spreadsheets, compiled in MS Excel following IPCC methodology and taking into account the national circumstances. Similar systems of spreadsheets are used also in other sectors. All the spreadsheets are stored electronically and prepared both in sectoral compiler institutions and in the CHMI. Following calculation, all the relevant data are put into the *Common Reporting Format* (CRF) to be reported and to be stored in the CHMI and the MoE. A new version of the CRF Reporter database software has been used for the 2006 submission, containing data for the 1990 – 2004 period.

The *National Inventory Report* (NIR) describes all the methods in a sufficiently transparent manner and in more detail and includes numerous relevant references.

5.6 Description of the process and the results of key source identification

The CHMI performs an annual analysis leading to the identification of key source categories, which provides an important basis for annual inventory planning and guidance for inventory improvement. The CHMI consults results with the relevant sectoral compilers. The latest NIR (2006 Submission) includes, e.g., identification of the key source categories based on both level and trend assessments (Tier 1) in more detail (13 key sources were established for the 2004 data).

In cooperation with sectoral compilers, the CHMI also provides uncertainty estimates. Currently, only Tier 1 uncertainty analysis has been used; nevertheless most single uncertainties were assessed by expert judgment.

5.7 Description of the process for the recalculation of previously submitted inventory data

In accordance with *Good Practice Guidance*, 2000 and *Good Practice Guidance for LULUCF*, 2003 where possible, necessary recalculations are undertaken if new and better underlying data and/or methodological changes and improvements become available. Some gaps and imperfections were identified in the past few years and thus it was necessary to perform the relevant recalculations. These recalculations were gradually elaborated and performed; nevertheless they were not reported in recent submissions until they were subjected to standard QA/QC procedures.

Implementation of the new CRF Reporter was a good opportunity to report these recalculations. Introduction of EU ETS according to Directive 87/2003/EC was another important incentive for improvement of the existing inventories. In addition, recalculations in LULUCF were motivated by the necessity to implement the latest IPCC methodology for this sector (*Good Practice in LULUCF*, 2003).

All recent recalculations and revisions for the 1990-2004 period are reported in the latest submission of April 2006 (see CRF and NIR).

5.8 Description of the QA/QC plan, its implementation and established quality objectives, and information on internal and external evaluation and review processes and their results

Preparation of a QA/QC plan is one of the most important parts of the NIS. Elaboration of the QA/QC plan reflects the institutional arrangements and each sectoral compiler should elaborate its own system of QA/QC procedures, incl. designation of a responsible QA/QC expert for each sector. Sectoral QA/QC plans are integral parts of the overall NIS QA/QC plan being elaborated by the NIS manager. A schematic cycle describing the timing of the GHG inventory preparation process (incl. QA/QC) is given in Figure 1.

5.8.1 Quality control procedures (QC)

QC is designed to provide routine technical checks to measure and control the quality of the inventory, to ensure consistency, integrity, correctness, and completeness of the data and to identify and address errors and omissions. Its scope covers a wide range of inventory processes, from data acquisition and handling and application of the approved procedures and methods to calculation of estimates and documentation. These procedures are performed according to the *IPCC Good Practice Guidance*, 2000 (GPG).

QC procedures are carried out both by sectoral compilers and by the NIS manager. Sectoral compilers concentrate more on activity data and the sector-specific methods used; the NIS manager mostly checks appropriate use of methodologies, provides trend analyses and compares data from other possible sources. After completing the sectoral inventories, the NIS manager performs a final detailed check. In accordance with GPG, all the described procedures correspond mainly to the Tier 1 QC approach.

The Tier 2 approach has so far been used only in some specific cases (e.g. in the transport sub-sector, where activity data based on energy statistics are combined with activity data based on transport statistics). Appropriate use of EFs is discussed in a similar way.

5.8.2 Quality assurance procedures (QA)

QA generally consists of independent third-party review activities to ensure that the inventory represents the best possible estimates of emissions and removals and to support the effectiveness of the QC program.

Experts from the Slovak Hydrometeorological Institute (responsibility for the GHG inventory in Slovakia) regularly perform a detail review of the draft GHG estimates in December. As part of the approval process, the MoE also reviews the draft of the GHG inventory. All the procedures are recorded and archived.

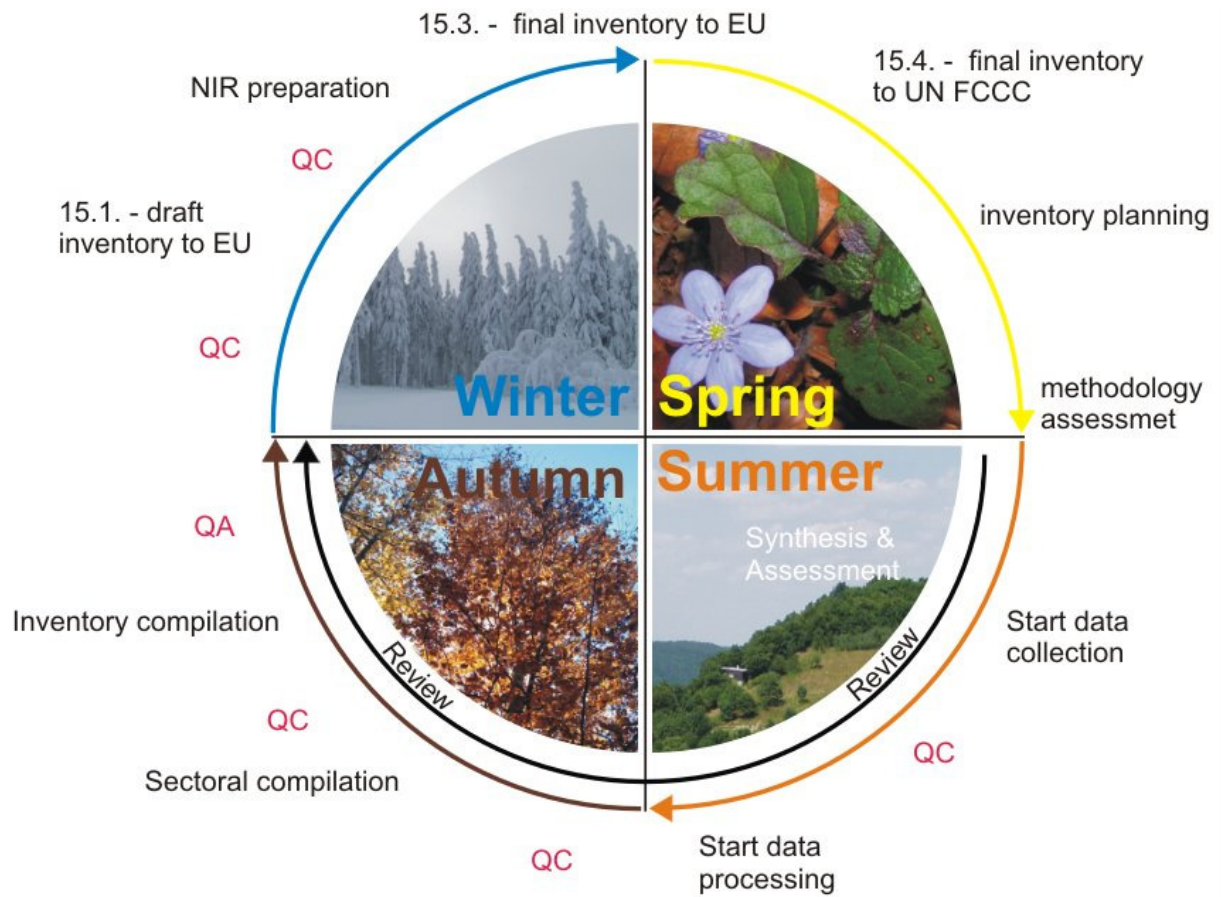
The results of reviews, together with the findings of the review process performed by an international review team organized by UN FCCC, are utilized in the process of inventory planning for the coming years. The relevant findings are analysed by the NIS manager in co-operation with the sectoral compilers to eliminate possible omissions and imperfections.

5.8.3 Response to the UNFCCC review of previous national inventories

Each year, the Czech inventory team analyses the findings of the ERT (Expert Review Team) and attempts to improve the inventory quality following the relevant recommendations. Most recommendations have been focused on the completion of all the incomplete recalculations or data restructuring over the entire time period since 1990 (see above).

The Czech inventory team currently serves more or less as a very stable group of experts. Almost all the members of the team are active researcher workers regularly publishing papers in the relevant literature; five of them have PhD degrees. The manager of NIS is a member of WG1 (GHG inventories) under the EU Climate Change Committee, three experts participated in preparation of the IPCC methodology and two are UNFCCC ERTs experts (LR, R).

Figure 2: Czech GHG Inventory Annual Cycle



6 The Czech National Registry

6.1 Registry administrator

Registry administrator	
Name	Operátor trhu s elektřinou, a.s.
Address	Sokolovska 192/79
City	Prague 8
Postcode	186 00
Country	Czech Republic
Telephone number	+420 296 579 166; +420 296 579 202; +420 296 579 177; +420 296 579 186; +420 296 579 188
Facsimile number	+420 296 579 189
E-mail	Ote-povolenky@ote-cr.cz

6.2 Technical Description

Description of the Czech National Registry is presented in accordance with the reporting requirements laid down in Annex II under Decision 22/CP.7 in FCCC/CP/2001/13/Add.3, and the Czech Republic will implement the Kyoto registry as a consolidated system together with the registry used for the EU Emissions Trading Scheme.

The Czech National Registry has been created in accordance with Directive 2003/87/EC of 13th October 2003, Article 19. Operátor trhu s elektřinou, a.s. (the Czech electricity market operator) was designated as the registry administrator according to the Czech legislation. The Registry software, SeringasTM, is a software program developed by Caisse des Dépôts et Consignations (France).

The Registry was tested successfully by the European Commission in May 2005 and it has been in use since 13th October 2005. The Czech National Registry can be accessed through the following web portal:

<http://www.povolenky.cz>

The Registry has two parts:

In **the public part** of the Registry, a large amount of useful information can be found:

- The contents of international contracts
- The relevant national legislation,
- A glossary of terms,
- FAQ,
- Documents needed to access the Registry,
- Links to related web pages and
- Reports of the Registry accessible for the Public.

The protected (private) part of the Registry is accessible only for the authorized representatives of account holders.

The Czech National Registry employs all the required processes to minimize discrepancies in issuance, transactions, cancellation and retirement of ERUs, CERs, AAUs or RMUs. Every transaction is carried out to minimize the risk of inconsistent data in the Czech National Registry and the independent transaction log (ITL) and EU supplementary transaction log (CITL). The National Registry automatically informs the ITL or CITL of proposed transactions (for approval) before they can be finalized. This is an automatic process that account holders do not see or become involved in. If an inconsistency is detected or an invalid action is proposed by the Registry, the CITL or OTL will reject the proposal and cancel the request.

The Registry administrator ensures that the registry is available for access by account holders 24 hours a day, 7 days a week, and that the communication link between the Registry and the Community independent transaction log is maintained 24 hours a day, 7 days a week.

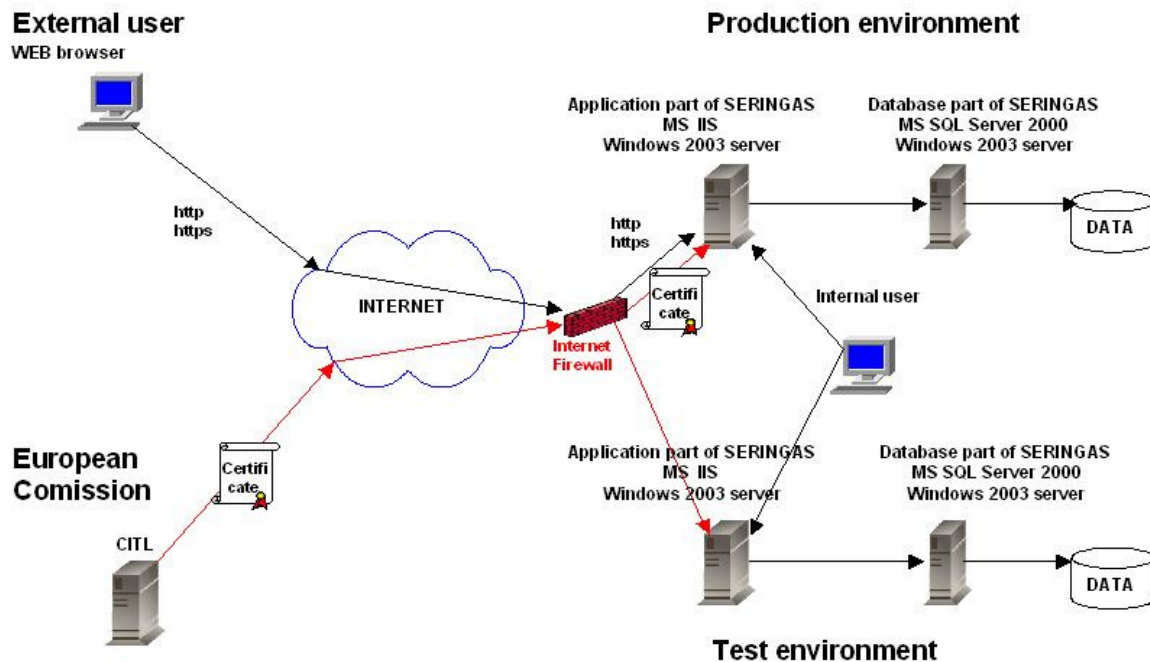
Currently, our registry system for the EU Emission Trading Scheme uses the security mechanism as specified within the EU Regulation (Annex XV).

The login name and password are generated automatically by the registry software application; users should change their passwords during the first login in the system. A password should have a length between 10 and 14 characters and contain both numerals and letters. Software security updates are performed on a monthly basis. Updates are applied to the test environment first and, after approval by the application support team, they are applied to the productive environment. The updating of the productive registry system is strictly managed under CIP (the Change Implementation Plan).

The Registry administrator uses the following HW for the test and production environments:

Hardware specification for test and production environments		
	Test	Production
Web server	HP ProLiant DL380R04 X3.2-1MB/800, 1GB	HP ProLiant DL380R04 2×X3.2-1MB/800, 2GB
Application server	Application server resides on the same machine as web server	Application server resides on the same machine as web server
Database server	HP ProLiant DL380R04 X3.2-1MB/800, 1GB	HP ProLiant DL380R04 2×X3.2-1MB/800, 2GB
Firewalls	CISCO PIX 115	CISCO PIX 115

Figure 3: Scheme of the Czech National Registry technical infrastructure



Safeguarding data procedures are set-up by the OTE Data Security Policy and the Disaster Recovery Plan. The main features are:

- daily on-line database backup, incremental
- weekly on-line database backup, full database
- delivery of backup tapes for independent secured storage in the Prague Safe Deposit Centre, once a week
- monthly full off-line database and application backup
- full off-line database and application backup before implementation of changes (as part of the Change Implementation Plan)
- disaster recovery time according to SLA: less than 48 hours in business days

Place of storage of the daily and weekly backups

- daily on-line database backups are stored in a place other than the seat of the Operátor trhu s elektřinou, a.s., located in a restricted area.
- both weekly on-line database backups and monthly full off-line db & application backups are stored at the Prague Safe Deposit Centre.